

# SECURITIES AND EXCHANGE COMMISSION

## FORM 8-K

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### FILER

#### **ADVANCED TISSUE SCIENCES INC**

CIK: **829549** | IRS No.: **141701513** | State of Incorpor.: **DE** | Fiscal Year End: **1231**  
Type: **8-K** | Act: **34** | File No.: **000-16607** | Film No.: **98667111**  
SIC: **2836** Biological products, (no diagnostic substances)

Mailing Address	Business Address
10933 NORTH TORREY PINES ROAD	10933 N TORREY PINES RD LA JOLLA CA 92037
10933 NORTH TORREY PINES ROAD	6194505730
LA JOLLA CA 92037	



## Item 5. Other Events

On July 10, 1998, Advanced Tissue Sciences, Inc. (the "Company") completed a private placement of \$25 million of Series B Convertible Preferred Stock (the "Series B Preferred Stock") to a group of investors (the "Investors"). Subject to adjustment in certain events, the Series B Preferred Stock is convertible into Common Stock of the Company at \$4.77 per share (the "Conversion Price"). The Conversion Price will be increased by one-half the amount by which the market price of the Common Stock on the date of conversion exceeds \$7.96 per share. Conversely, should the average daily trading price (as defined in the agreements) prior to a conversion be equal to or below \$3.58 per share, the Conversion Price will be equal to such average daily trading price.

The Series B Preferred Stock accrues dividends at 5% per annum. Dividends are payable quarterly in Common Stock or cash at the option of the Company. To the extent not previously converted, the Series B Preferred Stock is, at the election of the Company, redeemable at par value plus accrued dividends or convertible into Common Stock three years from the date of issuance subject to extension in certain circumstances. The Series B Preferred Stock is redeemable at the option of the holders upon the occurrence of certain events. The Common Stock issuable upon conversion of the Series B Preferred Stock will be registered for resale under the Securities Act of 1933.

Under the terms of the private placement and subject to certain conditions, the Company has the option to sell an additional \$25 million of the Series B Preferred Stock in the first quarter of 1999 to the Investors. Conditions to the Company's option include having the Common Stock issuable on conversion registered and that the Common Stock must be trading above \$5.49 per share, among others. The Investors participating in the private placement were advised by the Promethean Investment Group L.L.C. The terms of the private placement are more fully described in the Certificate of Designations, Preferences and Rights of Series B Convertible Preferred Stock, and the Securities Purchase Agreement and Registration Rights Agreement between the Company and the Investors which are attached hereto as exhibits and are incorporated herein by reference.

Separately, the Company reported that it has extended its existing equity line to February 2000. Under the equity line, the Company could receive up to \$50 million from the sale of Common Stock to an investor group. Drawings under the equity line are at the Company's discretion. The Company originally entered into an investment agreement for the equity line in February 1996. The decision to draw any funds under the equity line remains at the Company's sole discretion. Under the provisions of the equity line and subject to applicable rules and regulations, the Company can obtain up to \$15 million at any one time through the sale of Common Stock. Any sales against the equity line will be at a five percent discount to the average low sales prices of the Company's Common Stock over a specified period of time as determined by market volume at the time of the draw. The Company's ability to draw under the equity line is subject to certain conditions including, but not limited to, registration of the shares, a minimum trading price per share, and certain limitations on the number of shares of Common Stock held by the investment group at any point in time. The

agreement to extend the equity line is set forth in Amendment No. 2 to the Investment Agreement between the Company and Hatteras Partners, L.P. (formerly Ramius Haterras Partners, L.P.) which is attached hereto as an exhibit and is also incorporated herein by reference.

The foregoing summary is qualified in its entirety by reference to the exhibits attached hereto.

2

Item 7. Exhibits

Exhibit Number -----	Description -----
3.1	Certificate of Designations, Preferences and Rights of Series B Convertible Preferred Stock of Advanced Tissue Sciences, Inc.
4.1	Amendment No. 2 to Investment Agreement between Advanced Tissue Sciences, Inc. and Hatteras Partners, L.P. (formerly Ramius Hatteras Partners, L.P.) dated July 10, 1998
10.1	Securities Purchase Agreement by and among Advanced Tissue Sciences, Inc. and the Investors dated July 10, 1998
10.2	Registration Rights Agreement by and among Advanced Tissue Sciences, Inc. and the Investors dated July 10, 1998

SIGNATURES

Pursuant to the requirements of the Securities Exchange Act of 1934, the registrant has duly caused this report to be signed on its behalf by the undersigned hereunto duly authorized.

ADVANCED TISSUE SCIENCES, INC.

Date: July 15, 1998

By: /s/ Arthur J. Benvenuto  
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Arthur J. Benvenuto  
Chairman and



CERTIFICATE OF DESIGNATIONS, PREFERENCES  
AND RIGHTS OF SERIES B CONVERTIBLE PREFERRED STOCK  
OF  
ADVANCED TISSUE SCIENCES, INC.

Advanced Tissue Sciences, Inc. (the "COMPANY"), a corporation organized and existing under the General Corporation Law of the State of Delaware, does hereby certify that, pursuant to authority conferred upon the Board of Directors of the Company by the Certificate of Incorporation, as amended, of the Company, and pursuant to Section 151 of the General Corporation Law of the State of Delaware, the Board of Directors of the Company at a meeting duly held adopted resolutions (i) authorizing a series of the Company's previously authorized preferred stock, par value \$.01 per share, and (ii) providing for the designations, preferences and relative, participating, optional or other rights, and the qualifications, limitations or restrictions thereof, of 1,000 shares of Series B Convertible Preferred Stock of the Company, as follows:

RESOLVED, that the Company is authorized to issue 1,000 shares of Series B Convertible Preferred Stock (the "PREFERRED SHARES"), par value \$.01 per share, which shall have the following powers, designations, preferences and other special rights:

- (1) Dividends. The Preferred Shares shall bear dividends

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("DIVIDENDS") at a rate of 5.0% per annum, which shall be cumulative, accrue daily from the Issuance Date (as defined below) and be payable on the first day of each Calendar Quarter (as defined below) beginning on the earlier of (a) the first day of the Calendar Quarter immediately following the date on which the Registration Statement (as defined below) is declared effective by the SEC (as defined below) and (b) January 1, 1999 (each a "DIVIDEND DATE"). If a Dividend Date is not a Business Day (as defined below) then the Dividend shall be due and payable on the Business Day immediately following the Dividend Date. Dividends shall be payable in shares of Common Stock or, at the option of the Company, in cash, provided that the Dividends which accrued during any period shall be payable in cash only if the Company provides written notice ("DIVIDEND ELECTION NOTICE") to each holder of Preferred Shares at least 6 business days prior to the Dividend Date. Dividends to be paid in shares of Common Stock shall be paid in a number of fully paid and nonassessable shares (rounded to the nearest whole share in accordance with Section 2(h)) of Common Stock equal to the quotient of (a) the accrued and unpaid Dividends and (b) the Market Price (as defined below) on the applicable Dividend Date. Notwithstanding the foregoing and to the extent it may lawfully do so, the Company shall not be entitled to pay Dividends in shares of Common Stock and shall be required to pay such Dividends in cash if

(a) any event constituting a Triggering Event (as defined in Section 3(d)), or an event that with the passage of time would constitute a Triggering Event if not cured, has occurred and is continuing on the date of the Company's Dividend Election Notice or on the Dividend Date, unless otherwise consented to in writing by the holder of Preferred Shares entitled to receive such Dividend or (b) the Registration Statement (as defined below) has not been declared effective by the Securities and Exchange Commission (the "SEC") on or before the Dividend Date. Any accrued and unpaid dividends which are not paid within five (5) Business Days of such accrued and unpaid dividends' Dividend Date shall bear interest at the rate of 18.0% per annum from such Dividend Date until the same is paid (the "DEFAULT INTEREST").

(2) Holder's Conversion of Preferred Shares. A holder of  
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Preferred Shares shall have the right, at such holder's option, to convert the Preferred Shares into shares of the Company's common stock, par value \$.01 per share (the "COMMON STOCK"), on the following terms and conditions:

(a) Conversion Right. Subject to Section 2(j), at any time  
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or times on or after the Issuance Date (as defined below), any holder of Preferred Shares shall be entitled to convert any whole number of Preferred Shares into fully paid and nonassessable shares (rounded to the nearest whole share in accordance with Section 2(h)) of Common Stock, at the Conversion Rate (as defined below); provided, however, that in no event shall any holder be entitled to convert Preferred Shares in excess of that number of Preferred Shares which, upon giving effect to such conversion, would cause the aggregate number of shares of Common Stock beneficially owned by the holder and its affiliates to exceed 4.99% of the outstanding shares of the Common Stock following such conversion. For purposes of the foregoing proviso, the aggregate number of shares of Common Stock beneficially owned by the holder and its affiliates shall include the number of shares of Common Stock issuable upon conversion of the Preferred Shares with respect to which the determination of such proviso is being made, but shall exclude the number of shares of Common Stock which would be issuable upon (i) conversion of the remaining, nonconverted Preferred Shares beneficially owned by the holder and its affiliates, and (ii) exercise or conversion of the unexercised or unconverted portion of any other securities of the Company (including, without limitation, any warrants) subject to a limitation on conversion or exercise analogous to the limitation contained herein beneficially owned by the holder and its affiliates. Except as set forth in the preceding sentence, for purposes of this Section 2(a), beneficial ownership shall be calculated in accordance with Section 13(d) of the Securities Exchange Act of 1934, as amended. The holder may waive the foregoing limitations by written notice to the Company upon not less than 61 days prior notice (with such waiver taking effect only upon the expiration of such 61 day notice period).

(b) Conversion Rate. The number of shares of Common Stock  
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issuable upon conversion of each of the Preferred Shares pursuant to Sections (2) (a) and 2(g) and Section 5 shall be determined according to the following formula (the "CONVERSION RATE"):

-2-

$$\frac{\text{Conversion Amount}}{\text{Conversion Price}}$$

For purposes of this Certificate of Designations, the following terms shall have the following meanings:

(i) "CONVERSION PRICE" means, on a per share basis, as of the Conversion Date (as defined below) or other date of determination (other than the Maturity Date (as defined in Section 2(g)) of the applicable Preferred Shares (A) prior to an Offering (I) if the Floating Conversion Price is less than or equal to 90% of the Initial Market Price, the Floating Conversion Price, (II) if the Floating Conversion Price is greater than 90% of the Initial Market Price and less than 200% of the Initial Market Price, 120% of the Initial Market Price, or (III) if the Floating Conversion Price is greater than or equal to 200% of the Initial Market Price, the Profit-Sharing Conversion Price and (B) after an Offering (I) if the Floating Conversion Price is less than or equal to 120% of the Initial Market Price, the Floating Conversion Price (II) if the Floating Conversion Price is greater than 120% of the Initial Market Price and less than 200% of the Initial Market Price, 120% of the Initial Market Price, or (III) if the Floating Conversion Price is greater than or equal to 200% of the Initial Market Price, the Profit-Sharing Conversion Price; provided that on any Conversion Date which is the Maturity Date for such Preferred Share, the Conversion Price shall mean the average of the Average Daily Trading Prices of the Common Stock for the 20 consecutive trading days immediately preceding such Maturity Date;

(ii) "FLOATING CONVERSION PRICE" means, as of any date of determination, the average of the 15 lowest Average Daily Trading Prices during the 45 consecutive trading days immediately preceding such date of determination;

(iii) "PROFIT-SHARING CONVERSION PRICE" means, as of any date of determination, the amount determined according to the following formula:

$$\text{Profit-Sharing Conversion Price} = (1.2 \times \text{IMP}) + \frac{\text{ADTP} - (2 \times \text{IMP})}{2}$$

where: IMP = Initial Market Price on each Conversion Date  
ADTP = The Average Daily Trading Price on each Conversion Date



(iv) "CONVERSION AMOUNT" means, on a per share basis, the sum of (A) the Additional Amount and (B) \$50,000;

(v) "ADDITIONAL AMOUNT" means, on a per share basis, the sum of (A) unpaid Default Interest through the date of determination plus (B) the result of the following formula:  $(.050)(N/365)(\$50,000)$ ;

-3-

(vi) "MARKET PRICE" means, with respect to any security for any date, the average of the Average Daily Trading Prices for such security during the five consecutive trading days immediately preceding such date of determination;

(vii) "INITIAL MARKET PRICE" means, with respect to any Preferred Share the Market Price on (I) in the case of Preferred Shares issued on the Initial Issuance Date, the second trading day immediately following the Initial Closing Date, or (II) in the case of Preferred Shares issued after the Initial Issuance Date, the Issuance Date of such Preferred Share, subject in each case to adjustment as provided herein;

(viii) "OFFERING" means any (A) draw down or receipt of proceeds under an equity line or (B) equity financing, debt financing with an equity component or issuance of any equity securities of the Company or any Subsidiary or securities convertible or exchangeable into, or for equity securities of the Company or any Subsidiary (including debt securities with an equity component) in which the Company receives, individually or in the aggregate, proceeds of at least \$2,500,000. An Offering shall not include (i) a loan from a commercial bank, (ii) any transaction involving the Company's issuances of securities (A) as consideration in a merger or consolidation, (B) in connection with any strategic partnership or joint venture (the primary purpose of which is not to raise equity capital), or (C) as consideration for the acquisition of a business, product or license or other assets by the Company, (iii) the issuance of Common Stock in a firm commitment, underwritten public offering with net proceeds of at least \$10,000,000, (iv) the issuance of securities upon exercise or conversion of the Company's options, warrants or other convertible securities outstanding as of the date hereof, (v) the grant of additional options or warrants, or the issuance of additional securities, under any Approved Stock Plan, (vi) issuances of Preferred Shares or shares of Common Stock upon conversion of Preferred Shares or (vii) the issuance of securities of the Company to Smith & Nephew on or after January 1, 2000 pursuant to the terms of the Dermagraft Joint Venture Agreement with Smith & Nephew in effect on the Initial Issuance Date;

(ix) "N" means the number of days from, but excluding, the last Dividend Date with respect to which dividends, along with any Default Interest, has been paid by the Company on the applicable Preferred Share through and including the Conversion Date or the Maturity Date for the Preferred Shares for which conversion and/or redemption is being elected, as the case may be;

(x) "ISSUANCE DATE" means, with respect to each Preferred Share, the date of issuance of the applicable Preferred Share;

(xi) "INITIAL ISSUANCE DATE" means the first date on which any Preferred Shares are issued by the Company;

-4-

(xii) "BUSINESS DAY" means any day other than Saturday, Sunday or other day on which commercial banks in the City of New York are authorized or required by law to remain closed;

(xiii) "CALENDAR QUARTER" means, each of the period beginning on and including January 1 and ending on and including March 31, the period beginning on and including April 1 and ending on and including June 30, the period beginning on and including July 1 and ending on and including September 30, and the period beginning on and including October 1 and ending on and including December 31;

(xiv) "SECURITIES PURCHASE AGREEMENT" means that certain securities purchase agreement between the Company and the initial holders of the Preferred Shares;

(xv) "REGISTRATION RIGHTS AGREEMENT" means that certain registration rights agreement between the Company and the initial holders of the Preferred Shares relating to the filing of a registration statement covering the resale of the Conversion Shares;

(xvi) "CONVERSION SHARES" means shares of Common Stock issuable upon conversion of Preferred Shares and any shares of Common Stock issuable as payment of Dividends or Registration Delay Payments (as defined in the Registration Rights Agreement);

(xvii) "AVERAGE DAILY TRADING PRICE" means, for any security as of any date, the average of the high and low trading prices on such date for such security on The Nasdaq National Market (as reported by Bloomberg), or, if The Nasdaq National Market is not the principal trading market for such security, the average of the high and low trading prices on such date of such security on the principal securities exchange or trading market where such security is listed or traded (as reported by Bloomberg), or if the foregoing do not apply, the average of the high and low trading prices on such date of such security in the over-the-counter market on the electronic bulletin board for such security (as reported by Bloomberg). If the Average Daily Trading Price cannot be calculated for such security on such date on any of the foregoing bases, the Average Daily Trading Price of such security on such date shall be the fair market value as mutually determined by the Company and the holders of a majority of the outstanding Preferred Shares (including for purposes of this determination any Preferred Shares with respect to which the Average Daily

Trading Price is being determined). If the Company and the holders of Preferred Shares are unable to agree upon the fair market value of the Common Stock, then such dispute shall be resolved pursuant to Section 2(f)(iii) with the term "Average Daily Trading Price" being substituted for the term "Market Price." (All such determinations to be appropriately adjusted for any stock dividend, stock split or other similar transaction during such period).

(c) Intentionally omitted.

-5-

(d) Adjustment to Conversion Price - Dilution and Other

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Events. In order to prevent dilution of the rights granted under this

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Certificate of Designations, the Initial Market Price and the Conversion Price will be subject to adjustment from time to time as provided in this Section 2(d).

(i) Adjustment of Fixed Conversion Price upon Issuance

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of Common Stock. Except as provided in Section 2(d)(iv), if and whenever on or

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after the Issuance Date, the Company issues or sells, or is deemed to have issued or sold, any shares of Common Stock (other than Preferred Shares or shares of Common Stock issued upon conversion of Preferred Shares or as payment of Dividends or deemed to have been issued by the Company in connection with an Approved Stock Plan (as defined below)) for a consideration per share less than a price (the "APPLICABLE PRICE") equal to the Initial Market Price in effect immediately prior to such issuance or sale, then immediately after such issue or sale, the Initial Market Price then in effect shall be reduced to an amount equal to the product of (x) the Initial Market Price in effect immediately prior to such issue or sale and (y) the quotient determined by dividing (1) the sum of (I) the product of the Applicable Price and the number of shares of Common Stock Deemed Outstanding (as defined below) immediately prior to such issue or sale, and (II) the consideration, if any, received by the Company upon such issue or sale, by (2) the product of (I) the Applicable Price and (II) the number of shares of Common Stock Deemed Outstanding immediately after such issue or sale. Notwithstanding anything to the contrary in this Section 2(d), no adjustment to the Initial Market Price shall be required unless such adjustment would result in an increase or decrease of at least five percent (5%) of the Initial Market Price; provided that any adjustments which by reason of this sentence are not

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required to be made shall be carried forward and taken into account in any subsequent adjustment. For purposes of determining the adjusted Initial Market Price under this Section 2(d)(i), the following shall be applicable:

(A) Issuance of Options. If and whenever on or

after the Issuance Date, the Company in any manner grants any rights or options to subscribe for or to purchase Common Stock (other than pursuant to an Approved Stock Plan or upon conversion of the Preferred Shares) or any stock or other securities convertible into or exchangeable for Common Stock (such rights or options being herein called "OPTIONS" and such convertible or exchangeable stock or securities being herein called "CONVERTIBLE SECURITIES") and the price per share for which Common Stock is issuable upon the exercise of such Options or upon conversion or exchange of such Convertible Securities is less than the Applicable Price, then the total maximum number of shares of Common Stock issuable upon the exercise of such Options or upon conversion or exchange of the total maximum amount of such Convertible Securities issuable upon the exercise of such Options at the time of issuance of such Options (without regard to limitations on exercise, conversion or exchange) shall be deemed to be outstanding and to have been issued and sold by the Company for such price per share. For purposes of this Section 2(d)(i)(A), the "price per share for which

-6-

Common Stock is issuable upon exercise of such Options or upon conversion or exchange of such Convertible Securities" is determined by dividing (I) the total amount, if any, received or receivable by the Company as consideration for the granting of such Options, plus the minimum aggregate amount of additional consideration payable to the Company upon the exercise of all such Options at the time of issuance of such Options (without regard to limitations on exercise, conversion or exchange), plus in the case of such Options which relate to Convertible Securities, the minimum aggregate amount of additional consideration, if any, payable to the Company upon the issuance or sale of such Convertible Securities and the conversion or exchange thereof, by (II) the total maximum number of shares of Common Stock issuable upon exercise of such Options at the time of issuance of such Options (without regard to limitations on exercise, conversion or exchange) or upon the conversion or exchange of all such Convertible Securities issuable upon the exercise of such Options. Except as set forth in Section 2(d)(i)(C) below, no adjustment of the Initial Market Price shall be made upon the actual issuance of such Common Stock or of such Convertible Securities upon the exercise of such Options or upon the actual issuance of such Common Stock upon conversion or exchange of such Convertible Securities.

(B) Issuance of Convertible Securities. If and  
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whenever on or after the Issuance Date, the Company in any manner issues or sells any Convertible Securities and the price per share for which Common Stock is issuable upon such conversion or exchange is less than the Applicable Price, then the maximum number of shares of Common Stock issuable upon conversion or exchange of such Convertible Securities at the time of issuance of such Convertible Securities (without regard to limitations on exercise, conversion or exchange) shall be deemed to be outstanding and to have been issued and sold by the Company for such price per share. For the purposes of this Section 2(d)(i)(B), the "price per share for which Common Stock is issuable upon such

conversion or exchange" is determined by dividing (I) the total amount received or receivable by the Company as consideration for the issue or sale of such Convertible Securities, plus the minimum aggregate amount of additional consideration, if any, payable to the Company upon the conversion or exchange thereof at the time of issuance of such Convertible Securities (without regard to limitations on exercise, conversion or exchange), by (II) the total maximum number of shares of Common Stock issuable upon the conversion or exchange of all such Convertible Securities at the time of issuance of such Convertible Securities (without regard to limitations on exercise, conversion or exchange). Except as set forth in Section 2(d)(i)(C) below, no adjustment of the Initial Market Price shall be made upon the actual issue of such Common Stock upon conversion or exchange of such Convertible Securities, and if any such issue or sale of such Convertible Securities is made upon exercise of any Options for which adjustment of the Initial Market Price had been or are to be made pursuant to other provisions of this Section 2(d)(i), no further adjustment of the Initial Market Price shall be made by reason of such issue or sale.

-7-

(C) Change in Option Price or Rate of Conversion.  
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If the purchase price provided for in any Options, the additional consideration, if any, payable upon the issue, conversion or exchange of any Convertible Securities, or the rate at which any Convertible Securities are convertible into or exchangeable for Common Stock change at any time, the Initial Market Price in effect at the time of such change shall be readjusted to the Initial Market Price which would have been in effect at such time had such Options or Convertible Securities still outstanding provided for such changed purchase price, additional consideration or changed conversion rate, as the case may be, at the time initially granted, issued or sold; provided that no adjustment shall be made if such adjustment would result in an increase of the Initial Market Price then in effect. Notwithstanding the foregoing, no adjustment will be made pursuant to this Section 2(d)(i)(C) due to changes in a Variable Price (as defined in Section 2(d)(iv)) resulting solely from changes in the market price of the Common Stock, except for adjustments at the time of conversion, exchange or exercise of such Options and Convertible Securities; provided that no adjustment shall be made if such adjustment would result in an increase of the Initial Market Price then in effect.

(D) Certain Definitions. For purposes of  
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determining the adjusted Initial Market Price under this Section 2(d)(i), the following terms have the meanings set forth below:

(I) "APPROVED STOCK PLAN" shall mean any contract, plan or agreement which has been approved by the Board of Directors of the Company, pursuant to which the Company's securities may be issued to any employee, officer, director, consultant or other service provider (other than Smith & Nephew).

(II) "COMMON STOCK DEEMED OUTSTANDING" means, at any given time, the number of shares of Common Stock actually outstanding at such time, plus the number of shares of Common Stock deemed to be outstanding pursuant to Sections 2(d)(i)(A) and 2(d)(i)(B) hereof regardless of whether the Options or Convertible Securities are actually exercisable at such time, but excluding any shares of Common Stock issuable upon conversion of the Preferred Shares.

(E) Effect on Initial Market Price of Certain  
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Events. For purposes of determining the adjusted Initial Market Price under  
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this Section 2(d)(i), the following shall be applicable:

(I) Calculation of Consideration Received. If  
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any Common Stock, Options or Convertible Securities are issued or sold or deemed to have been issued or sold for cash, the consideration received therefor will be deemed to be the amount received by the Company therefor, before deduction of commissions, underwriting discounts or allowances or placement agent or finder fees (but only to the extent that such commissions, discounts, allowances and fees do not exceed, in the aggregate, 6% of the gross proceeds to the Company)

-8-

and other reasonable expenses paid or incurred by the Company in connection with such issuance or sale, provided that any amounts paid to the purchasers of such Common Stock, Options or Convertible Securities or to any affiliates of such purchasers in connection with such issuance or sale shall be deducted from the amount of consideration received by the Company. In case any Common Stock, Options or Convertible Securities are issued or sold for a consideration other than cash, the amount of the consideration other than cash received by the Company will be the fair value of such consideration, except where such consideration consists of securities, in which case the amount of consideration received by the Company will be the average of the Average Daily Trading Prices of such securities for the five consecutive trading days immediately preceding the date of receipt. In case any Common Stock, Options or Convertible Securities are issued to the owners of the non-surviving entity in connection with any merger in which the Company is the surviving entity, the amount of consideration therefor will be deemed to be the fair value of such portion of the net assets and business of the non-surviving entity as is attributable to such Common Stock, Options or Convertible Securities, as the case may be. The fair value of any consideration other than cash or securities will be determined jointly by the Company and the holders of a majority of the Preferred Shares then outstanding. If such parties are unable to reach agreement within ten (10) days after the occurrence of an event requiring valuation (the "VALUATION EVENT"), the fair value of such consideration will be determined within ten (10) days of the tenth (10th) day following the Valuation Event by an independent, reputable appraiser selected by the Company. The determination of such

appraiser shall be binding upon all parties absent manifest error.

(II) Integrated Transactions. In case any  
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Option is issued in connection with the issue or sale of other securities of the Company, together comprising one integrated transaction in which no specific consideration is allocated to such Options by the parties thereto, the Options will be deemed to have been issued for a consideration of \$.01 and the aggregate consideration received by the Company in such integrated transaction shall be included in the adjustment calculation in Section 2(d)(i) above.

(III) Treasury Shares. The number of shares  
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of Common Stock outstanding at any given time does not include shares owned or held by or for the account of the Company, and the disposition of any shares so owned or held will be considered an issue or sale of Common Stock.

(IV) Record Date. If the Company takes a  
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record of the holders of Common Stock for the purpose of entitling them (1) to receive a dividend or other distribution payable in Common Stock, Options or in Convertible Securities, or (2) to subscribe for or purchase Common Stock, Options or Convertible Securities, then such record date will be deemed to be the date of the issue or sale of the shares of Common Stock deemed to have been issued or sold upon the declaration of such dividend or the making of such other distribution or the date of the granting of such right of subscription or purchase, as the case may be.

-9-

(ii) Adjustment of Initial Market Price upon Subdivision  
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or Combination of Common Stock. If the Company at any time subdivides (by any  
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stock split, stock dividend, recapitalization or otherwise) one or more classes of its outstanding shares of Common Stock into a greater number of shares, the Initial Market Price in effect immediately prior to such subdivision each will be proportionately reduced. If the Company at any time combines (by combination, reverse stock split or otherwise) one or more classes of its outstanding shares of Common Stock into a smaller number of shares, the Initial Market Price in effect immediately prior to such combination will be proportionately increased.

(iii) Reorganization, Reclassification, Consolidation,  
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Merger or Sale. Any recapitalization, reorganization, reclassification,  
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consolidation, merger, sale of all or substantially all of the Company's assets to another Person (as defined below) or other transaction which is effected in

such a way that holders of Common Stock are entitled to receive (either directly or upon subsequent liquidation) stock, securities or assets with respect to or in exchange for Common Stock is referred to herein as "ORGANIC CHANGE." Prior to the consummation of any Organic Change, the Company will make appropriate provision (in form and substance satisfactory to the holders of a majority of the Preferred Shares then outstanding) to insure that each of the holders of the Preferred Shares will thereafter have the right to acquire and receive in lieu of or in addition to (as the case may be) the shares of Common Stock otherwise acquirable and receivable upon the conversion of such holder's Preferred Shares, such shares of stock, securities or assets that would have been issued or payable in such Organic Change with respect to or in exchange for the number of shares of Common Stock which would have been acquirable and receivable upon the conversion of such holder's Preferred Shares had such Organic Change not taken place (without taking into account any limitations or restrictions on the timing or amount of conversions). In any such case, the Company will make appropriate provision (in form and substance satisfactory to the holders of a majority of the Preferred Shares then outstanding) with respect to such holders' rights and interests to insure that the provisions of this Section 2(d) and Section 2(e) will thereafter be applicable to the Preferred Shares (including, in the case of any such consolidation, merger or sale in which the successor entity or purchasing entity is other than the Company, an immediate adjustment of the Initial Market Price to the value for the Common Stock reflected by the terms of such consolidation, merger or sale, if the value so reflected is less than the Initial Market Price in effect immediately prior to such consolidation, merger or sale and an immediate revision to the Initial Market Price to reflect the price of the common stock of the surviving entity and the market in which such common stock is traded). The Company will not effect any such consolidation, merger or sale, unless prior to the consummation thereof, the successor entity (if other than the Company) resulting from consolidation or merger or the entity purchasing such assets assumes, by written instrument (in form and substance

-10-

satisfactory to the holders of a majority of the Preferred Shares then outstanding), the obligation to deliver to each holder of Preferred Shares such shares of stock, securities or assets as, in accordance with the foregoing provisions, such holder may be entitled to acquire. "PERSON" shall mean an individual, a limited liability company, a partnership, a joint venture, a corporation, a trust, an unincorporated organization and a government or any department or agency thereof.

(iv) Adjustment of Floating Conversion Price and/or

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Initial Market Price upon Issuance of Convertible Securities. (A) If and  
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whenever after the Issuance Date, the Company in any manner issues or sells Convertible Securities that are convertible into or exercisable or exchangeable for Common Stock at a price which may vary with the market price of the Common Stock (the formulation for such variable price being herein referred to as, the



"VARIABLE PRICE") and such Variable Price is not calculated using the same formula used to calculate the Floating Conversion Price in effect immediately prior to the time of such issue or sale, the Company shall provide written notice thereof via facsimile and overnight courier to each holder of the Preferred Shares ("VARIABLE NOTICE") on the date of issuance of such Convertible Securities. If the holders of Preferred Shares representing at least two-thirds (2/3) of the Preferred Shares then outstanding provide written notice via facsimile and overnight courier (the "VARIABLE PRICE ELECTION NOTICE") to the Company within five (5) Business Days of receiving a Variable Notice that such holders desire to replace the Floating Conversion Price then in effect with the Variable Price described in such Variable Notice, then from and after the date of the Company's receipt of the Variable Price Election Notice the Floating Conversion Price will automatically be replaced with the Variable Price (together with such modifications to this Certificate of Designations as may be required to give full effect to the substitution of the Variable Price for the Floating Conversion Price), subject to further adjustments as provided in this Certificate of Designations. A holder's delivery of a Variable Price Election Notice shall serve as the consent required to amend this Certificate of Designations pursuant to Section 15 below. In the event that a holder delivers a Conversion Notice at any time after the Company's issuance of Convertible Securities with a Variable Price but before such holder's receipt of the Company's Variable Notice, then such holder shall have the option by written notice to the Company to rescind such Conversion Notice or to have the Conversion Price be equal to such Variable Price for the conversion effected by such Conversion Notice.

(B) If the Company in any manner issues or sells Convertible Securities that are convertible into or exchangeable or exercisable for Common Stock at a price which has the possibility of not varying with the market price of the Common Stock (the formulation for such fixed price being herein referred to as, the "FIXED PRICE") and such Fixed Price is less than 120% of the Initial Market Price in effect immediately prior to the time of such issue or sale, the Company shall provide written notice thereof via facsimile and overnight courier to each holder of the Preferred Shares ("FIXED NOTICE") on the date of issuance of such Convertible Securities. If the holders of Preferred Shares representing

-11-

at least two-thirds (2/3) of the Preferred Shares then outstanding provide written notice via facsimile and overnight courier (the "FIXED PRICE ELECTION NOTICE") to the Company within five (5) Business Days of receiving a Fixed Notice that such holders desire to have the Initial Market Price then in effect replaced with a price equal to the product of 0.8333 and the Fixed Price described in such Fixed Notice, then from and after the date of the Company's receipt of the Fixed Price Election Notice the Initial Market Price will automatically be replaced with a price equal to the product of 0.8333 and the Fixed Price (together with such modifications to this Certificate of Designations as may be required to give full effect to the replacement of the Initial Market Price with 83.33% of the Fixed Price), subject to further

adjustments as provided in this Certificate of Designations. A holder's delivery of a Fixed Price Election Notice shall serve as the consent required to amend this Certificate of Designations pursuant to Section 15 below. In the event that a holder delivers a Conversion Notice at any time after the Company's issuance of Convertible Securities with a Fixed Price but before such holder's receipt of the Company's Fixed Notice, then such holder shall have the option by written notice to the Company to rescind such Conversion Notice or to have the Conversion Price for such conversion be calculated using an Initial Market Price equal to 83.33% of the Fixed Price. No adjustment to the Initial Market Price shall be made pursuant to this paragraph in connection with the issuance of Convertible Securities that are convertible into Common Stock only at a Fixed Price and which Fixed Price is not subject to any adjustments or resets other than adjustments substantially similar to those set forth in Sections 2(d)(i), (ii) and (iii). In the event that the Initial Market Price is adjusted pursuant to this paragraph, then the issue or sale of Convertible Securities which was the basis for such adjustment shall not result in any adjustment to the Initial Market Price pursuant to Section 2(d)(i).

(v) Certain Events. If any event occurs of the type

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contemplated by the provisions of this Section 2(d) but not expressly provided for by such provisions (including, without limitation, the granting of stock appreciation rights, phantom stock rights or other rights with equity features), then the Company's Board of Directors will make an appropriate adjustment in the Conversion Price so as to protect the rights of the holders of the Preferred Shares; provided, however, that no such adjustment will increase the Conversion Price as otherwise determined pursuant to this Section 2(d).

(vi) Notices.

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(A) Immediately upon any adjustment of the Conversion Price, the Company will give written notice thereof to each holder of the Preferred Shares, setting forth in reasonable detail and certifying the calculation of such adjustment.

(B) The Company will give written notice to each holder of the Preferred Shares at least ten (10) days prior to the date on which the Company closes its books or takes a record (I) with respect to any dividend or distribution upon the Common Stock, (II) with respect to any pro rata

-12-

subscription offer to holders of Common Stock, or (III) for determining rights to vote with respect to any Organic Change, dissolution or liquidation and in no event shall such notice be provided to such holder prior to such information being made known to the public.

(C) The Company will also give written notice to

each holder of the Preferred Shares at least ten (10) days prior to the date on which any Organic Change, dissolution or liquidation will take place and in no event shall such notice be provided to such holder prior to such information being made known to the public.

(e) Purchase Rights. In addition to any adjustments of the  
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Conversion Price pursuant to Section 2(d), if at any time after the Issuance Date the Company grants, issues or sells any Options, Convertible Securities or rights to purchase stock, warrants, securities or other property pro rata to the record holders of any class of Common Stock (the "PURCHASE RIGHTS"), then the holders of the Preferred Shares will be entitled to acquire, upon the terms applicable to such Purchase Rights, the aggregate Purchase Rights which such holder could have acquired if such holder had held the number of shares of Common Stock acquirable upon complete conversion of the Preferred Shares (without taking into account any limitations or restrictions on the timing or amount of conversions) immediately before the date on which a record is taken for the grant, issuance or sale of such Purchase Rights, or, if no such record is taken, the date as of which the record holders of the Common Stock are to be determined for the grant, issue or sale of such Purchase Rights.

(f) Mechanics of Conversion. Subject to the Company's  
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inability to fully satisfy its obligations under a Conversion Notice (as defined below) as provided for in Section 4:

(i) Holder's Delivery Requirements. To convert  
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Preferred Shares into full shares of Common Stock on any date (the "CONVERSION DATE"), the holder thereof shall (A) transmit by facsimile (or otherwise deliver), for receipt on or prior to 11:59 p.m. Eastern Time, on such date, a copy of a fully executed notice of conversion in the form attached hereto as Exhibit I (the "CONVERSION NOTICE") to the Company or its designated transfer  
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agent (the "TRANSFER AGENT"), and (B) if required by Section 2(f)(vii), surrender to a common carrier, for delivery to the Company as soon as practicable following such date, the original certificate(s) representing the Preferred Shares being converted (or an indemnification undertaking with respect to such shares in the case of their loss, theft or destruction) (the "PREFERRED STOCK CERTIFICATE(S)").

(ii) Company's Response. Upon receipt by the Company of  
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a facsimile copy of a Conversion Notice, the Company shall (A) immediately send, via facsimile, a confirmation of receipt of such Conversion Notice to such holder and (B) on the second Business Day following the date of receipt,

(I) issue and surrender to a common carrier for overnight delivery to the address specified in the Conversion Notice, a certificate, registered in the name of the holder or its designee, for the number of shares of Common Stock to which the holder shall be entitled, or (II) credit such aggregate number of shares of Common Stock to which the holder shall be entitled to the holder's or its designee's balance account with The Depository Trust Company. If the number of Preferred Shares represented by the Preferred Stock Certificate(s) submitted for conversion is greater than the number of Preferred Shares being converted, then the Company shall, as soon as practicable and in no event later than two Business Days after receipt of the Preferred Stock Certificate(s) and at its own expense, issue and deliver to the holder a new Preferred Stock Certificate representing the number of Preferred Shares not converted.

(iii) Dispute Resolution. In the case of a dispute as

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to the determination of the Average Daily Trading Price or the arithmetic calculation of the Conversion Rate, the Company shall promptly issue to the holder the number of shares of Common Stock that is not disputed and shall submit the disputed determinations or arithmetic calculations to the holder via facsimile within one (1) Business Day of receipt of such holder's Conversion Notice. If such holder and the Company are unable to agree upon the determination of the Average Daily Trading Price or arithmetic calculation of the Conversion Rate within one (1) Business Day of such disputed determination or arithmetic calculation being submitted to the holder, then the Company shall within one (1) Business Day submit via facsimile (A) the disputed determination of the Average Daily Trading Price to an independent, reputable investment bank, or (B) the disputed arithmetic calculation of the Conversion Rate to its independent, outside accountant. The Company shall cause the investment bank or the accountant, as the case may be, to perform the determinations or calculations and notify the Company and the holder of the results no later than forty-eight (48) hours from the time it receives the disputed determinations or calculations. Such investment bank's or accountant's determination or calculation, as the case may be, shall be binding upon all parties absent manifest error.

(iv) Record Holder. The person or persons entitled to

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receive the shares of Common Stock issuable upon a conversion of Preferred Shares shall be treated for all purposes as the record holder or holders of such shares of Common Stock on the Conversion Date.

(v) Company's Failure to Timely Convert. If within six

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Business Days after the Company's or the Transfer Agent's (as applicable) receipt of a facsimile copy of a Conversion Notice, the Company shall fail to issue a certificate for the number of shares of Common Stock to which a holder is entitled or to credit the holder's balance account with The Depository Trust Company for such number of shares of Common Stock to which the holder is entitled upon such holder's conversion of the Preferred Shares, pursuant to Section 2(f)(ii), in addition to all other available remedies which such holder

may pursue hereunder and under the Securities Purchase Agreement (including indemnification pursuant to Section 8 thereof), the Company shall pay additional damages to such holder on each date after such sixth (6th) Business Day that such conversion is not timely effected in an amount equal to 0.5% of the product of (A) the sum of the number of shares of Common Stock not issued to the holder on a timely basis pursuant to Section 2(f)(ii) and to which such holder is entitled and (B) the Average Daily Trading Price of the Common Stock on the last possible date which the Company could have issued such Common Stock to such holder without violating Section 2(f)(ii).

(vi) Company's Failure to Issue Certificates. If within

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ten Business Days after the Company's receipt of the Preferred Stock Certificates to be converted and the Conversion Notice the Company shall fail to issue a new Preferred Stock Certificate representing the number of Preferred Shares to which such holder is entitled, pursuant to Section 2(f)(ii), in addition to all other available remedies which such holder may pursue hereunder and under the Securities Purchase Agreement (including indemnification pursuant to Section 8 thereof), the Company shall pay additional damages to such holder on each date after such tenth (10th) Business Day that such delivery of such Preferred Stock Certificates is not timely effected in an amount equal to 0.5% of the product of (A) the number of shares of Common Stock issuable upon conversion of the Preferred Shares represented by such Preferred Stock Certificate as of the last possible date which the Company could have issued such Preferred Stock Certificate to such holder without violating Section 2(f)(ii) and (B) the Average Daily Trading Price of the Common Stock on the last possible date which the Company could have issued such Preferred Stock Certificate to such holder without violating Section 2(f)(ii).

(vii) Book-Entry. Notwithstanding anything to the

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contrary set forth herein, upon conversion of Preferred Shares in accordance with the terms hereof, the holder thereof shall not be required to physically surrender the certificate representing the Preferred Shares to the Company unless the full number of Preferred Shares represented by the certificate are being converted. The holder and the Company shall maintain records showing the number of Preferred Shares so converted and the dates of such conversions or shall use such other method, reasonably satisfactory to the holder and the Company, so as not to require physical surrender of the certificate representing the Preferred Shares upon each such conversion. In the event of any dispute or discrepancy, such records of the Company shall be controlling and determinative in the absence of manifest error. Notwithstanding the foregoing, if Preferred Shares represented by a certificate are converted as aforesaid, the holder may not transfer the certificate representing the Preferred Shares unless the holder first physically surrenders the certificate representing the Preferred Shares to the Company, whereupon the Company will forthwith issue and deliver upon the

order of the holder a new certificate of like tenor, registered as the holder may request, representing in the aggregate the remaining number of Preferred Shares represented by such certificate. The holder and any assignee, by acceptance of a certificate, acknowledge and agree that, by reason of the provisions of this paragraph, following conversion of any Preferred Shares, the

-15-

number of Preferred Shares represented by such certificate may be less than the number of Preferred Shares stated of the face thereof. Each certificate for Preferred Shares shall bear the following legend:

ANY TRANSFEREE OF THIS CERTIFICATE SHOULD CAREFULLY REVIEW THE TERMS OF THE COMPANY'S CERTIFICATE OF DESIGNATIONS, PREFERENCES AND RIGHTS OF THE PREFERRED SHARES REPRESENTED BY THIS CERTIFICATE, INCLUDING SECTION 2(f)(vii) THEREOF. THE NUMBER OF PREFERRED SHARES REPRESENTED BY THIS CERTIFICATE MAY BE LESS THAN THE NUMBER OF PREFERRED SHARES STATED ON THE FACE HEREOF PURSUANT TO SECTION 2(f)(vii) OF THE CERTIFICATE OF DESIGNATIONS, PREFERENCES AND RIGHTS.

(g) Mandatory Conversion or Redemption at Maturity. If any  
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Preferred Shares remain outstanding on the Maturity Date (as defined below), then all such Preferred Shares, at the Company's option, either (i) shall be converted as of such date in accordance with this Section 2 as if the holders of such Preferred Shares had given the Conversion Notice on the Maturity Date (a "MATURITY DATE MANDATORY CONVERSION") or (ii) shall be redeemed as of such date for an amount in cash per Preferred Share (the "MATURITY DATE REDEMPTION PRICE") equal to the sum of (A) \$50,000 plus (B) the Additional Amount as of such date (a "MATURITY DATE MANDATORY REDEMPTION"); provided, however, that if the Company has elected a Maturity Date Mandatory Conversion and a Triggering Event has occurred and is continuing on the Maturity Date, then the Company shall, within five Business Days following the Maturity Date (unless otherwise notified in writing by the holder of its request to have the Preferred Shares converted into Common Stock), pay to each holder of Preferred Shares then outstanding, in immediately available funds, an amount equal to the Maturity Date Redemption Price. The Company shall be deemed to have elected a Maturity Date Mandatory Conversion unless it delivers written notice to each holder of Preferred Shares at least 20 Business Days prior to the Maturity Date of its election to effect a Maturity Date Mandatory Redemption. If the Company elects a Maturity Date Mandatory Redemption, then on the Maturity Date the Company shall pay to each holder of Preferred Shares outstanding on the Maturity Date, by wire transfer of immediately available funds, an amount per Preferred Share equal to the Maturity Date Redemption Price. All holders of Preferred Shares shall thereupon surrender all Preferred Stock Certificates, duly endorsed for cancellation, to the Company, provided that the Company has complied with its obligations under this Section 2(g). Notwithstanding the foregoing, if the Common Stock is not designated for quotation on The Nasdaq National Market or listed on The New York

Stock Exchange, Inc. but such events do not constitute a Triggering Event, then the Maturity Date shall be extended until the Common Stock is so designated or listed. "MATURITY DATE" means the date which is three years after the applicable Issuance Date, subject to extension as described in the immediately preceding sentence and subject to extension pursuant to Section 3(u) of the Registration Rights Agreement, which extension shall be equal to one and one-half (1?) day for each day in any Grace Period (as defined in the Registration Rights Agreement).

-16-

(h) Fractional Shares. The Company shall not issue any  
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fraction of a share of Common Stock upon any conversion. All shares of Common Stock (including fractions thereof) issuable upon conversion of more than one Preferred Share by a holder thereof shall be aggregated for purposes of determining whether the conversion would result in the issuance of a fraction of a share of Common Stock. If, after the aforementioned aggregation, the issuance would result in the issuance of a fraction of a share of Common Stock, the Company shall round such fraction of a share of Common Stock up or down to the nearest whole share.

(i) Taxes. The Company shall pay any and all taxes which may  
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be imposed upon it with respect to the issuance and delivery of shares of Common Stock upon the conversion of the Preferred Shares.

(j) Conversion Restrictions. The right of a holder of  
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Preferred Shares to convert Preferred Shares pursuant to this Section 2 shall be limited as set forth below. Without the prior consent of the Company, a holder of Preferred Shares shall not be entitled to convert (i) any Preferred Shares during the period beginning on and including the Issuance Date of such Preferred Shares and ending on and including the date which is 120 days after the Issuance Date of such Preferred Shares and (ii) in any calendar month beginning with the first calendar month which ends on or after the day which is 120 days after the Issuance Date of such Preferred Shares, more than 10% of the number of Preferred Shares acquired by such holder at a Conversion Price less than or equal to 90% of the Initial Market Price then in effect; provided the number of Preferred Shares permitted to be converted each month shall be cumulative in that any shares permitted to be converted in any month and not so converted shall be carried over into each successive months until so converted. Notwithstanding the foregoing, the conversion restrictions set forth in this Section 2(j) shall not apply (A) on and after any date on which the Common Stock is not listed on The Nasdaq National Market, The New York Stock Exchange, Inc. or The American Stock Exchange, Inc. or has been suspended from trading (excluding suspensions of not more than one day resulting from business announcements), or any such delisting or suspension is threatened or pending (including, without limitation, the Company is not in compliance with published listing requirements), (B) on or

after any date on which there shall have occurred an event constituting a Major Transaction (as defined in Section 3(c)), Triggering Event (as defined in Section 3(d)) or a Material Adverse Change (as defined below), (C) with respect to the restriction set forth in clause (i) of the immediately preceding sentence, to any conversion of Preferred Shares at a Conversion Price which is equal to or greater than 120% of the Initial Market Price then in effect, (D) with respect to the restriction set forth in clause (ii) of the immediately preceding sentence, to any conversion of Preferred Shares at a Conversion Price greater than or equal to 120% of the Initial Market Price then in effect or (E) on or after any date on which there shall have been an announcement of a pending Major Transaction. "MATERIAL ADVERSE CHANGE" means any change, event, result or happening not in the normal course of the Company's business or operations involving, directly or indirectly, the Company or any of its subsidiaries

-17-

resulting in a material adverse effect on the business, financial condition or results of operations of the Company and its subsidiaries, taken as a whole.

(k) Adjustment of Conversion Restrictions upon Issuance of  
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Convertible Securities. Except as provided below, if the Company in any manner  
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issues or sells Convertible Securities that are convertible into Common Stock and are subject to (i) restrictions on the amount of shares that can be converted, or (ii) no restrictions on the amount of shares that can be converted (the restriction on conversions or lack thereof being herein referred to as the "CONVERSION RESTRICTION"), and such Conversion Restriction is not formulated using the same time periods and percentages used in Section 2(j), then the Company shall provide written notice thereof via facsimile and overnight courier to each holder of the Preferred Shares ("CONVERSION RESTRICTION NOTICE") on the date of issuance of such Convertible Securities. If the holders of Preferred Shares representing at least two-thirds (2/3) of the Preferred Shares then outstanding which remain subject to the restrictions in Section 2(j) provide written notice via facsimile and overnight courier (the "CONVERSION RESTRICTION ELECTION NOTICE") to the Company within five (5) Business Days of receiving a Conversion Restriction Notice that such holders desire to replace the conversion restrictions set forth in Section 2(j) then in effect with the Conversion Restriction described in such Conversion Restriction Notice, then from and after the date of the Company's receipt of the Conversion Restriction Election Notice the conversion restrictions set forth in Section 2(j) automatically will be replaced with the Conversion Restrictions (together with such modifications to this Certificate of Designations as may be required to give full effect to the substitution of the Conversion Restrictions for the conversion restrictions set forth in Section 2(j)), provided, however, holders of Preferred Shares shall not be entitled to replace the conversion restrictions set forth in Section 2(j) with the Conversion Restrictions applicable to issuances of Convertible Securities that are convertible, exchangeable or exercisable for shares of Common Stock in an amount not to exceed, individually or in the aggregate, the



lesser of (i) 250,000 shares of Common Stock (subject to adjustments for stock splits, stock dividends, recapitalizations or other similar events) and (ii) the average daily trading volume of the Common Stock (as reported by Bloomberg) for the 20 consecutive trading days immediately preceding such issuance or sale. A holder's delivery of a Conversion Restriction Election Notice shall serve as the consent required to amend this Certificate of Designations pursuant to Section 15 below.

(3) Redemption at Option of Holders.  
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(a) Redemption Option Upon Major Transaction. In addition to  
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all other rights of the holders of Preferred Shares contained herein, simultaneous with or after the occurrence of a Major Transaction (as defined below), each holder of Preferred Shares shall have the right, at such holder's option, to require the Company to redeem all or a portion of such holder's Preferred Shares at a price per Preferred Share equal to the greater of (i) 125% of the Liquidation Value (as defined in Section 11); and (ii) the product of (A) the Conversion Rate at such time, and (B) the Average Daily Trading Price on the date of the public announcement of such Major Transaction or the next date on which the exchange or market on which the Common Stock is traded is open if such public announcement is made (X) after 12:00 p.m. Eastern Time, on such date or (Y) on a date on which the exchange or market on which the Common Stock is traded is closed (the "MAJOR TRANSACTION REDEMPTION PRICE").

-18-

(b) Redemption Option Upon Triggering Event. In addition to  
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all other rights of the holders of Preferred Shares contained herein, simultaneous with or after the occurrence of a Triggering Event (as defined below), each holder of Preferred Shares shall have the right, at such holder's option, to require the Company to redeem all or a portion of such holder's Preferred Shares at a price per Preferred Share equal to the greater of (i) 125% of the Liquidation Value; and (ii) the product of (A) the Conversion Rate at such time, and (B) the greater of (I) the Average Daily Trading Price on the trading day immediately preceding such Triggering Event or (II) the Average Daily Trading Price on the date of the holder's delivery to the Company of a Notice of Redemption at Option of Buyer Upon Triggering Event (as defined below) or, if such date of delivery is not a trading day, the next date on which the exchange or market on which the Common Stock is traded is open (the "TRIGGERING EVENT REDEMPTION PRICE" and, collectively with the Major Transaction Redemption Price, the "REDEMPTION PRICE").

(c) "Major Transaction". A "MAJOR TRANSACTION" shall be  
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deemed to have occurred at such time as any of the following events:

(i) the consolidation, merger or other business combination of the Company with or into another Person (other than (A) a consolidation, merger or other business combination in which holders of the Company's voting power immediately prior to the transaction continue after the transaction to hold, directly or indirectly, the voting power of the surviving entity or entities necessary to elect a majority of the members of the board of directors (or their equivalent if other than a corporation) of such entity or entities, or (B) pursuant to a migratory merger effected solely for the purpose of changing the jurisdiction of incorporation of the Company) (a "CHANGE OF CONTROL TRANSACTION");

(ii) the sale or transfer of all or substantially all of the Company's assets; or

(iii) a purchase, tender or exchange offer made to and accepted by the holders of more than 50% of the outstanding shares of Common Stock.

(d) "Triggering Event". A "TRIGGERING EVENT" shall be deemed  
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to have occurred at such time as any of the following events:

(i) the failure of the Registration Statement (as defined in the Registration Rights Agreement) to be declared effective by the SEC on or prior to the date that is 150 days after the Initial Issuance Date;

-19-

(ii) while the Registration Statement is required to be maintained effective pursuant to the terms of the Registration Rights Agreement, the effectiveness of the Registration Statement lapses for any reason (including, without limitation, the issuance of a stop order) or is unavailable (other than on days during any Allowable Grace Period) to the holder of the Preferred Shares for sale of the Registrable Securities (as defined in the Registration Rights Agreement) in accordance with the terms of the Registration Rights Agreement, and such lapse or unavailability continues for a period of ten consecutive trading days (other than on days during any Allowable Grace Period);

(iii) suspension from listing or delisting of the Common Stock from The Nasdaq National Market or The New York Stock Exchange, Inc. for a period of five consecutive days;

(iv) the Company's notice to any holder of Preferred Shares, including by way of public announcement, at any time, of its intention not to comply with proper requests for conversion of any Preferred Shares into shares of Common Stock, including due to any of the reasons set forth in Section 4(a) below; or

(v) the Company breaches any representation, warranty,

covenant or other term or condition of the Securities Purchase Agreement, the Registration Rights Agreement, this Certificate of Designations or any other agreement, document, certificate or other instrument delivered in connection with the transactions contemplated thereby or hereby, except to the extent that such breach would not have a Material Adverse Effect (as defined in Section 3(a) of the Securities Purchase Agreement) and except, in the case of a breach of a covenant which is curable, only if such breach continues for a period of at least ten days.

(e) Mechanics of Redemption at Option of Buyer Upon Major  
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Transaction. No sooner than 15 days nor later than 10 days prior to the  
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consummation of a Major Transaction, but not prior to the public announcement of such Major Transaction, the Company shall deliver written notice thereof via facsimile and overnight courier (a "NOTICE OF MAJOR TRANSACTION") to each holder of Preferred Shares. At any time after receipt of a Notice of Major Transaction (or, in the event a Notice of Major Transaction is not delivered at least 10 days prior to a Major Transaction, at any time on or after the date which is 10 days prior to a Major Transaction), any holder of the Preferred Shares then outstanding may require the Company to redeem all or a portion of the holder's Preferred Shares then outstanding by delivering written notice thereof via facsimile and overnight courier (a "NOTICE OF REDEMPTION AT OPTION OF BUYER UPON MAJOR TRANSACTION") to the Company, which Notice of Redemption at Option of Buyer Upon Major Transaction shall indicate (i) the number of Preferred Shares that such holder is submitting for redemption, and (ii) the applicable Major Transaction Redemption Price, as calculated pursuant to Section 3(a).

(f) Mechanics of Redemption at Option of Buyer Upon  
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Triggering Event. Within one (1) day after the occurrence of a Triggering  
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Event, the Company shall deliver written notice thereof via facsimile and overnight courier (a "NOTICE OF TRIGGERING EVENT") to each holder of Preferred Shares. At any time after the earlier of a holder's receipt of a Notice of Triggering Event and such holder becoming aware of a Triggering Event, any holder of Preferred Shares then outstanding may require the Company to redeem all or a portion of the holder's Preferred Shares then outstanding by delivering written notice thereof via facsimile and overnight courier (a "NOTICE OF REDEMPTION AT OPTION OF BUYER UPON TRIGGERING EVENT") to the Company, which Notice of Redemption at Option of Buyer Upon Triggering Event shall indicate (i) the number of Preferred Shares that such holder is submitting for redemption, and (ii) the applicable Triggering Event Redemption Price, as calculated pursuant to Section 3(b).

(g) Payment of Redemption Price. Upon the Company's receipt  
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of a Notice(s) of Redemption at Option of Buyer Upon Triggering Event or a Notice(s) of Redemption at Option of Buyer Upon Major Transaction from any holder of Preferred Shares, the Company shall immediately notify each holder of Preferred Shares by facsimile of the Company's receipt of such Notice(s) of Redemption at Option of Buyer Upon Triggering Event or Notice(s) of Redemption at Option of Buyer Upon Major Transaction and each holder which has sent such a notice shall promptly submit, if required by Section(2)(f)(vii), to the Company or its Transfer Agent such holder's Preferred Stock Certificates which such holder has elected to have redeemed. The Company shall deliver the applicable Triggering Event Redemption Price, in the case of a redemption pursuant to Section 3(f), to such holder within five (5) Business Days after the Company's receipt of a Notice of Redemption at Option of Buyer Upon Triggering Event and, in the case of a redemption pursuant to Section 3(e), the Company shall deliver the applicable Major Transaction Redemption Price simultaneous with the consummation of the Major Transaction; provided that, if required by Section 2(f)(vii), a holder's Preferred Stock Certificates shall have been so delivered to the Company; provided further that if the Company is unable to redeem all of the Preferred Shares to be redeemed, the Company shall redeem an amount from each holder of Preferred Shares being redeemed equal to such holder's pro-rata amount (based on the number of Preferred Shares held by such holder relative to the number of Preferred Shares outstanding) of all Preferred Shares being redeemed. If the Company shall fail to redeem all of the Preferred Shares submitted for redemption (other than pursuant to a dispute as to the arithmetic calculation of the Redemption Price), in addition to any remedy such holder of Preferred Shares may have under this Certificate of Designation, the Securities Purchase Agreement and the Registration Rights Agreement, the applicable Redemption Price payable in respect of such unredeemed Preferred Shares shall bear interest at the rate of 1.5% per month (prorated for partial months) until paid in full. Until the Company pays such unpaid applicable Redemption Price in full to a holder of Preferred Shares submitted for redemption, such holder shall have the option (the "VOID OPTIONAL REDEMPTION OPTION") to, in lieu of redemption, require the Company to promptly return to such holder(s) all of the Preferred Shares that were submitted for redemption by such holder(s) under this

-21-

Section 3 and for which the applicable Redemption Price has not been paid, by sending written notice thereof to the Company via facsimile (the "VOID OPTIONAL REDEMPTION NOTICE"). Upon the Company's receipt of such Void Optional Redemption Notice(s) prior to payment of the full applicable Redemption Price to such holder, (i) the Notice(s) of Redemption at Option of Buyer Upon Triggering Event or the Notice(s) of Redemption at Option of Buyer Upon Major Transaction, as the case may be, shall be null and void with respect to those Preferred Shares submitted for redemption and for which the applicable Redemption Price has not been paid, (ii) the Company shall immediately return any Preferred Shares submitted to the Company by each holder for redemption under this Section 3(g) and for which the applicable Redemption Price has not been paid and (iii) the Initial Market Price of such returned Preferred Shares shall be adjusted to the lesser of (A) the Initial Market Price as in effect on the date on which the

Void Optional Redemption Notice(s) is delivered to the Company and (B) the lowest Average Daily Trading Price during the period beginning on the date on which the Notice(s) of Redemption of Option of Buyer Upon Major Transaction or the Notice(s) of Redemption at Option of Buyer Upon Triggering event, as the case may be, is delivered to the Company and ending on the date on which the Void Optional Redemption Notice(s) is delivered to the Company; provided that no adjustment shall be made if such adjustment would result in an increase of the Initial Market Price then in effect. Notwithstanding the foregoing, in the event of a dispute as to the determination of the Average Daily Trading Price or the arithmetic calculation of the Redemption Price, such dispute shall be resolved pursuant to Section 2(f)(iii) above with the term "Average Daily Trading Price" being substituted for the term "Market Price" and the term "Redemption Price" being substituted for the term "Conversion Rate". A holder's delivery of a Void Optional Redemption Notice and exercise of its rights following such notice shall not effect the Company's obligations to make any payments which have accrued prior to the date of such notice. Payments provided for in this Section 3 shall have priority to payments to other stockholders in connection with a Major Transaction.

(4) Inability to Fully Convert.  
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(a) Holder's Option if Company Cannot Fully Convert. If,  
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upon the Company's receipt of a Conversion Notice or on the Maturity Date, the Company can not issue shares of Common Stock registered for resale under the Registration Statement for any reason, including, without limitation, because the Company (x) does not have a sufficient number of shares of Common Stock authorized and available, (y) is otherwise prohibited by applicable law or by the rules or regulations of any stock exchange, interdealer quotation system or other self-regulatory organization with jurisdiction over the Company or its Securities, including without limitation the Exchange Cap (as defined in Section 14 below), from issuing all of the Common Stock which is to be issued to a holder of Preferred Shares pursuant to a Conversion Notice or (z) fails to have a sufficient number of shares of Common Stock registered for resale under the Registration Statement, then the Company shall issue as many shares of Common

-22-

Stock as it is able to issue in accordance with such holder's Conversion Notice and pursuant to Section 2(f) and, with respect to the unconverted Preferred Shares, the holder, solely at such holder's option, can elect to:

(i) require the Company to redeem from such holder those Preferred Shares for which the Company is unable to issue Common Stock in accordance with such holder's Conversion Notice ("MANDATORY REDEMPTION") at a price per Preferred Share (the "MANDATORY REDEMPTION PRICE") equal to the product of (A) the Conversion Rate and (B) the Average Daily Trading Price as of such Conversion Date;

(ii) if the Company's inability to fully convert Preferred Shares is pursuant to Section 4(a)(z), require the Company to issue restricted shares of Common Stock in accordance with such holder's Conversion Notice and pursuant to Section 2(f);

(iii) void its Conversion Notice and retain or have returned, as the case may be, the nonconverted Preferred Shares that were to be converted pursuant to such holder's Conversion Notice (provided that a holder's voiding its Conversion Notice shall not effect the Company's obligations to make any payments which have accrued prior to the date of such notice); or

(iv) if the Company's inability to fully convert Preferred Shares is pursuant to the Exchange Cap described in Section 4(a)(y), require the Company to issue shares of Common Stock in accordance with such holder's Conversion Notice and pursuant to Section 2(f) at a Conversion Price equal to the average of Average Daily Trading Prices of the Common Stock for the five consecutive trading days preceding such holder's Notice in Response to Inability to Convert (as defined below) or such other market price that satisfies the applicable exchange or trading market.

(b) Mechanics of Fulfilling Holder's Election. The Company

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shall immediately send via facsimile to a holder of Preferred Shares, upon receipt of a facsimile copy of a Conversion Notice from such holder which cannot be fully satisfied as described in Section 4(a), a notice of the Company's inability to fully satisfy such holder's Conversion Notice (the "INABILITY TO FULLY CONVERT NOTICE"). Such Inability to Fully Convert Notice shall indicate (i) the reason why the Company is unable to fully satisfy such holder's Conversion Notice, (ii) the number of Preferred Shares which cannot be converted and (iii) the applicable Mandatory Redemption Price. Such holder shall notify the Company of its election pursuant to Section 4(a) above by delivering written notice via facsimile to the Company ("NOTICE IN RESPONSE TO INABILITY TO CONVERT").

-23-

(c) Payment of Redemption Price. If such holder shall elect

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to have its shares redeemed pursuant to Section 4(a)(i), the Company shall pay the Mandatory Redemption Price in cash to such holder within ten days of the Company's receipt of the holder's Notice in Response to Inability to Convert. If the Company shall fail to pay the applicable Mandatory Redemption Price to such holder on a timely basis as described in this Section 4(c) (other than pursuant to a dispute as to the determination of the arithmetic calculation of the Redemption Price), in addition to any remedy such holder of Preferred Shares may have under this Certificate of Designations, the Securities Purchase Agreement and the Registration Rights Agreement, such unpaid amount shall bear interest at the rate of 1.5% per month (prorated for partial months) until paid

in full. Until the full Mandatory Redemption Price is paid in full to such holder, such holder may void the Mandatory Redemption with respect to those Preferred Shares for which the full Mandatory Redemption Price has not been paid and (i) receive back such Preferred Shares and (ii) the Initial Market Price of such returned Preferred Shares shall be adjusted to the lesser of (A) the Initial Market Price in effect on the date on which the holder voided the Mandatory Redemption and (B) the lowest Average Daily Trading Price during the Period beginning on the Conversion Date and ending on the date the holder voided the Mandatory Redemption. Notwithstanding the foregoing, if the Company fails to pay the applicable Mandatory Redemption Price within such ten-day period due to a dispute as to the determination of the arithmetic calculation of the Redemption Price, such dispute shall be resolved pursuant to Section 2(f)(iii) with the term "Redemption Price" being substituted for the term "Conversion Rate".

(d) Pro-rata Conversion and Redemption. In the event the

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Company receives a Conversion Notice, Notice of Redemption at Option of Buyer Upon Major Transaction or Notice of Redemption at Option of Buyer Upon Triggering Event from more than one holder of Preferred Shares on the same day and the Company can convert and/or redeem some, but not all, of the Preferred Shares pursuant to this Section 4, the Company shall convert and redeem from each holder of Preferred Shares electing to have Preferred Shares converted and redeemed at such time an amount equal to such holder's pro-rata amount (based on the number of Preferred Shares held by such holder relative to the number of Preferred Shares outstanding) of all Preferred Shares being converted and redeemed at such time.

(e) Forced Delisting. If the Company's inability to fully

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convert Preferred Shares is pursuant to the Exchange Cap and the stockholders have voted not to approve issuances in excess of the Exchange Cap, and if so directed by the holders of at least two-thirds (?) of the Preferred Shares then outstanding, the Company shall immediately delist the Common Stock from the exchange or automated quotation system on which the Common Stock is traded and have the Common Stock, at such holders' option, traded on the electronic bulletin board or the "pink sheets."

-24-

(5) Conversion at the Company's Election. At any time or times on

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or after the date which is one year after the Issuance Date of the applicable Preferred Shares, the Company shall have the right, in its sole discretion, to require that any or all of such outstanding Preferred Shares be converted ("CONVERSION AT COMPANY'S ELECTION") at the Conversion Rate; provided that the Conditions to Conversion at the Company's Election (as set forth below) are satisfied. The Company shall exercise its right to Conversion at Company's Election by providing each holder of Preferred Shares written notice ("NOTICE OF

CONVERSION AT COMPANY'S ELECTION") at least 5 trading days prior to the date selected by the Company for conversion ("COMPANY'S ELECTION CONVERSION DATE"). If the Company elects to require conversion of some, but not all, of such Preferred Shares, the Company shall convert an amount from each holder of Preferred Shares equal to such holder's pro rata amount (based on the number of such Preferred Shares held by such holder relative to the number of such Preferred Shares outstanding on date of the Company's delivery of the Notice of Conversion at Company's Election) of all Preferred Shares the Company is requiring to be converted. The Notice of Conversion at Company's Election shall indicate (x) the number of Preferred Shares the Company has selected for conversion, (y) the Company's Election Conversion Date, which date shall be not less than 5 or more than 30 trading days after each holder's receipt of such notice, and (z) each holder's pro rata share of outstanding Preferred Shares. All Preferred Shares selected for conversion in accordance with the provision of this Section 5 shall be converted as of the Company's Election Conversion Date in accordance with Section 2 as if the holders of such Preferred Shares selected by the Company to be converted had given the Conversion Notice on the Company's Election Conversion Date. If required by Section 2(f)(vii), all holders of Preferred Shares shall thereupon and within two Business Days after the Company's Election Conversion Date surrender all Preferred Stock Certificates selected for conversion, duly endorsed for cancellation, to the Company. "CONDITIONS TO CONVERSION AT THE COMPANY'S ELECTION" means the following conditions: (i) on each day during the period beginning 30 days prior to the date of the Company's Notice of Conversion at Company's Election and ending on and including the Company's Election Conversion Date, the Registration Statement shall be effective and available for the sale of no less than 125% of the sum of (A) the number of Conversion Shares then issuable upon the conversion of all outstanding Preferred Shares (without regard to any limitations on conversion herein or elsewhere), including the Conversion Shares to be issued pursuant to this Conversion at the Company's Election, and (B) the number of Conversion Shares and Dividend Shares that are then held by the holders of the Preferred Shares; (ii) on each day during the period beginning 30 days prior to the date of the Company's Notice of Conversion at Company's Election and ending on and including the Company's Election Conversion Date, the Common Stock is designated for quotation on The Nasdaq National Market or listed on The New York Stock Exchange, Inc. and is not suspended from trading; (iii) on each day during the 15 consecutive trading days immediately preceding the date of the receipt by the holders of Preferred Shares of the Notice of Conversion at Company's Election, the Average Daily Trading Price of the Common Stock is at least 240% of the Initial Market Price; (iv) on each day during the period beginning on and including the date of the receipt by the holders of Preferred Shares of the Notice of Conversion at Company's Election and ending on and including the Company's Election Conversion Date, the Average Daily Trading Price of the Common Stock is at least 240% of the Initial Market Price; (v) during the period

beginning on the first Issuance Date of any Preferred Shares and ending on and including the Company's Election Conversion Date, the Company shall have



delivered all Conversion Shares upon conversion of the Preferred Shares to the holders of Preferred Shares on a timely basis as set forth in Section 2(e)(ii) of this Certificate of Designations; and (vi) the Company otherwise has satisfied its obligations and is not in default under this Certificate of Designations, the Securities Purchase Agreement and the Registration Rights Agreement. Notwithstanding the above, any holder of Preferred Shares may convert such shares (including Preferred Shares selected for conversion) into Common Stock pursuant to Section 2(a) on or prior to the date immediately preceding the Company's Election Conversion Date.

(6) Company's Right to Redeem in Lieu of Conversion.  
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(a) Notwithstanding Section 2 or anything herein to the contrary, but subject to Section 6(e), at any time after the Issuance Date, the Company may elect to redeem Preferred Shares submitted for conversion at a Conversion Price less than or equal to 90% of the Initial Market Price in lieu of converting such Preferred Shares (a "COMPANY REDEMPTION IN LIEU OF CONVERSION"). If the Company elects to redeem some, but not all, of the Preferred Shares submitted for conversion, the Company shall redeem a number of Preferred Shares from each holder of Preferred Shares submitted for conversion on the applicable date equal to such holder's pro-rata amount (based on the number of Preferred Shares held by such holder relative to the number of Preferred Shares outstanding) of all Preferred Shares submitted for conversion which the Company elects to redeem.

(b) Redemption Price of Company Redemption in Lieu of  
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Conversion. The "REDEMPTION PRICE OF COMPANY REDEMPTION IN LIEU OF CONVERSION"  
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shall be an amount per Preferred Share equal to 105% of the Liquidation Value of such Preferred Shares.

(c) Mechanics of Company Redemption in Lieu of Conversion.  
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The Company shall exercise its right to redeem by delivering written notice by facsimile and overnight courier ("NOTICE OF COMPANY REDEMPTION IN LIEU OF CONVERSION") no later than three Business Days prior to the first day of a Calendar Quarter to (i) each holder of the Preferred Shares and (ii) the Transfer Agent. Such Notice of Company Redemption in Lieu of Conversion shall (A) indicate the maximum, if any, number of Preferred Shares which shall be subject to Company Redemption in Lieu of Conversion which maximum number of Preferred Shares, if less than all of the Preferred Shares outstanding, shall be allocated pro rata among the holders of Preferred Shares (based on the number of Preferred Shares held by each holder on the date of the Company's delivery of Notice of Company Redemption in Lieu of Conversion relative to the total number of Preferred Shares outstanding on such date), (B) confirm the Calendar Quarter during which the Company may effect Company Redemption in Lieu of conversion. The Company's Notice of Company Redemption in Lieu of Conversion shall be effective for the period of the applicable Calendar Quarter (the "REDEMPTION IN LIEU OF CONVERSION PERIOD"). The Company may terminate a Redemption in Lieu of Conversion Period at any time with respect to Preferred Shares which have not

been submitted for conversion by delivering written notice of such termination to each holder of Preferred Shares by facsimile and overnight courier at least five Business Days prior to the date of such termination. If the Company terminates a Redemption in Lieu of Conversion Period as described in the preceding sentence, then the Company shall not be entitled to submit another Notice of Company Redemption in Lieu of Conversion during the remainder of the calendar quarter. Any Preferred Shares submitted for conversion after the termination of the Redemption in Lieu of Conversion Period or the number of which is in excess of the maximum number of Preferred Shares designated in the Notice of Company Redemption in Lieu of Conversion shall be converted in accordance with Section 2.

(d) Payment of Redemption Price. The Company shall pay the  
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applicable Redemption Price of Company Redemption in Lieu of Conversion to the holder of the Preferred Shares being redeemed in cash within five business days after the Conversion Date, but not prior to such holder's delivery to the Company of the Preferred Stock Certificates representing the Preferred Shares being redeemed. If the Company shall fail to pay the applicable Redemption Price of Company Redemption in Lieu of Conversion to such holder on a timely basis as described in this Section 6(d), in addition to any remedy such holder of Preferred Shares may have under this Certificate of Designations, the Securities Purchase Agreement and the Registration Rights Agreement, such unpaid amount shall bear interest at the rate of 1.5% per month (prorated for partial months) until paid in full. Until the Company pays such unpaid applicable Redemption Price of Company Redemption in Lieu of Conversion in full to each holder, each holder of Preferred Shares submitted for redemption pursuant to this Section 6 and for which the applicable Redemption Price of Company Redemption in Lieu of Conversion has not been paid, shall have the option (the "VOID COMPANY REDEMPTION OPTION") to, in lieu of redemption, require the Company to promptly return to each holder all of the Preferred Shares that were submitted for redemption by such holder under this Section 6 and for which the applicable Redemption Price of Company Redemption in Lieu of Conversion has not been paid, by sending written notice thereof to the Company via facsimile (the "VOID COMPANY REDEMPTION NOTICE"). Upon the Company's receipt of such Void Company Redemption Notice(s) prior to payment of the full applicable redemption price to each holder, (i) the Company's Redemption in Lieu of Conversion shall be null and void with respect to those Preferred Shares submitted for redemption and for which the applicable Redemption Price has not been paid and (ii) the Company shall immediately either, at the option of the holder, (A) return any Preferred Shares submitted to the Company by such holder for redemption under this Section 6 and for which the applicable Redemption Price of Company Redemption in Lieu of Conversion has not been paid or (B) deliver the Conversion Shares to such holder which would have been issuable on the Conversion Date with respect to Preferred Shares submitted to the Company by such holder for redemption under this Section 6 and for which the applicable Redemption Price of

foregoing, if the Company fails to pay the applicable Redemption Price of Company Redemption in Lieu of Conversion to a holder within the time period described in this Section 6(d) due to a dispute as to the arithmetic calculation of the Redemption Price of Company Redemption in Lieu of Conversion, such dispute shall be resolved pursuant to Section 2(f)(iii) with the term "Redemption Price of Company Redemption in Lieu of Conversion" being substituted for the term "Conversion Rate." If the Company fails to timely effect a Company Redemption in Lieu of Conversion in accordance with this Section 6, the Company shall not be allowed to submit another Notice of Company Redemption in Lieu of Conversion without the prior written consent of the holders of at least two-thirds (2/3) of the Preferred Shares then outstanding.

(e) Company Must Have Immediately Available Funds or Credit

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Facilities. The Company shall not be entitled to send any Notice of Company  
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Redemption in Lieu of Conversion pursuant to Section 6(b) above and begin the redemption procedure under this Section 6, unless it has:

(i) the full amount of the Redemption Price of Company Redemption in Lieu of Conversion in cash, available in a demand or other immediately available account in a bank or similar financial institution;

(ii) credit facilities, with a bank or similar financial institutions that are immediately available and unrestricted for use in redeeming the Preferred Shares, in the full amount of the Redemption Price of Company Redemption in Lieu of Conversion;

(iii) a written agreement with a standby underwriter or qualified buyer ready, willing and able to purchase from the Company a sufficient number of shares of stock to provide proceeds necessary to redeem any Preferred Shares that are not converted prior to a Company Redemption in Lieu of Conversion; or

(iv) a combination of the items set forth in the preceding clauses (i), (ii) and (iii), aggregating the full amount of the Redemption Price of Company Redemption in Lieu of Conversion.

(7) Redemption at the Company's Election Upon Change of Control. At

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any time or times on or after the date the Company publicly discloses a Change of Control Transaction (as in Section 3(c)(i)), the Company shall have the right, in its sole discretion, to require that all of the outstanding Preferred Shares be redeemed ("REDEMPTION AT COMPANY'S ELECTION") at the Major Transaction Redemption Price ("COMPANY'S ELECTION REDEMPTION PRICE"); provided that the

Conditions to Redemption at the Company's Election (as set forth below) are satisfied. The Company shall exercise its right to Redemption at Company's Election by providing each holder of Preferred Shares written notice ("NOTICE OF REDEMPTION AT COMPANY'S ELECTION") after the public disclosure of a Change of Control Transaction and at least 20 trading days prior to the date of

-28-

consummation of the Change of Control Transaction ("COMPANY'S ELECTION REDEMPTION DATE"). The Notice of Redemption at Company's Election shall indicate the anticipated Company's Election Redemption Date. If the Company has exercised its right of Redemption at Company's Election and the conditions to such Redemption at Company's Election have been satisfied, then all Preferred Shares outstanding at the time of the consummation of the Change of Control Transaction shall be redeemed as of the Company's Election Redemption Date by payment by the Company to each holder of Preferred Shares of the Company's Election Redemption Price concurrent with the closing of the Change of Control Transaction. If required by Section 2(f)(vii), all holders of Preferred Shares shall thereupon and within two business days after the Company's Election Redemption Date, or such earlier date as the Company and each holder of Preferred Shares mutually agree, surrender all outstanding Preferred Stock Certificates, duly endorsed for cancellation, to the Company. If the Company fails to pay the full Company's Election Redemption Price with respect to any Preferred Shares concurrently with the closing of the Change of Control Transaction, then the Redemption at Company's Election shall be null and void with respect to such Preferred Shares and the holder of such Preferred Shares shall be entitled to all the rights of a holder of outstanding Preferred Shares set forth in this Certificate of Designations. "CONDITIONS TO REDEMPTION AT THE COMPANY'S ELECTION" means the following conditions: (i) during the period beginning on the first Issuance Date of any Preferred Shares and ending on and including the Company's Election Redemption Date, the Company shall have delivered Conversion Shares upon conversion of the Preferred Shares to the Buyers on a timely basis as set forth in Section 2(e)(ii) of this Certificate of Designations; and (ii) the Company otherwise has satisfied its obligations in all material respects and is not in default in any material respect under this Certificate of Designations, the Securities Purchase Agreement and the Registration Rights Agreement. Notwithstanding the above, any holder of Preferred Shares may convert such shares (including Preferred Shares selected for redemption) into Common Stock pursuant to Section 2(a) on or prior to the date immediately preceding the Company's Election Redemption Date.

(8) Reissuance of Certificates. Subject to Section 2(f)(vii), in  
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the event of a conversion or redemption pursuant to this Certificate of Designations of less than all of the Preferred Shares represented by a particular Preferred Stock Certificate, the Company shall promptly cause to be issued and delivered to the holder of such Preferred Shares a preferred stock certificate representing the remaining Preferred Shares which have not been so converted or redeemed.

(9) Reservation of Shares. The Company shall, so long as any of

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the Preferred Shares are outstanding, reserve and keep available out of its authorized and unissued Common Stock, solely for the purpose of effecting the conversion of the Preferred Shares, such number of shares of Common Stock as shall from time to time be sufficient to effect the conversion of all of the Preferred Shares then outstanding (without regard to any limitations on conversions); provided that the number of shares of Common Stock so reserved shall at no time be less than 150% of the number of shares of Common Stock for which the Preferred Shares are at any time convertible. The initial number of shares of Common Stock reserved for conversions of the Preferred Shares and each increase in the number of shares so reserved shall be allocated pro rata among

-29-

the holders of the Preferred Shares based on the number of Preferred Shares held by each holder at the time of issuance of the Preferred Shares or increase in the number of reserved shares, as the case may be. In the event a holder shall sell or otherwise transfer any of such holder's Preferred Shares, each transferee shall be allocated a pro rata portion of the number of reserved shares of Common Stock reserved for such transferor. Any shares of Common Stock reserved and which remain allocated to any person or entity which does not hold any Preferred Shares shall be allocated to the remaining holders of Preferred Shares, pro rata based on the number of Preferred Shares then held by such holder.

(10) Voting Rights. Holders of Preferred Shares shall have no

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voting rights, except as required by law, including but not limited to the General Corporation Law of the State of Delaware, and as expressly provided in this Certificate of Designations.

(11) Liquidation, Dissolution, Winding-Up. In the event of any

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voluntary or involuntary liquidation, dissolution or winding up of the Company, the holders of the Preferred Shares shall be entitled to receive in cash out of the assets of the Company, whether from capital or from earnings available for distribution to its stockholders (the "PREFERRED FUNDS"), before any amount shall be paid to the holders of any of the capital stock of the Company of any class junior in rank to the Preferred Shares in respect of the preferences as to the distributions and payments on the liquidation, dissolution and winding up of the Company, an amount per Preferred Share equal to the sum of (i) \$50,000 and (ii) the Additional Amount (such sum being referred to as the "LIQUIDATION VALUE"); provided that, if the Preferred Funds are insufficient to pay the full amount due to the holders of Preferred Shares and holders of shares of other classes or series of preferred stock of the Company that are of equal rank with the Preferred Shares as to payments of Preferred Funds (the "PARI PASSU SHARES"), then each holder of Preferred Shares and Pari Passu Shares shall

receive a percentage of the Preferred Funds equal to the full amount of Preferred Funds payable to such holder as a liquidation preference, in accordance with their respective Certificate of Designations, Preferences and Rights, as a percentage of the full amount of Preferred Funds payable to all holders of Preferred Shares and Pari Passu Shares. The purchase or redemption by the Company of stock of any class, in any manner permitted by law, shall not, for the purposes hereof, be regarded as a liquidation, dissolution or winding up of the Company. Neither the consolidation or merger of the Company with or into any other Person, nor the sale or transfer by the Company of less than substantially all of its assets, shall, for the purposes hereof, be deemed to be a liquidation, dissolution or winding up of the Company. No holder of Preferred Shares shall be entitled to receive any amounts with respect thereto upon any liquidation, dissolution or winding up of the Company other than the amounts provided for herein; provided that a holder of Preferred Shares shall be entitled to all amounts previously accrued with respect to amounts owed hereunder.

(12) Preferred Rank; Participation. (a) All shares of Common  
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Stock shall be of junior rank to all Preferred Shares in respect to the preferences as to distributions and payments upon the liquidation, dissolution and winding up of the Company. The rights of the shares of Common Stock shall

-30-

be subject to the preferences and relative rights of the Preferred Shares. Without the prior express written consent of the holders of not less than two-thirds (2/3) of the then outstanding Preferred Shares, the Company shall not hereafter authorize or issue additional or other capital stock that is of senior rank to the Preferred Shares in respect of the preferences as to distributions and payments upon the liquidation, dissolution and winding up of the Company. Without the prior express written consent of the holders of not less than two-thirds (2/3) of the then outstanding Preferred Shares, the Company shall not hereafter authorize or make any amendment to the Company's Certificate of Incorporation or bylaws, or file any resolution of the board of directors of the Company with the Secretary of State of the State of Delaware containing any provisions, which would adversely affect or otherwise impair the rights or relative priority of the holders of the Preferred Shares relative to the holders of the Common Stock or the holders of any other class of capital stock. In the event of the merger or consolidation of the Company with or into another corporation, the Preferred Shares shall maintain their relative powers, designations and preferences provided for herein and no merger shall result inconsistent therewith.

(b) Subject to the rights of the holders, if any, of the Pari Passu Shares, the holders of the Preferred Shares shall, as holders of Preferred Stock, be entitled to such dividends paid and distributions made to the holders of Common Stock to the same extent as if such holders of Preferred Shares had converted the Preferred Shares into Common Stock (without regard to any

limitations on conversion herein or elsewhere) and had held such shares of Common Stock on the record date for such dividends and distributions. Payments under the preceding sentence shall be made concurrently with the dividend or distribution to the holders of Common Stock.

(13) Restriction on Redemption and Cash Dividends with respect to  
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Other Capital Stock. Until all of the Preferred Shares have been converted or  
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redeemed as provided herein, the Company shall not, directly or indirectly, redeem, or declare or pay any cash dividend or distribution on, its Common Stock without the prior express written consent of the holders of not less than two-thirds (2/3) of the then outstanding Preferred Shares.

(14) Limitation on Number of Conversion Shares. Notwithstanding  
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any other provision herein, the Company shall not be obligated to issue any shares of Common Stock upon conversion of the Preferred Shares if the issuance of such shares of Common Stock would exceed that number of shares of Common Stock which the Company may issue upon Conversion of the Preferred Shares (the "EXCHANGE CAP") without breaching the Company's obligations, if any, under the rules or regulations of The Nasdaq Stock Market, Inc., except that such limitation shall not apply in the event that the Company (a) obtains the approval of its stockholders as required by applicable rules and regulations of The Nasdaq Stock Market for issuances of Common Stock in excess of such amount or (ii) obtains a written opinion from outside counsel to the Company that such approval is not required, which opinion shall be reasonably satisfactory to the holders of a majority of the Preferred Shares then outstanding. Until such

approval or written opinion is obtained, no purchaser of Preferred Shares pursuant to the Securities Purchase Agreement (the "PURCHASERS") shall be issued, upon conversion of Preferred Shares, shares of Common Stock in an amount greater than the product of (i) the Exchange Cap amount multiplied by (ii) a fraction, the numerator of which is the number of Preferred Shares issued to such Purchaser pursuant to the Securities Purchase Agreement and the denominator of which is the aggregate amount of all the Preferred Shares issued to the Purchasers pursuant to the Securities Purchase Agreement (the "CAP ALLOCATION AMOUNT"). In the event that any Purchaser shall sell or otherwise transfer any of such Purchaser's Preferred Shares, the transferee shall be allocated a pro rata portion of such Purchaser's Cap Allocation Amount. In the event that any holder of Preferred Shares shall convert all of such holder's Preferred Shares into a number of shares of Common Stock which, in the aggregate, is less than such holder's Cap Allocation Amount, then the difference between such holder's Cap Allocation Amount and the number of shares of Common Stock actually issued to such holder shall be allocated to the respective Cap Allocation Amounts of the remaining holders of Preferred Shares on a pro rata basis in proportion to the number of Preferred Shares then held by each such holder.

(15) Vote to Change the Terms of or Issue Preferred Shares. The

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affirmative vote at a meeting duly called for such purpose or the written consent without a meeting, of the holders of not less than two-thirds (2/3) of the then outstanding Preferred Shares, shall be required for (a) any change to this Certificate of Designations or the Company's Certificate of Incorporation which would amend, alter, change or repeal any of the powers, designations, preferences and rights of the Preferred Shares, or (b) any issuance of Preferred Shares other than pursuant to the Securities Purchase Agreement.

(16) Lost or Stolen Certificates. Upon receipt by the Company of

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evidence satisfactory to the Company of the loss, theft, destruction or mutilation of any Preferred Stock Certificates representing the Preferred Shares, and, in the case of loss, theft or destruction, of an indemnification undertaking by the holder to the Company and, in the case of mutilation, upon surrender and cancellation of the Preferred Stock Certificate(s), the Company shall execute and deliver new preferred stock certificate(s) of like tenor and date; provided, however, the Company shall not be obligated to re-issue preferred stock certificates if the holder contemporaneously requests the Company to convert such Preferred Shares into Common Stock.

(17) Remedies, Characterizations, Other Obligations, Breaches and

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Injunctive Relief. The remedies provided in this Certificate of Designations

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shall be cumulative and in addition to all other remedies available under this Certificate of Designations, at law or in equity (including a decree of specific performance and/or other injunctive relief), no remedy contained herein shall be deemed a waiver of compliance with the provisions giving rise to such remedy and nothing herein shall limit a holder's right to pursue actual damages for any failure by the Company to comply with the terms of this Certificate of Designations. The Company covenants to each holder of Preferred Shares that there shall be no characterization concerning this instrument other than as the Preferred Shares are expressly described herein. Amounts set forth or provided for herein with respect to payments, conversion and the like (and the

computation thereof) shall be the amounts to be received by the holder thereof and shall not, except as expressly provided herein, be subject to any other obligation of the Company (or the performance thereof). The Company acknowledges that a breach by it of its obligations hereunder will cause irreparable harm to the holders of the Preferred Shares and that the remedy at law for any such breach may be inadequate. The Company therefore agrees that, in the event of any such breach or threatened breach, the holders of the Preferred Shares shall be entitled, in addition to all other available remedies, to an injunction restraining any breach, without the necessity of showing



economic loss and without any bond or other security being required.

(18) Specific Shall Not Limit General; Construction. No specific

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provision contained in this Certificate of Designations shall limit or modify any more general provision contained herein. This Certificate of Designations shall be deemed to be jointly drafted by the Company and all holders of Preferred Shares and shall not be construed against any person as the drafter hereof.

(19) Failure or Indulgence Not Waiver. No failure or delay on the

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part of a holder of Preferred Shares in the exercise of any power, right or privilege hereunder shall operate as a waiver thereof, nor shall any single or partial exercise of any such power, right or privilege preclude other or further exercise thereof or of any other right, power or privilege.

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-34-

IN WITNESS WHEREOF, the Company has caused this Certificate of Designations to be signed by Gail K. Naughton, its President, as of July 9, 1998.

ADVANCED TISSUE SCIENCES, INC.

By: /s/ Gail K. Naughton

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Gail K. Naughton  
President

EXHIBIT I

ADVANCED TISSUE SCIENCES, INC.  
CONVERSION NOTICE

Reference is made to the Certificate of Designations, Preferences and Rights of Series B Convertible Preferred Stock (the "CERTIFICATE OF DESIGNATIONS"). In accordance with and pursuant to the Certificate of Designations, the undersigned hereby elects to convert the number of shares of Series B Convertible Preferred

Stock, par value \$.01 per share (the "PREFERRED SHARES"), of Advanced Tissue Sciences, Inc., a DELAWARE corporation (the "COMPANY"), indicated below into shares of Common Stock, par value \$.01 per share (the "COMMON STOCK"), of the Company, by tendering the stock certificate(s) representing the Preferred Shares specified below as of the date specified below.

Date of Conversion: \_\_\_\_\_

Number of Preferred Shares to be converted: \_\_\_\_\_

Stock certificate no(s). of Preferred Shares to be converted: \_\_\_\_\_

Please confirm the following information:

Conversion Price: \_\_\_\_\_

Number of shares of Common Stock  
to be issued: \_\_\_\_\_

Please issue the Common Stock into which the Preferred Shares are being converted and, if applicable, any check drawn on an account of the Company in the following name and to the following address:

Issue to: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Facsimile Number: \_\_\_\_\_

Authorization: \_\_\_\_\_  
By: \_\_\_\_\_  
Title: \_\_\_\_\_

Dated: \_\_\_\_\_

Account Number:  
(if electronic book entry transfer): \_\_\_\_\_

Transaction Code Number  
(if electronic book entry transfer): \_\_\_\_\_

ACKNOWLEDGEMENT

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The Company hereby acknowledges this Conversion Notice and hereby directs Chase Mellon Shareholders Services to issue the above indicated number of shares of Common Stock in accordance with the Transfer Agent Instructions dated July \_\_\_, 1998 from the Company and acknowledged and agreed to by Chase Mellon Shareholders Services.

ADVANCED TISSUE SCIENCES, INC.

By: \_\_\_\_\_  
Name: \_\_\_\_\_  
Title: \_\_\_\_\_

AMENDMENT NO. 2 TO INVESTMENT AGREEMENT

This Amendment No. 2 to Investment Agreement (this "Amendment") is made as of July 10, 1998 by and between Hatteras Partners, L.P., formerly known as Ramius Hatteras Partners, L.P. (the "Investor") and Advanced Tissue Sciences, Inc., a corporation organized and existing under the laws of the State of Delaware (the "Company").

WHEREAS, the Investor and the Company are parties to that certain Investment Agreement dated as of February 9, 1996, as amended by Amendment No. 1 to Investment Agreement dated as of January 26, 1998 (the "Investment Agreement") pursuant to which the Investor shall, upon the request of the Company, invest up to \$50,000,000 in the Company's Common Stock, par value \$.01 per share (the "Common Stock"); and

WHEREAS, pursuant to Section 1.2(a) of the Investment Agreement, the Investment Agreement terminates on the earlier of February 9, 1999 or the occurrence of certain specified events, and the Investor and the Company desire to extend the term to February 9, 2000;

NOW, THEREFORE, for good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, the parties hereto agree as follows:

- 1. Defined Terms. Capitalized terms used but not defined herein shall have the meanings ascribed to them in the Investment Agreement.
2. Amendment of Section 1.2(a) to Extend Term to February 9, 2000.

The first sentence of Section 1.2(a) of the Investment Agreement is hereby restated to read as follows:

"At any time prior to the earlier of (i) February 9, 2000 or (ii) the termination of this Agreement in accordance with Article V herein, the Company may deliver written notices to the Investor (each such notice hereinafter referred to as a "Put Notice") stating a dollar amount (the "Dollar Amount") of Common Stock which the Company intends to sell to the Investor five business days following the date (the "Put Notice Date") on which the Put Notice is given

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to the Investor by the Company in accordance with Section 6.4 herein."

3. Balance of Investment Agreement Unaffected. Except as amended

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hereby, the Investment Agreement continues in full force and effect as originally executed.

4. Entire Agreement. This Amendment, together with the Investment

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Agreement, constitutes the entire agreement among the parties pertaining to the subject matter hereof and completely supersedes all prior or contemporaneous agreements, understandings, arrangements, commitments, negotiations and discussions of the parties, whether oral or written (all of which shall have no substantive significance or evidentiary effect). Each party acknowledges, represents and warrants that it has not relied on any representation, agreement, understanding, arrangement or commitment which has not been expressly set forth in this Amendment and the Investment Agreement. Each party acknowledges, represents and warrants that this Amendment, together with the Investment Agreement, is fully integrated and not in need of parol evidence in order to

reflect the intentions of the parties. The parties specifically intend that the literal words of this Amendment and the Investment Agreement shall, alone, conclusively determine all questions concerning the parties' intent.

5. Remedies for Failure to Purchase. For purposes of

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clarification, after February 9, 1999, the deliveries to be made by the Investor to Company under Section 5(i), (ii) or (iii) of Amendment No. 1 to the Investment Agreement shall no longer apply, and the warrants issued in conjunction with the Investment Agreement and Amendment No. 1 to the Investment Agreement to purchase 225,000 shares of Common Stock of the Company shall no longer be subject to forfeiture.

6. Counterparts. This Amendment may be executed in one or more

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counterparts, which, when taken together, shall constitute one and the same instrument.

IN WITNESS WHEREOF, the parties hereto have caused this Amendment to be duly executed by their respective authorized officers as of the date first above written.

ADVANCED TISSUE SCIENCES, INC.

By: /s/ Arthur J. Benvenuto

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Name: Arthur J. Benvenuto  
Title: Chairman and  
Chief Executive Officer

HATTERAS PARTNERS, L.P.

By: Bertram Capital, LLC

By: /s/ Jeffrey E. Devers  
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Name: Jeffrey E. Devers  
Title: Managing Member

SECURITIES PURCHASE AGREEMENT

SECURITIES PURCHASE AGREEMENT (the "AGREEMENT"), dated as of July 10, 1998, by and among Advanced Tissue Sciences, Inc., a Delaware corporation, with headquarters located at 10933 N. Torrey Pines Rd., La Jolla, California 92037 (the "COMPANY"), and the investors listed on the Schedule of Buyers attached hereto (individually, a "BUYER" and collectively, the "BUYERS").

WHEREAS:

A. The Company and the Buyers are executing and delivering this Agreement in reliance upon the exemption from securities registration afforded by Rule 506 of Regulation D ("REGULATION D") as promulgated by the United States Securities and Exchange Commission (the "SEC") under the Securities Act of 1933, as amended (the "1933 ACT");

B. The Company has authorized the following new series of its Preferred Stock, par value \$.01 per share (the "PREFERRED STOCK"): the Company's Series B Convertible Preferred Stock, which shall be convertible into shares of the Company's Common Stock, par value \$.01 per share (the "COMMON STOCK") (as converted, the "CONVERSION SHARES"), in accordance with the terms of the Company's Certificate of Designations, Preferences and Rights of the Preferred Shares, substantially in the form attached hereto as Exhibit A (the "CERTIFICATE OF DESIGNATIONS");

C. The Buyers wish to purchase, upon the terms and conditions stated in this Agreement, initially an aggregate of 500 of the Preferred Shares (the "INITIAL PREFERRED SHARES") in the respective amounts set forth opposite each Buyer's name on the Schedule of Buyers;

D. Subject to the terms and conditions set forth in this Agreement, the Company will have the right to cause the Buyers to purchase up to an aggregate of 500 Preferred Shares (pro rata based on the number of Initial Preferred Shares each Buyer purchased in relation to the total number of Initial Preferred Shares) (the "PUT PREFERRED SHARES") (the Initial Preferred Shares and the Put Preferred Shares collectively are referred to in this Agreement as the "PREFERRED SHARES");

E. Contemporaneously with the execution and delivery of this Agreement, the parties hereto are executing and delivering a Registration Rights Agreement substantially in the form attached hereto as Exhibit B (the "REGISTRATION RIGHTS AGREEMENT") pursuant to which the Company has agreed to provide certain registration rights under the 1933 Act and the rules and regulations promulgated thereunder, and applicable state securities laws.

NOW THEREFORE, the Company and the Buyers hereby agree as follows:

1. PURCHASE AND SALE OF PREFERRED SHARES.

a. Purchase of Preferred Shares. Subject to satisfaction (or

waiver) of the conditions set forth in Sections 6(a) and 7(a), the Company shall issue and sell to the Buyers and the Buyers severally shall purchase from the Company an aggregate of 500 Initial Preferred Shares, in the respective amounts set forth opposite each Buyer's name on the Schedule of Buyers (the "INITIAL CLOSING"). Subject to satisfaction (or waiver) of the conditions set forth in Sections 1(c), 1(d), 6(b) and 7(b), the Company may require that each Buyer purchase, at up to two closings, if applicable, that number of additional Preferred Shares equal to such Buyer's pro rata portion of up to an aggregate of 500 Preferred Shares (based on the number of Initial Preferred Shares each Buyer purchased in relation to the total number of Initial Preferred Shares purchased by the Buyers) (the "PUT CLOSINGS"). The Initial Closing and the Put Closings collectively are referred to in this Agreement as the "CLOSINGS." The purchase price (the "PURCHASE PRICE") of each Preferred Share at each of the Closings shall be \$50,000.

b. The Initial Closing Date. The date and time of the Initial

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Closing (the "INITIAL CLOSING DATE") shall be 10:00 a.m. Central Time, within three (3) business days following the date hereof, subject to satisfaction (or waiver) of the conditions to the Initial Closing set forth in Sections 6(a) and 7(a) (or such later date as is mutually agreed to by the Company and the Buyers). The Initial Closing shall occur on the Initial Closing Date at the offices of Katten Muchin & Zavis, 525 West Monroe Street, Suite 1600, Chicago, Illinois 60661-3693.

c. The Put Closing Dates. The date and time of each of the Put

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Closings (the "PUT CLOSING DATES") shall be 10:00 a.m. Central Time, on the date specified in the Company's Put Share Notice (as defined below), subject to satisfaction (or waiver) of the conditions to each of the Put Closings set forth in Sections 6(b) and 7(b) and the conditions set forth in Section 1(d), (or such later date as is mutually agreed to by the Company and the Buyers). During the period (the "COMPANY PUT RIGHT PERIOD") beginning on the later of (i) January 1, 1999 and (ii) the date on which the Company receives the \$15,000,000 milestone payment from Smith & Nephew pursuant to the Dermagraft joint venture with Smith & Nephew and publicly announces receipt of such payment (the "MILESTONE DATE") and ending on the earlier of (x) April 15, 1999 and (y) the date which is 90 days after the Milestone Date, but subject to the requirements of Sections 6(b) and 7(b) and satisfaction of the Put Notice Conditions (as defined in Section 1(d)), the Company may require each Buyer to purchase Put Preferred Shares by delivering written notice to each of the Buyers (a "PUT SHARE NOTICE") six business days (the "PUT SHARE NOTICE DATE") prior to the Put Closing Date set forth in the Put Share Notice. The Put Share Notice shall set forth (i) each Buyer's pro rata portion (based on the number of Initial Preferred Shares each Buyer purchased in relation to the total number of Initial Preferred Shares purchased by the Buyers) of the aggregate number of Put Preferred Shares (which aggregate number shall not exceed 500 Preferred Shares, less any Put Preferred Shares previously purchased) which the Company is requiring each Buyer to

-2-

purchase at such Put Closing, (ii) the aggregate Purchase Price for each such Buyer's Put Preferred Shares and (iii) the date selected by the Company for the Put Closing Date, which Put Closing Date shall be on the sixth business day after the Put Share Notice Date but not later than the date which is 90 days after the Milestone Date. Each Put Closing shall occur on the Put Closing Date at the offices of Katten Muchin & Zavis, 525 West Monroe Street, Suite 1600, Chicago, Illinois 60661-3693. The Initial Closing Date and the Put Closing Dates collectively are referred to in this Agreement as the "CLOSING DATES."

d. The Put Notice Conditions. Notwithstanding anything in this

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agreement to the contrary, the Company shall not be entitled to deliver a Put Share Notice and require the Buyers to purchase the Put Preferred Shares unless, in addition to the satisfaction of the requirements of Sections 6(b) and 7(b), all of the following conditions (the "PUT NOTICE CONDITIONS") are satisfied: (i) during the period beginning 30 business days prior to the Put Closing Date and ending on and including the Put Closing Date, the registration statement (the "REGISTRATION STATEMENT") covering the resale of the Conversion Shares has been declared effective by the SEC and at all times during such period has been effective and available for the sale of no less than 150% of the sum of (A) the number of Conversion Shares then issuable upon the conversion of all outstanding Preferred Shares and (B) the number of Conversion Shares that are then held by the Buyers and (C) any shares of Common Stock issued with respect to outstanding Preferred Shares as a result of a stock dividend or otherwise; (ii) during the period beginning on the 120th day following the Initial Closing Date and ending on and including the Put Closing Date, the Common Stock is listed on The Nasdaq National Market and has not been suspended from trading at any time during such period, has not been voluntarily delisted at any time during such period, nor is there any pending or threatened delisting or suspension including, but not limited to, the Company not being in compliance with published listing requirements (except for a voluntary suspension of not more than one day due to a business announcement by the Company); (iii) no event constituting a Major Transaction (as defined in Section 3(c) of the Certificate of Designations), including an agreement to consummate a Major Transaction, or a Triggering Event (as defined in Section 3(d) of the Certificate of Designations) shall have occurred nor shall any pending event which would constitute a Major Transaction have been publicly disclosed from the period beginning on and including the Closing Date and ending on and including the Put Closing Date; (iv) on each day



during the period beginning on and including the date which is 20 business days prior to the Put Closing Date and ending on and including the Put Closing Date, the Average Daily Trading Price (as defined in the Certificate of Designations) of the Common Stock shall not be less than the greater of (A) \$4.50 and (B) 138% of the Market Price (as defined in the Certificate of Designations) on the second trading day immediately following the Initial Closing Date (subject to adjustment for stock splits, stock dividends, reorganizations and combinations and other similar events); (v) the Company shall have obtained shareholder approval for the issuance of greater than 20% of its outstanding shares of Common Stock, if necessary; (vi) during the period beginning on the Initial Closing Date and ending on and including the Put Closing Date, the Company shall have delivered Conversion Shares upon conversion of the Preferred Shares to the Buyers on a timely basis as set forth in Section 2(f)(ii) of the Certificate of Designations; (vii) there shall not have been more than one prior Put Share

-3-

Notice delivered to the Buyers; (viii) the number of Put Preferred Shares to be sold by the Company at such Put Closing is not less than 100 Preferred Shares and (ix) on the Put Closing Date the Registration Statement is effective and available for the sale of no less than 150% of the number of Conversion Shares then issuable upon conversion of the Put Preferred Shares to be issued by the Company.

e. Form of Payment. On each of the Closing Dates, (i) each Buyer  
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shall pay the Purchase Price to the Company for the Preferred Shares to be issued and sold to such Buyer at the respective Closing, by wire transfer of immediately available funds in accordance with the Company's written wire instructions, and (ii) the Company shall deliver to each Buyer, stock certificates (in the denominations as such Buyer shall request) (the "STOCK CERTIFICATES") representing such number of the Preferred Shares which such Buyer is then purchasing (as indicated opposite such Buyer's name on the Schedule of Buyers), duly executed on behalf of the Company and registered in the name of such Buyer or its designee.

2. BUYER'S REPRESENTATIONS AND WARRANTIES.  
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Each Buyer represents and warrants with respect to only itself that:

a. Investment Purpose. Such Buyer (i) is acquiring the Preferred  
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Shares and (ii) upon conversion of the Preferred Shares, will acquire the Conversion Shares then issuable (the Preferred Shares, the Conversion Shares and any shares of Common Stock issued by the Company as a dividend on the Preferred Shares (the "DIVIDEND SHARES") collectively are referred to herein as the "SECURITIES"), for its own account for investment only and not with a view towards, or for resale in connection with, the public sale or distribution thereof, except pursuant to sales registered or exempted under the 1933 Act; provided, however, that by making the representations herein, such Buyer does not agree to hold any of the Securities for any minimum or other specific term and reserves the right to dispose of the Securities at any time in accordance with or pursuant to a registration statement or an exemption under the 1933 Act.

b. Accredited Investor Status. Such Buyer is an "accredited  
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investor" as that term is defined in Rule 501(a)(3) of Regulation D.

c. Reliance on Exemptions. Such Buyer understands that the  
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Securities are being offered and sold to it in reliance on specific exemptions from the registration requirements of United States federal and state securities laws and that the Company is relying in part upon the truth and accuracy of, and such Buyer's compliance with, the representations, warranties, agreements, acknowledgments and understandings of such Buyer set forth herein in order to determine the availability of such exemptions and the eligibility of such Buyer to acquire such Securities.

d. Information. Such Buyer and its advisors, if any, have been  
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furnished with all materials relating to the business, finances and operations of the Company and materials relating to the offer and sale of the Securities

-4-

which have been requested by such Buyer. Such Buyer and its advisors, if any, have been afforded the opportunity to ask questions of the Company. Neither such inquiries nor any other due diligence investigations conducted by such Buyer or its advisors, if any, or its representatives shall modify, amend or affect such Buyer's right to rely on the Company's representations and warranties contained in Section 3 below. Such Buyer understands that its investment in the Securities involves a high degree of risk. Such Buyer has sought such accounting, legal and tax advice as it has considered necessary to make an informed investment decision with respect to its acquisition of the Securities.

e. No Governmental Review. Such Buyer understands that no United

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States federal or state agency or any other government or governmental agency has passed on or made any recommendation or endorsement of the Securities or the fairness or suitability of the investment in the Securities nor have such authorities passed upon or endorsed the merits of the offering of the Securities.

f. Transfer or Resale. Such Buyer understands that except as

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provided in the Registration Rights Agreement: (i) the Securities have not been and are not being registered under the 1933 Act or any state securities laws, and may not be offered for sale, sold, assigned or transferred unless (A) subsequently registered thereunder, (B) such Buyer shall have delivered to the Company an opinion of counsel, in a generally acceptable form, to the effect that such Securities to be sold, assigned or transferred may be sold, assigned or transferred pursuant to an exemption from such registration, or (C) such Buyer provides the Company with reasonable assurance that such Securities can be sold, assigned or transferred pursuant to Rule 144 promulgated under the 1933 Act (or a successor rule thereto) ("RULE 144"); (ii) any sale of the Securities made in reliance on Rule 144 may be made only in accordance with the terms of Rule 144 and further, if Rule 144 is not applicable, any resale of the Securities under circumstances in which the seller (or the person through whom the sale is made) may be deemed to be an underwriter (as that term is defined in the 1933 Act) may require compliance with some other exemption under the 1933 Act or the rules and regulations of the SEC thereunder; and (iii) neither the Company nor any other person is under any obligation to register such Securities under the 1933 Act or any state securities laws or to comply with the terms and conditions of any exemption thereunder.

g. Legends. Such Buyer understands that the certificates or other

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instruments representing the Preferred Shares and, until such time as the sale of the Conversion Shares and the Dividend Shares, have been registered under the 1933 Act as contemplated by the Registration Rights Agreement, the stock certificates representing the Conversion Shares and the Dividend Shares, except as set forth below, shall bear a restrictive legend in substantially the following form (and a stop-transfer order may be placed against transfer of such stock certificates):

THE SECURITIES REPRESENTED BY THIS CERTIFICATE HAVE NOT BEEN REGISTERED UNDER THE SECURITIES ACT OF 1933, AS AMENDED, OR

-5-

APPLICABLE STATE SECURITIES LAWS. THE SECURITIES HAVE BEEN ACQUIRED FOR INVESTMENT AND MAY NOT BE OFFERED FOR SALE, SOLD, TRANSFERRED OR ASSIGNED IN THE ABSENCE OF AN EFFECTIVE REGISTRATION STATEMENT FOR THE SECURITIES UNDER THE SECURITIES ACT OF 1933, AS AMENDED, OR APPLICABLE STATE SECURITIES LAWS, OR AN OPINION OF COUNSEL, IN A GENERALLY ACCEPTABLE FORM, THAT REGISTRATION IS NOT REQUIRED UNDER SAID ACT OR APPLICABLE STATE SECURITIES LAWS OR UNLESS SOLD PURSUANT TO RULE 144 UNDER SAID ACT.

The legend set forth above shall be removed and the Company shall issue a certificate without such legend to the holder of the Securities upon which it is stamped, if (i) such Securities are registered for sale under the 1933 Act, (ii) in connection with a sale transaction, such holder provides the Company with an opinion of counsel, in a generally acceptable form, to the effect that a public sale, assignment or transfer of such Securities may be made without registration under the 1933 Act, or (iii) such holder provides the Company with reasonable

assurances that such Securities can be sold pursuant to Rule 144 without any restriction as to the number of securities acquired as of a particular date that can then be immediately sold. Each Buyer acknowledges, covenants and agrees to sell the Securities represented by a certificate(s) from which the legend has been removed, only pursuant to (i) a registration statement effective under the 1933 Act, or (ii) advice of counsel that such sale is exempt from registration required by Section 5 of the 1933 Act.

h. Authorization; Enforcement. This Agreement and the  
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Registration Rights Agreement have been duly and validly authorized, executed and delivered on behalf of such Buyer and each is a valid and binding agreement of such Buyer enforceable against such Buyer in accordance with its respective terms, subject as to enforceability to general principles of equity and to applicable bankruptcy, insolvency, reorganization, moratorium, liquidation and other similar laws relating to, or affecting generally, the enforcement of applicable creditors' rights and remedies.

i. Residency. Such Buyer is a resident of that jurisdiction  
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specified on the Schedule of Buyers.

j. Short Sale Limitation. During the 30 days immediately  
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preceding the Initial Closing Date, neither such Buyer nor its affiliates has engaged, directly or indirectly, in any transaction constituting a "short sale" (as defined in Rule 3b-3 of the Securities Exchange Act of 1934, as amended (the "1934 ACT")) or similar hedge of the Common Stock.

k. Section 9 of the Securities Exchange Act. So long as a Buyer  
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holds any Preferred Shares, such Buyer will comply with the provisions of Section 9 of the 1934 Act, and the rules promulgated thereunder with respect to transactions involving the Securities.

-6-

l. No Conflicts. The execution, delivery and performance of this  
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Agreement and the Registration Rights Agreement by such Buyer and the consummation by such Buyer of the transactions contemplated hereby and thereby will not result in a violation of the certificate of incorporation, by-laws or other documents of organization of such Buyer.

3. REPRESENTATIONS AND WARRANTIES OF THE COMPANY.  
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The Company represents and warrants to each of the Buyers that:

a. Organization and Qualification. The Company and its  
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"Subsidiaries" (which for purposes of this Agreement means any entity in which the Company, directly or indirectly, owns capital stock or holds an equity or similar interest) (a complete list of which is set forth in Schedule 3(a)) are  
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corporations or other legal entities duly organized and validly existing in good standing under the laws of the jurisdiction in which they are incorporated, and have the requisite corporate power and authorization to own their properties and to carry on their business as now being conducted. Each of the Company and its Subsidiaries is duly qualified as a foreign corporation to do business and is in good standing in every jurisdiction in which its ownership of property or the nature of the business conducted by it makes such qualification necessary, except to the extent that the failure to be so qualified or be in good standing would not have a Material Adverse Effect. As used in this Agreement, "MATERIAL ADVERSE EFFECT" means any material adverse effect on the business, properties, assets, operations, results of operations or financial condition of the Company and its Subsidiaries, if any, taken as a whole, or on the transactions contemplated hereby or by the agreements and instruments to be entered into in connection herewith, or on the authority or ability of the Company to perform its obligations under the Transaction Documents (as defined below) or the Certificate of Designations.

b. Authorization; Enforcement; Compliance with Other Instruments.  
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(i) The Company has the requisite corporate power and authority to enter into

and perform this Agreement, the Registration Rights Agreement, and the Irrevocable Transfer Agent Instructions (as defined in Section 5) and each of the other agreements entered into by the parties hereto in connection with the transactions contemplated by this Agreement (collectively, the "TRANSACTION DOCUMENTS"), and to issue the Securities in accordance with the terms hereof and thereof, (ii) the execution and delivery of the Transaction Documents and the Certificate of Designations by the Company and the consummation by it of the transactions contemplated hereby and thereby, including without limitation the issuance of the Preferred Shares and the reservation for issuance and the issuance of the Conversion Shares issuable upon conversion thereof, any Dividend Shares with respect thereto and any shares of Common Stock issued as payment of Registration Delay Payments (as defined in the Registration Rights Agreement), have been duly authorized by the Company's Board of Directors and no further consent or authorization is required by the Company, its Board of Directors or its stockholders, (iii) the Transaction Documents have been duly executed and delivered by the Company, (iv) the Transaction Documents constitute the valid and binding obligations of the Company enforceable against the Company in

-7-

accordance with their terms, except as such enforceability may be limited by general principles of equity or applicable bankruptcy, insolvency, reorganization, moratorium, liquidation or similar laws relating to, or affecting generally, the enforcement of creditors' rights and remedies, and (v) prior to each of the Closing Dates, the Certificate of Designations will have been filed with the Secretary of State of the State of Delaware and will be in full force and effect, enforceable against the Company in accordance with its terms.

c. Capitalization. As of the date hereof, the authorized capital

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stock of the Company consists of (i) 100,000,000 shares of Common Stock, of which as of the date hereof 39,324,173 shares were issued and outstanding, 8,251,676 shares were issuable and reserved for issuance pursuant to the Company's stock option and purchase plans and warrants and no shares are issuable and reserved for issuance pursuant to securities (other than the Preferred Shares) exercisable or exchangeable for, or convertible into, shares of Common Stock and (ii) 1,000,000 shares of Preferred Stock, of which as of the date hereof, no shares were issued and outstanding. All of such outstanding shares have been, or upon issuance will be, validly issued and are fully paid and nonassessable. Except as disclosed in Schedule 3(c), (i) no shares of the

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Company's capital stock are subject to preemptive rights or any other similar rights or any liens or encumbrances suffered or permitted by the Company; (ii) there are no outstanding debt securities; (iii) there are no outstanding options, warrants, scrip, rights to subscribe to, calls or commitments of any character whatsoever relating to, or securities or rights convertible into, any shares of capital stock of the Company or any of its Subsidiaries, or contracts, commitments, understandings or arrangements by which the Company or any of its Subsidiaries is or may become bound to issue additional shares of capital stock of the Company or any of its Subsidiaries or options, warrants, scrip, rights to subscribe to, calls or commitments of any character whatsoever relating to, or securities or rights convertible into, any shares of capital stock of the Company or any of its Subsidiaries; (iv) there are no agreements or arrangements under which the Company or any of its Subsidiaries is obligated to register the sale of any of their securities under the 1933 Act (except the Registration Rights Agreement); (v) there are no outstanding securities of the Company or any of its Subsidiaries which contain any redemption or similar provisions, and there are no contracts, commitments, understandings or arrangements by which the Company or any of its Subsidiaries is or may become bound to redeem a security of the Company or any of its Subsidiaries; (vi) there are no securities or instruments containing anti-dilution or similar provisions that will be triggered by the issuance of the Securities as described in this Agreement; and (vii) the Company does not have any stock appreciation rights or "phantom stock" plans or agreements or any similar plan or agreement. The Company has furnished to the Buyers true and correct copies of the Company's Certificate of Incorporation, as amended and as in effect on the date hereof (the "CERTIFICATE OF INCORPORATION"), and the Company's By-laws, as in effect on the date hereof (the "BY-LAWS"), and the terms of all securities convertible into or exercisable for Common Stock and the material rights of the holders thereof in respect thereto.

-8-

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d. Issuance of Securities. The Preferred Shares are duly  
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authorized and, upon issuance in accordance with the terms hereof, shall be (i) validly issued, fully paid and non-assessable, (ii) free from all taxes, liens and charges with respect to the issue thereof and (iii) entitled to the rights and preferences set forth in the Certificate of Designations. At least 10,000,000 shares of Common Stock (subject to adjustment pursuant to the Company's covenant set forth in Section 4(f) below) have been duly authorized and reserved for issuance upon conversion of the Preferred Shares. Upon conversion in accordance with the Certificate of Designations, the Conversion Shares will be, and upon payment thereof, the Dividend Shares and any shares of Common Stock issued as payment of Registration Delay Payments will be, validly issued, duly listed, fully paid and nonassessable and free from all taxes, liens and charges with respect to the issue thereof, with the holders being entitled to all rights accorded to a holder of Common Stock. The issuance by the Company of the Securities is exempt from registration under the 1933 Act.

e. No Conflicts. Except as disclosed in Schedule 3(e), the  
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execution, delivery and performance of the Transaction Documents by the Company, the performance by the Company of its obligations under the Certificate of Designations and the consummation by the Company of the transactions contemplated hereby and thereby (including, without limitation, the reservation for issuance and issuance of the Conversion Shares and the Dividend Shares) will not (i) result in a violation of the Certificate of Incorporation, any Certificate of Designations, Preferences and Rights of any outstanding series of Preferred Stock of the Company or the By-laws; (ii) conflict with, or constitute a default (or an event which with notice or lapse of time or both would become a default) under, or give to others any rights of termination, amendment, acceleration or cancellation of, any material agreement, indenture or instrument to which the Company or any of its Subsidiaries is a party; or (iii) result in a violation of any law, rule, regulation, order, judgment or decree (including federal and state securities laws and regulations and the rules and regulations of the principal market or exchange on which the Common Stock is traded or listed) applicable to the Company or any of its Subsidiaries or by which any property or asset of the Company or any of its Subsidiaries is bound or affected. Except as disclosed in Schedule 3(e), neither the Company nor its

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Subsidiaries is in violation of any term of or in default under (i) its Certificate of Incorporation, any Certificate of Designations, Preferences and Rights of any outstanding series of Preferred Stock or By-laws or their organizational charter or by-laws, respectively, or (ii) any contract, agreement, mortgage, indebtedness, indenture, instrument, judgment, decree or order or any statute, rule or regulation applicable to the Company or its Subsidiaries the consequences of which would have a Material Adverse Effect. Except as specifically contemplated by this Agreement and as required under the 1933 Act, the Company is not required to obtain any consent, authorization or order of, or make any filing or registration with, any court or governmental agency or any regulatory or self-regulatory agency in order for it to execute, deliver or perform any of its obligations under or contemplated by the Transaction Documents or the Certificate of Designations in accordance with the terms hereof or thereof. Except as disclosed in Schedule 3(e), all consents,

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authorizations, orders, filings and registrations which the Company is required to obtain pursuant to the preceding sentence have been obtained or effected on or prior to the date hereof. Except as disclosed in Schedule 3(e), the Company

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and its Subsidiaries are unaware of any facts or circumstances which might give rise to any of the foregoing. The business of the Company and its Subsidiaries is not being conducted, and shall not be conducted, in violation of any law,

-9-

ordinance or regulation of any governmental entity the consequences of which would have a Material Adverse Effect. The Company is not in violation of the listing requirements of The Nasdaq National Market as in effect on the date hereof and on each of the Closing Dates and, except as disclosed in Schedule

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3(e), is not aware of any facts which would reasonably lead to delisting or

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suspension of the Common Stock by The Nasdaq National Market in the foreseeable future (including, but not limited to, the Company not being in compliance with published listing requirements).

f. SEC Documents; Financial Statements. Since December 31, 1996,  
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the Company has filed all reports, schedules, forms, statements and other documents required to be filed by it with the SEC pursuant to the reporting requirements of the 1934 Act, (all of the foregoing filed prior to the date hereof and all exhibits included therein and financial statements and schedules thereto and documents incorporated by reference therein being hereinafter referred to as the "SEC DOCUMENTS"). The Company has delivered to the Buyers or their respective representatives true and complete copies of the SEC Documents. As of their respective dates, the SEC Documents complied in all material respects with the requirements of the 1934 Act and the rules and regulations of the SEC promulgated thereunder applicable to the SEC Documents, and none of the SEC Documents, at the time they were filed with the SEC, contained any untrue statement of a material fact or omitted to state a material fact required to be stated therein or necessary in order to make the statements therein, in light of the circumstances under which they were made, not misleading. As of their respective dates, the financial statements of the Company included in the SEC Documents complied as to form in all material respects with applicable accounting requirements and the published rules and regulations of the SEC with respect thereto. Such financial statements have been prepared in accordance with generally accepted accounting principles, consistently applied, during the periods involved (except (i) as may be otherwise indicated in such financial statements or the notes thereto, or (ii) in the case of unaudited interim statements, to the extent they may exclude footnotes or may be condensed or summary statements) and fairly present in all material respects the financial position of the Company as of the dates thereof and the results of its operations and cash flows for the periods then ended (subject, in the case of unaudited statements, to normal year-end audit adjustments). No other information provided by or on behalf of the Company to the Buyers which is not included in the SEC Documents, including, without limitation, information referred to in Section 2(d) of this Agreement, contains any untrue statement of a material fact or omits to state any material fact necessary in order to make the statements therein, in the light of the circumstance under which they are or were made, not misleading. Neither the Company nor any of its Subsidiaries or any of their officers, directors, employees or agents have provided the Buyers with any material, nonpublic information.

g. Absence of Certain Changes. Except as disclosed in the SEC  
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Documents or Schedule 3(g), since December 31, 1997 there has been no material  
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adverse change and no material adverse development in the business, properties, operations, financial condition, liabilities or results of operations of the Company or its Subsidiaries. The Company has not taken any steps, and does not currently expect to take any steps, to seek protection pursuant to any

-10-

bankruptcy law nor does the Company or any of its Subsidiaries have any knowledge or reason to believe that its creditors intend to initiate involuntary bankruptcy proceedings.

h. Absence of Litigation. There is no action, suit, proceeding,  
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inquiry or investigation before or by any court, public board, government agency, self-regulatory organization or body pending or, to the knowledge of the Company or any of its Subsidiaries, threatened against or affecting the Company, the Common Stock or any of the Company's Subsidiaries or any of the Company's or the Company's Subsidiaries' officers or directors in their capacities as such, except as expressly set forth in Schedule 3(h).  
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i. Acknowledgment Regarding Buyers' Purchase of Preferred Shares.  
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The Company acknowledges and agrees that each of the Buyers is acting solely in the capacity of arm's length purchaser with respect to the Transaction Documents and the transactions contemplated thereby. The Company further acknowledges that each Buyer is not acting as a financial advisor or fiduciary of the Company (or in any similar capacity) with respect to the Transaction Documents and the Certificate of Designations and the transactions contemplated thereby and any advice given by any of the Buyers or any of their respective representatives or agents in connection with the Transaction Documents and the Certificate of Designations and the transactions contemplated thereby is merely incidental to such Buyer's purchase of the Securities. The Company further represents to each Buyer that the Company's decision to enter into the Transaction Documents has

been based solely on the independent evaluation by the Company and its representatives.

j. No Undisclosed Events, Liabilities, Developments or

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Circumstances. No event, liability, development or circumstance has occurred or  
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exists with respect to the Company or its Subsidiaries or their respective business, properties, operations or financial condition, that would be required to be disclosed by the Company under applicable securities laws on a currently effective registration statement on Form S-3 filed with the SEC and which has not been publicly disclosed.

k. No General Solicitation. Neither the Company, nor any of its

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affiliates, nor any person acting on its or their behalf, has engaged in any form of general solicitation or general advertising (within the meaning of Regulation D under the 1933 Act) in connection with the offer or sale of the Securities.

l. No Integrated Offering. Neither the Company, nor any of its

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affiliates, nor any person acting on its or their behalf has, directly or indirectly, made any offers or sales of any security or solicited any offers to buy any security, under circumstances that would require registration of any of the Securities under the 1933 Act or cause this offering of Securities to be integrated with prior offerings by the Company for purposes of the 1933 Act or any applicable stockholder approval provisions, including, without limitation, under the rules and regulations of The Nasdaq Stock Market, Inc., nor will the Company or any of its Subsidiaries take any action or steps that would require registration of the Securities under the 1933 Act or cause the offering of the Securities to be integrated with other offerings.

-11-

m. Employee Relations. Neither the Company nor any of its

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Subsidiaries is involved in any union labor dispute nor, to the knowledge of the Company or any of its Subsidiaries, is any such dispute threatened. Neither the Company nor any of its Subsidiaries is a party to a collective bargaining agreement, and the Company and its Subsidiaries believe that relations with their employees are good. No executive officer (as defined in Rule 501(f) of the 1933 Act) has notified the Company that such officer intends to leave the Company or otherwise terminate such officer's employment with the Company.

n. Intellectual Property Rights. The Company and its Subsidiaries

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own or possess adequate rights or licenses to use all trademarks, trade names, service marks, service mark registrations, service names, patents, patent rights, copyrights, inventions, licenses, approvals, governmental authorizations, trade secrets and rights necessary to conduct their respective businesses as now conducted except where the failure to own or possess such rights or licenses would not have a Material Adverse Effect. Except as set forth on Schedule 3(n), none of the Company's trademarks, trade names, service  
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marks, service mark registrations, service names, patents, patent rights, copyrights, inventions, licenses, approvals, government authorizations, trade secrets or other intellectual property rights have expired or terminated, or are expected to expire or terminate within two years from the date of this Agreement where the result of such expiration or termination would have, individually or in the aggregate, a Material Adverse Effect. The Company and its Subsidiaries do not have any knowledge of any infringement by the Company or its Subsidiaries of trademarks, trade name rights, patents, patent rights, copyrights, inventions, licenses, service names, service marks, service mark registrations, trade secrets or other similar rights of others, and, except as set forth on Schedule 3(n), there is no claim, action or proceeding being made or brought  
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against, or to the Company's knowledge, being threatened against, the Company or its Subsidiaries regarding trademarks, trade name rights, patents, patent rights, inventions, copyrights, licenses, service names, service marks, service mark registrations, trade secrets or other infringement; and the Company and its Subsidiaries are unaware of any facts or circumstances which might give rise to any of the foregoing except as would not have a Material Adverse Effect. The Company and its Subsidiaries have taken reasonable security measures to protect the secrecy, confidentiality and value of all of their intellectual properties.

o. Environmental Laws. The Company and its Subsidiaries (i) are

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in compliance with any and all applicable foreign, federal, state and local laws and regulations relating to the protection of human health and safety, the environment or hazardous or toxic substances or wastes, pollutants or contaminants ("ENVIRONMENTAL LAWS"("ENVIRONMENTAL LAWS"("ENVIRONMENTAL LAWS"ENVIRONMENTAL LAWS")), (ii) have received all permits, licenses or other approvals required of them under applicable Environmental Laws to conduct their respective businesses and (iii) are in compliance with all terms and conditions of any such permit, license or approval, except in each case where the failure to comply or receive, as the case may be, would not have a Material Adverse Effect.

-12-

p. Title. Except as set forth in Schedule 3(p), the Company and

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its Subsidiaries have good and marketable title in fee simple to all real property and good and marketable title to all personal property owned by them which is material to the business of the Company and its Subsidiaries, in each case free and clear of all liens, encumbrances and defects except such as are described in Schedule 3(p) or such as do not materially affect the value of such

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property and do not interfere with the use made and proposed to be made of such property by the Company or any of its Subsidiaries. Any real property and facilities held under lease by the Company or any of its Subsidiaries are held by them under valid, subsisting and enforceable leases with such exceptions as are not material and do not interfere with the use made and proposed to be made of such property and buildings by the Company and its Subsidiaries.

q. Insurance. The Company and each of its Subsidiaries are

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insured by insurers of recognized financial responsibility against such losses and risks and in such amounts as management of the Company believes to be prudent and customary in the businesses in which the Company and its Subsidiaries are engaged. Neither the Company nor any such Subsidiary has been refused any insurance coverage sought or applied for and neither the Company nor any such Subsidiary has any reason to believe that it will not be able to renew its existing insurance coverage as and when such coverage expires or to obtain similar coverage from similar insurers as may be necessary to continue its business at a cost that would not materially and adversely affect the condition, financial or otherwise, or the earnings, business or operations of the Company and its Subsidiaries, taken as a whole.

r. Regulatory Permits. Except as set forth on Schedule 3(r), the

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Company and its Subsidiaries possess all certificates, authorizations and permits issued by the appropriate federal, state or foreign regulatory authorities necessary to conduct their respective businesses except where the failure to possess such certificates, authorizations or permits would not have a Material Adverse Effect, and neither the Company nor any such Subsidiary has received any notice of proceedings relating to the revocation or modification of any such certificate, authorization or permit.

s. Internal Accounting Controls. The Company and each of its

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Subsidiaries maintain a system of internal accounting controls sufficient to provide reasonable assurance that (i) transactions are executed in accordance with management's general or specific authorizations, (ii) transactions are recorded as necessary to permit preparation of financial statements in conformity with generally accepted accounting principles and to maintain asset accountability, (iii) access to assets is permitted only in accordance with management's general or specific authorization and (iv) the recorded accountability for assets is compared with the existing assets at reasonable intervals and appropriate action is taken with respect to any differences.

t. No Materially Adverse Restrictions, Etc. Except as disclosed

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in the SEC Documents, neither the Company nor any of its Subsidiaries is subject to any charter, corporate or other legal restriction, or any judgment, decree, order, rule or regulation which in the judgment of the Company's officers has or

-13-



is expected in the future to have a Material Adverse Effect. Except as disclosed in the SEC Documents, neither the Company nor any of its Subsidiaries is a party to any contract or agreement which in the judgment of the Company's officers has or is expected to have a Material Adverse Effect.

u. Tax Status. Except as set forth on Schedule 3(u), the Company  
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and each of its Subsidiaries has made or filed all federal and state income and all other tax returns, reports and declarations required by any jurisdiction to which it is subject (unless and only to the extent that the Company and each of its Subsidiaries has set aside on its books provisions reasonably adequate for the payment of all unpaid and unreported taxes) and has paid all taxes and other governmental assessments and charges that are material in amount, shown or determined to be due on such returns, reports and declarations, except those being contested in good faith and has set aside on its books provision reasonably adequate for the payment of all taxes for periods subsequent to the periods to which such returns, reports or declarations apply. There are no unpaid taxes in any material amount claimed to be due by the taxing authority of any jurisdiction, and the officers of the Company know of no basis for any such claim.

v. Certain Transactions. Except as set forth in writing to the  
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Buyers or in the SEC Documents filed at least ten days prior to the date hereof and except for arm's length transactions pursuant to which the Company makes payments in the ordinary course of business upon terms no less favorable than the Company could obtain from third parties and other than the grant of stock options disclosed on Schedule 3(c), none of the officers, directors, or

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employees of the Company is presently a party to any transaction with the Company or any of its Subsidiaries (other than for services as employees, officers and directors), including any contract, agreement or other arrangement providing for the furnishing of services to or by, providing for rental of real or personal property to or from, or otherwise requiring payments to or from any officer, director or such employee or, to the knowledge of the Company, any corporation, partnership, trust or other entity in which any officer, director, or any such employee has a substantial interest or is an officer, director, trustee or partner.

w. Dilutive Effect. The Company understands and acknowledges that  
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the number of Conversion Shares issuable upon conversion of the Preferred Shares will increase in certain circumstances. The Company further acknowledges that its obligation to issue Conversion Shares upon conversion of the Preferred Shares in accordance with this Agreement and the Certificate of Designations is absolute and unconditional regardless of the dilutive effect that such issuance may have on the ownership interests of other stockholders of the Company.

x. No Other Agreements. The Company has not, directly or  
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indirectly, made any agreements with any Buyers relating to the terms or conditions of the transactions contemplated by the Transaction Documents except as set forth in the Transaction Documents.

y. Application of Takeover Protections. The Company and its board  
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of directors have taken all necessary action, if any, in order to render inapplicable any control share acquisition, business combination, poison pill

-14-

(including any distribution under a rights agreement) or other similar anti-takeover provision under the Company's Certificate of Incorporation, the Rights Agreement, dated as of January 6, 1995, between the Company and Chemical Trust Company of California or the laws of the state of its incorporation which is or could become applicable to the Buyers as a result of the transactions contemplated by this Agreement, including, without limitation, the Company's issuance of the Securities and the Buyer's ownership of the Securities.

4. COVENANTS.  
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a. Best Efforts. Each party shall use its best efforts timely to

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satisfy each of the conditions to be satisfied by it as provided in Sections 6 and 7 of this Agreement.

b. Form D. The Company agrees to file a Form D with respect to  
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the Securities as required under Regulation D and to provide a copy thereof to each Buyer promptly after such filing. The Company shall, on or before each of the Closing Dates, take such action as the Company shall reasonably determine is necessary to qualify the Securities for, or obtain exemption for the Securities for, sale to the Buyers at each of the Closings pursuant to this Agreement under applicable securities or "Blue Sky" laws of the states of the United States, and shall provide evidence of any such action so taken to the Buyers on or prior to the Closing Date. The Company shall make all filings and reports relating to the offer and sale of the Securities required under applicable securities or "Blue Sky" laws of the states of the United States following each of the Closing Dates.

c. Reporting Status. Until the earlier of (i) the date which is  
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one year after the date as of which the Investors (as that term is defined in the Registration Rights Agreement) may sell all of the Conversion Shares without restriction pursuant to Rule 144(k) promulgated under the 1933 Act (or successor thereto), or (ii) the date on which (A) the Investors shall have sold all the Conversion Shares and the Dividend Shares, if any, and (B) none of the Preferred Shares is outstanding (the "REGISTRATION PERIOD"), the Company shall file all reports required to be filed with the SEC pursuant to the 1934 Act, and the Company shall not terminate its status as an issuer required to file reports under the 1934 Act even if the 1934 Act or the rules and regulations thereunder would otherwise permit such termination.

d. Use of Proceeds. The Company will use the proceeds from the  
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sale of the Preferred Shares for substantially the same purposes and in substantially the same amounts as indicated in Schedule 4(d).  
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e. Financial Information. The Company agrees to send the  
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following to each Investor (as that term is defined in the Registration Rights Agreement) during the Registration Period: (i) within two (2) business days after the filing thereof with the SEC, a copy of its Annual Reports on Form 10-K, its Quarterly Reports on Form 10-Q, any Current Reports on Form 8-K and any registration statements or amendments (other than on Form S-8) filed

-15-

pursuant to the 1933 Act; (ii) on the same day as the release thereof, facsimile copies of all press releases issued by the Company or any of its Subsidiaries and (iii) copies of any notices and other information made available or given to the stockholders of the Company generally, contemporaneously with the making available or giving thereof to the stockholders.

f. Reservation of Shares. The Company shall take all action  
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necessary to at all times have authorized, and reserved for the purpose of issuance, no less than 150% of the number of shares of Common Stock needed to provide for the issuance of the Conversion Shares (without regard to any limitations on conversions).

g. Restrictions on Sales. No Buyer nor any affiliates of such  
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Buyer shall be entitled, so long as neither a Triggering Event (as defined in the Certificate of Designations) nor a Major Transaction (as defined in the Certificate of Designations) has occurred, to sell or agree to sell any shares of Common Stock during the five consecutive trading days immediately following (i) the date which is the fourth trading day immediately preceding the Initial Closing Date and (ii) the Put Share Notice Date.

h. Listing. The Company shall promptly secure the listing of all  
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of the Registrable Securities (as defined in the Registration Rights Agreement) upon each national securities exchange and automated quotation system (including The Nasdaq National Market), if any, upon which shares of Common Stock are then listed (subject to official notice of issuance) and shall maintain, so long as

any other shares of Common Stock shall be so listed, such listing of all Registrable Securities from time to time issuable under the terms of the Transaction Documents and the Certificate of Designations. The Company shall maintain the Common Stock's authorization for listing on The Nasdaq National Market or The New York Stock Exchange, Inc. ("NYSE"). Neither the Company nor any of its Subsidiaries shall take any action which may result in the delisting or suspension of the Common Stock on The Nasdaq National Market or NYSE (other than to switch listings from The National Nasdaq Market to NYSE) including, but not limited to, not being in compliance with published listing requirements. The Company shall promptly provide to each Buyer copies of any notices it receives from The Nasdaq National Market or NYSE regarding the continued eligibility of the Common Stock for listing on such automated quotation system or securities exchange. The Company shall pay all fees and expenses in connection with satisfying its obligations under this Section 4(h). Notwithstanding the foregoing, the Company shall not be required to list a number of shares of Common Stock for conversion of the Preferred Shares in excess of the Exchange Cap, if applicable.

i. Expenses. Subject to Section 9(1) below, following the Initial  
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Closing, the Company shall reimburse the Buyers for the Buyers' expenses (including attorneys fees and expenses) in connection with negotiating and preparing the Transaction Documents and consummating the Transactions contemplated thereby up to an aggregate of \$50,000.

-16-

j. Transactions With Affiliates. So long as any Preferred Shares  
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are outstanding the Company shall not, and shall cause each of its Subsidiaries not to, enter into, amend, modify or supplement, or permit any Subsidiary to enter into, amend, modify or supplement, any material agreement, transaction, commitment or arrangement with any of its or any Subsidiary's officers, directors, person who were officers or directors at any time during the previous two years, stockholders who beneficially own 5% or more of the Common Stock, or affiliates or with any individual related by blood, marriage or adoption to any such individual or with any entity in which any such entity or individual owns a 5% or more beneficial interest (each a "RELATED PARTY"), except for (a) customary employment arrangements and benefit programs on reasonable terms, (b) any agreement, transaction, commitment or arrangement on an arms-length basis on terms no less favorable than terms which would have been obtainable from a person other than such Related Party, or (c) any agreement, transaction, commitment or arrangement which is approved by a majority of the disinterested directors of the Company. For purposes hereof, any director who is also an officer of the Company or any Subsidiary of the Company shall not be a disinterested director with respect to any such agreement, transaction, commitment or arrangement. "AFFILIATE" for purposes hereof means, with respect to any person or entity, another person or entity that, directly or indirectly, (i) has a 5% or more equity interest in that person or entity, (ii) has 5% or more common ownership with that person or entity, (iii) controls that person or entity, or (iv) shares common control with that person or entity. "CONTROL" or "CONTROLS" for purposes hereof means that a person or entity has the power, direct or indirect, to conduct or govern the policies of another person or entity.

k. Filing of Form 8-K. On or before the fifth business day  
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following each of the Closing Dates, the Company shall file a Form 8-K with the SEC describing the terms of the transaction contemplated by the Transaction Documents and consummated at such Closing, in each case in the form required by the 1934 Act.

l. Proxy Statement. Upon the earlier of (i) June 30, 1999 and  
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(ii) the date after the 120th day following the Closing Date on which the average of the Average Daily Trading Prices (as defined in the Certificate of Designations) for the five consecutive trading days ending on such date of the Common Stock is equal to or less than \$3.75 (the earlier of such dates being referred to herein as the "PROXY STATEMENT TRIGGER DATE"), the Company shall provide each stockholder entitled to vote at the next meeting of stockholders of the Company, which meeting shall not be later than 60 days after the Proxy Statement Trigger Date (the "STOCKHOLDER MEETING DEADLINE"), a proxy statement, which has been previously reviewed by the Buyers and a counsel of their choice, soliciting each such stockholder's affirmative vote at such stockholder meeting for approval of the Company's issuance of all of the Securities as described in

this Agreement, and the Company shall use its best efforts to solicit its stockholders' approval of such issuance of the Securities and cause the Board of Directors of the Company to recommend to the stockholders that they approve such proposal. If such stockholder meeting is not the Company's annual stockholder meeting, such proxy statement shall not seek approval of any matters other than the approval described in the preceding sentence and the election of directors and increasing the number of authorized shares of Common Stock. If the Company fails to hold a meeting of its stockholders by the Stockholder Meeting Deadline, then, as partial relief (which remedy shall not be exclusive of any other

-17-

remedies available at law or in equity), the Company shall pay to each holder of Preferred Shares an amount in cash per Preferred Share equal to the product of (i) \$10,000; multiplied by (ii) .02; multiplied by (iii) the quotient of (x) the number of days after the Stockholder Meeting Deadline that a meeting of the Company's stockholders is not held, divided by (y) 30. The Company shall make the payments referred to in the immediately preceding sentence within five days of the earlier of (I) the holding of the meeting of the Company's stockholders, the failure of which resulted in the requirement to make such payments, and (II) the last day of each 30-day period beginning on the Stockholder Meeting Deadline. In the event the Company fails to make such payments in a timely manner, such payments shall bear interest at the rate of 1.5% per month (pro rated for partial months) until paid in full.

m. Underwriting Lock-Up Agreements. Subject to the terms and

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conditions set forth below, at any time during the period beginning on and including the Initial Closing Date and ending on the date which is two years after the Initial Closing Date, the Company may require that all, but not less than all, of the holders of the Preferred Shares agree to sign a "lock-up" agreement with the underwriters of a public offering of the Common Stock pursuant to which the holders would agree not to sell any Conversion Shares issued to the holders pursuant to a Conversion Notice delivered to the Company during the period beginning on the date designated by the Company, which date shall be not less than 20 days after the holders' receipt of such notice, and ending on the date which is the earlier of the closing date of such offering and 60 days after the beginning of the lock-up period as designated by the Company (the "UNDERWRITING LOCK-UP PERIOD"). The Company shall exercise this right by delivering written notice (the "LOCK-UP REQUEST NOTICE") of such request to all of the holders of the Preferred Shares then outstanding at least 20 days prior to the date on which the Underwriting Lock-Up Period will begin, but in no event prior to the filing of the registration statement for such proposed offering. The Lock-up Request Notice shall state (i) that the underwriters of such offering have requested that the holders of the Preferred Shares enter into "lock-up" agreements, (ii) the date on which the Underwriting Lock-Up Period will begin and (iii) the name of the managing underwriters of the proposed offering. Notwithstanding the foregoing, the Company shall not be entitled to require the holders to enter into lock-up agreements unless (A) the Underwriting Lock-Up Period is not more than 60 days, (B) the Underwriting Lock-Up Period shall terminate immediately upon (I) the termination or abandonment or indefinite delay of the underwritten offering, (II) the announcement of a pending or consummated Major Transaction or (III) the occurrence of a Triggering Event, (C) the managing underwriters for such proposed offering are included on the Schedule of Underwriters attached to this Agreement, (D) all officers and directors of the Company enter into substantially similar or more restrictive "lock-up" agreements, (E) the preliminary prospectus for such underwritten public offering reflects a price per share to the public of not less than 120% of the Initial Market Price, in effect on the date hereof (subject to adjustment as a result of any stock split, stock dividend, recapitalization, reverse stock split, consolidation, exchange or similar event) and aggregate gross proceeds to the Company of at least \$20,000,000, (F) during the period beginning on the date which is ten business days prior to the filing of the registration statement for the proposed offering and ending on and including the first day of the Underwriting Lock-Up Period, (I) the Registration Statement has been effective

-18-

and available for sale of all the Registrable Securities, (II) there has been no stop order or other regulatory prohibition on trading of the Common Stock and (III) the Average Daily Trading Price on each day during such period is at least 120% of the Initial Market Price on the date hereof (subject to adjustment as a result of any stock split, stock dividend, recapitalization, reverse stock

split, consolidation, exchange or similar event), (G) there has been no other Underwriting Lock-Up Period in the 365 days prior to the date of the Lock-Up Request Notice, (H) there has been no Grace Period (as defined in the Registration Rights Agreement) during the period beginning on and including the date which is ten business days prior to the filing of the registration statement for the proposed offering and ending on and including the first day of the Underwriting Lock-Up Period, (I) the Company is in compliance with the Certificate of Designations and (J) at least 30% of the Preferred Shares originally issued (including the Preferred Shares issued at the Put Option Closing, if any) remain outstanding. In the event the Company requires an Underwriting Lock-Up Period, the Mandatory Conversion Date (as defined in the Certificate of Designations) shall be delayed two days for each day in the Underwriting Lock-Up Period as provided in Section 2(g) of the Certificate of Designations. If the Company delivers a Lock-Up Request Notice and the underwritten public offering is not consummated within 90 days of the first day of the Underwriting Lock-Up Period, then the Company may require an Underwriting Lock-Up Period pursuant to this Section 4(m) on only one other occasion.

5. TRANSFER AGENT INSTRUCTIONS.  
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The Company shall issue irrevocable instructions to its transfer agent in the form attached as Exhibit D hereto, and any subsequent transfer agent, to  
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issue certificates, registered in the name of each Buyer or its respective nominee(s), for the Conversion Shares in such amounts as specified from time to time by each Buyer to the Company upon conversion of the Preferred Shares and upon payment by the Company of dividends on the Preferred Shares in Dividend Shares (the "IRREVOCABLE TRANSFER AGENT INSTRUCTIONS"). Prior to registration of the Conversion Shares and the Dividend Shares under the 1933 Act, all such certificates shall bear the restrictive legend specified in Section 2(g) of this Agreement. The Company warrants that no instruction other than the Irrevocable Transfer Agent Instructions referred to in this Section 5, and stop transfer instructions to give effect to Section 2(f) hereof (in the case of the Conversion Shares and the Dividend Shares, prior to registration of the Conversion Shares and the Dividend Shares under the 1933 Act) will be given by the Company to its transfer agent and that the Securities shall otherwise be freely transferable on the books and records of the Company as and to the extent provided in this Agreement and the Registration Rights Agreement. Nothing in this Section 5 shall affect in any way each Buyer's obligations and agreements set forth in Section 2(g) to comply with all applicable prospectus delivery requirements, if any, upon resale of the Securities. If a Buyer provides the Company with an opinion of counsel, in generally acceptable form, that registration of a resale by such Buyer of any of such Securities is not required under the 1933 Act, the Company shall permit the transfer, and, in the case of the Conversion Shares and the Dividend Shares, promptly instruct its transfer agent to issue one or more certificates in such name and in such denominations as specified by such Buyer and without any restrictive legends. The Company acknowledges that a breach by it of its obligations hereunder will cause

-19-

irreparable harm to the Buyers by vitiating the intent and purpose of the transaction contemplated hereby. Accordingly, the Company acknowledges that the remedy at law for a breach of its obligations under this Section 5 will be inadequate and agrees, in the event of a breach or threatened breach by the Company of the provisions of this Section 5, that the Buyers shall be entitled, in addition to all other available remedies, to an injunction restraining any breach and requiring immediate issuance and transfer, without the necessity of showing economic loss and without any bond or other security being required.

6. CONDITIONS TO THE COMPANY'S OBLIGATION TO SELL.  
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a. Initial Closing Date. The obligation of the Company hereunder  
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to issue and sell the Initial Preferred Shares to each Buyer at the Initial Closing is subject to the satisfaction, at or before the Initial Closing Date, of each of the following conditions, provided that these conditions are for the Company's sole benefit and may be waived by the Company at any time in its sole discretion by providing each Buyer with prior written notice thereof:

(i) Such Buyer shall have executed each of the Transaction Documents and delivered the same to the Company.

(ii) The Certificate of Designations shall have been filed with the Secretary of State of the State of Delaware.

(iii) Such Buyer shall have delivered to the Company the Purchase Price for the Preferred Shares being purchased by such Buyer at the Initial Closing by wire transfer of immediately available funds pursuant to the wire instructions provided by the Company.

(iv) The representations and warranties of such Buyer shall be true and correct as of the date when made and as of the Initial Closing Date as though made at that time (except for representations and warranties that speak as of a specific date), and such Buyer shall have performed, satisfied and complied with the covenants, agreements and conditions required by the Transaction Documents to be performed, satisfied or complied with by such Buyer at or prior to the Initial Closing Date.

b. Put Closing Date. The obligation of the Company hereunder to -----

issue and sell the Put Preferred Shares to each Buyer at each of the Put Closings is subject to the satisfaction, at or before the Put Closing Date, of each of the following conditions, provided that these conditions are for the Company's sole benefit and may be waived by the Company at any time in its sole discretion by providing each Buyer with prior written notice thereof:

(i) Such Buyer shall have delivered to the Company the Purchase Price for the Put Preferred Shares being purchased by such Buyer at the Put Closing by wire transfer of immediately available funds pursuant to the wire instructions provided by the Company.

-20-

(ii) The representations and warranties of such Buyer shall be true and correct as of the date when made and as of the Put Closing Date as though made at that time (except for representations and warranties that speak as of a specific date), and such Buyer shall have performed, satisfied and complied in all material respects with the covenants, agreements and conditions required by the Transaction Documents to be performed, satisfied or complied with by such Buyer at or prior to the Put Closing Date.

7. CONDITIONS TO EACH BUYER'S OBLIGATION TO PURCHASE.  
-----

a. Initial Closing Date. The obligation of each Buyer hereunder -----

to purchase the Initial Preferred Shares at the Initial Closing is subject to the satisfaction, at or before the Initial Closing Date, of each of the following conditions, provided that these conditions are for each Buyer's sole benefit and may be waived by such Buyer at any time in its sole discretion:

(i) The Company shall have executed each of the Transaction Documents, and delivered the same to such Buyer.

(ii) The Certificate of Designations, shall have been filed with the Secretary of State of the State of Delaware, and a copy thereof certified by such Secretary of State shall have been delivered to such Buyer.

(iii) The Common Stock shall be authorized for quotation on The Nasdaq National Market or listing on NYSE, trading in the Common Stock issuable upon conversion of the Initial Preferred Shares on The Nasdaq National Market or NYSE shall not have been suspended by the SEC, The Nasdaq Stock Market, Inc. or NYSE and all of the Conversion Shares issuable upon conversion of the Initial Preferred Shares to be sold at the Initial Closing and the Dividend Shares issuable with respect thereto shall be listed upon The Nasdaq National Market or NYSE. Notwithstanding the foregoing, the Company shall not be required to list a number of shares of Common Stock for conversion of the Preferred Shares in excess of the Exchange Cap, if applicable.

(iv) The representations and warranties of the Company shall be true and correct as of the date when made and as of the Initial Closing Date as though made at that time (except for representations and warranties that speak as of a specific date) and the Company shall have performed, satisfied and complied with the covenants, agreements and conditions

required by the Transaction Documents or Certificate of Designations to be performed, satisfied or complied with by the Company at or prior to the Initial Closing Date. Such Buyer shall have received a certificate, executed by the Chief Executive Officer of the Company, dated as of the Initial Closing Date, to the foregoing effect and as to such other matters as may be reasonably requested by such Buyer including, without limitation, an update as of the Initial Closing Date regarding the representation contained in Section 3(c) above.

-21-

(v) Such Buyer shall have received the opinion of Brobeck Phleger & Harrison LLP dated as of the Initial Closing Date, in form, scope and substance reasonably satisfactory to such Buyer and in substantially the form of Exhibit C attached hereto.  
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(vi) The Company shall have executed and delivered to such Buyer the Stock Certificates (in such denominations as such Buyer shall request) for the Initial Preferred Shares being purchased by such Buyer at the Initial Closing.

(vii) The Board of Directors of the Company shall have adopted resolutions consistent with Section 3(b)(ii) above and in a form reasonably acceptable to such Buyer (the "RESOLUTIONS").

(viii) As of the Initial Closing Date, the Company shall have reserved out of its authorized and unissued Common Stock, solely for the purpose of effecting the conversion of the Preferred Shares, at least 10,000,000 shares of Common Stock.

(ix) The Irrevocable Transfer Agent Instructions, in the form of Exhibit D attached hereto, shall have been delivered to and acknowledged  
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in writing by the Company's transfer agent.

(x) The Company shall have delivered to such Buyer a certificate evidencing the incorporation and good standing of the Company and each Subsidiary in such corporation's state of incorporation issued by the Secretary of State of such state of incorporation as of a date within 20 days of the Initial Closing.

(xi) The Company shall have delivered to such Buyer a secretary's certificate certifying as to (A) the Resolutions, (B) certified copies of its Certificate of Incorporation and (C) By-laws, each as in effect at the Initial Closing.

(xii) The Company shall have delivered to such Buyer a certified copy of its Certificate of Incorporation as certified by the Secretary of State of the State of Delaware within 20 days of the Initial Closing Date.

(xiii) The Company shall have delivered to such Buyer such other documents relating to the transactions contemplated by the Transaction Documents as such Buyer or its counsel may reasonably request.

-22-

b. Put Closing Dates. The obligation of each Buyer hereunder to  
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purchase the Put Preferred Shares at each of the Put Closings is subject to the satisfaction, at or before each of the Put Closing Dates, of each of the following conditions, provided that these conditions are for each Buyer's sole benefit and may be waived by such Buyer at any time in its sole discretion:

(i) The Company shall have complied with the requirements of Section 1(c) and all of the Put Notice Conditions set forth in Section 1(d) shall have been satisfied.

(ii) The Certificate of Designations, shall be in full force and effect and shall not have been amended since the Initial Closing Date (except for any amendments approved by such Buyer), and a copy thereof certified by the Secretary of State of the State of Delaware shall have been delivered to such Buyer.

(iii) The Common Stock shall be authorized for quotation on The Nasdaq National Market or listing on NYSE, trading in the Common Stock issuable upon conversion of the Put Preferred Shares on The Nasdaq National Market or NYSE shall not have been suspended by the SEC, The Nasdaq Stock Market, Inc. or NYSE and all of the Conversion Shares issuable upon conversion of the Put Preferred Shares to be sold at the Put Closing and the Dividend Shares issuable with respect thereto shall be listed upon The Nasdaq National Market or NYSE.

(iv) The representations and warranties of the Company shall be true and correct as of the date when made and as of the Put Closing Date as though made at that time (except for representations and warranties that speak as of a specific date) and the Company shall have performed, satisfied and complied with the covenants, agreements and conditions required by the Transaction Documents or the Certificate of Designations to be performed, satisfied or complied with by the Company at or prior to the Put Closing Date (other than those set forth in Section 4(e) of this Agreement). The Company shall have performed, satisfied and complied in all material respects with the covenants, agreements and conditions required by Section 4(e) of this Agreement. Such Buyer shall have received a certificate, executed by the Chief Executive Officer of the Company, dated as of the Put Closing Date, to the foregoing effect and as to such other matters as may be reasonably requested by such Buyer including, without limitation, an update as of the Put Closing Date regarding the representation contained in Section 3(c) above.

(v) Such Buyer shall have received the opinion of Brobeck Phleger & Harrison LLP dated as of the Put Closing Date, in form, scope and substance reasonably satisfactory to such Buyer and in substantially the form of Exhibit C attached hereto.

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(vi) The Company shall have executed and delivered to such Buyer the Stock Certificates (in such denominations as such Buyer shall request) for the Put Preferred Shares being purchased by such Buyer at the Put Closing.

-23-

(vii) The Board of Directors of the Company shall have adopted, and shall not have amended, the Resolutions.

(viii) As of the Put Closing Date, the Company shall have reserved out of its authorized and unissued Common Stock, solely for the purpose of effecting the conversion of the Preferred Shares, a number of shares of Common Stock equal to at least 150% of the number of shares of Common Stock which would be issuable upon conversion in full of the then outstanding Preferred Shares (without regard to any limitations on conversions), including for such purposes the Put Preferred Shares to be issued at such Put Closing.

(ix) The Irrevocable Transfer Agent Instructions, in the form of Exhibit D attached hereto, shall have been delivered to and acknowledged in ----- writing by the Company's transfer agent.

(x) The Company shall have delivered to such Buyer a certificate evidencing the incorporation and good standing of the Company and each Subsidiary in the state of such corporation's state of incorporation issued by the Secretary of State of such state of incorporation as of a date within 10 days of the Put Closing Date.

(xi) The Company shall have delivered to such Buyer a certified copy of its Certificate of Incorporation as certified by the Secretary of State of the State of Delaware within ten days of the Put Closing Date.

(xii) The Company shall have delivered to such Buyer a secretary's certificate certifying as to (A) the Resolutions, (B) certified copies of its Certificate of Incorporation and (C) By-laws, each as in effect at the Put Closing.

(xiii) The Company shall have delivered to such Buyer such other documents relating to the transactions contemplated by this Agreement as such Buyer or its counsel may reasonably request.



8. INDEMNIFICATION. In consideration of each Buyer's execution and

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delivery of the Transaction Documents and acquiring the Securities thereunder and in addition to all of the Company's other obligations under the Transaction Documents and the Certificate of Designations, the Company shall defend, protect, indemnify and hold harmless each Buyer and each other holder of the Securities and all of their stockholders, officers, directors, employees and direct or indirect investors and any of the forgoing person's agents or other representatives (including, without limitation, those retained in connection with the transactions contemplated by this Agreement) (collectively, the "INDEMNITEES") from and against any and all actions, causes of action, suits, claims, losses, costs, penalties, fees, liabilities and damages, and expenses in connection therewith (irrespective of whether any such Indemnitee is a party to

-24-

the action for which indemnification hereunder is sought), and including reasonable attorneys' fees and disbursements (the "INDEMNIFIED LIABILITIES"), incurred by any Indemnitee as a result of, or arising out of, or relating to (a) any misrepresentation or breach of any representation or warranty made by the Company in the Transaction Documents or the Certificate of Designations or any other certificate, instrument or document contemplated hereby or thereby, (b) any breach of any covenant, agreement or obligation of the Company contained in the Transaction Documents or the Certificate of Designations or any other certificate, instrument or document contemplated hereby or thereby, or (c) any cause of action, suit or claim brought or made against such Indemnitee and arising out of or resulting from the execution, delivery, performance or enforcement of the Transaction Documents or the Certificate of Designations (d) any transaction financed or to be financed in whole or in part, directly or indirectly, with the proceeds of the issuance of the Securities, excluding losses resulting solely from a decline in the market value of the Company's securities or (e) the status of such Buyer or holder of the Securities as an investor in the Company. Notwithstanding the foregoing, Indemnified Liabilities shall not include any liability of an Indemnitee arising solely out of such Indemnitee's willful misconduct or fraudulent action(s). To the extent that the foregoing undertaking by the Company may be unenforceable for any reason, the Company shall make the maximum contribution to the payment and satisfaction of each of the Indemnified Liabilities which is permissible under applicable law. Except as otherwise set forth herein, the mechanics and procedures with respect to the rights and obligations under this Section 8 shall be the same as those set forth in Sections 6(a) and (d) of the Registration Rights Agreement, including, without limitation, those procedures with respect to the settlement of claims and the Company's rights to assume the defense of claims.

9. GOVERNING LAW; MISCELLANEOUS.

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a. Governing Law. This Agreement shall be governed by and

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interpreted in accordance with the laws of the State of New York without regard to the principles of conflict of laws. Each party hereby irrevocably submits to the non-exclusive jurisdiction of the state and federal courts sitting in the City of New York, borough of Manhattan, for the adjudication of any dispute hereunder or in connection herewith or with any transaction contemplated hereby or discussed herein, and hereby irrevocably waives, and agrees not to assert in any suit, action or proceeding, any claim that it is not personally subject to the jurisdiction of any such court, that such suit, action or proceeding is brought in an inconvenient forum or that the venue of such suit, action or proceeding is improper. Each party hereby irrevocably waives personal service of process and consents to process being served in any such suit, action or proceeding by mailing a copy thereof to such party at the address for such notices to it under this Agreement and agrees that such service shall constitute good and sufficient service of process and notice thereof. Nothing contained herein shall be deemed to limit in any way any right to serve process in any manner permitted by law. If any provision of this Agreement shall be invalid or unenforceable in any jurisdiction, such invalidity or unenforceability shall not affect the validity or enforceability of the remainder of this Agreement in that jurisdiction or the validity or enforceability of any provision of this Agreement in any other jurisdiction.

-25-

b. Counterparts. This Agreement may be executed in two or more

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identical counterparts, all of which shall be considered one and the same agreement and shall become effective when counterparts have been signed by each party and delivered to the other party; provided that a facsimile signature shall be considered due execution and shall be binding upon the signatory thereto with the same force and effect as if the signature were an original, not a facsimile signature.

c. Headings. The headings of this Agreement are for convenience

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of reference and shall not form part of, or affect the interpretation of, this Agreement.

d. Severability. If any provision of this Agreement shall be

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invalid or unenforceable in any jurisdiction, such invalidity or unenforceability shall not affect the validity or enforceability of the remainder of this Agreement in that jurisdiction or the validity or enforceability of any provision of this Agreement in any other jurisdiction.

e. Entire Agreement; Amendments. This Agreement supersedes all

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other prior oral or written agreements between the Buyers, the Company, their affiliates and persons acting on their behalf with respect to the matters discussed herein, and this Agreement and the instruments referenced herein contain the entire understanding of the parties with respect to the matters covered herein and therein and, except as specifically set forth herein or therein, neither the Company nor any Buyer makes any representation, warranty, covenant or undertaking with respect to such matters. No provision of this Agreement may be amended other than by an instrument in writing signed by the Company and the holders of at least two-thirds (2/3) of the Preferred Shares then outstanding, and no provision hereof may be waived other than by an instrument in writing signed by the party against whom enforcement is sought. No such amendment shall be effective to the extent that it applies to less than all of the holders of the Preferred Shares then outstanding. No consideration shall be offered or paid to any person to amend or consent to a waiver or modification of any provision of any of the Transaction Documents or the Certificate of Designations unless the same consideration also is offered to all of the parties to the Transaction Documents or holders of the Preferred Shares, as the case may be.

f. Notices. Any notices, consents, waivers or other

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communications required or permitted to be given under the terms of this Agreement must be in writing and will be deemed to have been delivered (i) upon receipt, when delivered personally; (ii) upon receipt, when sent by facsimile (provided confirmation of transmission is mechanically or electronically generated and kept on file by the sending party); or (iii) one (1) business day after deposit with a nationally recognized overnight delivery service, in each case properly addressed to the party to receive the same. The addresses and facsimile numbers for such communications shall be:

-26-

If to the Company:

Advance Tissue Sciences, Inc.  
10933 N. Torrey Pines Rd.  
La Jolla, California 92037  
Telephone: (619) 450-5730  
Facsimile: (619) 450-5732  
Attention: Vice President, Finance  
and Administration

With a copy to:

Brobeck Phleger & Harrison, LLP  
38 Technology Drive  
Irvine, California 92618  
Telephone: (949) 790-6300  
Facsimile: (949) 790-6301  
Attention: Richard A. Fink

If to the Transfer Agent:

Chase Mellon Shareholder Services  
400 South Hope Street, 4th Floor  
Los Angeles, California 90071  
Telephone: (213) 553-9718  
Facsimile: (213) 553-9735  
Attention: Martha Mijango

If to a Buyer, to its address and facsimile number on the Schedule of Buyers, with copies to such Buyer's representatives as set forth on the Schedule of Buyers.

Each party shall provide five (5) days' prior written notice to the other party of any change in address or facsimile number.

g. Successors and Assigns. This Agreement shall be binding upon  
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and inure to the benefit of the parties and their respective successors and assigns, including any purchasers of the Preferred Shares. The Company shall not assign this Agreement or any rights or obligations hereunder without the prior written consent of the holders of two-thirds (2/3) of the Preferred Shares

-27-

then outstanding including by merger or consolidation except pursuant to a Major Transaction with respect to which the Company is in compliance with Sections 2(d)(iv) and 3 of the Certificate of Designations. A Buyer may assign some or all of its rights hereunder without the consent of the Company; provided, however, that any such assignment shall not release such Buyer from its obligations hereunder unless such obligations are assumed by such assignee and the Company has consented to such assignment and assumption. Notwithstanding anything to the contrary contained in the Transaction Documents, Buyer shall be entitled to pledge the Securities in connection with a bona fide margin account.

h. No Third Party Beneficiaries. This Agreement is intended for  
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the benefit of the parties hereto and their respective permitted successors and assigns, and is not for the benefit of, nor may any provision hereof be enforced by, any other person.

i. Survival. Unless this Agreement is terminated under Section  
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9(1), the representations and warranties of the Company and the Buyers contained in Sections 2 and 3, the agreements and covenants set forth in Sections 4, 5 and 9, and the indemnification provisions set forth in Section 8, shall survive each of the Closings. Each Buyer shall be responsible only for its own representations, warranties, agreements and covenants hereunder.

j. Publicity. The Company and each Buyer shall have the right to  
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approve before issuance any press releases or any other public statements with respect to the transactions contemplated hereby; provided, however, that the Company shall be entitled, without the prior approval of any Buyer, to make any press release or other public disclosure with respect to such transactions as is required by applicable law and regulations (although each Buyer shall be consulted by the Company in connection with any such press release or other public disclosure prior to its release and shall be provided with a copy thereof).

k. Further Assurances. Each party shall do and perform, or cause  
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to be done and performed, all such further acts and things, and shall execute and deliver all such other agreements, certificates, instruments and documents, as the other party may reasonably request in order to carry out the intent and accomplish the purposes of this Agreement and the consummation of the transactions contemplated hereby.

l. Termination. In the event that the Initial Closing shall not  
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have occurred with respect to a Buyer on or before three (3) business days from the date hereof due to the Company's or such Buyer's failure to satisfy the conditions set forth in Sections 6 and 7 above (and the nonbreaching party's failure to waive such unsatisfied condition(s)), the nonbreaching party shall have the option to terminate this Agreement with respect to such breaching party at the close of business on such date without liability of any party to any

other party; provided, however, that if this Agreement is terminated pursuant to this Section 9(1), the Company shall remain obligated to reimburse the non-breaching Buyers for expenses up to the amount described in Section 4(i) above, provided that no Buyer has failed to satisfy the conditions set forth in Section 7.

-28-

m. Placement Agent. Each Buyer, severally and not jointly,

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acknowledges that it has not engaged any placement agent in connection with the purchase of the Preferred Shares. Each Buyer, severally and not jointly, shall be responsible for the payment of any fees or commissions of placement agents or brokers engaged by such Buyer relating to or arising out of the transactions contemplated hereby. Each Buyer, severally and not jointly, shall pay, and hold the Company harmless against, any liability, loss or expense (including, without limitation, attorneys' fees and out of pocket expenses) arising in connection with any such claim. The Company acknowledges that it has not engaged any placement agent in connection with the sale of the Preferred Shares. The Company shall be responsible for the payment of any placement agent's fees or brokers commissions relating to or arising out of the transactions contemplated hereby (other than for which any Buyer is responsible pursuant to this Section 9(m)). The Company shall pay, and hold each Buyer harmless against, any liability, loss or expense (including, without limitation, attorneys' fees and out of pocket expenses) arising in connection with any such claim (other than for which any Buyer is responsible pursuant to this Section 9(m)).

n. No Strict Construction. The language used in this Agreement

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will be deemed to be the language chosen by the parties to express their mutual intent, and no rules of strict construction will be applied against any party.

o. Remedies. Each Buyer and each holder of Preferred Shares or

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Conversion Shares shall have all rights and remedies set forth in the Transaction Documents and the Certificate of Designation and all rights and remedies which such holders have been granted at any time under any other agreement or contract and all of the rights which such holders have under any law. Any person having any rights under any provision of this Agreement shall be entitled to enforce such rights specifically (without posting a bond or other security), to recover damages by reason of any breach of any provision of this Agreement and to exercise all other rights granted by law.

p. Payment Set Aside. To the extent that the Company makes a

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payment or payments to the Buyers hereunder or pursuant to the Registration Rights Agreement or the Certificate of Designations or the Buyers enforce or exercise their rights hereunder or thereunder, and such payment or payments or the proceeds of such enforcement or exercise or any part thereof are subsequently invalidated, declared to be fraudulent or preferential, set aside, recovered from, disgorged by or are required to be refunded, repaid or otherwise restored to the Company, a trustee, receiver or any other person under any law (including, without limitation, any bankruptcy law, state or federal law, common law or equitable cause of action), then to the extent of any such restoration the obligation or part thereof originally intended to be satisfied shall be revived and continued in full force and effect as if such payment had not been made or such enforcement or setoff had not occurred.

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-29-

IN WITNESS WHEREOF, the Buyers and the Company have caused this Securities Purchase Agreement to be duly executed as of the date first written above.

COMPANY:

ADVANCED TISSUE SCIENCES, INC.

By: /s/ Arthur J. Benvenuto

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BUYERS:

THEMIS PARTNERS L.P.

By: Promethean Investment Group L.L.C.

Its: General Partner

Name: Arthur J. Benvenuto  
Its: Chairman of the Board and  
Chief Executive Officer

By: /s/ James F. O'Brien, Jr.  
-----  
Name: James F. O'Brien, Jr.  
Its: President

HERACLES FUND  
By: Promethean Investment Group L.L.C.  
Its: Investment Advisor

By: /s/ James F. O'Brien, Jr.  
-----  
Name: James F. O'Brien, Jr.  
Its: President

HALIFAX FUND, L.P.  
By: The Palladin Group, L.P.  
Its: Attorney-in-Fact

By: /s/ Robert Chender  
-----  
Name: Robert Chender  
Title: Managing Director

LEONARDO, L.P.  
By: Angelo, Gordon & Co., L.P.  
Its: General Partner

By: /s/ Michael L. Gordon  
-----  
Name: Michael L. Gordon  
Its: Chief Operating Officer

RAPHAEL, L.P.

By: /s/ Michael L. Gordon  
-----  
Name: Michael L. Gordon  
Its: Chief Operating Officer

RAMIUS FUND, LTD.  
By: AG Ramius Partners, L.L.C.  
Its: Investment Advisor

By: /s/ Michael L. Gordon  
-----  
Name: Michael L. Gordon  
Its: Managing Officer

GAM ARBITRAGE INVESTMENTS, INC.  
By: Angelo, Gordon & Co., L.P.  
Its: Investment Advisor

By: /s/ Michael L. Gordon  
-----  
Name: Michael L. Gordon  
Its: Chief Operating Officer

AG SUPER FUND INTERNATIONAL  
PARTNERS, L.P.  
By: Angelo, Gordon & Co., L.P.  
Its: General Partner

By: /s/ Michael L. Gordon  
-----  
Name: Michael L. Gordon  
Its: Chief Operating Officer

WINGATE CAPITAL LTD.

By: /s/ Benjamin E. Kopin  
-----  
Name: Benjamin E. Kopin  
Its: Secretary

FISHER CAPITAL LTD.

By: /s/ Benjamin E. Kopin  
-----  
Name: Benjamin E. Kopin  
Its: Secretary

CCG INVESTMENT FUND LTD.

By: /s/ Benjamin E. Kopin  
-----  
Name: Benjamin E. Kopin  
Its: Secretary

CCG CAPITAL LTD.

By: /s/ Benjamin E. Kopin  
-----  
Name: Benjamin E. Kopin  
Its: Secretary

MIDWAY CAPITAL LTD.

By: /s/ Benjamin E. Kopin  
-----  
Name: Benjamin E. Kopin  
Its: Secretary

SCHEDULE OF BUYERS

<TABLE>  
<CAPTION>

INVESTOR NAME	INVESTOR ADDRESS AND FACSIMILE NUMBER	NUMBER OF INITIAL PREFERRED SHARES	INVESTOR'S REPRESENTATIVES' ADDRESS AND FACSIMILE NUMBER
<S> Themis Partners L.P.	<C> c/o Promethean Investment Group, L.L.C. 40 West 57th Street, Suite 1520 New York, New York 10019 Attn: James F. O'Brien, Jr. Facsimile: 212-698-0505 Residence: New York	<C> 40	<C> Promethean Investment Group, L.L.C. 40 West 57th Street, Suite 1520 New York, New York 10019 Attn: James F. O'Brien, Jr. Facsimile: 212-698-0505  Katten Muchin & Zavis

			525 West Monroe, Suite 1600 Chicago, Illinois 60661-3693 Attn: Robert J. Brantman, Esq. Facsimile: 312-902-1061
Heracles Fund	Bank of Bermuda (Cayman) Limited P.O. Box 513 3rd Floor British American Center Dr. Roy's Drive Georgetown, Grand Cayman Cayman Island, BWI Attn: Allen J. Bernardo Facsimile: 809-949-7802 Residence: Cayman Islands	100	Promethean Investment Group, L.L.C. 40 West 57th Street, Suite 1520 New York, New York 10019 Attn: James F. O'Brien, Jr. Facsimile: 212-698-0505
Halifax Fund, L.P.	c/o Citco Fund Services (Cayman Islands) Ltd. Corporate Centre, West Bay Road P.O. Box 31106 SMB Grand Cayman, Cayman Islands Facsimile: 345-949-3877  Residence: Cayman Islands	80	Katten Muchin & Zavis 525 West Monroe, Suite 1600 Chicago, Illinois 60661-3693 Attn: Robert J. Brantman, Esq. Facsimile: 312-902-1061
Leonardo, L.P.	c/o Angelo, Gordon & Co., L.P. 245 Park Avenue - 26th Floor New York, New York 10167 Attn: Gary Wolf Facsimile: 212-867-6449  Residence: New York	98	The Palladin Group L.P. As Investment Advisor 40 West 57th Street 15th Floor New York, NY 10019 Attn: Kevin Gerlitz Facsimile: 212-698-0563
Raphael, L.P.	c/o Angelo, Gordon & Co., L.P. 245 Park Avenue - 26th Floor New York, New York 10167 Attn: Gary Wolf Facsimile: 212-867-6449  Residence: New York	10	Angelo, Gordon & Co., L.P. 245 Park Avenue - 26th Floor New York, New York 10167 Attn: Gary Wolf Facsimile: 212-867-6449
Ramius Fund, Ltd.	c/o Angelo, Gordon & Co., L.P. 245 Park Avenue - 26th Floor New York, New York 10167 Attn: Gary Wolf Facsimile: 212-867-6449  Residence: New York	24	Angelo, Gordon & Co., L.P. 245 Park Avenue - 26th Floor New York, New York 10167 Attn: Gary Wolf Facsimile: 212-867-6449
GAM Arbitrage Investments, Inc.	c/o Angelo, Gordon & Co., L.P. 245 Park Avenue - 26th Floor New York, New York 10167 Attn: Gary Wolf Facsimile: 212-867-6449  Residence: New York	5	Angelo, Gordon & Co., L.P. 245 Park Avenue - 26th Floor New York, New York 10167 Attn: Gary Wolf Facsimile: 212-867-6449
AG Super Fund International, L.P.	c/o Angelo, Gordon & Co., L.P. 245 Park Avenue - 26th Floor New York, New York 10167 Attn: Gary Wolf Facsimile: 212-867-6449  Residence: New York	3	Angelo, Gordon & Co., L.P. 245 Park Avenue - 26th Floor New York, New York 10167 Attn: Gary Wolf Facsimile: 212-867-6449
Wingate Capital Ltd.	c/o Citadel Investment Group, L.L.C. 225 West Washington Street Chicago, Illinois 60606 Attention: Daniel J. Hopkins Facsimile: (312) 338-0780 Telephone: (312) 338-7803  Residence: Cayman Islands	41	Katten Muchin & Zavis 525 W. Monroe Street Chicago, Illinois 60661-3693 Attention: Robert J. Brantman, Esq. Facsimile: (312) 902-1061 Telephone: (312) 902-5200

Fisher Capital Ltd.	c/o Citadel Investment Group, L.L.C. 225 West Washington Street Chicago, Illinois 60606 Attention: Daniel J. Hopkins Facsimile: (312) 338-0780 Telephone: (312) 338-7803	77	Katten Muchin & Zavis 525 W. Monroe Street Chicago, Illinois 60661-3693 Attention: Robert J. Brantman, Esq. Facsimile: (312) 902-1061 Telephone: (312) 902-5200
	Residence: Cayman Islands		
CCG Investment Fund Ltd.	c/o Citadel Investment Group, L.L.C. 225 West Washington Street Chicago, Illinois 60606 Attention: Daniel J. Hopkins Facsimile: (312) 338-0780 Telephone: (312) 338-7803	9	Katten Muchin & Zavis 525 W. Monroe Street Chicago, Illinois 60661-3693 Attention: Robert J. Brantman, Esq. Facsimile: (312) 902-1061 Telephone: (312) 902-5200
	Residence: Cayman Islands		
CCG Capital Ltd.	c/o Citadel Investment Group, L.L.C. 225 West Washington Street Chicago, Illinois 60606 Attention: Daniel J. Hopkins Facsimile: (312) 338-0780 Telephone: (312) 338-7803	9	Katten Muchin & Zavis 525 W. Monroe Street Chicago, Illinois 60661-3693 Attention: Robert J. Brantman, Esq. Facsimile: (312) 902-1061 Telephone: (312) 902-5200
	Residence: Cayman Islands		
Midway Capital Ltd.	c/o Citadel Investment Group, L.L.C. 225 West Washington Street Chicago, Illinois 60606 Attention: Daniel J. Hopkins Facsimile: (312) 338-0780 Telephone: (312) 338-7803	4	Katten Muchin & Zavis 525 W. Monroe Street Chicago, Illinois 60661-3693 Attention: Robert J. Brantman, Esq. Facsimile: (312) 902-1061 Telephone: (312) 902-5200
	Residence: Cayman Islands		

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#### SCHEDULES

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#### Schedule of Buyers

#### Schedule of Underwriters

Schedule 3(a)	-	Subsidiaries
Schedule 3(c)	-	Capitalization
Schedule 3(e)	-	Conflicts
Schedule 3(g)	-	Material Changes
Schedule 3(h)	-	Litigation
Schedule 3(n)	-	Intellectual Property
Schedule 3(p)	-	Liens
Schedule 3(r)	-	Regulatory Permits
Schedule 3(u)	-	Tax Status
Schedule 4(d)	-	Use of Proceeds

#### EXHIBITS

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Exhibit A	-	Form of Certificate of Designations, Preferences and rights of the Preferred Shares
Exhibit B	-	Form of Registration Rights Agreement
Exhibit C	-	Form of Company Counsel Opinion
Exhibit D	-	Form of Irrevocable Transfer Agent Instructions

#### SCHEDULE OF UNDERWRITERS



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ABN AMRO  
A.G. Edwards & Sons Inc.  
Bancamerica Robertson  
BT Alex Brown  
Cowen & Co.  
Cruttendon Roth Incorporated  
CS First Boston  
Dain Bosworth Incorporated  
Dean Witter  
Deutsche Morgan Grenfell  
Donaldson Lufkin & Jenrette  
Fahnestock & Co. Inc.  
Furman Selz Incorporated  
Genesis Merchant Securities  
Goldman Sachs & Co.  
Hambrecht & Quist  
Invermed Associates  
Jeffries & Company, Inc.  
J.P. Morgan & Company  
Lehman Brothers  
Merrill Lynch  
Montgomery Securities  
Morgan Stanley Co., Inc.  
Needham & Company, Inc.  
Oppenheimer & Co.  
Pacific Growth Equities Inc.  
Paine Webber  
Piper Jaffray Inc.  
Prudential Bache Securities  
Punk Ziegel & Knoll  
Raymond James & Associates, Inc.  
Salomon Brothers  
SBC Warburg/Dillon Read  
Smith Barney  
SoundView Financial Group, Inc.  
Sutro & Co. Incorporated  
UBS Securities, Inc.  
Unterberg Harris  
Vector Securities  
Volpe, Welty & Company  
Wedbush Morgan Securities

## REGISTRATION RIGHTS AGREEMENT

REGISTRATION RIGHTS AGREEMENT (this "AGREEMENT"), dated as of July 10, 1998, by and among Advanced Tissue Sciences, Inc., a Delaware corporation, with headquarters located at 10933 N. Torrey Pines Rd., La Jolla, California 92037 (the "COMPANY"), and the undersigned buyers (each, a "BUYER" and collectively, the "BUYERS").

## WHEREAS:

A. In connection with the Securities Purchase Agreement by and among the parties of even date herewith (the "SECURITIES PURCHASE AGREEMENT"), the Company has agreed, upon the terms and subject to the conditions of the Securities Purchase Agreement, to issue and sell to the Buyers shares of the Company's Series B Convertible Preferred Stock (the "PREFERRED SHARES"), which will be convertible into shares of the Company's common stock, par value \$.01 per share (the "COMMON STOCK") (as converted, the "CONVERSION SHARES"), in accordance with the terms of the Company's Certificate of Designations, Preferences and Rights of Series B Convertible Preferred Stock (the "CERTIFICATE OF DESIGNATIONS"); and

B. To induce the Buyers to execute and deliver the Securities Purchase Agreement, the Company has agreed to provide certain registration rights under the Securities Act of 1933, as amended, and the rules and regulations thereunder, or any similar successor statute (collectively, the "1933 ACT"), and applicable state securities laws:

NOW, THEREFORE, in consideration of the premises and the mutual covenants contained herein and other good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, the Company and the Buyers hereby agree as follows:

## 1. DEFINITIONS.

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As used in this Agreement, the following terms shall have the following meanings:

a. "INVESTOR" means a Buyer and any transferee or assignee thereof to whom a Buyer assigns its rights under this Agreement and who agrees to become bound by the provisions of this Agreement in accordance with Section 9.

b. "PERSON" means a corporation, a limited liability company, an association, a partnership, an organization, a business, an individual, a governmental or political subdivision thereof or a governmental agency.

c. "REGISTER," "REGISTERED," and "REGISTRATION" refer to a registration effected by preparing and filing one or more Registration Statements in compliance with the 1933 Act and pursuant to Rule 415 under the 1933 Act or any successor rule providing for offering securities on a continuous basis ("RULE 415"), and the declaration or ordering of effectiveness of such Registration Statement(s) by the United States Securities and Exchange Commission (the "SEC").

d. "REGISTRABLE SECURITIES" means the Conversion Shares issued or issuable upon conversion of the Preferred Shares (without regard to any restrictions on conversion), any Dividend Shares (as defined in the Certificate of Designations), any shares of Common Stock issued as payment of Registration Delay Payments (as defined in Section 2(h)) and any shares of capital stock issued or issuable with respect to the Conversion Shares or the Preferred Shares as a result of any stock split, stock dividend, recapitalization, exchange or similar event or otherwise, regardless of any limitation on conversions of Preferred Shares; provided, Registrable Shares shall not include securities previously sold pursuant to the Registration Statement.

e. "REGISTRATION STATEMENT" means a registration statement of the Company filed under the 1933 Act.

Capitalized terms used herein and not otherwise defined herein shall have the respective meanings set forth in the Securities Purchase Agreement.

## 2. REGISTRATION.

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a. Mandatory Registration. The Company shall prepare, and, as

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soon as practicable but in no event later than 60 days after the date of issuance of the relevant Preferred Shares, file with the SEC a Registration Statement or Registration Statements (as is necessary) on Form S-3 (or, if such form is unavailable for such a registration, on such other form as is available for such a registration, subject to the consent of the Investors holding a majority of the Registrable Securities and the provisions of Section 2(c), which consent will not be unreasonably withheld), covering the resale of all of the Registrable Securities, which Registration Statement(s) shall state that, in accordance with Rule 416 promulgated under the 1933 Act, such Registration Statement(s) also covers such indeterminate number of additional shares of Common Stock as may become issuable upon conversion of the Preferred Shares (i) to prevent dilution resulting from stock splits, stock dividends or similar transactions and (ii) by reason of changes in the Conversion Price or Conversion Rate of the Preferred Shares in accordance with the terms thereof. Such Registration Statement shall initially register for resale at least 7,850,000 shares of Common Stock, subject to adjustment as provided in Section 3(b). Such

registered shares of Common Stock shall be allocated among the Investors pro rata based on the total number of Registrable Securities issued or issuable as of each date that a Registration Statement, as amended, relating to the resale of the Registrable Securities is declared effective by the SEC. The Company shall use its best efforts to have the Registration Statement(s) declared effective by the SEC as soon as practicable, but in no event later than 120 days after the issuance of the relevant Preferred Shares.

b. Allocation of Registrable Securities. The initial number of  
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Registrable Securities included in any Registration Statement and each increase in the number of Registrable Securities included therein shall be allocated pro rata among the Investors based on the number of Registrable Securities held by each Investor at the time of such establishment or increase, as the case may be. In the event an Investor shall sell or otherwise transfer any of such holder's Registrable Securities, each transferee shall be allocated a pro rata portion of the then remaining number of Registrable Securities included in such

-2-

Registration Statement for such transferor. Any shares of Common Stock included in a Registration Statement and which remain allocated to any person or entity which does not hold any Registrable Securities shall be allocated to the remaining Investors, pro rata based on the number of Registrable Securities then held by such Investors. For the avoidance of doubt, the number of Registrable Securities held by any Investor shall be determined as if all Preferred Shares then outstanding were converted into or exercised for Registrable Securities.

c. Counsel. Subject to Section 5 hereof, in connection with any  
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offering pursuant to this Section 2, the Investors shall have the right to select one legal counsel to administer their interest in the offering. The Company shall reasonably cooperate with any such counsel.

d. Piggy-Back Registrations. If at any time prior to the  
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expiration of the Registration Period (as hereinafter defined) the number of shares of Common Stock available for sale under the Registration Statement is insufficient to cover all of the Registrable Securities and the Company proposes to file with the SEC a Registration Statement relating to an offering for its own account or the account of others under the 1933 Act of any of its securities (other than on Form S-4 or Form S-8 or their then equivalents relating to securities to be issued solely in connection with any acquisition of any entity or business or equity securities issuable in connection with stock option or other employee benefit plans) the Company shall promptly send to each Investor who is entitled to registration rights under this Section 2(d) written notice of the Company's intention to file a Registration Statement and of such Investor's rights under this Section 2(d) and, if within twenty (20) days after receipt of such notice, such Investor shall so request in writing, the Company shall

include in such Registration Statement all or any part of the Registrable Securities such Investor requests to be registered, subject to the priorities set forth in Section 2(e). No right to registration of Registrable Securities under this Section 2(d) shall be construed to limit any registration required under Section 2(a). The obligations of the Company under this Section 2(d) may be waived by Investors holding a majority of the Registrable Securities. If an offering in connection with which an Investor is entitled to registration under this Section 2(d) is an underwritten offering, then each Investor whose Registrable Securities are included in such Registration Statement shall, unless otherwise agreed by the Company, offer and sell such Registrable Securities in an underwritten offering using the same underwriter or underwriters and, subject to the provisions of this Agreement, on the same terms and conditions as other shares of Common Stock included in such underwritten offering.

e. Priority in Piggy-Back Registration Rights in connection with  
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Registrations for Company Account. If the registration referred to in Section  
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2(d) is to be an underwritten public offering and the managing underwriter(s) advise the Company in writing, that in their reasonable good faith opinion, marketing or other factors dictate that a limitation on the number of shares of Common Stock which may be included in the Registration Statement is necessary to facilitate and not adversely affect the proposed offering, then the Company shall include in such registration: (1) first, all securities the Company proposes to sell for its own account, (2) second, up to the full number of securities proposed to be registered for the account of the holders of

-3-

securities entitled to inclusion of their securities in the Registration Statement by reason of demand registration rights, and (3) third, the securities requested to be registered by the Investors and other holders of securities entitled to participate in the registration, as of the date hereof, drawn from them pro rata based on the number each has requested to be included in such registration.

f. Eligibility for Form S-3. The Company represents, warrants and  
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covenants that on and after the date hereof it meets and will meet the requirements for the use of Form S-3 for registration of the sale by the Investors of the Registrable Securities and the Company has filed and shall file all reports required to be filed by the Company with the SEC in a timely manner so as to obtain and maintain such eligibility for the use of Form S-3. In the event that Form S-3 is not available for sale by the Investors of the Registrable Securities, then the Company (i) with the consent of the Investors holding a majority of the Registrable Securities pursuant to Section 2(a), shall register the sale of the Registrable Securities on another appropriate form and (ii) the Company shall undertake to register the Registrable Securities on Form S-3 as soon as such form is available, provided that the Company shall maintain

the effectiveness of the Registration Statement then in effect until such time as a Registration Statement on Form S-3 covering the Registrable Securities has been declared effective by the SEC.

g. Rule 416. The Company and the Investors each acknowledge that  
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an indeterminate number of Registrable Securities shall be registered pursuant to Rule 416 under the 1933 Act so as to include in such Registration Statement any and all Registrable Securities which may become issuable (i) to prevent dilution resulting from stock splits, stock dividends or similar transactions and (ii) if permitted by law, by reason of reductions in the Conversion Price (as defined in the Certificate of Designations) of the Preferred Shares in accordance with the terms thereof, including, without limitation, the terms which may cause the Conversion Price to decrease as the price of the Common Stock decreases (collectively, the "RULE 416 SECURITIES"). In this regard, the Company agrees to use all reasonable efforts to ensure that the maximum number of Registrable Securities which may be registered pursuant to Rule 416 under the 1933 Act are covered by the Registration Statement and, absent guidance from the SEC or other definitive authority to the contrary, the Company shall use all reasonable efforts to affirmatively support and to not take any position adverse to the position that the Registration Statement filed hereunder covers all of the Rule 416 Securities. If the Company determines that the Registration Statement filed hereunder does not cover all of the Rule 416 Securities, the Company shall immediately provide to each Investor written notice setting forth the basis for the Company's position and the authority therefor.

h. Effect of Failure to Obtain and Maintain Effectiveness of  
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Registration Statement. If the Registration Statement is not (i) filed within  
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60 days of the Initial Issuance Date (as defined in the Certificate of Designations) (the "SCHEDULED FILING DATE"), (ii) declared effective by the SEC on or before 120 days after the Initial Issuance Date (the "SCHEDULED EFFECTIVE DATE"), or (iii) if after the Registration Statement has been declared effective

by the SEC, sales cannot be made (other than on any days during any Allowable Grace Period (as defined in Section 3(u))) pursuant to the Registration Statement (whether because of a failure to keep the Registration Statement effective, to disclose such information as is necessary for sales to be made pursuant to the Registration Statement, to register sufficient shares of Common Stock or otherwise), then, as partial relief for the damages to any holder by reason of any such delay in or reduction of its ability to sell any of the Registrable Securities (which remedy shall not be exclusive of any other remedies available at law or in equity), the Company shall pay to each holder of Preferred Shares an amount in cash per Preferred Share held equal to the product of (i) \$50,000 multiplied by (ii) the sum of (A) .02, if the Registration Statement is not filed by the Scheduled Filing Date, plus (B) .02, if the

Registration Statement is not declared effective by the SEC by the Scheduled Effective Date, plus (C) the product of (I) .00067 multiplied by (II) the sum of (x) the number of days after the Scheduled Filing Date that the relevant Registration Statement has not been filed with the SEC, (y) the number of days after the Scheduled Effective Date and prior to the date that the relevant Registration Statement has not been declared effective by the SEC, and (z) the number of days (excluding days during an Allowable Grace Period (as defined in Section 3(u))) that sales cannot be made pursuant to the Registration Statement after the Registration Statement has been declared effective. The payments to which a holder shall be entitled pursuant to this Section 2(h) are referred to herein as "REGISTRATION DELAY PAYMENTS." Registration Delay Payments shall be paid within five business days of the earlier of (A) the first day of the month following the occurrence of the event resulting in the requirement to make Registration Delay Payments, or (B) the date on which the event resulting in the requirement to make Registration Delay Payments is cured; provided, however, the Company shall not be required to pay any amounts under (A) or (B) more than once. In the event the Company fails to make Registration Delay Payments in a timely manner, such Registration Delay Payments shall bear interest at the rate of 1.5% per month (prorated for partial months) until paid in full. If the Company fails to pay the Registration Delay Payments, including any interest thereon, within 15 business days of the applicable payment date, then the holder entitled to such payments shall have the right at any time, so long as the Company continues to fail to make such payments, to require the Company, upon written notice, to immediately issue, in lieu of the Registration Delay Payments, including any interest thereon, the number of shares of Common Stock equal to the quotient of (X) the sum of the Registration Delay Payments and all interest accrued thereon divided by (Y) the lowest Average Daily Trading Price (as defined in the Certificate of Designations) on any day during the period beginning on and including the date the Registration Delay Payments were due and payable and ending on and including the date the holder delivers written notice to the Company of its election to receive shares of Common Stock in lieu of the Registration Delay Payments.

-5-

### 3. RELATED OBLIGATIONS.

Whenever an Investor has requested that any Registrable Securities be registered pursuant to Section 2(d) or at such time as the Company is obligated to file a Registration Statement with the SEC pursuant to Section 2(a), the Company will use its best efforts to effect the registration of the Registrable Securities in accordance with the intended method of disposition thereof and, pursuant thereto, the Company shall have the following obligations:

a. The Company shall promptly prepare and file with the SEC a Registration Statement with respect to the Registrable Securities (on or prior to the sixtieth (60th) day after the date of issuance of the relevant Preferred Shares for the registration of Registrable Securities pursuant to Section 2(a))

and use its best efforts to cause such Registration Statement relating to the Registrable Securities to become effective as soon as possible after such filing (but in no event later than 120 days after the issuance of the relevant Preferred Shares for the registration of Registrable Securities), and keep such Registration Statement effective pursuant to Rule 415 at all times until the earlier of (i) the date as of which the Investors may sell all of the Registrable Securities without restriction pursuant to Rule 144(k) promulgated under the 1933 Act (or successor thereto) or (ii) the date on which (A) the Investors shall have sold all the Registrable Securities and (B) none of the Preferred Shares is outstanding (the "REGISTRATION PERIOD"), which Registration Statement (including any amendments or supplements thereto and prospectuses contained therein) shall not contain any untrue statement of a material fact or omit to state a material fact required to be stated therein, or necessary to make the statements therein, in light of the circumstances in which they were made, not misleading.

b. The Company shall prepare and file with the SEC such amendments (including post-effective amendments) and supplements to a Registration Statement and the prospectus used in connection with such Registration Statement, which prospectus is to be filed pursuant to Rule 424 promulgated under the 1933 Act, as may be necessary to keep such Registration Statement effective at all times during the Registration Period, and, during such period, comply with the provisions of the 1933 Act with respect to the disposition of all Registrable Securities of the Company covered by such Registration Statement until such time as all of such Registrable Securities shall have been disposed of in accordance with the intended methods of disposition by the seller or sellers thereof as set forth in such Registration Statement. In the event the number of shares available under a Registration Statement filed pursuant to this Agreement is insufficient to cover all of the Registrable Securities, the Company shall amend such Registration Statement, or file a new Registration Statement (on the short form available therefor, if applicable), or both, so as to cover all of the Registrable Securities, in each case, as soon as practicable, but in any event within fifteen (15) days after the necessity therefor arises (based on the market price of the Common Stock and other relevant factors on which the Company reasonably elects to rely). The Company shall use its best efforts to cause such amendment and/or new Registration Statement to become effective as soon as practicable following the filing thereof. For purposes of the foregoing provision, the number of shares available under a Registration Statement shall be deemed "insufficient to cover all of the Registrable Securities" if at any time the number of Registrable

-6-

Securities issued or issuable upon conversion of the Preferred Shares is greater than the quotient determined by dividing (i) the number of shares of Common Stock available for resale under such Registration Statement by (ii) 1.5. For purposes of the calculation set forth in the foregoing sentence, any restrictions on the convertibility of the Preferred Shares or the Conversion Price shall be disregarded and such calculation shall assume that the Preferred



Shares are then convertible into shares of Common Stock at the then prevailing Conversion Rate (as defined in the Company's Certificate of Designations).

c. The Company shall furnish to each Investor whose Registrable Securities are included in any Registration Statement and its legal counsel without charge (i) promptly after the same is prepared and filed with the SEC at least one copy of such Registration Statement and any amendment(s) thereto, including financial statements and schedules, all documents incorporated therein by reference and all exhibits, the prospectus included in such Registration Statement (including each preliminary prospectus) and, with regards to such Registration Statement(s), any correspondence by or on behalf of the Company to the SEC or the staff of the SEC and any correspondence from the SEC or the staff of the SEC to the Company or its representatives (but in no event, without the prior written consent of the Investor, shall the Company disclose to such Investor material non-public information), (ii) upon the effectiveness of any Registration Statement, ten (10) copies of the prospectus included in such Registration Statement and all amendments and supplements thereto (or such other number of copies as such Investor may reasonably request) and (iii) such other documents, including copies of any preliminary or final prospectus, as such Investor may reasonably request from time to time in order to facilitate the disposition of the Registrable Securities owned by such Investor.

d. The Company shall use its reasonable efforts to (i) register and qualify the Registrable Securities covered by a Registration Statement under such other securities or "blue sky" laws of such jurisdictions in the United States as any Investor reasonably requests, (ii) prepare and file in those jurisdictions, such amendments (including post-effective amendments) and supplements to such registrations and qualifications as may be necessary to maintain the effectiveness thereof during the Registration Period, (iii) take such other actions as may be necessary to maintain such registrations and qualifications in effect at all times during the Registration Period, and (iv) take all other actions reasonably necessary or advisable to qualify the Registrable Securities for sale in such jurisdictions; provided, however, that the Company shall not be required in connection therewith or as a condition thereto to (x) qualify to do business in any jurisdiction where it would not otherwise be required to qualify but for this Section 3(d), (y) subject itself to general taxation in any such jurisdiction, or (z) file a general consent to service of process in any such jurisdiction. The Company shall promptly notify each Investor who holds Registrable Securities of the receipt by the Company of any notification with respect to the suspension of the registration or qualification of any of the Registrable Securities for sale under the securities or "blue sky" laws of any jurisdiction in the United States or its receipt of actual notice of the initiation or threatening of any proceeding for such purpose.

e. Intentionally Omitted.

f. As promptly as practicable after becoming aware of such event, the Company shall notify each Investor in writing of the happening of any event as a result of which the prospectus included in a Registration Statement, as then in effect, includes an untrue statement of a material fact or omission to state a material fact required to be stated therein or necessary to make the statements therein, in light of the circumstances under which they were made, not misleading, and promptly prepare a supplement or amendment to such Registration Statement to correct such untrue statement or omission, and deliver ten (10) copies of such supplement or amendment to each Investor (or such other number of copies as such Investor may reasonably request). The Company shall also promptly notify each Investor in writing (i) when a prospectus or any prospectus supplement or post-effective amendment has been filed, and when a Registration Statement or any post-effective amendment has become effective (notification of such effectiveness shall be delivered to each Investor by facsimile on the same day of such effectiveness and by overnight mail), (ii) of any request by the SEC for amendments or supplements to a Registration Statement or related prospectus or related information, and (iii) of the Company's reasonable determination that a post-effective amendment to a Registration Statement would be appropriate.

g. The Company shall use its best efforts to prevent the issuance of any stop order or other suspension of effectiveness of a Registration Statement, or the suspension of the qualification of any of the Registrable Securities for sale in any jurisdiction and, if such an order or suspension is issued, to obtain the withdrawal of such order or suspension at the earliest possible moment and to notify each Investor who holds Registrable Securities being sold (and, in the event of an underwritten offering, the managing underwriters) of the issuance of such order and the resolution thereof or its receipt of actual notice of the initiation or threat of any proceeding for such purpose.

h. The Company shall permit each Investor and a single firm of counsel, initially Katten Muchin & Zavis or such other counsel as thereafter designated as selling stockholders' counsel by the Investors who hold a majority of the Registrable Securities being sold, to review and comment upon a Registration Statement and all amendments and supplements thereto at least seven (7) business days prior to their filing with the SEC, and not file any document in a form to which such counsel reasonably objects; provided no Registration Delay Payments shall accrue for any delay caused solely by such counsel's unreasonable objections. The Company shall not submit a request for acceleration of the effectiveness of a Registration Statement or any amendment or supplement thereto without the prior approval of such counsel, which consent shall not be unreasonably withheld.

i. At the request of any Investor and at such Investor's expense, the Company shall use its best efforts to furnish to such Investor, on the date of the effectiveness of the Registration Statement and thereafter from time to time on such dates as an Investor may reasonably request (i) a letter, dated such date, from the Company's independent certified public accountants in form and substance as is customarily given by independent certified public

accountants to underwriters in an underwritten public offering, and (ii) an opinion, dated as of such date, of counsel representing the Company for purposes of such Registration Statement, in form, scope and substance as is customarily given in an underwritten public offering, addressed to the Investors.

j. The Company shall make available for inspection by (i) any Investor and (ii) one firm of attorneys and one firm of accountants or other agents retained by the Investors, (collectively, the "INSPECTORS") all pertinent financial and other records, and pertinent corporate documents and properties of the Company (collectively, the "RECORDS"), as shall be reasonably deemed necessary by each Inspector to enable such Inspector to exercise its due diligence responsibility, if any, and cause the Company's officers, directors and employees to supply all information which any Inspector may reasonably request for purposes of such due diligence; provided, however, that each Inspector shall hold in strict confidence and shall not make any disclosure (except to an Investor) or use of any Record or other information which the Company determines in good faith to be confidential, and of which determination the Inspectors are so notified, unless (a) the disclosure of such Records is necessary to avoid or correct a misstatement or omission in any Registration Statement or is otherwise required under the 1933 Act, (b) the release of such Records is ordered pursuant to a final, non-appealable subpoena or order from a court or government body of competent jurisdiction, or (c) the information in such Records has been made generally available to the public other than by disclosure in violation of this or any other agreement of which the Inspector has knowledge. The Company shall not be required to disclose any confidential information in such Records to an Inspector unless and until such Inspector shall have entered into a confidentiality agreement with the Company with respect thereto, substantially in the form of this Section 3(j). Each Investor agrees that it shall, upon learning that disclosure of such Records is sought in or by a court or governmental body of competent jurisdiction or through other means, give prompt notice to the Company and allow the Company, at its expense, to undertake appropriate action to prevent disclosure of, or to obtain a protective order for, the Records deemed confidential.

k. The Company shall hold in confidence and not make any disclosure of information concerning an Investor provided to the Company unless (i) disclosure of such information is necessary to comply with federal or state securities laws, (ii) the disclosure of such information is necessary to avoid or correct a misstatement or omission in any Registration Statement, (iii) the release of such information is ordered pursuant to a subpoena or other final, non-appealable order from a court or governmental body of competent jurisdiction, or (iv) such information has been made generally available to the public other than by disclosure in violation of this Agreement or any other agreement. The Company agrees that it shall, upon learning that disclosure of such information concerning an Investor is sought in or by a court or governmental body of competent jurisdiction or through other means, give prompt

written notice to such Investor and allow such Investor, at the Investor's expense, to undertake appropriate action to prevent disclosure of, or to obtain a protective order for, such information.

-9-

l. The Company shall use its best efforts either to (i) cause all the Registrable Securities covered by a Registration Statement to be listed on each securities exchange on which securities of the same class or series issued by the Company are then listed, if any, if the listing of such Registrable Securities is then permitted under the rules of such exchange, or (ii) secure designation and quotation of all the Registrable Securities covered by the Registration Statement on The Nasdaq National Market and, without limiting the generality of the foregoing, to arrange for at least two market makers to register with the National Association of Securities Dealers, Inc. ("NASD") as such with respect to such Registrable Securities. The Company shall pay all fees and expenses in connection with satisfying its obligation under this Section 3(1).

m. The Company shall cooperate with the Investors who hold Registrable Securities being offered to facilitate the timely preparation and delivery of certificates (not bearing any restrictive legend) representing the Registrable Securities to be offered pursuant to a Registration Statement and enable such certificates to be in such denominations or amounts, as the case may be, as the Investors may reasonably request and registered in such names as the Investors may request.

n. Intentionally Omitted.

o. The Company shall provide a transfer agent and registrar for all such Registrable Securities not later than the effective date of such Registration Statement.

p. If requested by the Investor, the Company shall (i) immediately incorporate in a prospectus supplement or post-effective amendment such information as the Investors agree should be included therein relating to the sale and distribution of Registrable Securities, including, without limitation, information with respect to the offering of the Registrable Securities to be sold in such offering; (ii) make all required filings of such prospectus supplement or post-effective amendment as soon as notified of the matters to be incorporated in such prospectus supplement or post-effective amendment; and (iii) supplement or make amendments to any Registration Statement or the related prospectus if requested by a shareholder of such Registrable Securities.

q. The Company shall use its best efforts to cause the Registrable Securities covered by the applicable Registration Statement to be registered with or approved by such other governmental agencies or authorities as may be necessary to consummate the disposition of such Registrable Securities, provided that the Company shall have no obligation to seek registration or approval with

governmental agencies or authorities outside the United States.

r. The Company shall make generally available to its security holders as soon as practical, but not later than 90 days after the close of the period covered thereby, an earnings statement (in form complying with the provisions of Rule 158 under the 1933 Act) covering a twelve-month period beginning not later than the first day of the Company's fiscal quarter next following the effective date of the Registration Statement.

-10-

s. The Company shall otherwise use its best efforts to comply with all applicable rules and regulations of the SEC in connection with any registration hereunder.

t. Within two (2) business days after the Registration Statement which includes the Registrable Securities is ordered effective by the SEC, the Company shall deliver, and shall cause legal counsel for the Company to deliver, to the transfer agent for such Registrable Securities (with copies to the Investors whose Registrable Securities are included in such Registration Statement) confirmation that the Registration Statement has been declared effective by the SEC in the form attached hereto as Exhibit A.

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u. Notwithstanding anything to the contrary in Section 3(f), at any time after the Registration Statement has been declared effective, the Company may delay the disclosure of material non-public information concerning the Company the disclosure of which at the time is not, in the good faith opinion of the Board of Directors of the Company and its counsel, in the best interest of the Company and, in the opinion of counsel to the Company, otherwise required (a "GRACE PERIOD"); provided, that the Company shall promptly (i) notify the Investors in writing of the existence of material non-public information giving rise to a Grace Period and the date on which the Grace Period will begin, and (ii) notify the Investors in writing of the date on which the Grace Period ends; and, provided further, that no grace period shall exceed 15 days and during any consecutive 365 day period, such Grace Period shall not exceed 45 calendar days in the aggregate (an "ALLOWABLE GRACE PERIOD"). For purposes of determining the length of a Grace Period above, the Grace Period shall begin on and include the date the Investors receive the notice referred to in clause (i) above and shall end on and include the date the Investors receive the notice referred to in clause (ii) above. The provisions of Sections 2(h) and 3(g) hereof shall not be applicable during the period of any Allowable Grace Period. Upon expiration of the Allowable Grace Period, the Company shall again be bound by the first sentence of Section 3(f) with respect to the information giving rise thereto. In the event of any Grace Period, the Maturity Date (as defined in the Certificate of Designations) shall be delayed one and one-half (1-1/2) days for each day in the Grace Period as provided in Section 2(g) of the Certificate of Designations.

4. OBLIGATIONS OF THE INVESTORS.  
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a. At least seven (7) business days prior to the first anticipated filing date of a Registration Statement, the Company shall notify each Investor in writing of the information the Company requires from each such Investor if such Investor elects to have any of such Investor's Registrable Securities included in such Registration Statement. It shall be a condition precedent to the obligations of the Company to complete the registration pursuant to this Agreement with respect to the Registrable Securities of a particular Investor that such Investor shall furnish to the Company such information regarding itself, the Registrable Securities held by it and the intended method of disposition of the Registrable Securities held by it as shall be reasonably required to effect the registration of such Registrable Securities and shall execute such documents in connection with such registration as the Company may reasonably request. At least ten Business Days prior to the first filing date of the Registration Statement, the Company shall notify each Investor if any of such Investor's Registrable Securities are eligible for inclusion in the Registration Statement and such notice shall include a request for information. If at least three Business Days prior to the filing date the Company has not received the information requested from an Investor (a "Non-Responsive Investor") then the Company may file the Registration Statement without including Registrable Securities of such Non-Responsive Investor but shall not be relieved of its obligation to file a Registration Statement with the SEC relating to the Registrable Securities of such Non-Responsive Investor promptly after such Non-Responsive Investor provides the required information. If available, the Company shall include such Non-Responsive Investor's Registrable Securities in the Registration Statement by amending such Registration Statement to include such securities. No Registration Delay Penalties shall accrue to a Non-Responsive Investor during the period such Investor is delinquent in providing information to the Company. If the Company has to file an additional Registration Statement to register the Registrable Securities of a Non-Responsive Investor due solely to such Investor's failure to provide information reasonably requested by the Company, such Investor shall pay the reasonable out-of-pocket expenses actually incurred by the Company in connection with such Registration Statement other than filing fees.

b. Each Investor, by such Investor's acceptance of the Registrable Securities, agrees to cooperate with the Company as reasonably requested by the Company in connection with the preparation and filing of any Registration Statement hereunder, unless such Investor has notified the Company in writing of such Investor's election to exclude all of such Investor's Registrable Securities from such Registration Statement.

c. As promptly as practicable after becoming aware of such event, each Investor shall notify the Company in writing of the happening of any event

as a result of which the information provided in writing by such Investor to the Company expressly for use in the Prospectus included in a Registration Statement, as then in effect, includes an untrue statement of a material fact or omission to state a material fact required to be stated therein or necessary to make the statements therein, in light of the circumstances under which they were made, not misleading.

-12-

d. Each Investor agrees that, upon receipt of any notice from the Company of the happening of any event of the kind described in Section 3(g) or the first sentence of 3(f), such Investor will immediately discontinue disposition of Registrable Securities pursuant to any Registration Statement(s) covering such Registrable Securities until such Investor's receipt of the copies of the supplemented or amended prospectus contemplated by Section 3(g) or the first sentence of 3(f).

e. In the event any Investor elects to participate in an underwritten public offering pursuant to Section 2, each such Investor agrees to enter into and perform such Investor's obligations under an underwriting agreement, in usual and customary form, including, without limitation, customary indemnification and contribution obligations (only with respect to violations which occur in reliance upon and in conformity with information furnished in writing to the Company by such Investor expressly for use in the Registration Statement for such underwritten public offering), with the managing underwriter of such offering and take such other actions as are reasonably required in order to expedite or facilitate the disposition of the Registrable Securities, unless such Investor notifies the Company in writing of such Investor's election to exclude all of such Investor's Registrable Securities from such Registration Statement. No Investor may participate in any underwritten registration hereunder unless such Investor (i) agrees to sell such Investor's Registrable Securities on the basis provided in any underwriting arrangements approved by the Investors entitled hereunder to approve such arrangements, (ii) completes and executes all questionnaires, powers of attorney, indemnities, underwriting agreements and other documents reasonably required under the terms of such underwriting arrangements, and (iii) agrees to pay its pro rata share of all underwriting discounts and commissions.

5. EXPENSES OF REGISTRATION.

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All reasonable expenses, other than underwriting discounts and commissions, incurred in connection with registrations, filings or qualifications pursuant to Sections 2 and 3, including, without limitation, all registration, listing and qualifications fees, printers and accounting fees, and fees and disbursements of counsel for the Company and reasonable fees and disbursements of one counsel for the Investors, shall be paid by the Company.

6. INDEMNIFICATION.  
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In the event any Registrable Securities are included in a Registration Statement under this Agreement:

a. To the fullest extent permitted by law, the Company will, and hereby does, indemnify, hold harmless and defend each Investor who holds such Registrable Securities, the directors, officers, partners, employees, agents of, and each Person, if any, who controls, any Investor within the meaning of the 1933 Act or the Securities Exchange Act of 1934, as amended (the "1934 ACT") (each, an "INDEMNIFIED PERSON"), against any losses, claims, damages, liabilities, judgments, fines, penalties, charges, costs, attorneys' fees, amounts paid in settlement or expenses, joint or several, (collectively, "CLAIMS") incurred in investigating, preparing or defending any action, claim, suit, inquiry, proceeding, investigation or appeal taken from the foregoing by or before any court or governmental, administrative or other regulatory agency, body or the SEC, whether pending or threatened, whether or not an indemnified party is or may be a party thereto ("INDEMNIFIED DAMAGES"), to which any of them may become subject insofar as such Claims (or actions or proceedings, whether commenced or threatened, in respect thereof) arise out of or are based upon: (i) any untrue statement or alleged untrue statement of a material fact in a Registration Statement or any post-effective amendment thereto or in any filing made in connection with the qualification of the offering under the securities or other "blue sky" laws of any jurisdiction in which Registrable Securities are offered ("BLUE SKY FILING"), or the omission or alleged omission to state a material fact required to be stated therein or necessary to make the statements therein, in light of the circumstances under which the statements therein were made, not misleading, (ii) any untrue statement or alleged untrue statement of a material fact contained in any preliminary prospectus if used prior to the effective date of such Registration Statement, or contained in the final prospectus (as amended or supplemented, if the Company files any amendment thereof or supplement thereto with the SEC) or the omission or alleged omission to state therein any material fact necessary to make the statements made therein, in light of the circumstances under which the statements therein were made, not misleading, or (iii) any violation or alleged violation by the Company of the 1933 Act, the 1934 Act, any other law, including, without limitation, any state securities law, or any rule or regulation thereunder relating to the offer or sale of the Registrable Securities pursuant to a Registration Statement (the matters in the foregoing clauses (i) through (iii) being, collectively, "VIOLATIONS"). Subject to the restrictions set forth in Section 6(d) with respect to the number of legal counsel, the Company shall reimburse each Indemnified Person, promptly as such expenses are incurred and are due and payable, for any legal fees or other reasonable expenses incurred by them in connection with investigating or defending any such Claim. Notwithstanding anything to the contrary contained herein, the indemnification agreement



contained in this Section 6(a): (i) shall not apply to a Claim arising out of or based upon a Violation which occurs in reliance upon and in conformity with information furnished in writing to the Company by any Indemnified Person expressly for use in connection with the preparation of the Registration Statement or any such amendment thereof or supplement thereto; (ii) with respect to any preliminary prospectus, shall not inure to the benefit of any such person from whom the person asserting any such Claim purchased the Registrable Securities that are the subject thereof (or to the benefit of any person controlling such person) if the untrue statement or omission of a material fact contained in the preliminary prospectus was corrected in the prospectus, as then amended or supplemented, if such prospectus was timely made available by the Company pursuant to Section 3(c), and the Indemnified Person was promptly advised in writing not to use the incorrect prospectus prior to the use giving

-14-

rise to a violation and such Indemnified Person, notwithstanding such advice, used it; (iii) shall not be available to the extent such Claim is based on a failure of the Investor to deliver or to cause to be delivered the prospectus made available by the Company; and (iv) shall not apply to amounts paid in settlement of any Claim if such settlement is effected without the prior written consent of the Company. Such indemnity shall remain in full force and effect regardless of any investigation made by or on behalf of the Indemnified Person and shall survive the transfer or disposition of the Registrable Securities by the Investors.

b. In connection with any Registration Statement in which an Investor is participating, each such Investor agrees to severally and not jointly indemnify, hold harmless and defend, the Company, each of its directors, each of its officers who signs the Registration Statement, each Person, if any, who controls the Company within the meaning of the 1933 Act or the 1934 Act each, an "INDEMNIFIED PARTY"), against any Claim or Indemnified Damages to which any of them may become subject, under the 1933 Act, the 1934 Act or otherwise, insofar as such Claim or Indemnified Damages arise out of or are based upon any Violation, in each case to the extent, and only to the extent, that such Violation occurs in reliance upon and in conformity with written information furnished to the Company by such Investor expressly for use in connection with such Registration Statement; and, subject to Section 6(d), such Investor will reimburse each Indemnified Party promptly as such expenses are incurred and are due and payable any legal fees or other reasonable expenses incurred by them in connection with investigating or defending any such Claim; provided, however, that the indemnity agreement contained in this Section 6(b) and the agreement with respect to contribution contained in Section 7 shall not apply to amounts paid in settlement of any Claim if such settlement is effected without the prior written consent of such Investor; provided, further, however, that the Investor shall be liable under this Section 6(b) for only that amount of a Claim or Indemnified Damages as does not exceed the net proceeds to such Investor as a result of the sale of Registrable Securities pursuant to such Registration Statement. Such indemnity shall remain in full force and effect regardless of

any investigation made by or on behalf of such Indemnified Party and shall survive the transfer of the Registrable Securities by the Investors pursuant to Section 9. Notwithstanding anything to the contrary contained herein, the indemnification agreement contained in this Section 6(b) with respect to any preliminary prospectus shall not inure to the benefit of any Indemnified Party if the untrue statement or omission of material fact contained in the preliminary prospectus was corrected on a timely basis in the prospectus, as then amended or supplemented.

c. Intentionally Omitted.

d. Promptly after receipt by an Indemnified Person or Indemnified Party under this Section 6 of notice of the commencement of any action or proceeding (including any governmental action or proceeding) involving a Claim, such Indemnified Person or Indemnified Party shall, if a Claim in respect thereof is to be made against any indemnifying party under this Section 6, deliver to the indemnifying party a written notice of the commencement thereof, and the indemnifying party shall have the right to participate in, and, to the extent the indemnifying party so desires, jointly with any other indemnifying party similarly noticed, to assume control of the defense thereof with counsel

-15-

mutually satisfactory to the indemnifying party and the Indemnified Person or the Indemnified Party, as the case may be; provided, however, that an Indemnified Person or Indemnified Party shall have the right to retain its own counsel with the fees and expenses to be paid by the indemnifying party, if, in the reasonable opinion of counsel retained by the indemnifying party, the representation by such counsel of the Indemnified Person or Indemnified Party and the indemnifying party would be inappropriate due to actual or potential differing interests between such Indemnified Person or Indemnified Party and any other party represented by such counsel in such proceeding. The indemnifying party shall pay for only one separate legal counsel for the Indemnified Persons or the Indemnified Parties, as applicable, and such counsel shall be selected by Investors holding a majority-in-interest of the Registrable Securities included in the Registration Statement to which the Claim relates, if the Investors are entitled to indemnification hereunder, or the Company, if the Company is entitled to indemnification hereunder, as applicable. The Indemnified Party or Indemnified Person shall cooperate fully with the indemnifying party in connection with any negotiation or defense of any such action or claim by the indemnifying party and shall furnish to the indemnifying party all information reasonably available to the Indemnified Party or Indemnified Person which relates to such action or claim. The indemnifying party shall keep the Indemnified Party or Indemnified Person fully apprised at all times as to the status of the defense or any settlement negotiations with respect thereto. No indemnifying party shall, without the consent of the Indemnified Party or Indemnified Person, consent to entry of any judgment or enter into any settlement or other compromise which does not include as an unconditional term thereof the giving by the claimant or plaintiff to such Indemnified Party or

Indemnified Person of a release from all liability in respect to such claim or litigation. Following indemnification as provided for hereunder, the indemnifying party shall be subrogated to all rights of the Indemnified Party or Indemnified Person with respect to all third parties, firms or corporations relating to the matter for which indemnification has been made. The failure to deliver written notice to the indemnifying party within a reasonable time of the commencement of any such action shall not relieve such indemnifying party of any liability to the Indemnified Person or Indemnified Party under this Section 6, except to the extent that the indemnifying party is prejudiced in its ability to defend such action.

e. The indemnification required by this Section 6 shall be made by periodic payments of the amount thereof during the course of the investigation or defense, as and when bills are received or Indemnified Damages are incurred.

f. The indemnity agreements contained herein shall be in addition to (i) any cause of action or similar right of the Indemnified Party or Indemnified Person against the indemnifying party or others, and (ii) any liabilities the indemnifying party may be subject to pursuant to the law.

-16-

7. CONTRIBUTION.  
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To the extent any indemnification by an indemnifying party is prohibited or limited by law, the indemnifying party agrees to make the maximum contribution with respect to any amounts for which it would otherwise be liable under Section 6 to the fullest extent permitted by law; provided, however, that: (i) no contribution shall be made under circumstances where the maker would not have been liable for indemnification under the fault standards set forth in Section 6; (ii) no seller of Registrable Securities guilty of fraudulent misrepresentation (within the meaning of Section 11(f) of the 1933 Act) shall be entitled to contribution from any seller of Registrable Securities who was not guilty of fraudulent misrepresentation; and (iii) contribution by any seller of Registrable Securities shall be limited in amount to the net amount of proceeds received by such seller from the sale of such Registrable Securities.

8. REPORTS UNDER THE 1934 ACT.  
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With a view to making available to the Investors the benefits of Rule 144 promulgated under the 1933 Act or any other similar rule or regulation of the SEC that may at any time permit the Investors to sell securities of the Company to the public without registration ("RULE 144"), the Company agrees to:

a. make and keep public information available, as those terms are understood and defined in Rule 144;

b. file with the SEC in a timely manner all reports and other

documents required of the Company under the 1934 Act so long as the Company remains subject to such requirements (it being understood that nothing herein shall limit the Company's obligations under Section 4(c) of the Securities Purchase Agreement) and the filing of such reports and other documents is required for the applicable provisions of Rule 144; and

c. furnish to each Investor so long as such Investor owns Registrable Securities, promptly upon request, (i) a written statement by the Company that it has complied with the reporting requirements of Rule 144 and the 1934 Act, (ii) a copy of the most recent annual or quarterly report of the Company and such other reports and documents so filed by the Company, and (iii) such other information as may be reasonably requested to permit the investors to sell such securities pursuant to Rule 144 without registration.

9. ASSIGNMENT OF REGISTRATION RIGHTS.  
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The rights under this Agreement shall be automatically assignable by the Investors to any transferee of all or any portion of Registrable Securities if: (i) the Investor agrees in writing with the transferee or assignee to assign such rights, and a copy of such agreement is furnished to the Company within a reasonable time after such assignment; (ii) the Company is, within a reasonable time after such transfer or assignment, furnished with written notice of (a) the name and address of such transferee or assignee, and (b) the securities with respect to which such registration rights are being transferred or assigned; (iii) immediately following such transfer or assignment the further disposition of such securities by the transferee or assignee is restricted under the 1933 Act and applicable state securities laws; (iv) at or before the time the Company receives the written notice contemplated by clause (ii) of this sentence the transferee or assignee agrees in writing with the Company to be bound by all of the provisions contained herein; and (v) such transfer shall have been made in accordance with the applicable requirements of the Securities Purchase Agreement.

10. AMENDMENT OF REGISTRATION RIGHTS.  
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Provisions of this Agreement may be amended and the observance thereof may be waived (either generally or in a particular instance and either retroactively or prospectively), only with the written consent of the Company and Investors who hold two-thirds (?) of the Registrable Securities. Any amendment or waiver effected in accordance with this Section 10 shall be binding upon each Investor and the Company. No such amendment shall be effective to the extent that it applies to less than all of the holders of the Registrable Securities. No consideration shall be offered or paid to any person to amend or consent to a waiver or modification of any provision of this Agreement unless the same consideration also is offered to all of the parties to this Agreement.

11. MISCELLANEOUS.

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a. A person or entity is deemed to be a holder of Registrable Securities whenever such person or entity owns of record such Registrable Securities. If the Company receives conflicting instructions, notices or elections from two or more persons or entities with respect to the same Registrable Securities, the Company shall act upon the basis of instructions, notice or election received from the registered owner of such Registrable Securities.

-18-

b. Any notices, consents, waivers or other communications required or permitted to be given under the terms of this Agreement must be in writing and will be deemed to have been delivered (i) upon receipt, when delivered personally; (ii) upon receipt, when sent by facsimile (provided a confirmation of transmission is mechanically or electronically generated and kept on file by the sending party); (iii) one (1) business day after deposit with a nationally recognized overnight delivery service, in each case properly addressed to the party to receive the same. The addresses and facsimile numbers for such communications shall be:

If to the Company:

Advanced Tissue Sciences, Inc.  
10933 N. Torrey Pines Rd.  
La Jolla, California 92037  
Telephone: (619) 450-5730  
Facsimile: (619) 450-5732  
Attention: Vice President, Finance and Administration

With a copy to:

Brobeck Phleger & Harrison, LLP  
38 Technology Drive  
Irvine, California 92618  
Telephone: (949) 790-6300  
Facsimile: (949) 790-6301  
Attention: Richard A. Fink

If to a Buyer, to its address and facsimile number on the Schedule of Buyers attached hereto, with copies to such Buyer's counsel as set forth on the Schedule of Buyers.

Each party shall provide five (5) days prior notice to the other party of any change in address, phone number or facsimile number.

c. Failure of any party to exercise any right or remedy under this Agreement or otherwise, or delay by a party in exercising such right or remedy, shall not operate as a waiver thereof.

d. This Agreement shall be governed by and interpreted in accordance with the laws of the State of New York without regard to the principles of conflict of laws. Each party hereby irrevocably submits to the non-exclusive jurisdiction of the state and federal courts sitting in the City of New York, borough of Manhattan, for the adjudication of any dispute hereunder or in connection herewith or with any transaction contemplated hereby or discussed herein, and hereby irrevocably waives, and agrees not to assert in any suit, action or proceeding, any claim that it is not personally subject to the jurisdiction of any such court, that such suit, action or proceeding is brought

-19-

in an inconvenient forum or that the venue of such suit, action or proceeding is improper. Each party hereby irrevocably waives personal service of process and consents to process being served in any such suit, action or proceeding by mailing a copy thereof to such party at the address for such notices to it under this Agreement and agrees that such service shall constitute good and sufficient service of process and notice thereof. Nothing contained herein shall be deemed to limit in any way any right to serve process in any manner permitted by law. If any provision of this Agreement shall be invalid or unenforceable in any jurisdiction, such invalidity or unenforceability shall not affect the validity or enforceability of the remainder of this Agreement in that jurisdiction or the validity or enforceability of any provision of this Agreement in any other jurisdiction.

e. This Agreement and the Securities Purchase Agreement constitute the entire agreement among the parties hereto with respect to the subject matter hereof and thereof. There are no restrictions, promises, warranties or undertakings, other than those set forth or referred to herein and therein. This Agreement and the Securities Purchase Agreement supersede all prior agreements and understandings among the parties hereto with respect to the subject matter hereof and thereof.

f. Subject to the requirements of Section 9, this Agreement shall inure to the benefit of and be binding upon the permitted successors and assigns of each of the parties hereto.

g. The headings in this Agreement are for convenience of reference only and shall not limit or otherwise affect the meaning hereof.

h. This Agreement may be executed in two or more identical counterparts, each of which shall be deemed an original but all of which shall constitute one and the same agreement. This Agreement, once executed by a party, may be delivered to the other party hereto by facsimile transmission of a copy of this Agreement bearing the signature of the party so delivering this

Agreement.

i. Each party shall do and perform, or cause to be done and performed, all such further acts and things, and shall execute and deliver all such other agreements, certificates, instruments and documents, as the other party may reasonably request in order to carry out the intent and accomplish the purposes of this Agreement and the consummation of the transactions contemplated hereby.

j. All consents and other determinations to be made by the Investors pursuant to this Agreement shall be made, unless otherwise specified in this Agreement, by Investors holding a majority of the Registrable Securities.

k. The language used in this Agreement will be deemed to be the language chosen by the parties to express their mutual intent and no rules of strict construction will be applied against any party.

-20-

IN WITNESS WHEREOF, the parties have caused this Registration Rights Agreement to be duly executed as of day and year first above written.

COMPANY:

ADVANCED TISSUE SCIENCES, INC.

By: /s/ Arthur J. Benvenuto

-----  
Name: Arthur J. Benvenuto  
Its: Chairman of the Board and  
Chief Executive Officer

BUYERS:

THEMIS PARTNERS L.P.

By: Promethean Investment Group L.L.C.  
Its: General Partner

By: /s/ James F. O'Brien, Jr.

-----  
Name: James F. O'Brien, Jr.  
Its: President

HERACLES FUND

By: Promethean Investment Group L.L.C.  
Its: Investment Advisor

By: /s/ James F. O'Brien, Jr.

-----  
Name: James F. O'Brien, Jr.  
Its: President

HALIFAX FUND, L.P.

By: The Palladin Group, L.P.

Its: Attorney-in-Fact

By: /s/ Robert Chender

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Name: Robert Chender

Title: Managing Director

LEONARDO, L.P.

By: Angelo, Gordon & Co., L.P.

Its: General Partner

By: /s/ Michael L. Gordon

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Name: Michael L. Gordon

Its: Chief Operating Officer

RAPHAEL, L.P.

By: /s/ Michael L. Gordon

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Name: Michael L. Gordon

Its: Chief Operating Officer

RAMIUS FUND, LTD.

By: AG Ramius Partners, L.L.C.

Its: Investment Advisor

By: /s/ Michael L. Gordon

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Name: Michael L. Gordon

Its: Managing Officer

GAM ARBITRAGE INVESTMENTS, INC.

By: Angelo, Gordon & Co., L.P.

Its: Investment Advisor



By: /s/ Michael L. Gordon

-----  
Name: Michael L. Gordon  
Its: Chief Operating Officer

AG SUPER FUND INTERNATIONAL  
PARTNERS, L.P.

By: Angelo, Gordon & Co., L.P.  
Its: General Partner

By: /s/ Michael L. Gordon

-----  
Name: Michael L. Gordon  
Its: Chief Operating Officer

WINGATE CAPITAL LTD.

By: /s/ Benjamin E. Kopin

-----  
Name: Benjamin E. Kopin  
Its: Secretary

FISHER CAPITAL LTD.

By: /s/ Benjamin E. Kopin

-----  
Name: Benjamin E. Kopin  
Its: Secretary

CCG INVESTMENT FUND LTD.

By: /s/ Benjamin E. Kopin

-----  
Name: Benjamin E. Kopin  
Its: Secretary

CCG CAPITAL LTD.

By: /s/ Benjamin E. Kopin

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Name: Benjamin E. Kopin  
Its: Secretary

MIDWAY CAPITAL LTD.

By: /s/ Benjamin E. Kopin

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Name: Benjamin E. Kopin  
Its: Secretary

SCHEDULE OF BUYERS

INVESTOR NAME	INVESTOR ADDRESS AND FACSIMILE NUMBER	INVESTOR'S REPRESENTATIVES' ADDRESS AND FACSIMILE NUMBER
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Themis Partners L.P.	c/o Promethean Investment Group, L.L.C. 40 West 57th Street, Suite 1520 New York, New York 10019 Attn: James F. O'Brien, Jr. Facsimile: 212-698-0505	Promethean Investment Group, L.L.C. 40 West 57th Street, Suite 1520 New York, New York 10019 Attn: James F. O'Brien, Jr. Facsimile: 212-698-0505  Katten Muchin & Zavis 525 West Monroe, Suite 1600 Chicago, Illinois 60661-3693 Attn: Robert J. Brantman, Esq. Facsimile: 312-902-1061
Heracles Fund	Bank of Bermuda (Cayman) Limited P.O. Box 513 3rd Floor British American Center Dr. Roy's Drive Georgetown, Grand Cayman Cayman Island, BWI Attn: Allen J. Bernardo Facsimile: 809-949-7802	Promethean Investment Group, L.L.C. 40 West 57th Street, Suite 1520 New York, New York 10019 Attn: James F. O'Brien, Jr. Facsimile: 212-698-0505  Katten Muchin & Zavis 525 West Monroe, Suite 1600

		Chicago, Illinois 60661-3693 Attn: Robert J. Brantman, Esq. Facsimile: 312-902-1061
Halifax Fund, L.P.	c/o Citco Fund Services (Cayman Islands) Ltd. Corporate Centre, West Bay Road P.O. Box 31106 SMB Grand Cayman, Cayman Islands Facsimile: 345-949-3877	The Palladin Group, L.P. As Investment Advisor 40 West 57th Street 15th Floor New York, NY 10019 Attn: Kevin Gerlits Facsimile: 212-698-0563
Leonardo, L.P.	c/o Angelo, Gordon & Co., L.P. 245 Park Avenue 26th Floor New York, New York 10167 Attn: Gary Wolf Facsimile: 212-867-6449	Angelo, Gordon & Co., L.P. 245 Park Avenue 26th Floor New York, New York 10167 Attn: Gary Wolf Facsimile: 212-867-6449
Raphael, L.P.	c/o Angelo, Gordon & Co., L.P. 245 Park Avenue 26th Floor New York, New York 10167 Attn: Gary Wolf Facsimile: 212-867-6449	Angelo, Gordon & Co., L.P. 245 Park Avenue 26th Floor New York, New York 10167 Attn: Gary Wolf Facsimile: 212-867-6449
Ramius Fund, Ltd.	c/o Angelo, Gordon & Co., L.P. 245 Park Avenue 26th Floor New York, New York 10167 Attn: Gary Wolf Facsimile: 212-867-6449	Angelo, Gordon & Co., L.P. 245 Park Avenue 26th Floor New York, New York 10167 Attn: Gary Wolf Facsimile: 212-867-6449
GAM Arbitrage Investments, Inc.	c/o Angelo, Gordon & Co., L.P. 245 Park Avenue 26th Floor New York, New York 10167 Attn: Gary Wolf Facsimile: 212-867-6449	Angelo, Gordon & Co., L.P. 245 Park Avenue 26th Floor New York, New York 10167 Attn: Gary Wolf Facsimile: 212-867-6449
AG Super Fund International, L.P.	c/o Angelo, Gordon & Co., L.P. 245 Park Avenue	Angelo, Gordon & Co., L.P. 245 Park Avenue

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FORM OF NOTICE OF EFFECTIVENESS  
OF REGISTRATION STATEMENT

[TRANSFER AGENT]

Attn: \_\_\_\_\_

RE:           ADVANCED TISSUE SCIENCES, INC.  
-----

Ladies and Gentlemen:

We are counsel to ADVANCED TISSUE SCIENCES, INC., a Delaware corporation (the "COMPANY"), and have represented the Company in connection with that certain Securities Purchase Agreement (the "PURCHASE AGREEMENT") entered into by and among the Company and the Buyers named therein (collectively, the "HOLDERS") pursuant to which the Company issued to the Holders shares of its Series B Convertible Preferred Stock, par value \$.01 per share, (the "PREFERRED SHARES"). Pursuant to the Purchase Agreement, the Company also has entered into a Registration Rights Agreement with the Holders (the "REGISTRATION RIGHTS AGREEMENT") pursuant to which the Company agreed, among other things, to register the Registrable Securities (as defined in the Registration Rights Agreement), including the shares of the Common Stock of the Company, par value \$.01 per share (the "COMMON STOCK") issuable upon conversion of the Preferred Shares, under the Securities Act of 1933, as amended (the "1933 ACT"). In connection with the Company's obligations under the Registration Rights Agreement, on \_\_\_\_\_, 1998, the Company filed a Registration Statement on Form \_\_\_\_\_ (File No. 333-\_\_\_\_\_) (the "REGISTRATION STATEMENT") with the Securities and Exchange Commission (the "SEC") relating to the Registrable Securities which names each of the Holders as a selling stockholder thereunder.

In connection with the foregoing, we advise you that a member of the SEC's staff has advised us by telephone that the SEC has entered an order declaring the Registration Statement effective under the 1933 Act at [ENTER TIME OF EFFECTIVENESS] on [ENTER DATE OF EFFECTIVENESS] and we have no knowledge, after telephonic inquiry of a member of the SEC's staff, that any stop order suspending its effectiveness has been issued or that any proceedings for that purpose are pending before, or threatened by, the SEC and the Registrable Securities are available for resale under the 1933 Act pursuant to the Registration Statement.

Very truly yours,

[COMPANY COUNSEL]

By: \_\_\_\_\_

cc: [LIST NAMES OF INVESTORS]