



Current Agreements

Dealdoc

Licensing agreement for ELPs

PhaseBio Pharmaceuticals
Duke University

Oct 01 2006

Licensing agreement for ELPs

Companies:	PhaseBio Pharmaceuticals
	Duke University
Announcement date:	Oct 01 2006
Deal value, US\$m:	2.237 : sum of upfront and milestone payments
Related contracts:	Eighth amendment to licensing agreement for ELPs

- [Details](#)
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- [Termsheet](#)
- [Press Release](#)
- [Filing Data](#)
- [Contract](#)

Details

Announcement date:	Oct 01 2006
Start date:	Oct 18 2006
Industry sectors:	Academic Pharmaceutical
Exclusivity:	Exclusive Non-exclusive
Asset type:	Intellectual property Technology
Therapy areas:	Cardiovascular
Technology types:	Enabling technology
Deal components:	Licensing
Stages of development:	Discovery
Geographic focus:	Worldwide

Financials

Deal value, US\$m:	2.237 : sum of upfront and milestone payments
Upfront, US\$m:	0.037 : upfront payment
Milestones, US\$m:	2.2 : regulatory and clinical milestone fees 0.4 : commercial milestone fees
Royalty rates, %:	n/d : low single-digit royalty percentages on net sales
Semi-quant royalties:	Low single digit
Equity, US\$m:	n/d : 270,984 shares of common stock

Termsheet

PhaseBio entered into an exclusive license agreement with Duke University, or the Duke License, which we most recently amended in May 2017.

Pursuant to the Duke License, Duke granted us an exclusive, worldwide license under certain patent rights owned or controlled by Duke, and a non-exclusive, worldwide license under certain know-how of Duke, to develop and commercialize any products covered by the Duke License, or Duke licensed products, relating to ELPs.

Under the Duke License, we paid Duke an upfront fee of \$37,000, additional fees in connection with amendments to the Duke License of \$0.2 million and other additional licensing fees of \$0.2 million.

In consideration for license rights granted to us, we initially issued Duke 270,984 shares of our common stock.

Until we reached a certain stipulated equity milestone, which we reached in October 2007, we were obligated to issue additional shares of common stock to Duke from time to time so that its aggregate ownership represented 7.5% of our issued and outstanding capital stock.

We are also required to pay Duke: up to \$2.2 million in regulatory and clinical milestone fees; up to \$0.4 million in commercial milestone fees; low single-digit royalty percentages on net sales of Duke licensed products, with minimum aggregate royalty payments of \$0.2 million payable following our achievement of certain commercial milestones; and up to the greater of \$0.3 million or a low double-digit percentage of the fees we receive from a third party in consideration of forming a strategic alliance with respect to certain patent rights covered under the Duke License.

We also must pay Duke the first \$1.0 million of non-royalty payments we receive from a sublicensee, and thereafter a low double-digit percentage of any additional nonroyalty payments we receive.

As of June 30, 2018, we have not paid any amounts under the Duke License. We are required to apply for, prosecute and maintain all U.S. and foreign patent rights under the Duke License.

As of June 30, 2018, we have incurred \$1.4 million in patent prosecution costs under the Duke License.

Press Release

Not available.

Filing Data

In October 2006, we entered into an exclusive license agreement with Duke University, or the Duke License, which we most recently amended in May 2017. Pursuant to the Duke License, Duke granted us an exclusive, worldwide license under certain patent rights owned or controlled by Duke, and a non-exclusive, worldwide license under certain know-how of Duke, to develop and commercialize any products covered by the Duke License, or Duke licensed products, relating to ELPs. Under the Duke License, we paid Duke an upfront fee of \$37,000, additional fees in connection with amendments to the Duke License of \$0.2 million and other additional licensing fees of \$0.2 million. In consideration for license rights granted to us, we initially issued Duke 270,984 shares of our common stock. Until we reached a certain stipulated equity milestone, which we reached in October 2007, we were obligated to issue additional shares of common stock to Duke from time to time so that its aggregate ownership represented 7.5% of our issued and outstanding capital stock. We are also required to pay Duke: up to \$2.2 million in regulatory and clinical milestone fees; up to \$0.4 million in commercial milestone fees; low single-digit royalty percentages on net sales of Duke licensed products, with minimum aggregate royalty payments of \$0.2 million payable following our achievement of certain commercial milestones; and up to the greater of \$0.3 million or a low double-digit percentage of the fees we receive from a third party in consideration of forming a strategic alliance with respect to certain patent rights covered under the Duke License. We also must pay Duke the first \$1.0 million of non-royalty payments we receive from a sublicensee, and thereafter a low double-digit percentage of any additional nonroyalty payments we receive. As of June 30, 2018, we have not paid any amounts under the Duke License. We are required to apply for, prosecute and maintain all U.S. and foreign patent rights under the Duke License. As of June 30, 2018, we have incurred \$1.4 million in patent prosecution costs under the Duke License.

Contract

LICENSE AGREEMENT

THIS Agreement is entered into this eighteenth day of October, 2006 ("Effective Date") between DUKE UNIVERSITY, a nonprofit educational and research institution organized under the laws of North Carolina ("DUKE"), having a place of business at Durham, North Carolina 27710, and Phase Bioscience, Inc., a corporation organized under the laws of Delaware ("Licensee"), with its principal office at 1822 East N.C. 54 Suite 250, Durham NC 27703.

RECITALS

- A. DUKE owns certain Patent Rights (defined below) relating to inventions ("Inventions") described in DUKE Office of Licensing & Ventures Files: [***].
- B. An inventor from McMaster University, having a place of business at 1280 Main Street West, Hamilton, ON, Canada L8S 4L8 ("MCMASTER"), and one or more of DUKE Inventors have jointly invented DUKE's Office of License & Ventures File [***] ("Joint Invention"). Licensing herein of the Joint Invention shall only be by DUKE on behalf of both parties, as stated in that certain Inter-Institutional Agreement between DUKE and MCMASTER, dated April 21, 2006, attached hereto as Appendix J (the "McMaster Agreement")
- C. DUKE desires to have its Patent Rights developed and commercialized to benefit the public and is willing to grant a license to the Licensee for that purpose.
- D. Licensee desires to obtain a license under the Patent Rights upon the terms and conditions set forth in this Agreement.
- E. The Inventions were made with U.S Government support and, notwithstanding anything to the contrary in this Agreement, the U. S. Government has certain rights in the Invention under 37CFR401.

Therefore, in consideration of these Recitals, any sums to be paid, any rights granted, and the mutual promises contained in this Agreement, the parties agree to the following

TERMS AND CONDITIONS:

ARTICLE 1 — DEFINITIONS

For the purposes of this Agreement, the terms and phrases below have the following definitions:

1.01 "Affiliate" means any corporation or non-corporate entity that controls, is controlled by or is under the common control with a party. A corporation or a non-corporate entity, as applicable, is deemed to be in control of another corporation if (a) it owns or directly or indirectly controls at least 50% of the voting stock of the other corporation or (b) in the absence of ownership of at least 50% of the voting stock of a corporation, or in the case of a non-corporate entity, if it possesses directly or indirectly, the power to direct or cause the direction of the management and policies of such corporation or non-cooperate entity, as applicable.

1.

1.02 "Field of Use" means (i) all fields of use except in vitro, surfaced-based clinical diagnostics for Unrestricted Patent Rights (for avoidance of doubt, all other fields including but not limited to in vitro clinical diagnostics that are solution-based are included for Unrestricted Patent Rights) and (ii) solely the field of injectable intra-tumoral drug delivery for Restricted Patent Rights. For avoidance of doubt, all fields of use are excluded except the field of injectable intra-tumoral drug delivery for Restricted Patent Rights.

1.03 "Unrestricted Patent Rights" means (a) the patents and patent applications listed in Appendix A (hereafter referred to as "Unrestricted Patent Applications"); (b) any patent (US or foreign) issuing on any such Unrestricted Patent Applications; and (c) all divisions, continuations, continuations-in-part (but only to the extent that the subject matter of each such continuation-in-part application is described in, claimed in, or enabled by the disclosure of the Unrestricted Patent Applications), re-examinations, reissues, substitutions, or extensions of any Unrestricted Patent Applications or patent issuing from those things described in (a) or (b) above. Notwithstanding the foregoing, Unrestricted Patent Rights does not include those patents and/or patent applications that, during the Term of this Agreement, cease to be Unrestricted Patent Rights pursuant to Article 6.01, 6.03 or 6.05. It is understood and agreed that subject matter that is Patentably Distinct (defined below) from the subject matter described within the Unrestricted Patent Applications is not within the scope of the Unrestricted Patent Rights even though that Patentably Distinct subject matter may fall within the scope of one or more claims of said Unrestricted Patent Rights. For avoidance of doubt, Patentably Distinct improvements relating to the subject matter of the Unrestricted Patent Applications are not Unrestricted Patent Rights under this Agreement. As used herein, "Patentably Distinct" subject matter is subject matter that is novel and unobvious over subject matter described within said Unrestricted Patent Rights.

1.04 "Restricted Patent Rights" means (a) the patents and patent applications listed in Appendix B (hereafter referred to as "Restricted Patent Applications"); (b) any patent (US or foreign) issuing on any .such Restricted Patent Applications; and (c) all divisions, continuations, continuations-in-part (but only to the extent that the subject matter' of each such continuation-in-part application is described in, claimed in, or enabled by the disclosure of the Restricted Patent Applications), re-examinations, reissues, substitutions, or extensions of any Restricted Patent Applications or patent issuing from those things described in (a) or (b) above, Notwithstanding the foregoing, Restricted Patent Rights does not include those patents and/or patent applications that, during the Term of this Agreement, cease to be Restricted Patent Rights pursuant to Article 6.01, 6.03 or 6.05. It is understood and agreed that subject matter that is Patentably Distinct (defined below) from the subject matter described within the Restricted Patent Applications is not within the scope of the Restricted Patent Rights even though that Patentably Distinct subject matter may fall within the scope of one or more claims of said Restricted Patent Rights. For avoidance of doubt, Patentably Distinct improvements relating to the subject matter of the Restricted Patent Applications are not Restricted Patent Rights under this Agreement. As used herein, "Patentably Distinct" subject matter is subject matter that is novel and unobvious over subject matter described within said Restricted Patent Rights.

*** CERTAIN CONFIDENTIAL INFORMATION CONTAINED IN THIS DOCUMENT, MARKED BY [***], HAS BEEN OMITTED AND FILED SEPARATELY WITH THE SECURITIES AND EXCHANGE COMMISSION PURSUANT TO RULE 24B-2 OF THE SECURITIES EXCHANGE ACT OF 1934, AS AMENDED.

2.

1.05 "Patent Rights" means the combination of both Unrestricted Patent Rights and Restricted Patent Rights.

1.06 "Licensed Product" or "Licensed Process" means any product or process or part thereof which:

(a) is covered in whole or in part by an Unexpired Claim contained in the Patent Rights in the country in which any such product, process, or part thereof is made, used or sold; or

(b) uses a process, is manufactured by using a process or is employed to practice a process which is covered in whole or in part by an Unexpired Claim contained in the Patent Rights in the country in which such product, process, or part thereof is used or sold;

1.07 "Licensed Service" means any service that is (a) provided by Licensee to a Third Party and (b) that utilizes a Licensed Product or Licensed Process;

1.08 "Net Sales" means

(a) in the case of Licensed Products or Licensed Processes, billings for Licensee's sales of Licensed Products or Licensed Processes;

(b) in the case of Licensed Services, any and all amounts received by Licensee for its provision of such Licensed Service to a Third Party;

less the sum of the following in both 1.06(a) and (b):

(1) [***];

(2) [***];

(3) [***];

(4) [***];

(5) [***]; and

(6) [***].

No deductions from the amounts defined by 1.06 (a) and (b) may be made for [***]. Licensed Products, Licensed Processes, and Licensed Services are considered "sold" when billed out or invoiced or, in the event such Licensed Services are not billed out or invoiced, when the consideration for sale or provision of the Licensed Product, Licensed Process; or Licensed Services is received by the Licensee. Notwithstanding the foregoing, Net Sales shall not include, and shall be deemed zero with respect to, [***].

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3.

1.09 "Territory" means the world.

1.10 "Inventors" means [***]

1.11 "Know-how" means any research information, technical information, technical data or other information that is (a) generated at DUKE by or under the supervision of one of the Inventors prior to the Term of this Agreement, (b) which is necessary for the practice of the Patent Rights, and (c) is not included in the Patent Rights. However, Know-how does not include any inventions, technology, cell lines, biological materials, compounds, probes, sequences, or methods or any uses thereof to the extent they are covered by Unexpired Claims of issued patents or covered by Unexpired Claims of patent applications which are pending, or (ii) that are patentable but unpatented. Further, Know-how does not include any inventions, technology, cell lines, biological materials, compounds, probes, sequences, or methods or any uses of any of the foregoing that DUKE cannot provide to Licensee because of other legal obligations of DUKE existing as of the Effective Date, such as those arising out of sponsored research, clinical research, material transfer, license, option to license, confidentiality, or other agreements.

1.12 "Third Party" means any individual or other entity other than DUKE, MCMASTER, Licensee, or an Affiliate of either of the foregoing.

1.13 "Term" has the meaning set forth in Article 10.01.

1.14 "Unexpired Claim" means a claim of any pending patent application or any issued, unexpired United States or granted foreign patent that has not been dedicated to the public, disclaimed, abandoned or held invalid or unenforceable by a court or other body of competent, jurisdiction from which no further appeal can be taken.

1.15 Words denoting a singular number include the plural and vice versa.

1.16 Certain other defined terms have the meanings given them elsewhere in this Agreement.

ARTICLE 2 — LICENSE

2.01 Subject to the terms and conditions of this Agreement, DUKE grants to Licensee and Licensee accepts from DUKE an exclusive, sublicenseable license for the Field of Use in the Territory to:

(a)

practice under DUKE's Patent Rights,

(b)

make, have made, use, lease, import, export, sell, and/or offer for sale Licensed Products or Licensed Processes, and

(c)

sell, offer for sale, use, and/or practice Licensed Services.

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4.

The rights granted in this Article 2.01 begin on the Effective Date and last until the end of the Term for which the Patent Rights are granted unless this Agreement is sooner terminated according to its terms.

2.02 Subject to the terms and conditions of this Agreement, DUKE grants to Licensee, and Licensee accepts from DUKE, a non-exclusive license to use Know-how for the Field of Use in the Territory to:

(a)

make, have made, use, lease, import, export, sell, and/or offer for sale Licensed Products or Licensed Processes,

(b)

sell, offer for sale, use, and/or practice Licensed Services

The rights granted in this Article 2.01 begin on the Effective Date and last until the end of the Term for which the Patent Rights are granted unless this Agreement is sooner terminated according to its terms. This non-exclusive license to Know-how may be sublicensed by Licensee, but only as part of the grant by Licensee of a sublicense under all or some of the related Patent Rights in the Field of Use.

2.03 The provisions of Articles 2.01 and 2.02, or any other provisions of this Agreement notwithstanding, Licensee's rights and license are subject to the rights of the U.S. Government pursuant to any grant funding agreement between DUKE and the Government.

2.04 Sublicenses shall include, without limitation, any relationship or agreement in which a Third Party is granted by Licensee any rights—temporary or otherwise—to any of the rights granted to Licensee under this Agreement. Any sublicenses granted under authority of this Agreement are subject to the terms and conditions of this Agreement and shall be no less favorable to DUKE than this Agreement, and not conflict, with the terms hereof. DUKE shall not have any obligations in excess of those of DUKE under this Agreement under any sublicense agreement made by Licensee or any sublicensee. With respect to any other financial considerations paid Licensee with any particular sublicense granted by Licensee under this Agreement, and notwithstanding anything to the contrary in this Agreement, DUKE will receive the following:

(a)

The greater of:

(i) [***] percent [***] of Net Sales (calculated as if Licensee had sold the Licensed Products, Licensed Processes, or Licensed Services sold by the relevant sublicensee) or

(ii) [***] percent [***] of running royalties paid by sublicensees to Licensee on the basis of net sales of Licensed Products, Licensed Processes, and Licensed Services.

Notwithstanding the foregoing, the total payment due DUKE under this Article 2.04(a) with respect to sales of Licensed Products, Licensed

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5.

Processes, and/or Licensed Services by a sublicensee for any applicable time period shall not, in any event, exceed an amount equal to the royalties that would have been due to DUKE for such time period had Licensee (or an Affiliate) itself sold the Licensed Products, Licensed Processes, and/or Licensed Services sold by such sublicensee, based on such sublicensee's net sales of Licensed Products, Licensed Processes, and Licensed Services and calculated pursuant to Articles 1.06, 3.03, 3.04, and 3.05.

(b)

[***] percent [***] of all sublicense income which is not sales-based royalties received by Licensee as consideration for the grant to a Third Party of a sublicense to Patent Rights granted hereunder. Such sublicense non-royalty income includes, but is not limited to, upfront license fees, annual license maintenance fees, payments on milestones, advance payments, option fees, damages recovered from enforcement or defense of the Patent Rights, equity issued to Licensee (to the extent issued solely or in part as consideration for the grant of rights), and the like. However, sublicense non-royalty income shall not include (i) any and all payments, regardless of amount, paid to Licensee as a result of the achievement of development milestones equivalent to those set forth in Appendix C, (ii) amounts received by Licensee from sublicensees in the form of research and development funding, (iii) amounts paid for purchases of equity or debt of Licensee, to the extent any amounts received do not exceed the fair market value of such equity or debt. Such fair market value shall be determined pursuant to Appendix D. Also, sublicense non-royalty income shall not include private or government research or teaching grants to Licensee, and "Alliance Fees" (as defined in Article 3.06). It is agreed that Licensee shall not agree to receive anything of value in lieu of cash payments in consideration for any sublicense without the express prior written permission of DUKE, such permission not to be unreasonably withheld, provided that such permission may be conditioned upon mutual agreement concerning the manner in which DUKE shall be paid its [***] percent [***] share of such consideration under this paragraph (b) and (ii) DUKE shall not, as a condition to such permission, require the payment or provision to DUKE of more than [***] percent [***] of such non-cash consideration unless mutually agreed upon by both Licensee and DUKE. DUKE shall provide Licensee notice of its approval or denial of such non-cash consideration within a reasonable period of time of any written request for such approval by Licensee.

Licensee further agrees to provide DUKE with a copy of any and all sublicenses of rights granted under this Agreement within [***] of execution of each subject sublicense agreement.

2.05 Notwithstanding anything; to the contrary in this Agreement, DUKE and MCMASTER retain the right to practice under the Patent Rights for their own educational, research and clinical purposes without restriction and without payment of royalties or other fees,

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6.

including the right (a) to provide technology claimed in the Patent Rights to governmental laboratories and to other non-profit institutions and (b) to perform research for non-commercial purposes without restriction and without payment of royalties or other fees. DUKE will make reasonable efforts to notify Licensee if it is aware that the exercise of such reserved rights by DUKE or MCMASTER shall include direct use for clinical field trials. In doing so, DUKE will not knowingly grant any for-profit party any rights to Patent Rights in the Field of Use which are licensed to Licensee under this Agreement. It is understood and acknowledged that nothing in this Agreement may be construed to restrict DUKE from using Patent Rights outside the Field of Use and/or Territory as it sees fit (which shall include, but shall not be limited to, the transferring of Patent Rights and technology claimed in the Patent Rights to any Third Party).

2.06 For avoidance of doubt, it is understood and acknowledged that nothing in this Agreement restricts DUKE from using the Know-how as it sees fit (which shall include, but shall not be limited to, the transferring of Know-how to any Third Party).

2.07 In exercising its rights as outlined in Articles 2.05 and 2.06 above, DUKE or the Inventors may occasionally get requests for tangible embodiments of the Patent Rights from government laboratories, other non-profit, and/or other not-for-profit entities. Further, notwithstanding anything in this Agreement to the contrary, DUKE shall have the right to provide materials which are within the scope of the claims of the Patent Rights ("Materials") to governmental laboratories and to other institutions of higher learning and research for non-commercial purposes without payment of royalties or other fees; provided, that each such transfer from an Inventors' laboratories at DUKE shall be subject to an executed materials transfer agreement in the form set forth in Appendix E attached hereto (the "MTA"). The terms of such MTA shall not be substantially modified without the prior written consent of Licensee, such consent not to be unreasonably withheld. Also, at the time, such Materials transfer requests may be forwarded by the Inventors or DUKE to Licensee. Upon receiving such a notification of the request from DUKE or the Inventors on behalf of a governmental or non-profit third party organization, Licensee shall make reasonable efforts to supply reasonable quantities of the Materials to the Third Party under the terms and conditions of the "MTA". DUKE shall make reasonable efforts, but is not obligated, to notify Licensee of all (i) requests to Inventors received by DUKE for tangible embodiments of the Patent Rights and (ii) material transfer or similar agreements entered into on behalf of the Inventors with respect to transfers of tangible embodiments of the Patent Rights (including with such notice, if possible and if not constrained by existing Third Party agreements, a copy of the executed MTA).

2.08 Except as expressly provided herein, the license granted hereunder does not confer any other rights upon Licensee by implication, estoppel or otherwise as to any technology or intellectual property (including, but not limited to, know-how, patent applications, patents, and the like) held by DUKE.

2.09 The research leading to the Patent Rights was funded in part by the U.S. Government, and the parties agree that, notwithstanding any use of descriptive terms such as "exclusive" in Article 2.01 and elsewhere in this Agreement, the U.S. Government has certain rights in the Patent Rights as set forth in 37 CFR 401. Licensee agrees to comply with all

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obligations resulting from such government rights, including, but not limited to, the requirement that any products sold in the United States based upon such technology must be substantially manufactured in the United States to the extent required by 35 U.S.C. Sec. 204, if such statute is applicable.

2.10 In the event Licensee decides to fund research in any Inventor's laboratory at DUKE, Licensee and DUKE shall negotiate in good faith over a sponsored research agreement which may include, to the extent that any option described herein is not at the time restricted by other contractual arrangements by DUKE, (1) the option to (i) include any inventions that are conceived or reduced to practice, solely or jointly, by DUKE faculty, employees, students, staff or other representatives as a result of or in the course of such sponsored research and which are dominated by the Patent Rights or directly relate to the Inventions ("Licensed Improvements") as Inventions under this Agreement, (ii) any patents or patent applications claiming Licensed Improvements as Patent Rights under this Agreement, and (iii) any research information, technical information, technical data or other information related to Licensed Improvements as Know-how under this Agreement and (2) an exclusive first option to negotiate a license to any inventions other Licensed Improvements on commercially reasonable terms as further detailed in such sponsored research agreement.

2.11 DUKE agrees that the license grants in Articles 2.01 and 2.02 above are, with respect to the Joint Invention, related Know-How, and Patent Rights claiming the Joint Invention, made by DUKE on behalf of itself and MCMASTER, as contemplated by the McMaster Agreement. DUKE shall at all times strictly comply with the terms of the McMaster Agreement. DUKE shall use reasonable efforts to promptly inform Licensee of any correspondence sent to or received from MCMASTER (or any agent or representative thereof) that concerns the McMaster Agreement. If and as requested by Licensee, DUKE shall use reasonable good faith efforts to assist Licensee in obtaining any additional documentation or agreements from MCMASTER related to the confirmation and/or assurance of Licensee's exclusive rights to the Joint Invention.

ARTICLE 3 — LICENSE FEE and ROYALTIES

3.01 License Fees—Licensee must pay to DUKE a non-refundable, non-creditable lump sum license fee of:

(a) Thirty- Seven Thousand US dollars (US\$37,000) within [***] from the Effective Date,

(b) [***] by [***] from the Effective Date or at the date when Licensee raises a cumulative total of [***] in equity funding, whichever comes first; and

(c) Two hundred seventy thousand nine hundred eighty-four (270,984) shares of common stock of Licensee ("Shares") issued to DUKE on or before the Effective Date, which will constitute seven and one-half percent (7.5%) of Licensee's issued and outstanding capital stock as of the Effective Date. The Licensee stock issued to DUKE hereunder shall not be subject to dilution until Licensee raises at least \$3,000,000 in

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aggregate equity investment (receipt of such \$3,000,000 in aggregate equity investment, "Financing").

If Licensee issues additional shares of stock prior to Financing (as hereinafter defined), then Licensee will issue to DUKE a number of shares of common stock so that DUKE will own seven and one-half percent (7.5%) of Licensee's issued and outstanding capital stock following such issuance. Upon Licensee's receipt of \$3,000,000 in aggregate equity investment, the Licensee common stock issued to the Foundation will be subject to dilution for on a pari passus basis with the Licensee common stock held by other holders of Licensee common stock.

The following examples are included to illustrate the effect of the foregoing dilution protection:

(i) If Licensee raises \$1,000,000 in equity at a price of \$1.00 per share (an issuance of 1,000,000 shares in such financing), DUKE would receive 75,000 additional shares of common stock as a result of such issuance (7.5% of 1,000,000 shares equals 75,000 shares), and such antidilution rights would continue for the next \$2,000,000 raised; and

(ii) If Licensee raises \$4,000,000 in equity at a price of \$1.00 per share, DUKE would receive additional shares for the first \$3,000,000 raised, but would only receive 225,000 shares (7.5% of 3,000,000 shares issued for first \$3,000,000 raised equals 225,000 shares). Thereafter, the dilution protection rights would terminate.

It is understood and agreed that, notwithstanding anything to the contrary in this Agreement, the Shares provided to DUKE under this Agreement are non-refundable. The Shares are not registered under the Securities Act of 1933, as amended, and may not be transferred unless and until registered or the Licensee has received an opinion of counsel or other evidence satisfactory to the Licensee and its counsel that such registration is not required. The Shares will be (i) issued pursuant to a subscription agreement, in the form attached hereto as Appendix F, which the parties shall execute simultaneously with the execution of this Agreement and (ii) subject to the terms and conditions as set forth in a stock sale agreement, the form of which is attached as Appendix G, between Licensee, DUKE, and other Third Party signatories thereto (the

“Shareholders Agreement”). Subject to the foregoing, Licensee will permit and promptly effect any request from DUKE to transfer any of the Shares initially issued to DUKE to any persons as DUKE will direct, subject to the terms of the Shareholders Agreement, and Licensee, DUKE and such persons will execute such documents and instruments as are reasonably necessary to effect such transfer. It is further understood and agreed that Licensee shall promptly reimburse DUKE for any reasonable, documented out-of-pocket costs, including Third Party attorneys’ fees, incurred by DUKE in effecting any transfer of Shares to DUKE or to any persons as DUKE will direct, up to a maximum total amount of [***] in the aggregate. DUKE and Licensee agree to negotiate in good faith over reasonable or

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9.

customary agreements required by any future equity investors regarding subjecting DUKE’s shares of Licensee common stock to rights of first refusal and co-sale, such rights to terminate on an initial public offering of Licensee stock pursuant to a registration statement filed pursuant to the Securities Act of 1933, as amended, provided that, notwithstanding the foregoing, (i) such agreements shall not in any way limit Duke’s right to additional issuances of stock pursuant to the first three paragraphs of this Section 3.01(c) and (ii) the issuance(s) of Licensee stock to DUKE under this Agreement shall not increase the number of shares of Licensee’s Common Stock issuable upon conversion of Licensee’s Series A Preferred Stock or trigger any other form of antidilution adjustment with respect to Licensee’s Series A Preferred Stock.

Notwithstanding the termination of this Agreement, and any current provisions or amendments or amendments made after the Effective Date to Licensee’s stock sale agreement, the form of which is attached as Appendix G, or any other Licensee documents, in case of dissolution of the Licensee, the Licensee’s Board of Directors will authorize a payment to DUKE of [***] per share for shares granted DUKE in accordance with this Agreement, provided such shares are still owned by DUKE at the time of dissolution and provided that these arrangements may be subordinate to Licensee’s future investors’ financing. Licensee shall pay DUKE such amounts within [***] of dissolution.

3.02 Milestone Payments—Licensee must pay to DUKE the non-refundable, non-creditable milestone payments set forth in Appendix C (hereafter, “Performance Milestone Fees”). Each Performance Milestone Fee is due and payable within [***] of Licensee’s achievement of the relevant milestone.

3.03 Running Royalty—At the times and in the manner set forth in this Agreement, Licensee must pay to DUKE a non-refundable, non-creditable [***] percent [***] running royalty on Net Sales of Licensed Products or Licensed Processes.

3.04 Third Party Royalties—Notwithstanding the foregoing, Licensee may obtain (or has obtained) one or more licenses under patents or patent applications owned by a Third Party (i) as reasonably necessary to avoid infringement thereof by the manufacture, use, or sale of any Licensed Product, Licensed Process, or Licensed Service, (ii) to reasonably avoid infringement-related litigation with respect to such patent(s), as determined by Licensee in its sole discretion, or (iii) in order to practice any Third Party’s rights that could improve, enhance, or modify a Licensed Product, Licensed Process, or Licensed Service (including but not limited to obtaining rights to any therapeutic compound, molecule, peptide, moiety, or sequence, or any other therapeutic agent), as determined reasonably and in good faith by Licensee. If it is necessary for Licensee to pay royalties in order to obtain such licenses from Third Parties such that the aggregates royalties on Net Sales due to Third Parties exceeds [***] percent [***] of Net Sales, Licensee shall be permitted to reduce the royalty due to DUKE by [***] of any such additional royalties payable to Third Parties in excess of [***] percent [***] of Net Sales with respect to such Licensed Product, Licensed Process, or Licensed Service, from the royalty owing to DUKE for sales of that Licensed Product, Licensed Process, or Licensed Service under Article 3.03, provided that the royalty paid to all Third Parties will be decreased proportionately, and that in

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no event shall the royalties otherwise due DUKE be less than [***] percent [***] of the royalties that would be payable to DUKE were DUKE the sole licensor with respect to such Licensed Product, Licensed Process, or Licensed Service.

3.05 Compulsory Licensing. Should a compulsory license be granted, or be the subject of a possible grant, to a third party under the applicable laws of any country in the Territory under the Patent Rights licensed hereunder, Licensee shall notify DUKE, including any material information concerning such compulsory license, and the running royalty rate payable under Articles 3.03 and 3.04 for sales of Licensed Products, Licensed Processes, and Licensed Services in such country will be adjusted to equal any lower royalty rate granted to such Third Party for such country with respect to the sales of such Licensed Products, Licensed Processes, and Licensed Services therein (the “Compulsory Royalty”), provided that (i) during such periods such Third Parties sell or offer for sale under the compulsory license products, processes, or services that compete with the Licensed Products, Licensed Processes, and Licensed Services then marketed and sold by Licensee or its Affiliate in that country and (ii) such Compulsory Royalty shall remain subject to further adjustment consistent with Article 3.04 above.

3.06 Alliance Fee— Within thirty (30) days of the execution of an Alliance (defined below) by Licensee with a Third Party, as elected by DUKE in a timely manner, Licensee will pay DUKE the greater of (i) Two Hundred Thousand US Dollars (US\$200,000) or (ii) [***] percent [***] of the total

value of any Alliance Fees. Licensee shall provide written notice to DUKE immediately upon the formation of any Alliance, such notice specifying the economic terms of such Alliance. "Alliance" shall mean any strategic alliance, partnership, joint venture, manufacturing arrangement, or other business arrangement between Licensee and a commercial Third Party in which (i) a new legal business entity (the "New Entity") is organized by Licensee and/or such Third Party and granted rights by Licensee under the Patent Rights (or assigned this Agreement pursuant to Article 13.01), (ii) Licensee receives a payment as consideration for entering into such transaction, and (iii) Licensee and such Third Party, or in either case, an Affiliate of either of the foregoing, are each issued equity or given voting control interests or future revenues in the New Entity. "Alliance Fees" shall include upfront cash fees, periodic maintenance fees, and other cash payments or non-cash economic consideration actually received by Licensee from such Third Party or the New Entity as consideration for the formation or continuation of an Alliance. Alliance Fees shall not include amounts received by Licensee in the form of research and development funding, payments for Licensee's equity or debt securities (to the extent any amounts received do not exceed the fair market value of such equity or debt), equity or debt investments, performance-based research milestones, royalties or other payments calculated on the basis of net sales or development milestones, or fees for hiring contractors to develop or manufacture all or components of any Licensed Products, Licensed Processes or Licensed Services.

3.07 Minimum Royalties—Licensee's obligation to pay minimum annual royalties begins with the calendar year following the first commercial sale of a Licensed Product, Licensed Process, or Licensed Service. Non-refundable, non-creditable minimum annual royalties are payable to DUKE as specified below. Should the running royalties due for the calendar year be less than the amount specified for minimum annual royalties, the total royalty

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paid for that year (payable with the payment due with respect to the final calendar quarter of such calendar year) by the Licensee to DUKE will be equal to the minimum annual royalty.

Licensee's minimum annual royalties will be at least

(i)

[***] per year for the calendar year which begins January 1 following the first commercial sale of a Licensed Product, Licensed Process, or Licensed Service;

(ii)

[***] per year for the calendar year which begins January 1 following the calendar year with respect to which the first minimum annual royalty stipulated in 3.07.i. above applies; and

(iii)

[***] per year for each calendar year thereafter.

3.08 By the end of the [***] of commercial sales of Licensed Product, Licensed Processor Licensed Services, or by [***], whichever comes first, [***] percent [***] of the minimum royalty paid by Licensee in accordance with Article 3.05 must come from earned income. If this requirement is not met, DUKE may, at its sole discretion, terminate this Agreement upon [***] written notice to Licensee.

3.09 Notwithstanding reports, correspondence or other communications from Licensee, it is understood that DUKE will apply any amounts received from Licensee in accordance with its policies and procedures in effect at the time of receipt.

3.10 All payments due hereunder shall be paid in full, without deduction of taxes or other fees which may be imposed by any government or other entity.

3.11 Licensee must make all payments due to DUKE under this Agreement on or before the date set forth by the terms of this Agreement, or within [***] of any invoice date on invoices received from DUKE. If Licensee fails to pay any amount due to DUKE during the aforementioned time period, then the payments set forth in this Agreement will bear interest until payment is made in full. Interest will be calculated on the balance due at a per annum rate of [***] at the Chase Manhattan Bank (N.A.) (or its successor, as the case may be) on the due date of the payment(s) in question. Amounts due are compounded monthly until the Licensee meets the full financial obligation due at the time of the next payment or invoice due date. However, in no event may any interest calculation hereunder exceed [***]. The payment of such interest does not foreclose DUKE from exercising any other rights it may have as a consequence of the lateness of the payment, including termination in accordance with Article 10.03 herein.

3.12 All payments due to DUKE under this Agreement must be paid in United States Dollars in Durham, North Carolina, or at such place as DUKE may reasonably designate consistent with the laws and regulations controlling in any foreign country. If any currency conversion is required in connection with such payments due, such conversion must be made by using the exchange rate prevailing at Wachovia Bank (N.A.)

(or its successor, as the case may be) on the last business day of the reporting period to which such payments relate.

3.13 When making payments due to DUKE under this Agreement, Licensee shall use commercially reasonable efforts to cite the applicable DUKE file, e.g., "DUKE File #", and

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must be made payable to "Duke University." Such payments, as well as reports due to DUKE in accordance with Articles 5.02 and 5.03, must be sent to DUKE at the following address:

For delivery via the U.S. Postal Service and/or nationally/internationally recognized courier:

DUKE UNIVERSITY

Duke University Technology Licensing

and Venture Development

Attention: Agreement Manager

3100 Tower Blvd. Ste. 1340

Durham, NC 27707 USA

ARTICLE 4 — DUE DILIGENCE REQUIREMENTS

4.01 Licensee must use commercially reasonable efforts to bring Licensed Products, Licensed Processes and/or Licensed Services to market and, once on the market, to sell Licensed Products, Licensed Processes, and/or Licensed Services through a diligent program for exploitation of the Patent Rights throughout the life of this Agreement. The parties agree that the development and commercialization schedule established in attached Appendix H is reasonable. Extensions or changes of any milestone described in Appendix H must be expressly approved by DUKE in writing, such approval not to be unreasonably withheld. DUKE hereby agrees that the efforts of Licensee's Affiliates, sublicensees and Third Party contractors shall be deemed the acts of Licensee for purposes of satisfying this Article 4.01.

4.02 During the Term of this Agreement, Licensee will submit annual progress reports to DUKE by [***] of each year. The progress reports will summarize the progress and results, as well as ongoing plans, with respect to the development and commercialization of Patent Rights. DUKE has the right to one meeting per year with Licensee to discuss such information at a mutually acceptable time and place. Should DUKE's personnel be required by Licensee to consult with Licensee outside of Durham, North Carolina, Licensee will reimburse reasonable travel and living expenses incident to such consulting.

4.03 DUKE may terminate this Agreement in accordance with Article 10.03 if Licensee fails to meet any two (2) of the development/commercialization milestones set forth in Appendix H unless extensions or changes thereof are expressly approved by DUKE in writing, such approval not to be unreasonably withheld.

4.04 In the event that, on or before the [***] after the Effective Date of this Agreement, Licensee has not granted a commercially reasonable license to a Third Party with respect to the technology claimed in the Patent Rights or executed an agreement for the clinical development of a Licensed Product, Licensee shall, as elected by DUKE in its sole discretion and within [***] days of such election by Duke, (i) pay DUKE an amount equal to [***] or (ii) issue DUKE shares of Licensee's common stock having a fair market value (determined in accordance with Appendix D) equal to [***], provided that such payment, or the fair market value of such issuance, shall be creditable towards the payment of any amounts which may

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thereafter become due DUKE under Section 3.02 for milestones subsequently achieved by Licensee.

ARTICLE 5 — REPORTS AND RECORDS

5.01 Licensee must keep full, true and accurate books of accounts and other records containing all particulars necessary to properly ascertain and verify the amounts payable to DUKE hereunder. These books of account must be kept at Licensee's principal place of business or the

principal place of business of the appropriate division of Licensee to which this Agreement relates. These books and the supporting data must be open and available for inspection by DUKE or its designee(s) at all reasonable times for a minimum of 3 years following the end of the calendar year to which they pertain.

5.02 DUKE shall, at its expense (except as specified below), have the right, from time to time and at reasonable times during normal business hours, through an independent certified public accountant, to examine the records of Licensee, including, but not limited to, sales invoice registers, sales analysis reports, original invoices, inventory records, price lists, sublicense and distributor agreements, accounting general ledgers, and sales tax returns, in order to verify the calculation of any royalties and/or fees payable under this Agreement. Such examination and verification shall not occur more than once each calendar year. If any such examination and verification reveals an underpayment by Licensee to DUKE of more than [***] for any quarter examined, Licensee shall immediately pay DUKE the amount of such underpayment plus interest (in accordance with Article 3.10) and shall reimburse DUKE for all reasonable, documented expenses incurred in the examination and verification of the records by the independent certified public accountant.

5.03 By [***] of each year that this Agreement is in effect, Licensee must summarize the status of development of each Licensed Product, Licensed Process, or Licensed Service. The report must, if and as requested and specified by DUKE in advance, provide information at least sufficient to meet DUKE's government reporting requirements and additionally must include summaries of Licensee's plans and commercially reasonable estimated timeframes for testing, development, governmental approvals and marketing/sale of each Licensed Product, Licensed Process, or Licensed Service.

5.04 After the first commercial sale of a Licensed Product, Licensed Processor Licensed Service, and in addition to the reports required under Article 5.03, Licensee must render to DUKE prior to [***] and [***] of each year a written account of the Net Sales of Licensed Products, Licensed Processes and Licensed Services made during the prior [***] period [***] and [***], respectively. Licensee must simultaneously with the submission of the reports pay to DUKE the royalties due on such Net Sales in United States dollars. Reports tendered must include the calculation of royalties by product by country in substantially the format provided in Appendix I. Minimum annual royalties, if any, which are due DUKE for any calendar year must be paid by Licensee along with the written report due on [***] of each year.

ARTICLE 6 — PATENTS

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6.01 DUKE will apply for, prosecute, and maintain during the Term of this Agreement, the Patent Rights in the United States and in any foreign countries designated by Licensee as contemplated below. DUKE will provide reasonable advance written notice of any required foreign patent filings and associated fees. Licensee must inform DUKE in writing which foreign countries, if any, in which Licensee desires patent protection. DUKE and/or its other Licensees of Patent Rights may elect to seek patent protection in countries not so designated by Licensee, in which case DUKE and/or such other Licensees of Patent Rights are responsible for all expenses attendant thereto. However, in such instances, such patent applications will not be Patent Rights and Licensee forfeits all rights under this Agreement to such patent applications and resulting patents in such countries.

6.02 Licensee will be given reasonable opportunities to advise DUKE in the filing, prosecution, and maintenance of Patent Rights and will cooperate with DUKE in such filing, prosecution, and maintenance. At Licensee's request and expense, and reasonably in advance of any filing, fee, or other action deadlines, Licensee shall be provided with copies of all prosecution documents relating to Patent Rights so that Licensee may have the opportunity to offer comments and remarks thereon, such comments and remarks to be given due consideration by DUKE. However, except for the provisions of 6.03, below, all decisions with respect to the filing, prosecution, and maintenance of Patent Rights are reserved solely to DUKE.

6.03 Licensee shall have the right to assume primary responsibility for all activities associated with the prosecution of Unrestricted Patent Rights under this Agreement, provided that it first provides DUKE with written notice of its desire to assume such responsibilities and obtains DUKE's written approval of the legal counsel that Licensee shall retain for such purposes, such approval not to be unreasonably withheld, conditioned or delayed. It is understood and agreed that in the event Licensee assumes such responsibilities, it shall keep DUKE advised as to the status of the Unrestricted Patent Rights by providing DUKE, in a timely manner, with copies of all official documents and correspondence relating to the prosecution, maintenance, and validity of the Unrestricted Patent Rights. Licensee shall consult with DUKE in such prosecution and maintenance, shall diligently seek advice of DUKE on all matters pertaining to the Unrestricted Patent Rights, shall diligently seek reasonably strong and broad claims under the Unrestricted Patent Rights, and shall not abandon prosecution of any Unrestricted Patent Rights or any of the claims of the Unrestricted Patent Rights without first notifying DUKE in a timely manner of Licensee's intention and reason therefore, and providing DUKE with reasonable opportunity to assume responsibility for prosecution and maintenance of the appertaining Unrestricted Patent Rights (which thereafter shall be subject to the provisions of Article 6.01 as regards status as Unrestricted Patent Rights and Licensee's rights therein). All decisions with respect to the prosecution of the Unrestricted Patent Rights by Licensee pursuant to this Article 6.03 shall be made by Licensee, subject to the approval of DUKE, such approval not to be unreasonably withheld or delayed. Licensee's obligations under this Article 6.03 shall include, without limitation, an obligation to inform DUKE in a timely manner (no less than [***] prior to the appertaining filing deadlines) that Licensee will not pursue patents in any non-U.S. country so that DUKE may pursue such patents if it so desires. In such case, upon the date

of such filing of such patent applications by DUKE, such patents and patent applications shall not be considered Unrestricted Patent Rights, Licensee shall be deemed to have forfeited all rights

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under this Agreement to such patent applications and resulting patents, and Appendix A shall be deemed to be so amended. For avoidance of doubt, it is understood that Licensee shall assume direct and full responsibility for payment of expenses it incurs as a result of its assumption of responsibility for prosecution of Unrestricted Patent Rights under this Article 6.03.

6.04 During the Term of this Agreement, payment of all documented fees and costs incurred in the filing, prosecution, and maintenance of the Patent Rights ("Patent Costs") are the responsibility of Licensee, whether such fees and costs were incurred before or after the Effective Date, as further described below. Within [***] of the Effective Date, Licensee shall pay DUKE all Patent Costs incurred before the Effective Date. Such Patent Costs incurred before the Effective Date shall not exceed [***]. Licensee must pay DUKE all Patent Costs incurred after the Effective Date within 30 days of receipt of an invoice for the same, and failure pay such invoice within such [***] period is a default hereunder for which DUKE may terminate this Agreement in accordance with Article 10.03.

6.05 If Licensee provides DUKE with written notification that it will no longer support the filing, prosecution, or maintenance of a specified patent(s) and/or patent application(s) within the Patent Rights, then Licensee's responsibility for fees and costs related to the filing, prosecution, and maintenance of such subject Patent Rights will terminate [***] after DUKE's receipt of such written notification. However, in such instances, [***] after DUKE's receipt of written notification, such patents and/or patent applications will no longer be included in Patent Rights (and Appendix A is deemed to be so amended accordingly), and Licensee surrenders all rights under this Agreement to such patents, patent applications, and any patents issuing therefrom.

6.06 To the extent required by applicable law, Licensee shall mark any Licensed Product sold in the United States and/or their containers, labels, and/or other packaging with all applicable United States patent numbers. All Licensed Products shipped to or sold in other countries shall, if and as applicable, be marked in such a manner as to comply with the patent laws of the country of manufacture or sale.

ARTICLE 7 — INFRINGEMENT OF THIRD-PARTY RIGHTS

7.01 If DUKE or Licensee is charged with infringement of a patent by a Third Party or is made a party in a civil action as a result, in either case, of Licensee's or a sub-Licensee's practice of the Patent Rights under this Agreement, Licensee:

(a)

must assume all costs, expenses, damages, and other obligations for payments incurred as a consequence of such charges of infringement and/or civil action;

(b)

must indemnify, defend, and hold DUKE harmless from any and all damages, losses, liability, and costs resulting from such a charge of infringement or civil action brought against DUKE and attributable to (i) technology added to, incorporated into or sold with a Licensed Product, Licensed Process, or Licensed Service by Licensee or a sub-Licensee, (ii)

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manufacturing processes utilized by Licensee or a sub-Licensee, or (iii) any Licensee's or a sub-Licensee's practice of the Patent Rights under this Agreement; and

(c)

may, if such claim of infringement or civil action is based on patent claims contained in any pending or issued patent included in the Patent Rights, terminate this Agreement effective immediately upon DUKE's receipt of written notice of termination. Thereafter, Licensee has no further liability for claims and/or damages arising subsequent to said date of termination unless Licensee is exercising its license under Article 10.07, in which case Licensee's liability and obligations under this Article shall continue as long as the license granted in Article 10.07 is in effect.

(d)

must use commercially reasonable efforts to secure from any such Third Party a covenant not to sue DUKE, or any of its faculty, students, employees or agents, for any historic and/or ongoing research, educational, or clinical efforts conducted at DUKE that relate to the Patent Rights and/or Know-How, provided that the foregoing shall not be construed to require Licensee to make any payments to such Third Party on DUKE's behalf.

7.02 DUKE will give Licensee assistance, at Licensee's expense, in the defense of any such infringement charge or lawsuit, as may be reasonably required.

ARTICLE 8 — INFRINGEMENT OF DUKE'S PATENT RIGHTS

BY THIRD PARTIES

8.01 Each Party to this Agreement must inform the other promptly in writing of any alleged, potential, or actual infringement of the Patent Rights of which it becomes aware and of any available evidence of infringement by a Third Party of any patents within the Patent Rights.

8.02 If during the Term of this Agreement Licensee becomes aware of any alleged, potential, or actual infringement by a Third Party, Licensee has the first right, but not the obligation, to either:

(a)

enter into a settlement agreement or other agreement (but only in accordance with the provisions of this Agreement) with respect to such infringement; or

(b)

prosecute at its own expense any infringement of the Patent Rights (including the right to enter into any consent judgment or other voluntary disposition of such an action). In the event Licensee prosecutes such infringement, Licensee may, for such purposes, reasonably request to use the name of DUKE as party plaintiff. DUKE, at its reasonable discretion and with the permission of the Board of Governors of DUKE, may agree

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to become a party plaintiff, and costs associated therewith must be borne by Licensee.

8.03 If Licensee undertakes the enforcement and/or defense of the Patent Rights by litigation, including any declaratory judgment action, the total cost of any such action commenced or defended solely by Licensee shall be borne by Licensee. Any recovery of damages or settlement amounts received by Licensee as a result of such action will be applied first in satisfaction of any unreimbursed expenses and attorneys' fees of Licensee relating to the action, and second in satisfaction of unreimbursed legal expenses and attorneys' fees of DUKE, if any, relating to the action. The balance remaining from any such recovery or settlement will be treated in accordance with Article 2.04(b). Licensee is entitled to settle any such litigation by agreement, consent judgment, voluntary dismissal, or otherwise, provided that any such settlement, consent judgment, voluntary dismissal, or other voluntary disposition of such actions which (i) materially limits the scope, validity, or enforceability of patents included in the Patent Rights, (ii) subjects DUKE to any non-indemnified liability or obligation, or (iii) admits fault or wrongdoing on the part of DUKE must be approved by DUKE in writing, such approval not to be unreasonably withheld.

8.04 If Licensee does not institute legal or other material action against any economically material infringing activity within [***] of having been made aware and notified thereof, DUKE has the right, but is not obligated, to prosecute at its own expense any such infringements of the Patent Rights. In furtherance of that right, DUKE may use the name of Licensee as a party plaintiff in any such suit. The total cost of any such infringement action commenced or defended solely by DUKE must be borne by DUKE. Any recovery by DUKE in such action must be applied first in satisfaction of any unreimbursed expenses and attorneys' fees of Licensee relating to the suit, and second toward reimbursement of DUKE's reasonable expenses, including reasonable attorneys' fees, relating to the suit. The balance remaining from any such recovery belongs solely to DUKE.

8.05 In any infringement suit instituted by either party to enforce the Patent Rights, the other party must, at the request and expense of the party initiating such suit, cooperate in all respects and, to the extent possible, have its employees testify when requested and make available relevant records, papers, information, samples, specimens, and the like.

8.06 Any of the foregoing notwithstanding, if at any time during the Term of this Agreement any of the Patent Rights are held invalid or unenforceable in a decision which is not appealable or is not appealed within the time allowed, Licensee has no further obligations to DUKE with respect to its future use or sale of any Licensed Product, Licensed Processor Licensed Service covered solely by such Patent Rights. Nevertheless, in such circumstances Licensee does not have a damage claim or a claim for refund or reimbursement against DUKE.

ARTICLE 9 — GOVERNMENT CLEARANCE, PUBLICATION, EXPORT

9.01 To the extent such clearance is required, Licensee must use commercially reasonable efforts to have Licensed Products, Licensed Processes, and/or Licensed Services developed under this Agreement cleared for marketing in those countries in which Licensee

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intends to sell such Licensed Products, Licensed Processes, and/or Licensed Services. As necessary to accomplish the foregoing, Licensee agrees to file or have filed any necessary data with appropriate government agencies.

9.02 If this Agreement terminates in accordance with Article 10.02, 10.03, or 10.04, Licensee must, within [***] following such termination and at its own expense, assign to DUKE its full interest and title in (a) all market clearance applications concerning Licensed Products, Licensed Processes, or Licensed Services described in Article 9.01 (including all data and documentation relating thereto) and (b) all data, and all documentation related to the data, that solely relate to a Licensed Product, Licensed Process, or Licensed Service and are referenced in such market clearance applications, including, but not limited to, all such in vitro and in vivo pre-clinical data, pharmacology data, toxicology data, human data and the like. Notwithstanding the above, such assignment obligation shall exclude such market applications, data, and documentation directly related to such data (i) generated by the Licensee pursuant or subject to the terms of a sublicense or other contractual arrangement with a Third Party or (ii) which is subject to a security interest, lien, or similar encumbrance for the benefit of a lender to, investor in, or creditor of the Licensee, provided that Licensee in all cases inform such Third Parties of Licensee's assignment obligations to DUKE. Notwithstanding anything to the contrary in this Agreement, once received by DUKE in accordance with this Article 9.02, such information, data, etc. is not the confidential information of Licensee under Article 11 but instead is the confidential information of DUKE. It remains subject to the provisions of Article 11, such as restricted use and non-disclosure.

9.03 It is understood and agreed that the right of publication of the Patent Rights resides in the Inventors and other staff and students of DUKE. Licensee may also publish and/or co-author any publication on the Patent Rights in accordance with academic custom.

9.04 This Agreement is subject to all of the United States laws and regulations controlling the export of technical data, computer software, laboratory prototypes and other commodities and technology. It is understood that DUKE is subject to United States laws and regulations controlling the export of technical data, computer software, laboratory prototypes and other commodities (including the Arms Export Control Act, as amended and the Export Administration Act of 1979), and that its obligations under this Agreement are contingent on compliance with applicable United States export laws and regulations. The transfer of certain technical data and commodities may require a license from the cognizant agency of the United States Government and/or written assurances by Licensee that Licensee will not export data or commodities to certain foreign countries without prior approval of such agency. DUKE makes no promise or representation that a license is not required nor that, if required, it will be issued.

ARTICLE 10 — DURATION AND TERMINATION

10.01 The term of this Agreement (the "Term") will commence on the Effective Date and continue, on a country-by-country basis, until the expiration of all Unexpired Claims in Patent Rights, unless sooner terminated in accordance with the provisions herein. Upon expiration of the Term with respect to a particular country, Licensee shall, notwithstanding

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anything to the contrary, have the perpetual, unrestricted, fully-paid, royalty-free right, with rights of sublicense, to make, use, sell, offer for sale, and import in such country the Licensed Products, Licensed Processes, and Licensed Services sold. For avoidance of doubt, these rights will not be taken as a license from DUKE under any unexpired Patent Rights or under any inventions of DUKE not granted under this Agreement.

10.02 Licensee may terminate this Agreement by giving DUKE written notice at least [***] prior to such termination. Upon termination, Licensee must, except as provided in Article 10.07 below, terminate the manufacture, use, practice, lease, and sale of Licensed Products, Licensed Processes and Licensed Services. It is understood that Licensee remains responsible for the timely payment of all amounts due DUKE under this Agreement through the effective date of the termination.

10.03 (a)

By giving written notice of termination to the other party, either party may immediately terminate this Agreement for the other party's illegal conduct, or plea of guilty or no contest with respect to, intentional fraud or willful misconduct or felony.

(b)

Except for the matters described in 10.03(a), if either party fails to fulfill any of its material obligations under this Agreement, including the failure to make any payment when due, or the failure to submit reports when due, the non-breaching party may terminate this Agreement by giving written notice to the breaching party, as further described in subsection (c) below.

(c)

Any notice of termination must contain a reasonably adequate description of the event or occurrence providing the right to terminate the Agreement. For breaches described in 10.03(b), the party receiving notice of the breach will have the opportunity to cure that breach within [***] of receipt of notice. If the breach is not cured within that time, the termination will be effective as of the [***] after receipt of notice. Licensee's ability to cure a breach of its obligations to achieve certain milestones by a certain date under Section 4.01 will apply only to the first two (2) failures of Licensee to achieve the development/commercialization milestones in Appendix H by the dates specified therein. Any subsequent such failure by Licensee with respect to the achievement of development milestones under Section 4.01 will entitle DUKE to terminate this Agreement upon proper notice.

10.04 If (a) an order for relief is entered against Licensee under the Federal Bankruptcy Code, (b) an order appointing a receiver for substantially all of Licensee's assets is entered by a court of competent jurisdiction, (c) Licensee makes an assignment for the benefit of creditors, or (d) a levy of execution is made upon substantially all of the assets of Licensee and such levy is not quashed or dismissed within [***], this Agreement automatically terminates, effective on the date of such order or assignment or, in the case of such levy, the expiration of such [***] period; provided, however, that such termination will not impair or prejudice any right of remedy that DUKE might have under this Agreement.

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10.05 Licensee must notify DUKE immediately in writing if and when Licensee decides to cease or ceases to pursue commercial development of the Patent Rights as contemplated herein, for a material period of time, at any time prior to the first commercial sale of a Licensed Product, Licensed Process or Licensed Service under this Agreement. At that time, DUKE may terminate this Agreement upon written notice to Licensee, without obligation on the part of DUKE to refund any of the fees or royalties which may have been paid by Licensee prior to such termination

10.06 Within 30 days of expiration or termination of this Agreement, or upon written approval by DUKE for some extended period of time after said [***], Licensee must (i) as directed by DUKE return or destroy all information, data, and any relevant materials provided to Licensee during the term of this Agreement and (ii) destroy all Licensed Products and/or Licensed Processes in a safe and legal manner. Further, Licensee must provide DUKE with a written statement signed by an authorized representative of Licensee certifying the destruction of all Licensed Products and/or Licensed Processes in a safe and legal manner and, if applicable, that all information data, and relevant materials have been destroyed.

10.07 Upon the termination of this Agreement pursuant to this Article 10, Licensee may notify DUKE of the amount of Licensed Products and/or Licensed Processes that Licensee has on hand or in the process of manufacture and Licensee may then, notwithstanding anything to the contrary, sell that amount of Licensed Products and/or Licensed Processes, but no more; provided, however, that Licensee pay DUKE any fees, royalties or other financial consideration as provided for in this Agreement with respect to such Licensed Products and/or Licensed Processes.

10.08 Upon termination of this Agreement for any reason, any sublicensee not then in default will have the right to receive a direct license from DUKE under the terms and conditions set forth in this Agreement, as such are available and as such terms and conditions apply to Licensee. In such case, Licensee agrees to assign, at its own expense, all such sublicenses to DUKE. DUKE shall not have any obligations under such a license in excess of those of DUKE under this Agreement and, if the material terms and conditions of such sublicense are less favorable to DUKE, or conflict, with the terms of this Agreement, such terms may be renegotiated in good faith between DUKE and the sublicensee. Sublicensee must contact DUKE within [***] of termination of this Agreement to initiate a discussion with DUKE concerning any potential renegotiations that may be needed. Any sublicense executed by Licensee or sublicensee must contain language to this effect. Upon the termination this Agreement by Licensee prior to the expiration of all valid claims in the Patent Rights, DUKE shall be granted a fully paid-up, royalty-free, non-exclusive license to practice any new intellectual property developed by Licensee, such license includes rights for DUKE to sublicense to a Third Party Licensee Improvement to such Third Party, under Licensee's rights in any improvements of the Inventions which improvements (i) were developed by Licensee in the course of exercising its rights hereunder (such improvements, "Licensee Improvements"). Notwithstanding the above, such license to DUKE may exclude rights to Licensee Improvements (i) generated by the Licensee pursuant or subject to the terms of a contractual arrangement with a Third Party or (ii) which are

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21.

subject to a security interest, lien, or similar encumbrance for the benefit of a lender to, investor in, or creditor of the Licensee.

10.09 Neither expiration nor termination of this Agreement removes or diminishes any financial obligations to DUKE, which Licensee incurred under this Agreement prior to and as of the effective date of termination.

ARTICLE 11 — CONFIDENTIALITY

11.01 DUKE and Licensee will treat any confidential information disclosed to it by the other party with reasonable care and will not disclose such information to any other person, firm or corporation, except Affiliates bound by the obligations of confidentiality and restricted use set forth in this Article 11. The receiving party may not use the disclosing party's confidential information other than for the benefit of the parties hereto and for the performance of this Agreement. These obligations of non-disclosure and restricted use remain effect for each subject disclosure of confidential information [***] from the date of disclosure. However, neither party is obligated, with respect to confidential information disclosed to it, or any part thereof, which receiving party can demonstrate:

(a) is already known to the receiving party at the time of the disclosure;

(b) becomes publicly known without the wrongful act or breach of this Agreement by the receiving party;

(c) is rightfully received by the receiving party from a Third Party on a non-confidential basis;

(d) is subsequently and independently developed by employees of the receiving party who had no knowledge or benefit of the information, as verified by written records;

(e) is approved for release by prior written authorization of the disclosing party; or

(f) is disclosed pursuant to the requirements of applicable law or pursuant to any judicial or government requirement or order, provided that the party so disclosing (i) takes reasonable steps to provide the other party sufficient prior notice in order to contest such request, requirement or order, (ii) assists the other party, as reasonably requested thereby, in seeking confidential or protective treatment of such information, and (iii) minimizes the extent of any such disclosure, and further provided that such disclosed confidential information otherwise remains subject to the obligations of confidentiality set forth in this Article 11.

11.02 DUKE and Licensee agree that any information to be treated as confidential information under this Article 11 must be (i) disclosed in writing or in another tangible medium

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22.

and must be clearly marked "CONFIDENTIAL" or, if disclosed orally, (ii) summarized and reduced to writing and communicated to the other party within [***] of such disclosure.

11.03 Notwithstanding the foregoing, Licensee may use and disclose any confidential information related to the Patent Rights and Know-how to investors, prospective investors, employees, consultants, and agents with a need to know, collaborators, prospective collaborators, actual or prospective licensees, other actual or prospective strategic partners, actual or prospective acquirors or acquisition targets, actual or prospective banks or bankers, and any other third parties in the chain of development, manufacturing, sales, and/or distribution, but if and only if Licensee obtains from each such recipient written obligations of confidentiality which is at least as protective of DUKE's confidential information as those provided in this Article 11.

11.04 Notwithstanding anything to the contrary in this Agreement, all information relating to filing, prosecution, maintenance, defense, infringement, and the like regarding the Patent Rights (no matter how disclosed) is the confidential information of DUKE and subject to the provisions of this Article 11.

ARTICLE 12 — NOTICES

12.01 It is a sufficient giving of any notice, request, report, statement, disclosure or other communication hereunder if the party giving the same:

(a)

hand delivers such communication; or

(b)

mails such communication, postage prepaid, first class, certified mail; or

(c)

sends such communication, shipping prepaid, by national/international courier service

to the other party at the address given below or as given in Article 3.12, in the case of payments and reports due in accordance with Articles 2.04, 3.01, 3.02, 3.03, 3.06, 3.07, 5.02, 5.03, 5.04, and 6.02.

DUKE Licensee

DUKE UNIVERSITY

Duke University Technology Licensing

and Venture Development

Attention: Agreement Manager

Tower Blvd. Ste.1340

Durham, NC 27707 USA

PHASE BIOSCIENCE, INC.

1822 East N.C. 54, Suite 250

Durham NC 27703

Attn: CEO

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23.

cc: (if of a legal nature)

Office of University Counsel

Duke University

Pratt Street, Suite 4000

Durham, North Carolina 27710

Wyrick Robbins Yates & Ponton LLP

4101 Lake Boone Trail, Suite 300

Raleigh, NC 27607

Attn: Donald R. Reynolds, Esq.

12.02 The date of giving any such notice, request, report, statement, disclosure or other communications, and the date of making any payment hereunder required (provided such payment is received), is the date of the U.S. postmark of such envelope if marked or the actual date of receipt if not marked or if delivered otherwise.

ARTICLE 13 — ASSIGNMENT

13.01 This Agreement is binding upon and inures to the benefit of the respective successors and assigns of the parties hereto. This Agreement may not be assigned by Licensee without DUKE's prior written consent, except that it may be assigned without such consent (i) to an Affiliate of Licensee or any New Entity in an Alliance or (ii) in connection with Licensee's sale or other transfer of all or substantially all of Licensee's business or assets or that part of Licensee's business or assets to which this Agreement relates, merger, acquisition, consolidation, or other similar transaction. Licensee shall give DUKE [***] prior written notice of such assignment or transfer. Any assignment of this Agreement, other than those specified in (i) or (ii) above, without the prior written consent of DUKE shall be void.

ARTICLE 14 — INDEMNITY, INSURANCE, REPRESENTATIONS, STATUS

14.01 DUKE, MCMASTER, and their Boards of Governors, trustees, officers, employees, students, invitees, and agents (collectively, "DUKE Indemnitees") will be indemnified, defended by counsel acceptable to DUKE, and held harmless by Licensee from and against any claim, liability, cost, expense, damage, deficiency, loss or obligation, of any kind or nature (including, without limitation, reasonable attorneys' fees and other costs and expenses of defense) (collectively, "Claims") based upon, arising out of, or otherwise relating to Licensee's exercise of the rights granted under this Agreement, including, but not limited to any such action relating to product liability or the use of Inventions or Licensed Products, Licensed Processes, or Licensed Services by Licensee, Licensee's sublicensees, or their customers or end-users. The previous sentence will not apply to any Claim that is determined with finality by a court of competent jurisdiction to result solely from the gross negligence, willful misconduct, or failure to comply with any applicable laws, rules, or regulations of or by a DUKE Indemnitee.

14.02 Licensee must maintain in force at its sole cost and expense, with licensed and reputable insurance companies, general liability insurance and, prior to the administration of any Licensed Product for human therapeutic use, products liability insurance coverage in amounts reasonably sufficient to protect against liability under Article 14.01 above. DUKE has the right to ascertain from time to time that such coverage exists, such right to be exercised in a reasonable manner.

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24.

14.03 DUKE AND MCMASTER MAKE NO WARRANTIES OF ANY KIND. IN PARTICULAR, THERE ARE NO EXPRESS OR IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE NOR IS THERE A WARRANTY THAT THE USE OF THE PATENT RIGHTS AND/OR KNOW-HOW WILL NOT INFRINGE ANY PATENT, COPYRIGHT, TRADEMARK OR OTHER RIGHTS. IN ADDITION, NOTHING IN THIS AGREEMENT MAY BE DEEMED TO BE A REPRESENTATION OR WARRANTY BY DUKE OR MCMASTER OF THE VALIDITY OF ANY OF THE PATENTS OR THE ACCURACY, SAFETY, EFFICACY, OR USEFULNESS, FOR ANY PURPOSE, OF THE PATENT RIGHTS. DUKE AND MCMASTER HAVE NO OBLIGATION, EXPRESS OR IMPLIED, TO SUPERVISE, MONITOR, REVIEW OR OTHERWISE ASSUME RESPONSIBILITY FOR THE PRODUCTION, MANUFACTURE, TESTING, MARKETING OR SALE OF ANY LICENSED PRODUCT OR LICENSED SERVICE. DUKE AND MCMASTER HAVE NO LIABILITY WHATSOEVER TO LICENSEE OR ANY THIRD PARTIES FOR OR ON ACCOUNT OF ANY INJURY, LOSS, OR DAMAGE, OF ANY KIND OR NATURE, SUSTAINED BY, OR ANY DAMAGE ASSESSED OR ASSERTED AGAINST, OR ANY OTHER LIABILITY INCURRED BY OR IMPOSED UPON LICENSEE OR ANY OTHER PERSON OR ENTITY, ARISING OUT OF OR IN CONNECTION WITH OR RESULTING FROM:

(a) the production, use, practice, lease, or sale of any Licensed Product, Licensed Process or Licensed Service;

(b) the use or practice of the Patent Rights; or

(c) any advertising or other promotional activities.

14.04 Notwithstanding anything to the contrary in this Agreement, it is understood and agreed that it shall be the responsibility of Licensee to secure the necessary rights under any Third Party intellectual property rights that may be required, as determined by DUKE or Licensee, for Licensee, its Affiliates, or their sublicensees to practice the Patent Rights and to exercise any and all of the rights granted under Article 2.

14.05 Neither party is an agent of the other party for any purpose whatsoever.

ARTICLE 15 — USE OF A PARTY'S NAME

15.01 Neither party may, without the prior written consent of the other party:

(a) use in any publication, advertising, publicity, press release, promotional activity or otherwise, any trade-name, personal name, trademark, trade device, service mark, symbol, image, icon, or any abbreviation, contraction or simulation thereof owned by the other party; or

(b) use the name or image of any employee or agent of the other party in any publication, publicity, advertising, press release, promotional activity or otherwise; or

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25.

(c) represent, either directly or indirectly, that any product or service of the other party is a product or service of the representing party or that it is made in accordance with or utilizes the information or documents of the other party.

Notwithstanding the foregoing, Licensee shall have the right to identify DUKE as the licensor and to disclose the terms of this Agreement to actual or prospective investors, strategic partners, investment bankers, and regulatory authorities in connection with its financing, regulatory,

licensing, development, and stockholder relations activities or that it may deem to be required in any prospectus, offering memorandum, or other document or filing prepared in connection with its compliance obligations under applicable securities law or other applicable law or regulation.

ARTICLE 16 — SEVERANCE AND WAIVER

16.01 Each clause of this Agreement is a distinct and severable clause and if any clause is deemed illegal, void or unenforceable, the validity, legality or enforceability of any other clause or portion of this Agreement will not be affected.

16.02 The failure of a party in any instance to insist upon the strict performance of the terms of this Agreement is not a waiver or relinquishment of any of the terms of this Agreement, either at the time of the party's failure to insist upon strict performance or at any time in the future, and such terms will continue in full force and effect.

ARTICLE 17 — TITLES

17.01 All titles and article headings contained in this Agreement are inserted only as a matter of convenience and reference. They do not define, limit, extend or describe the scope of this Agreement or the intent of any of its provisions.

ARTICLE 18 — SURVIVAL OF TERMS

18.01 The provisions of Articles 1, 3, 5, 6.06, 7, 8 (with respect to infringement occurring prior to expiration or termination), 9.02, 9.04, 10.06, 10.07, 10.08, 11, 12, 13, 14.01, 14.04, 14.06, 15, 16, 17, 18, 19, and 20 shall survive the expiration or termination of this Agreement.

ARTICLE 19 — GOVERNING LAW

19.01 This Agreement is entered into in the State of North Carolina and must be interpreted in accordance with and its performance governed by the laws of the State of North Carolina, without reference to its conflicts of laws provisions. Any and all litigation relating to this Agreement or the parties' performance hereunder must be in the State Courts of North Carolina or United States' federal courts having jurisdiction in North Carolina. The parties consent to the jurisdiction of those courts.

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26.

ARTICLE 20 — ENTIRE UNDERSTANDING

20.01 This Agreement represents the entire understanding between the parties, and supersedes all other agreements, express or implied, between the parties concerning the subject matter hereof, and is not subject to any change or modification except by the execution of a written instrument subscribed to by authorized representatives of the parties.

[Signature page to follow.]

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27.

IN WITNESS WHEREOF, the parties have executed this Agreement on the dates set forth below.

DUKE UNIVERSITY LICENSEE

By: /s/ Rose Ritts By: /s/ Gabriel Cipau

Name: Rose Ritts, Ph.D. Name: Gabriel Cipau, Ph.D.

Title: Executive Director, Office of Licensing and Ventures Title: Executive Chairman

Date Date:

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APPENDIX A — UNRESTRICTED PATENT RIGHTS

Duke file [***]

-

[***]

-

[***]

-

[***]

Duke [***]

-

[***]

Duke [***]

-

[***]

Duke [***]

-

[***]

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APPENDIX B — RESTRICTED PATENT RIGHTS

Duke file [***]

-

[***]

-

[***]

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APPENDIX C — MILESTONE FEES

-

[***]—Initiation of the first preclinical toxicology study conducted by or on behalf of Licensee or any sublicensee thereof evaluating the effects of a single dose of a Licensed Product which is an ELP-drug conjugate in rats by or on behalf of Licensee

-

[***]—Filing of 1st IND with respect to a Licensed Product by or on behalf of Licensee or any sublicensee thereof

-

[***]—1st patient enrolled in a clinical trial concerning a Licensed Product conducted by or on behalf of Licensee or any sublicensee thereof

-

***—Filing and acceptance by United States FDA of the 1st NDA submitted by or on behalf of Licensee or any sublicensee thereof concerning a Licensed Product

•

***—Approval by the United States FDA of the 1st NDA submitted by or on behalf of Licensee or any sublicensee thereof concerning a Licensed Product

•

***—Approval by the United States FDA of the 2nd, 3rd and 4th NDA submitted by or on behalf of Licensee or any sublicensee thereof, each of which concerns a previously-unapproved Licensed Product

•

***—Approval by the United States FDA of each NDA submitted by or on behalf of Licensee or any sublicensee thereof for the 2nd indication of a previously FDA-approved Licensed Product

•

***—Approval by the United States' FDA of each NDA submitted by or on behalf of Licensee or any sublicensee thereof for the 3rd indication of a previously FDA-approved Licensed Product

•

***—Approval by the United States FDA of each NDA submitted by or on behalf of Licensee or any sublicensee thereof for the 4th indication of a previously FDA-approved Licensed Product

•

***—First commercial sale of a Licensed Product by Licensee or any sublicensee thereof

•

***—Attainment of cumulative Net Sales of ***

•

***—Attainment of cumulative Net Sales of ***

Each of the milestone payments described above shall only be paid once upon their respective accomplishments, regardless of the number of times such milestones are achieved.

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APPENDIX D — FAIR MARKET VALUE DETERMINATION

For purposes of Article 2.04(b) and 4.04, the fair market value of any equity or debt securities (the "Appraisal Subject") shall be determined pursuant to the following:

a. For any Appraisal Subject consisting of a security traded on a public securities exchange or through the Nasdaq National Market, the fair market value thereof shall be deemed to be the closing price of such security on such exchange on the date prior to the date such security was received;

b. For any Appraisal Subject consisting of a security actively traded over-the-counter, the fair market value thereof shall be deemed to be the closing bid or sale price (whichever is applicable) on the date prior to the date such security was received; or

c. For any Appraisal Subject consisting of securities for which there is no active public market, or for any other form of non-cash consideration, Licensee shall in good faith make a determination of the fair market value of such Appraisal Subject based on all relevant factors (which shall include, with respect to equity securities, appropriate discounts for minority ownership interest and illiquidity) (the "Licensee Value") and inform DUKE thereof in writing as part of the reports required under Article 5. In the event that DUKE disagrees with Licensee's determination of the value of such Appraisal Subject, such value shall be determined by an independent, neutral Third Party reasonably expert in pharmaceutical and/or biotechnology transactions (an "Expert") selected in good faith by Licensee and DUKE. If Licensee and DUKE cannot mutually agree upon such an Expert within ***, then DUKE and Licensee shall each select such an Expert within ***, and those two Experts shall in good faith

select a mutually agreeable Expert ("Independent Expert") within [***] thereafter. The Independent Expert shall determine the value of the Appraisal Subject within [***] of such Expert selection. The expense of such Expert(s) shall be borne equally by DUKE and Licensee. In the event Licensee has underpaid DUKE pursuant to Article 2.04(b) or 4.04 based on any determination of the fair market value of any Appraisal Subject, Licensee shall pay DUKE the amount of such underpayment within [***] of such determination by the appraisal process described above. In the event Licensee has overpaid DUKE pursuant to Article 2.04(b) or 4.04 based on any determination of the fair market value of any Appraisal Subject pursuant to such appraisal process, DUKE shall either, as elected by Licensee, (i) refund the amount of such overpayment to Licensee within [***] of Licensee's request or (ii) credit the amount of such overpayment towards future amounts due DUKE under this Agreement.

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APPENDIX E — MATERIAL TRANSFER AGREEMENT

DUKE

Duke University

("Provider")

to

[Recipient Name Here]

[City, State, and Country where Recipient Located Here] ("Recipient")

Definitions:

Recipient's Scientist:

Original Material:

Progeny: Unmodified descendant from the Original Material, as defined immediately above, such as virus from virus, cell from cell, or organism from organism.

Unmodified Derivatives: Substances created by Recipient which constitute an important unmodified functional sub-unit or expression product of the Original Material, e.g., subclones of unmodified cell lines, purified or fractionated sub-sets of the Original Material such as novel plasmids or vectors, proteins expressed by DNA or RNA, antibodies secreted by a hybridoma.

Material: Original Material plus Progeny and Unmodified Derivatives.

Modifications: Substances created by Recipient which contain/incorporate any form of the Material (Original Material, Progeny or Unmodified Derivatives).

Research Purpose:

Terms and Conditions of this Agreement:

1. (a) The Material, which is the subject of one or more exclusive license agreements between Provider and, _____ a corporation or institution, having a place of business at _____ ("Recipient"), is and remains the property of Provider subject to certain rights granted to Recipient and is to be used by Recipient solely for the non-commercial Research Purpose. Material shall be used at Recipient's facilities and only under the direction of Recipient's Scientist.

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(b) Provider does not claim ownership of Modifications produced as a result of Recipient's research with the material that are not included in the definition of Material above; however, Provider shall retain ownership of any form of the Material included therein.

(c) Except as expressly provided in this Agreement, no rights are provided to Recipient under any patents, patent applications, trade secrets or other proprietary rights of Provider and/or Recipient. This Agreement does not confer to the Recipient any rights or licenses to use the Material or Modifications for profit-making or commercial purposes, such as sale; use in manufacturing; use in drug screening, evaluation, or design programs; provision of a commercial service based upon the Material or Modifications; or use Materials or Modifications as the subject of collaboration or sponsored research agreements under which rights may be granted to a third party (other than the government).

(d) Recipient represents that research with the Material and/or Modifications will not be subject to the terms of any consultant, option, license, or sponsored research agreement in which another party (other than the government) gains rights (including rights by option) to (i) the data arising from research with the Material and/or Modifications and/or (ii) intellectual property arising from research with the Material and/or Modifications.

2. The Recipient's Scientist shall not transfer the Material or Modifications to anyone who does not work under his/her direct supervision at Recipient's institutional facility without the prior written consent of Provider and Recipient. To the extent supplies are available, Provider will make the Material available under a material transfer agreement substantially identical to this Agreement upon request from appropriate scientists at non-profit or governmental institutions for the purpose of replicating Recipient's Scientist's research.

3. (a) If Recipient's research with Material or Modifications results in an invention ("Invention"), Recipient agrees promptly to disclose the Invention in writing to Provider, and Phase Bioscience, Inc. ("Phase"), on a confidential basis. Inventorship shall be determined in accordance with U.S. patent law (whether or not patentable) and ownership shall reflect inventorship.

(b) If Recipient decides not to pursue the further development of an Invention hereunder, Provider may elect to pursue, or permit its designee to pursue, the patenting and/or commercial development of said Invention at its/their own discretion. In the event that Provider and/or its designee so elects to pursue the patenting or commercial development of such an Invention, then Recipient will have the right to use such for its own internal research, education, and/or teaching purposes and for no other purposes.

(c) Provider shall have (i) the right to use each Invention for its internal research purposes without the payment of license fees or royalties and (ii) an exclusive, first option to obtain an exclusive, worldwide, royalty-bearing commercial license for each Invention, exercisable for a period of ninety (90) days from Provider's receipt of the written disclosure thereof. Upon exercise of such option by Provider, each owner of such Invention agrees to make good-faith efforts to negotiate an exclusive license agreement for the Invention with Provider on reasonable commercial terms.

(d) In addition to the rights that Provider may have as a result of co-ownership of Inventions made jointly with the Recipient, Provider shall also have the right to use for its own internal research, education, and/or teaching purposes, and for no other purposes, any and all other Inventions developed through use of the Material or Modifications under this Agreement without payment of license or royalty fees.

4. This Agreement shall not be interpreted to prevent publication or other disclosure of results of research using the Material or Modifications. Recipient and its Scientist agrees to provide appropriate acknowledgment of the source of the Material in all publications and presentations based on use of the

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34.

Material and/or Modifications. Recipient and its Scientist further agree to furnish Provider with a copy of the manuscript or abstract disclosing such results not less than forty-five (45) days prior to submission thereof for publication/disclosure, for review by Provider and Phase. Provider and Phase shall promptly provide Recipient with any comments relating to said publication or presentation and Recipient may proceed with said publication or presentation with due consideration to Provider and/or Recipient's comments. If no response is received from Provider and/or Phase within thirty (30) days of the date the proposed publication/disclosure was received by Provider, it will be conclusively presumed that the publication/disclosure may proceed without delay. If Provider and/or Phase determines that the proposed publication/presentation contains patentable subject matters which require protection, Provider and/or Phase may require the delay of the publication/presentation for an additional period of time not to exceed sixty (60) days for the purpose of allowing the pursuit of such protection. Patent applications shall be prepared, filed, prosecuted and maintained by the owner(s) of the subject patentable intellectual property unless an alternative arrangement is mutually agreed upon by all of the owners of such patentable intellectual property and/or Phase (as appropriate).

5. Any Material delivered pursuant to this Agreement is understood to be experimental in nature, and NEITHER PROVIDER NOR RECIPIENT MAKE ANY REPRESENTATIONS OR EXTEND ANY WARRANTIES OF ANY KIND, EITHER EXPRESS OR IMPLIED. THERE ARE NO EXPRESS OR IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE, OR THAT THE USE OF THE MATERIAL AND/OR MODIFICATIONS WILL NOT INFRINGE ANY PATENT, COPYRIGHT, TRADEMARK, OR OTHER RIGHTS.

6. Recipient agrees to defend, indemnify, and hold harmless Provider from any loss, claim, damage, or liability, of any kind whatsoever, which may arise from Recipient or its Scientist's use, storage or disposal of the Material and/or Modifications, and Recipient assumes liability for damages which may arise from its or its Scientist's use, storage or disposal of the Material and/or Modifications.

7. In no event shall the Material or Modifications be used in human beings (including for diagnostic purposes), and further provided, that any other research involving the Material and/or Modifications (including but not limited to research involving the use of animals and recombinant DNA) shall be conducted in accordance with all federal, state, local and other laws, regulations, and ordinances governing such research including applicable NIH guidelines.

8. Notices or other correspondence required by this Agreement shall be sent via national/international courier service to both Provider and Recipient at the following addresses, respectively:

As to Provider: As to Recipient:

Attn.:

As to Phase:

9. (a) This Agreement will terminate on the earliest of the following dates: (1) when the Material becomes generally available, for example, through reagent catalogs, or (2) on completion of Recipient's proposed research studies with the Material, or (3) on thirty (30) days written notice by either

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35.

Recipient or Provider to the other, or (4) two (2) years from the date that this Agreement is signed by Provider.

(b) On termination of this Agreement, Recipient will discontinue its use of the Material and will, upon direction of Provider, return or destroy the Material. Recipient will also either destroy Modifications or remain bound by the terms of this Agreement as they apply to Modifications.

(c) Paragraphs 1, 2, 3, 4, 5, 6, 7, 8, 9(b), 9(c) and 10 shall survive any termination or expiration of this Agreement.

[This space left blank intentionally]

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36.

10. This Agreement is not assignable without the proper written consent of Provider and Recipient.

Provider Scientist: Recipient's Scientist:

(signature) (date) (signature) (date)

Printed Name: Printed Name:

Provider Approval: Recipient Approval:

(authorized signature) (date) (authorized signature) (date)

Printed Name:

Title:

Address:

Fax: #: _____

E-mail address: _____

Printed Name:

Title:

Address:

Fax: #: _____

E-mail address: _____

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APPENDIX F — SUBSCRIPTION AGREEMENT

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THE SECURITIES SUBJECT TO THIS SUBSCRIPTION AGREEMENT ARE SUBJECT TO RESTRICTIONS ON TRANSFERABILITY AND RESALE AND MAY NOT BE TRANSFERRED OR RESOLD EXCEPT AS PERMITTED UNDER THE SECURITIES ACT OF 1933 (the "1933 Act"), AS AMENDED, AND APPLICABLE STATE SECURITIES LAWS, PURSUANT TO REGISTRATION OR EXEMPTION THEREFROM. INVESTORS SHOULD BE AWARE THAT THEY WILL BE REQUIRED TO BEAR THE FINANCIAL RISKS OF THIS INVESTMENT FOR AN INDEFINITE PERIOD OF TIME.

NAME OF PURCHASER:

DUKE UNIVERSITY

PHASE BIOSCIENCE, INC.

SUBSCRIPTION AGREEMENT

The undersigned (the "Purchaser") hereby subscribes to and agrees to purchase Two Hundred Seventy Thousand Nine Hundred Eighty-Four (270,984) shares of Common Stock (the "Shares") of Phase Bioscience, Inc., a Delaware corporation (the "Corporation"), at a price of \$0.03 per share, for a total purchase price of \$8,129.52 for such shares. The purchase price hereunder shall be considered paid in full upon the execution by Duke University (the "University") of that certain License Agreement dated October 18, 2006 between the Corporation and the University, with consideration taking the form of the University's grant of various intellectual property rights to the Corporation pursuant to such License Agreement, in which the University has directed the Corporation to issue the Shares to the Purchaser.

Section 1. Representation and Warranties of the Purchaser. The Purchaser hereby represents, warrants and agrees as follows:

- (a) The Purchaser is a resident or corporation or institution of or in the State of North Carolina.
 - (b) That the transfer of securities contemplated hereby is made in reliance upon the Purchaser's representation to the Corporation, which by its acceptance hereof the Purchaser hereby confirms, that the Shares to be received by it will be acquired for investment for its own account, not as a nominee or agent, and not with a view to the sale or distribution of any part thereof, and that it has no present intention of selling, granting participation in, or otherwise distributing the same, except to the extent that it may do so to any affiliate of the University. By executing this Subscription Agreement, the Purchaser further represents that it does not have any contract, undertaking, agreement, or arrangement with any person to sell, transfer or grant participations to such person, or to any third person, with respect to any of the Shares.
 - (c) The Purchaser understands that the Shares have not been registered under the 1933 Act on the grounds that the sale provided for in this Agreement and the issuance of securities hereunder is exempt from registration under the 1933 Act, and that the Corporation's reliance on such exemption is predicated in part on the Purchaser's representations set forth herein. The Purchaser realizes that the basis for the exemption may not be present if, notwithstanding such representations, the Purchaser has in mind merely acquiring the Shares for
- *** CERTAIN CONFIDENTIAL INFORMATION CONTAINED IN THIS DOCUMENT, MARKED BY [***], HAS BEEN OMITTED AND FILED SEPARATELY WITH THE SECURITIES AND EXCHANGE COMMISSION PURSUANT TO RULE 24B-2 OF THE SECURITIES EXCHANGE ACT OF 1934, AS AMENDED.
- a fixed or determined period in the future, or for a market rise, or for sale if the market does not rise. The Purchaser does not have any such intention.
- (d) The Purchaser represents that it is an "Accredited Investor" as such term is defined in Rule 501 or Regulation D promulgated under the Securities Act of 1933, as amended.
 - (e) The Purchaser represents that it is experienced in evaluating early-stage university technologies such as those licensed to the Corporation, has such knowledge and experience in financial and business matters as to be capable of evaluating the merits and risks of its investment, and has the ability to bear the economic risks of its investment. The Purchaser further represents that it has had access, during the course of the transactions and prior to its acquisition of Shares, to all such information as it deemed necessary or appropriate (to the extent the Corporation possessed such information or could acquire it without unreasonable effort or expense), and that it has had, during the course of the transactions and prior to its acquisition of Shares, the opportunity to ask questions of, and receive answers from, the Corporation concerning the terms and conditions of the offering and to obtain additional information (to the extent the Corporation possessed such information or could acquire it without unreasonable effort or expense) necessary to verify the accuracy of any information furnished to him or to which it had access.
 - (f) The Purchaser understands that the Shares may not be sold, transferred or otherwise disposed of without registration under the 1933 Act or an exemption therefrom, and that in the absence of an effective registration statement covering the Shares or an available exemption from registration under the 1933 Act, the Shares must be held indefinitely. In particular, the Purchaser is aware that the Shares may not be sold

pursuant to Rule 144 promulgated under the 1933 Act unless all of the conditions of that Rule are met. Among the conditions for use of Rule 144 is the availability of current information to the public about the Corporation. Such information is not now available and the Corporation has no present plans to make such information available. The Purchaser represents that, in the absence of an effective registration statement covering the Shares it will sell, transfer, or otherwise dispose of the Shares only in a manner consistent with its representations set forth herein.

(g) The Purchaser agrees that in no event will it make a transfer or disposition of any of the Shares (other than pursuant to an effective registration statement under the 1933 Act or, to the Corporation's reasonable satisfaction, pursuant to Rule 144), unless and until (i) the Purchaser shall have notified the Corporation of the proposed disposition and shall have furnished the Corporation with a statement of the circumstances surrounding the disposition, and (ii) if requested by the Corporation, at the expense of the Purchaser or transferee, it shall have furnished to the Corporation an opinion of counsel, reasonably satisfactory to the Corporation, to the effect that such transfer may be made without registration under the 1933 Act.

(h) The Purchaser understands that each certificate representing the Shares will be endorsed with a legend substantially as follows:

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

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40.

AMENDED, OR APPLICABLE STATE SECURITIES LAWS. THESE SECURITIES HAVE BEEN ACQUIRED FOR INVESTMENT AND NOT WITH A VIEW TO DISTRIBUTION OR RESALE, AND MAY NOT BE SOLD, MORTGAGED, PLEDGED, HYPOTHECATED OR OTHERWISE TRANSFERRED WITHOUT AN EFFECTIVE REGISTRATION STATEMENT FOR SUCH SECURITIES UNDER THE SECURITIES ACT OF 1933, AS AMENDED, AND ANY APPLICABLE STATE SECURITIES LAWS, OR THE AVAILABILITY OF AN EXEMPTION FROM THE REGISTRATION PROVISIONS OF THE SECURITIES ACT OF 1933, AS AMENDED, AND APPLICABLE STATE SECURITIES LAWS."

(i) The Purchaser understands that no public market now exists for any of the securities issued by the Corporation and that there is no assurance that a public market will ever exist for the Shares.

(j) The Purchaser agrees that during a period, not to exceed 180 days, following the effective date of the initial, effective registration statement of the Corporation filed under the 1933 Act, it shall not, to the extent requested by the Corporation and any underwriter, sell, pledge, transfer, make any short sale of, loan, grant any option for the purchase of, or otherwise transfer or dispose of (other than to donees who agree to be similarly bound) any stock held by it at any time during such period except common stock included in such registration; provided, however, that all "One Percent Stockholders" and all officers and directors of the Corporation enter into similar agreements. For purposes of this Agreement, the term "One Percent Stockholder" shall mean a stockholder of the Corporation who holds at least 1% of the outstanding common stock of the Corporation (assuming conversion of any outstanding preferred stock of the Corporation). In order to enforce the foregoing covenant, the Corporation may impose stop-transfer instructions with respect to the Shares until the end of such period.

Section 2. Representations and Warranties of the Corporation. The Corporation hereby represents, warrants and agrees as follows:

(a) The Corporation is duly organized, validly existing and in good standing under the laws of Delaware. The Company has all requisite power and authority to carry on its business as proposed to be conducted.

(b) The Corporation has full legal power and authority to enter into this Agreement and to carry out and perform its obligations hereunder. The execution, delivery and performance by Corporation of this Agreement and the consummation of the transactions as contemplated hereby have been duly authorized and approved by all necessary action. This Agreement has been duly authorized, executed and delivered by the Corporation and, assuming due authorization, execution and delivery by the other party hereto, constitutes the legal, valid and binding obligation of the Corporation enforceable against the Corporation in accordance with its terms, except as enforceability may be limited by bankruptcy, insolvency, fraudulent transfer, reorganization, moratorium and other similar laws relating to or affecting creditor's rights generally and to general equitable principles.

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41.

(c) The execution and delivery of this Agreement, the consummation of the transactions contemplated hereby and the performance of the Corporation's obligations hereunder will not conflict with, or result in a violation of or default (or event which after passage of time or notice, or both, would constitute a default) under, any provision of any governing instrument applicable to the Corporation or any other agreement or other instrument to which the Corporation is a party or by which the Corporation or any of its properties are bound, or any foreign or domestic permit, franchise, judgment, decree, statute, rule or regulation applicable to the Corporation or the Corporation's business or properties.

[Remainder of page intentionally left blank.]

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42.

IN WITNESS WHEREOF, the parties have duly executed this Agreement as of this 18th day of October, 2006.

CORPORATION:

PHASE BIOSCIENCE, INC.

By: /s/ Gabriel Cipau

Name: Gabriel Cipau

Title: Chairman & CEO

PURCHASER:

DUKE UNIVERSITY

/s/ Rose Ritts

Name: Rose Ritts, PhD

Title: Office of Licensing & Ventures

Address:

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APPENDIX G — SHAREHOLDERS AGREEMENT

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dT BIOSCIENCES, INC.

STOCK SALE AGREEMENT

THIS STOCK SALE AGREEMENT (the "Agreement") is made this 14th day of January 2002 by and among dT Biosciences, Inc., a Delaware corporation (the "Company"), the holders of the Company's Common Stock (the "Common Stock") listed on the Schedule of Common Holders attached as Exhibit A hereto (the "Common Holders") and the holders of the Company's Series A Preferred Stock (the "Series A Stock") as listed on the Schedule of Investors attached as Exhibit B hereto (the "Investors") The Common Holders and Investors shall be collectively referred to herein as the "Stockholders" Capitalized terms not otherwise defined herein shall have the meanings given to them in the Purchase Agreement (as defined below) unless otherwise defined herein..

WHEREAS, each Common Holder is the holder of outstanding shares of Common Stock;

WHEREAS, the Company proposes to obtain equity financing from the Investors pursuant to that certain Series A Preferred Stock Purchase Agreement dated as of the date hereof (the "Purchase Agreement"), by and among the Company and the Investors, which financing the Company and the Common Holders believe to be in the best interests of the Company and its stockholders; and

WHEREAS, the Investors have requested, as a condition to entering into the Purchase Agreement, that the Common Holders enter into this Agreement, and the Common Holders, as an inducement to the investors to enter into the Purchase Agreement, are willing to enter into this Agreement;

NOW, THEREFORE, in consideration of the premises, and the mutual covenants and terms hereof, the receipt and sufficiency of which are hereby acknowledged, the parties hereby agree as follows.

1. Prohibited Transfers. The Stockholders shall not sell, assign, transfer, pledge, hypothecate, mortgage or dispose of, by gift or otherwise, or in any way encumber, all or any part of the Shares (as hereinafter defined) owned by them during the term of this Agreement other than in compliance with the terms of this Agreement. For purposes of this Agreement, the term "Shares" shall mean and include all shares of Common Stock or Preferred Stock of the Company owned by the Stockholders, whether presently held or hereafter acquired.

2. Rights of First Refusal and Co-Sale

2.1 Right of First Refusal (a) If at any time any Stockholder (the "Seller") in good faith desires (or is required) to sell or transfer in any manner any Shares to a bona fide third party other than the Company (the "Buyer"), within a period of 15 days after the Company, the Common Holders, the Investors and the transferees of the Investors (if any) have received notice of such proposed sale pursuant to Section 2.3 (such date of receipt, the "Notice Date"), the Company shall have the right to purchase all of the Shares proposed to be sold or transferred by

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1.

the Seller (the "Offered Shares") at the same price per Share and on the same terms and conditions as involved in such sale or disposition

(b) If the Company does not elect to purchase all of the Offered Shares pursuant to Section 2.1(a), then for a period of 30 days from the Notice Date, each Stockholder (including any transferee of an Investor) shall have the right to require, as a condition to such sale or transfer, that the Seller sell to such Stockholder at the same price per Share and on the same terms and conditions as involved in such sale or disposition up to that percentage (subject to a right of over-allotment) of the Offered Shares expressed by a fraction, the numerator of which is the number of shares of Common Stock and Preferred Stock, on an as-converted into Common Stock basis, then held by the Stockholder (or such transferee of the Investor), and the denominator of which is the aggregate number of all shares of Common Stock and Preferred Stock, on an as-converted into Common Stock basis, then held by all the Stockholders (including transferees of the Investors, if any) Within such 60-day period, each Stockholder may also exercise its right of over-allotment such that if any Stockholder fails to exercise its right hereunder to purchase its pro rata portion of the Shares proposed to be sold by the Seller, the other Stockholders may, by notifying the Seller of such Stockholder's desire to acquire more than its pro rata share as part of its exercise notice pursuant to Section 2.3 below, purchase the non-purchasing Stockholder's portion on a pro rata basis

(c) Notwithstanding the foregoing, in the event that the Company and the Stockholders do not purchase all of the Offered Shares, then the Seller may sell all of the Offered Shares to the Buyer, except as provided in Section 2.2.

2.2 Right of Co-Sale. If at any time a Seller desires (or is required) to sell or transfer in any manner any Shares pursuant to the terms of a bona fide offer received from a Buyer, each Investor (or any transferee of the Investor) shall have the right, in lieu of exercise of its right of first refusal, to require, as a condition to such sale or transfer, that the Buyer purchase from the Investor (or such transferee) at the same price per share and on the same terms and conditions as involved in such sale or disposition that percentage of the Offered Shares (regardless of whether the shares consist of Preferred Stock of the Company or Common Stock issued upon conversion of such Preferred Stock) expressed by a fraction, the numerator of which is the number of shares of Preferred Stock, on an as-converted into Common Stock basis, and Common Stock then held by the Investor (or such transferee), and the denominator of which is the aggregate number of shares of Preferred Stock, on an as-converted into Common Stock basis, and Common Stock then held collectively by all the Investors, their transferees and the Common Holders

2.3 Notice. In the event any Seller proposes to undertake a transfer of Shares, it shall give the Company, Common Holders, Investors, and transferees of the Investors, if any, written notice of its intention, including a copy of any written offer made by any proposed purchaser of such Shares, describing in reasonable detail the purchaser(s), price and general terms upon which the Seller proposes to transfer Shares. The Company shall have 15 days, and the Stockholders (including transferees of the Investors, if any) shall have 30 days from the date of any such notice (as provided in Section 2.1) to either (a) exercise the right of first refusal

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2.

under Section 2.1 for the price and upon the general terms specified in the notice by giving written notice to the Seller and stating therein the quantity of Shares to be purchased, or (b) if applicable, exercise the right of co-sale under Section 2.2 hereof by giving written notice to the Seller and stating therein the quantity of shares to be included in the transfer. The closing of the transfer of Shares covered by any such exercise of rights by the Company or Stockholders pursuant to Section 2.1 or 2.2 shall occur on the date, if any, set forth in the Seller's notice pursuant to Section 2.3 or on such other date as the parties may agree, provided that if no date is so specified the closing shall occur on the date 30 days after the date of the Seller's notice pursuant to Section 2.3, or on such other date as the parties may agree. At the closing, the selling parties shall deliver certificates registered in the names of the buying parties against payment of the purchase price therefor on the terms described in the Seller's notice pursuant to Section 2.3.

3. Permitted Transfers The rights set forth in Section 2 hereof shall not apply to: (a) any transfer of Shares by a Stockholder by gift or bequest or through inheritance to, or for the benefit of, any spouse, ancestor or descendant of a Seller; (b) any transfer of Shares by a Stockholder to a trust for the benefit of any spouse, ancestor or descendant of a Stockholder; (c) any transfer of Shares by a Stockholder to an affiliate of such Stockholder or by a Stockholder which is a partnership to a partner of such partnership or retired partner who retires after the date hereof, or to the estate of any such partner or the transfer by any partner in accordance with (a) and (b) above; and (d) any sale of Common Stock in a public offering pursuant to a registration statement filed by the Company with the Securities and Exchange Commission In the event of any transfer pursuant to (a), (b) or (c), the transferee of the Shares shall hold the Shares so acquired with all the rights conferred by, and subject to all the restrictions imposed by, this Agreement.

4. Termination. The rights set forth in Section 2 hereof shall terminate upon the earliest to occur of the following: (a) the effective date of a merger of the Company with or into another corporation in which more than 50% of the voting power of the Company is disposed of, or the sale of substantially all of the assets or stock of the Company; or (b) the effective date of a registration statement under the Securities Act of 1933, as amended, relating to a bona fide, firm commitment underwriting of the Company's Common Stock pursuant to which the Preferred Stock of the Company would be converted into Common Stock under the terms of the Company's then current Certificate of Incorporation

5. Specific Performance. The rights of the parties under this Agreement are unique and, accordingly, the parties shall, in addition to such other remedies as may be available to any of them at law or in equity, have the right to enforce their rights hereunder by actions for specific performance to the extent permitted by law.

6. Legend. Each certificate held by or issued to the Common Holders or the Investors, whether now outstanding or subsequently issued, shall be surrendered to the Company for endorsement or be endorsed by the Company prior to its issuance with substantially the following legend:

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3.

THE SECURITIES REPRESENTED BY THIS CERTIFICATE ARE SUBJECT TO A STOCK SALE AGREEMENT AMONG THE HOLDER OF THESE SECURITIES AND CERTAIN OTHER HOLDERS OF THE ISSUERS SECURITIES BY ACCEPTING ANY INTEREST IN SUCH SECURITIES, THE PERSON ACCEPTING SUCH INTEREST SHALL BE DEEMED TO AGREE TO AND SHALL BECOME BOUND BY ALL OF THE PROVISIONS OF SUCH AGREEMENT COPIES OF SUCH AGREEMENT MAY BE OBTAINED UPON WRITTEN REQUEST BY THE HOLDER OF RECORD OF THIS CERTIFICATE TO THE SECRETARY OF THE CORPORATION AT THE PRINCIPAL EXECUTIVE OFFICES OF THE CORPORATION.

Nothing in this Agreement should be construed as a modification or amendment of any restrictions on transfer under applicable federal or state securities laws.

7. General Provisions

7.1 Governing Law. This Agreement shall be governed by and construed under the laws of the State of North Carolina as applied to agreements among North Carolina residents, made and to be performed entirely within the State of North Carolina.

7.2 Entire Agreement. This Agreement constitutes the entire agreement among the parties with respect to the subject matter hereof and supersedes all prior agreements and understandings between them or any of them as to such subject matter Without limitation of the foregoing, to the extent of any inconsistency therein, this Agreement shall supersede any conflicting agreements between the Company and the Common Holders relating to the sale of shares by such Common Holders This Agreement shall be binding upon and shall inure to the benefit of the parties hereto and their heirs, executors, legal representatives, successors and permitted transferees, except as may be expressly provided otherwise herein.

7.3 Amendments. Except as otherwise expressly provided herein, this Agreement may be amended only upon the written consent of the holders of a majority of the then-outstanding Common Stock held by the Common Holders, the Company and the holders of at least a majority of the then-outstanding Series A Stock and/or Common Stock issued on conversion thereof, held by the Investors Notwithstanding anything to the contrary in this Section 7.3, the Company shall be entitled to include additional purchasers of its Series A Stock pursuant to the Purchase Agreement as parties to this Agreement, and to treat such Purchasers as "Investors" hereunder, by amending Exhibit..13 attached hereto and providing such Exhibit R, as amended, to the other parties to this Agreement.

7.4 Severability. In the case anyone or more of the provisions contained in this Agreement shall for any reason to be held to be invalid, illegal or unenforceable in any respect, such invalidity, illegality or unenforceability shall not affect any other provision of this Agreement and such invalid, illegal and unenforceable provision shall be reformed and construed so that it will be valid, legal, and enforceable to the maximum extent permitted by law.

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4.

7.5 Notice. Any notice, demand or request required or permitted to be given by either the Company or a Common Holder pursuant to the terms of this Agreement shall be in writing and shall be deemed given when delivered personally or deposited in the United States mail, first class with postage prepaid, and addressed to the parties at the addresses of the parties set forth at the end of this Agreement or such other address as a party may request by notifying the other in writing Notices to the Investors and transferees of the investors, if any, shall be given by similar means at the addresses) of the investors and transferees of the Investors, if any, on the stock records of the Company.

7.6 Delays or Omissions. Any party's failure to enforce any provision or provisions of this Agreement shall not in any way be construed as a waiver of any such provision or provisions, nor prevent that party thereafter from enforcing each and every other provision of this Agreement The rights granted both parties herein are cumulative and shall not constitute a waiver of either party's right to assert all other legal remedies available to it under the circumstances.

7.7 Intent. The Common Holders agree to execute upon request any further documents or instruments necessary or desirable to carry out the purposes or intent of this Agreement.

7.8 Counterparts. This Agreement may be executed in any number of counterparts, each of which shall be enforceable against the parties actually executing such counterparts, and all of which together shall constitute one instrument

[Execution page to Stock Sale Agreement follows]

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5.

IN WITNESS WHEREOF, the parties have executed this Stock Sale Agreement as of the day and year first set forth above.

COMPANY: dT BIOSCIENSES INC.

By: /s/ Donald J. Rose

Name: Donald J. Rose

Title: President

INVESTORS: CATALYSTA SEED FUND I, LP

By: Catalysta Ventures, LLC

its general partner

By:

Name:

Title:

CATALYST A-COOPER SEED FUND I, LP

By: Catalysta Ventures, LLC

its general partner

By:

Name:

Title:

HOWARD CLARK

By:

COMMON HOLDERS: WRYP FOUNDERS FUND

By: /s/ James M. Yates (SEAL)

(Signature)

James M. Yates

(Printed Name)

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IN WITNESS WHEREOF, the parties have executed this Stock Sale Agreement as of the day and year first set forth above.

COMPANY: dT BIOSCIENSES INC.

By:

Name:

Title:

INVESTORS: CATALYSTA SEED FUND I, LP

By: Catalysta Ventures, LLC

its general partner

By: /s/ Clay B. Thorp

Name: Clay B. Thorp

Title: Manager

CATALYST A-COOPER SEED FUND I, LP

By: Catalysta Ventures, LLC

its general partner

By: /s/ Clay B. Thorp

Name: Clay B. Thorp

Title: Manager

HOWARD CLARK

By:

COMMON HOLDERS: (SEAL)

(Signature)

(Printed Name)

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IN WITNESS WHEREOF, the parties have executed this Stock Sale Agreement as of the day and year first set forth above.

COMPANY: dT BIOSCIENSES INC.

By:

Name:

Title:

INVESTORS: CATALYSTA SEED FUND I, LP

By: Catalysta Ventures, LLC

its general partner

By:

Name:

Title:

CATALYST A-COOPER SEED FUND I, LP

By: Catalysta Ventures, LLC

its general partner

By:

Name:

Title:

HOWARD CLARK

By: /s/ Howard Clark III

COMMON HOLDERS: (SEAL)

(Signature)

(Printed Name)

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IN WITNESS WHEREOF, the parties have executed this Stock Sale Agreement as of the day and year first set forth above.

COMPANY: dT BIOSCIENSES INC.

By:

Name:

Title:

INVESTORS: CATALYSTA SEED FUND I, LP

By: Catalysta Ventures, LLC

its general partner

By:

Name:

Title:

CATALYST A-COOPER SEED FUND I, LP

By: Catalysta Ventures, LLC

its general partner

By:

Name:

Title:

HOWARD CLARK

By:

COMMON HOLDERS: /s/ A. Chilkoti (SEAL)

(Signature)

Ashutosh Chilkoti

(Printed Name)

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IN WITNESS WHEREOF, the parties have executed this Stock Sale Agreement as of the day and year first set forth above.

COMPANY: dT BIOSCIENCES INC.

By:

Name:

Title:

INVESTORS: CATALYSTA SEED FUND I, LP

By: Catalysta Ventures, LLC

its general partner

By:

Name:

Title:

CATALYST A-COOPER SEED FUND I, LP

By: Catalysta Ventures, LLC

its general partner

By:

Name:

Title:

HOWARD CLARK

By:

COMMON HOLDERS: /s/ Daniel Meyer (SEAL)

(Signature)

Daniel Meyer

(Printed Name)

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IN WITNESS WHEREOF, the parties have executed this Stock Sale Agreement as of the day and year first set forth above.

COMPANY: dT BIOSCIENSES INC.

By:

Name:

Title:

INVESTORS: CATALYSTA SEED FUND I, LP

By: Catalysta Ventures, LLC

its general partner

By:

Name:

Title:

CATALYST A-COOPER SEED FUND I, LP

By: Catalysta Ventures, LLC

its general partner

By:

Name:

Title:

HOWARD CLARK

By:

COMMON HOLDERS: /s/ Clay B. Thorp (SEAL)

(Signature)

Clay B. Thorp

(Printed Name)

Manager, Catalysta Ventures, LLC

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APPENDIX H — DEVELOPMENT SCHEDULE

-

Licensee shall have received \$1.5M in total equity financing by Jan 1, 2008.

-

Licensee initiates preclinical toxicology study evaluating the effects of a single dose of a Licensed Product which is an ELP-drug conjugate in rats by or on behalf of Licensee within [***] of the Effective Date of this Agreement.

-

Licensee shall have received a total of \$3.0M in total equity financing (including, for purposes of such determination, the \$1.5M referenced above) by Jan 1, 2009.

•

Licensee has granted a commercially reasonable license to a Third Party with respect to the technology claimed in the Patent Rights or executed an agreement for the clinical development of a Licensed Product on or before the [***] after the Effective Date.

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APPENDIX I-ROYALTY REPORT FORM

ROYALTY REPORT for period ending _____

Duke File # _____

Country Product Sales in

<Month> Sales in

<Month> Sales in

<Month> Sales in

<Month> Sales in

<Month> Sales in

<Month> TOTAL GROSS

SALES Reductions

to Sales TOTAL NET

SALES % Royalty

Due TOTAL

ROYALTY DUE

SubTOTAL x Country

SubTOTAL x Country

GRAND TOTAL

ROYALTIES PAID

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APPENDIX J

MCMASTER AGREEMENT

*** CERTAIN CONFIDENTIAL INFORMATION CONTAINED IN THIS DOCUMENT, MARKED BY [***], HAS BEEN OMITTED AND FILED SEPARATELY WITH THE SECURITIES AND EXCHANGE COMMISSION PURSUANT TO RULE 24B-2 OF THE SECURITIES EXCHANGE ACT OF 1934, AS AMENDED.

INTERINSTITUTIONAL AGREEMENT

THIS AGREEMENT is made effective on this 21 day of April, 2006 ("EFFECTIVE DATE") between McMaster University having a place of business at 1280 Main Street West, Hamilton, ON, Canada L8S 4L8 (hereinafter referred to as "UNIVERSITY") and DUKE University, a not-for-profit educational, research, and healthcare institution having a place of business in Durham, North Carolina 27707 (hereinafter referred

to as "DUKE");

WITNESSETH THAT:

WHEREAS, inventors at UNIVERSITY and at DUKE have jointly invented [***], filed with DUKE's Office of License & Ventures on [***], as Duke File [***] and University file [***] (hereinafter referred to as "INVENTION"); and

WHEREAS, UNIVERSITY certifies that there are no intellectual property constraints on the technology resulting from research funding the development of the INVENTION; and

WHEREAS, the inventors have each assigned their rights to the INVENTION to their respective Institutions; and

WHEREAS, UNIVERSITY and DUKE wish to act jointly in pursuing patent protection and in offering options on licenses and licenses to others under the patent rights pertaining to said INVENTION; and

WHEREAS, UNIVERSITY and DUKE wish to provide for the handling and division of the monies received from any option to license or license under said patent rights;

NOW, THEREFORE, in consideration of the premises and of the mutual covenants and agreements contained herein and of other good and valuable consideration, the parties have agreed and do hereby agree as follows:

1.

DUKE will retain counsel of its choosing to prepare and prosecute patent applications and enforce patents directed to the INVENTION. Patent applications shall be assigned jointly to UNIVERSITY and DUKE, each of which shall have interest in said INVENTION disclosed and claimed therein, as well as any patent issuing thereon in accordance with the following inventor contributions: DUKE interest shall be [***], UNIVERSITY interest shall be [***]. DUKE will consult with and keep UNIVERSITY fully informed as to the preparation, filing, prosecution and maintenance of the patent application(s) and any patent(s) issuing thereon.

2

U.S. and foreign patent applications pertaining solely to the INVENTION shall be filed, prosecuted and enforced as mutually agreed upon between UNIVERSITY and DUKE, and the parties will share the expenses thereof as provided in Section 3 hereof if either UNIVERSITY or DUKE objects to the filing or continued prosecution of an application or enforcement of a patent in a particular country, the other party may proceed at its own expense. If either party proceeds on its own, the party declining to proceed shall have no rights or interests in any patent rights for said country(ies) in which it declines to proceed.

3.

[***] of legal expenses incurred by DUKE In filing, prosecuting, maintaining, and enforcing patents, U S. and foreign, shall be reimbursed by UNIVERSITY, unless UNIVERSITY has objected to the filing of patents in one or more countries as provided herein, in which case DUKE shall be solely responsible for legal expenses in that country(ies) where it has pursued patent(s) on its own. Non-payment of reimbursable legal expenses shall be considered a breach of this Agreement.

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4.

UNIVERSITY and DUKE herewith agree that Continuation, Continuation-in-part, and divisional patent applications pertaining to the INVENTION, future technologies based on the INVENTION or otherwise associated with the INVENTION shall be filed as determined in good faith and in accordance with the inventorship of such applications. Such determination and agreement, including but not limited to possible division of patent expenses and royalty or other income, shall be documented by an addendum executed by the parties.

5.

Licensing of said INVENTION shall only be by DUKE on behalf of both parties, UNIVERSITY shall not independently grant a license to a third party without agreement from DUKE. DUKE shall take the lead In Identifying potential licensees and negotiating license agreement(s) following consultation with UNIVERSITY.

6.

NET ROYALTIES (defined below) received pursuant to options on licenses and licenses under the patent rights of said INVENTION shall be divided between UNIVERSITY and DUKE as follows – [***] of said net royalties to UNIVERSITY, and [***] of said net royalties to DUKE. For the purposes of this article the term NET ROYALTIES' shall mean the net amount received under license agreement(s), including royalties and other income, but specifically excluding sponsored research grants, first less [***] administrative cost recovery to DUKE and then less patent expenses incurred by each party. Each party will be solely responsible for distributing to its respective inventors its share of net royalties in accordance with its own policy.

7.

Duke shall keep accounts of all received NET ROYALTIES and all patent expenses expended by it and shall permit UNIVERSITY or a certified public accounting firm acceptable to DUKE, to examine such accounts in order to verify the calculation of Net Income. Such examinations will occur not more than once each year and if they occur they will occur solely at the expense of UNIVERSITY.

8

Duke shall submit to UNIVERSITY an annual report, setting out a brief summary of the status of all patent(s) and patent application(s) related to the INVENTION.

9

This Agreement shall become effective as of the EFFECTIVE DATE above, and unless terminated as provided in this article, shall terminate with the expiration of the last to expire patent issued on the INVENTION, on abandonment of all patent applications on the INVENTION (provided such abandonment is by mutual consent) or upon the termination of all license agreements relating to the INVENTION, whichever event shall last occur.

9.1.

Either UNIVERSITY or DUKE may terminate this Agreement and its rights and obligations hereunder by providing [***] written notice of termination to the other party. The terminating party, after providing notice of its intentions, will proceed to meet all obligations, financial or otherwise, to the other party by the end of the [***] notice period, including any steps reasonably necessary to perfect legal rights to the invention in the remaining party and to enable the remaining party to properly manage any pending or issued patents.

9.2.

If either UNIVERSITY or DUKE elects to terminate in the manner provided in paragraph 7 1 (above), it shall forfeit all rights to the INVENTION and to any pending or issued patents, except that the terminating party shall maintain the right to practice the INVENTION and patent rights for its internal research, clinical and educational purposes. However, if the remaining party subsequently licenses the INVENTION and receives royalty or other income thereunder, the party having terminated this Agreement shall be entitled to have any unreimbursed patent expenses that were incurred while the Agreement was in force paid from such Income, but only after the remaining party has recovered its expenses in full. After the out-of-pocket patent expenses of the terminating

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Page 2 of 4

party have been reimbursed in full, that party shall have no further rights whatsoever to any income from any license agreement(s) related to the INVENTION and to patents related thereto.

9.3.

Either party may immediately terminate this Agreement for fraud, willful misconduct, or illegal conduct of the other party upon written notice of same to that other party. Except as provided above, if either party fails to fulfill any of its obligations under this Agreement, the non-breaching party may terminate this Agreement, upon written notice to the breaching party, as provided below. Such notice must contain a full description of the event or occurrence constituting a breach of the Agreement. The party receiving notice of the breach will have the opportunity to cure that breach within [***] of receipt of notice. If the breach is not cured within that time, the termination will be effective as of the thirtieth (30th) day after receipt of notice.

9.4.

If either UNIVERSITY or DUKE terminates this Agreement for breach by the other party in the manner provided in paragraph 7.3 (above), the effect of such termination shall be that the breaching party shall forfeit all rights to the INVENTION and to any pending or issued patents. The breaching party shall maintain the right to practice the INVENTION and patent rights solely for its non-commercial internal research, clinical and educational purposes. However, if the remaining party subsequently licenses the INVENTION and receives royalty or other Income thereunder,

the breaching party shall be entitled to have any unreimbursed patent expenses that were incurred while the Agreement was in force paid from such income, but only after the remaining party has recovered its expenses in full. After the out-of-pocket patent expenses of the breaching party have been reimbursed in full, the breaching party shall have no further rights whatsoever to any income from any license agreement(s) related to the INVENTION and to patents related thereto.

10

Nothing in this Agreement shall prohibit either UNIVERSITY or DUKE from assigning to a third party its respective interest in said INVENTION or in any patent issuing thereon. Any such assignment shall include the obligations of this Agreement.

11.

Neither party to this Agreement extends any warranties of any kind, either express or implied, including but not limited to the warranties of merchantability or fitness for a particular purpose, with respect to the INVENTION. In addition, each of the parties to this Agreement expressly disclaims and does not warrant that the practice of the INVENTION will not infringe any patent, copyright, trademark, or other rights of third parties. Neither party to this Agreement will make statements, representations, or warranties, or accept liabilities or responsibilities, that are inconsistent with this Paragraph.

12

Duke will ensure that all license agreements based on the INVENTION contain an indemnity by the third party in favour of DUKE and UNIVERSITY, their Boards of Governors, officers, employees, faculty, students, invitees, and agents from and against any and all claims arising out of the exercise by such third party of its rights under a licence agreement, including without limiting the generality of the foregoing, against any damages or losses, consequential or otherwise, arising from or out of the use of the INVENTION or products licensed under the COMMERCIALIZATION AGREEMENT by the third party or its sublicensees, or their customers or end-users.

13.

All notices and communications hereunder shall be forwarded to:

As to UNIVERSITY:

McMaster University

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Page 3 of 4

Office of Research Contracts and Intellectual Property (ORCIP)

McMaster Innovation Park

If by mail: 1280 Main St. W. Hamilton, ON L8S 4L8

If by courier: 175 Longwood Rd, S, Hamilton, ON

Attn: Sumeet Deng

As to DUKE:

Duke University

Office of Licensing & Ventures 3100 Tower Blvd

Suite 1340

Durham, NC 27707

Attn: Agreement Coordinator

14.

All notices and communications in relation to financial consideration contemplated under this Agreement, including but not limited to invoices for patent expense reimbursement shall be forwarded to:

As to UNIVERSITY:

McMaster University

Office of Research Contracts and Intellectual Property (ORCIP)

McMaster Innovation Park

If by mail: 1280 Main St. W. Hamilton, ON L8S 4L8

If by courier: 175 Longwood Rd. S. Hamilton, ON

Attn: Sumeet Deng

As to DUKE:

Duke University

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Page 4 of 4

FIRST AMENDMENT TO LICENSE AGREEMENT

THIS FIRST AMENDMENT is executed to be effective April 20, 2007 ("Effective Date") by and between Phase Bioscience, Inc., a North Carolina corporation ("LICENSEE"), and DUKE University, a North Carolina not-for-profit corporation ("DUKE").

WHEREAS, LICENSEE and DUKE executed and entered into that certain License Agreement dated October, 2006 (the "License Agreement"); and

WHEREAS, in connection with a proposed license of additional intellectual property, DUKE and LICENSEE have agreed to amend the License Agreement as set forth below.

NOW THEREFORE, in consideration of the mutual agreements set forth herein, and for other good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, the parties hereto agree as follows:

1. Amendment. The License Agreement shall be amended as follows:

(A) Paragraph 1.02 is deleted in its entirety and replaced with the following:

"Field of Use" means (i) all fields of use except in vitro, surfaced-based clinical diagnostics for Unrestricted Patent Rights (for avoidance of doubt, all other fields including but not limited to in vitro clinical diagnostics that are solution-based are included for Unrestricted Patent Rights) and (ii) all fields for use for Restricted Patent Rights.

(B) Paragraph 1.05 is deleted in its entirety and replaced with the following:

"Patent Rights" means the either or both Unrestricted Patent Rights and Restricted Patent Rights. For the purposes of clarification, the rights in Patent Rights granted to Licensee hereunder include the rights to both Unrestricted Patent Rights and Restricted Patent Rights. In addition, Licensee's obligations under this Agreement with respect to Patent Rights apply to either or both Unrestricted Patent Rights and Restricted Patent Rights, alone or in combination. For example if a milestone is met or an Alliance is created by Licensee such as in Article 3.02 and 3.06 respectively by the use or practice of the patent rights associated with only one of either Unrestricted Patent Rights or Restricted Patent Rights, any obligations of Licensee's triggered by the milestone or Alliance shall apply. Likewise, an obligation hereunder will also apply if both Unrestricted Patent Rights and Restricted Patent Rights are used or practiced to achieve a milestone or create an Alliance.

(C) Paragraph 3.01 is amended by adding to the existing paragraph 3.01, the following:

"(d) Fifty thousand dollars (US \$50,000) within [***] days from the Effective Date of this First Amendment to License Agreement.

*** CERTAIN CONFIDENTIAL INFORMATION CONTAINED IN THIS DOCUMENT, MARKED BY [***], HAS BEEN OMITTED AND FILED SEPARATELY WITH THE SECURITIES AND EXCHANGE COMMISSION PURSUANT TO RULE 24B-2 OF THE SECURITIES EXCHANGE ACT OF 1934, AS AMENDED.

(e) One hundred thousand dollars (US \$100,000) by [***] from the Effective Date of this First Amendment to License Agreement, or within [***] of when Licensee raises any additional monies in equity funding, whichever comes first."

(D) Paragraph 3.06 is amended by replacing, "...Licensee will pay DUKE the greater of (i) Two Hundred Thousand US Dollars (US\$200,000) or (ii) [***] percent [***] of the total value of any Alliance Fees...." With "...Licensee will pay DUKE the greater of (i) Two Hundred Thousand US Dollars (US\$200,000) or (ii) [***] percent [***] of the total value of any Alliance Fees associated with Unrestricted Patent Rights and/or Restricted Patent Rights in the field of injectable intra-tumoral drug delivery, and (iii) Three Hundred Thousand US Dollars (US\$300,000) or (iv) [***] percent [***] of the total value of any Alliance Fees associated with Restricted Patent Rights in any field of use other than injectable intra-tumoral drug delivery...."

2. Effect of First Amendment. The provisions of the License Agreement are hereby amended and modified by the provisions of this First Amendment to License Agreement. All other provisions of the License Agreement remain in full force and effect, and are unchanged by this First Amendment to License Agreement.

3. Single Instrument. This First Amendment and the License Agreement, as amended and modified by the provisions of this First Amendment, shall constitute and shall be construed as a single instrument. The provision of the License Agreement, as amended and modified by the provisions of this First Amendment, are incorporated herein by this reference and are hereby ratified and reaffirmed.

IN WITNESS WHEREOF, this First Amendment has been executed and delivered by each of the parties hereto effective as of the date first written above.

DUKE UNIVERSITY

/s/ Rose Ritts

Rose Ritts, Ph.D.

Executive Director, Office of

Licensing and Ventures

April 23, 2007

Date

PHASE BIOSCIENCE INC

/s/ Gabriel Cipau

Gabriel Cipau, Ph.D.

Executive Chairman

April 19, 2007

Date

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DUKE CONFIDENTIAL – Execution Copy

SECOND AMENDMENT TO LICENSE AGREEMENT

THIS SECOND AMENDMENT is executed to be effective February 22, 2008 ("Effective Date") by and between Phase Bioscience, Inc., a Delaware corporation ("LICENSEE"), and Duke University, a North Carolina not-for-profit corporation ("DUKE").

WHEREAS, LICENSEE and DUKE executed and entered into a License Agreement dated October, 2006 (the "Original License Agreement") and a First Amendment to License Agreement, dated April 20, 2007 ("First Amendment"; the Original License Agreement, as amended by the First Amendment, the "License Agreement"); and

WHEREAS, in connection with a proposed license of additional intellectual property, DUKE and LICENSEE have agreed to amend the License Agreement as set forth below.

NOW THEREFORE, in consideration of the mutual agreements set forth herein, and for other good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, the parties hereto agree as follows:

1. Amendment. The License Agreement shall be amended as follows:

(A) RECITAL A is amended by adding to the existing RECITAL A the following:

DUKE also owns certain Patent Rights (defined below) relating to inventions (the "Added Inventions") described in DUKE Office of Licensing & Ventures Files: [***] and has the right to grant licenses under its Patent Rights concerning the foregoing. Notwithstanding the initial definition of Inventions established in this paragraph's first sentence, "Inventions" shall, in addition to the inventions listed in that first sentence, include the Added Inventions.

(B) Appendix A is amended by adding to the existing Appendix A the following:

Duke [***]

-

[***]

Duke [***]

-

[***]

(C) Paragraph 1.10 is amended by replacing the existing Paragraph 1.10 with the following:

Inventors means [***].

(D) Paragraph 1.11 is amended by replacing the phrase "prior to the Term of this Agreement" with the following:

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"prior to (i) the Term of this Agreement with respect to Inventions other than Added Inventions or (ii) [***] with respect to Added Inventions

(E) Paragraph 3.01 is amended by adding to the existing Paragraph 3.01 the following:

(f) Twenty five thousand dollars (US\$25,000) within [***] days from the Effective Date of the Second Amendment to License Agreement.

(F) Appendix C - MILESTONE FEES is amended by replacing the existing milestone:

-

[***] - Approval by the United States FDA of the 2nd, 3rd and 4th NDA submitted by or on behalf of Licensee or any sublicensee thereof each of which concerns a previously-unapproved Licensed Product

with the following:

-

[***] - Approval by FDA of the 2nd, 3rd and 4th NDA submitted by or on behalf of Licensee or any sublicensee thereof each of which concerns a previously-unapproved Licensed Product

(G) Appendix C - MILESTONE FEES is amended by adding to the existing Appendix C the following milestone:

-

[***] - Filing and acceptance by the United States FDA of the 2nd NDA submitted by or on behalf of Licensee or any sublicensee thereof concerning a Licensed Product

2. Effect of Second Amendment. The provisions of the License Agreement are hereby amended and modified by the provisions of this Second Amendment to License Agreement. All other provisions of the License Agreement remain in full force and effect, and are unchanged by this Second Amendment to License Agreement.

3. Single Instrument. This Second Amendment and the License Agreement, as amended and modified by the provisions of this Second Amendment, shall constitute and shall be construed as a single instrument. The provisions of the License Agreement, as amended and modified by the provisions of this Second Amendment, are incorporated herein by this reference and are hereby ratified and reaffirmed.

IN WITNESS WHEREOF, this Second Amendment has been executed and delivered by each of the parties hereto effective as of the date first written above.

*** CERTAIN CONFIDENTIAL INFORMATION CONTAINED IN THIS DOCUMENT, MARKED BY [***], HAS BEEN OMITTED AND FILED SEPARATELY WITH THE SECURITIES AND EXCHANGE COMMISSION PURSUANT TO RULE 24B-2 OF THE SECURITIES EXCHANGE ACT OF 1934, AS AMENDED.

DUKE UNIVERSITY

/s/ Rose Ritts

Rose Ritts, Ph.D.

Executive Director, Office of

Licensing and Ventures

PHASE BIOSCIENCE INC

/s/ Thomas K. Laundon

2/22/08

Date

2/25/08

Date

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EXECUTION COPY

THIRD AMENDMENT TO LICENSE AGREEMENT

THIS THIRD AMENDMENT is executed to be effective November 6, 2009 ("Effective Date") by and between PhaseBio Pharmaceuticals, Inc., a Delaware corporation ("LICENSEE"), and Duke University, a North Carolina not-for-profit corporation ("DUKE").

WHEREAS, LICENSEE and DUKE executed and entered into a License Agreement dated October, 2006 (the "Original License Agreement") and a First Amendment to License Agreement, dated April 20, 2007 ("First Amendment"; the Original License Agreement, as amended by the First Amendment, the "License Agreement"); and a Second Amendment to License Agreement, dated February 26, 2008 ("Second Amendment"; the Original License Agreement, as amended by the Second Amendment, the "License Agreement") and

WHEREAS, in connection with the recognitions of certain milestones in development, DUKE and LICENSEE have agreed to amend the License Agreement as set forth below.

NOW THEREFORE, in consideration of the mutual agreements set forth herein, and for other good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, the parties hereto agree as follows:

1. Amendment. The License Agreement shall be amended as follows:

(A) Article 4, Paragraph 4.02 is amended by adding to the existing Paragraph 4.02 with the following:

As of the date herein, Licensee has provided sufficient progress reporting to Duke and is in compliance with this section of the agreement.

(B) Article 4, Paragraph 4.03 is deleted:

(C) Article 4, Paragraph 4.04 is amended by deleting [***] and replacing with the following:

[***]

(D) APPENDIX H, The 4th bullet is amended by deleting [***] and replacing with the following:

[***]

2. Effect of THIRD Amendment. The provisions of the License Agreement are hereby amended and modified by the provisions of this THIRD Amendment to License Agreement. All other provisions of the License Agreement remain in full force and effect, and are unchanged by this THIRD Amendment to License Agreement.

*** CERTAIN CONFIDENTIAL INFORMATION CONTAINED IN THIS DOCUMENT, MARKED BY [***], HAS BEEN OMITTED AND FILED SEPARATELY WITH THE SECURITIES AND EXCHANGE COMMISSION PURSUANT TO RULE 24B-2 OF THE SECURITIES EXCHANGE ACT OF 1934, AS AMENDED.

3. Single Instrument. This THIRD Amendment and the License Agreement, as amended and modified by the provisions of this THIRD Amendment, shall constitute and shall be construed as a single instrument. The provisions of the License Agreement, as amended and modified by the provisions of this THIRD Amendment, are incorporated herein by this reference and are hereby ratified and reaffirmed.

IN WITNESS WHEREOF, this THIRD Amendment has been executed and delivered by each of the parties hereto effective as of the date first written above.

DUKE UNIVERSITY

/s/ Rose Ritts

Rose Ritts, Ph.D.

Executive Director, Office of

Licensing and Ventures

PHASEBIO PHARMACEUTICALS INC.

/s/ Thomas K. Laundon

11/5/09

Date

11/9/09

Date

*** CERTAIN CONFIDENTIAL INFORMATION CONTAINED IN THIS DOCUMENT, MARKED BY [***], HAS BEEN OMITTED AND FILED SEPARATELY WITH THE SECURITIES AND EXCHANGE COMMISSION PURSUANT TO RULE 24B-2 OF THE SECURITIES EXCHANGE ACT OF 1934, AS AMENDED.

FOURTH AMENDMENT TO LICENSE AGREEMENT

THIS FOURTH AMENDMENT is executed to be effective November 24, 2009 ("Effective Date") by and between PhaseBio Pharmaceuticals, Inc., a Delaware corporation ("LICENSEE"), and Duke University, a North Carolina not-for-profit corporation ("DUKE").

WHEREAS, LICENSEE and DUKE executed and entered into a License Agreement dated October, 2006 (the "Original License Agreement") and a First Amendment to License Agreement, dated April 20, 2007 ("First Amendment"; the Original License Agreement, as amended by the First Amendment, the "License Agreement"); and a Second Amendment to License Agreement, dated February 26, 2008 ("Second Amendment"; the Original License Agreement, as amended by the Second Amendment, the "License Agreement") and a Third Amendment to License Agreement, dated November 6, 2009 ("Third Amendment"; the Original License Agreement, as amended by the Third Amendment, the "License Agreement") and

WHEREAS, in connection with the recognitions of certain milestones in development, DUKE and LICENSEE have agreed to amend the License Agreement as set forth below.

NOW THEREFORE, in consideration of the mutual agreements set forth herein, and for other good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, the parties hereto agree as follows:

1. Amendment. The License Agreement shall be amended as follows:

(A) Article 3.08, is amended by replacing the existing paragraph with the following:

By the end of the [***] of commercial sales of Licensed Product, Licensed Processor Licensed Services or by [***], whichever comes first, [***] percent [***] of the minimum royalty paid by Licensee in accordance with Article 3.07 must come from earned income. If this requirement is not met, DUKE may terminate this Agreement unless extensions or changes thereof are expressly approved by DUKE in writing, such approval not

to be unreasonably withheld.

2. Effect of FOURTH Amendment. The provisions of the License Agreement are hereby amended and modified by the provisions of this FOURTH Amendment to License Agreement. All other provisions of the License Agreement remain in full force and effect, and are unchanged by this FOURTH Amendment to License Agreement.

3. Single Instrument. This FOURTH Amendment and the License Agreement, as amended and modified by the provisions of this FOURTH Amendment, shall constitute and shall be construed as a single instrument. The provisions of the License Agreement, as amended and modified by the provisions of this FOURTH Amendment, are incorporated herein by this reference and are hereby ratified and reaffirmed.

*** CERTAIN CONFIDENTIAL INFORMATION CONTAINED IN THIS DOCUMENT, MARKED BY [***], HAS BEEN OMITTED AND FILED SEPARATELY WITH THE SECURITIES AND EXCHANGE COMMISSION PURSUANT TO RULE 24B-2 OF THE SECURITIES EXCHANGE ACT OF 1934, AS AMENDED.

IN WITNESS WHEREOF, this FOURTH Amendment has been executed and delivered by each of the parties hereto effective as of the date first written above.

DUKE UNIVERSITY

/s/ Rose Ritts

Rose Ritts, Ph.D.

Executive Director, Office of

Licensing and Ventures

PHASEBIO PHARMACEUTICALS INC.

/s/ Thomas K. Laundon

11/24/09

Date

11/24/09

Date

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FIFTH AMENDMENT TO LICENSE AGREEMENT

This FIFTH AMENDMENT TO LICENSE AGREEMENT (the "Amendment") is entered this the 24th day of May 2010 (the "Amendment Date") by and among Duke University, a North Carolina not-for-profit corporation ("Duke") and PhaseBio Pharmaceuticals, Inc., a Delaware corporation ("Licensee").

WHEREAS, Licensee and Duke are parties to that certain License Agreement, dated October 18, 2006, as previously amended April 20, 2007, February 22, 2008, November 6, 2009, and November 24, 2009, and modified by that certain letter agreement dated March 24, 2010 (collectively, the "Existing License"); and

WHEREAS, the parties wish to amend the Existing License to facilitate Licensee's ability to enter into sublicenses of the technology and intellectual property rights licensed under the Existing License on commercially reasonable terms for the mutual benefit of Duke and Licensee, as further described below,

NOW, THEREFORE, in consideration of the foregoing premises and for other good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, the parties to this Amendment mutually agree as follows:

1. Effective upon the Amendment Date, the Existing License shall be amended by inserting the following as the final sentence of Section 2.04(a) of the Existing License:

"Notwithstanding anything to the contrary in this Section 2.04(a), and subject to the preceding sentence, if, pursuant to that certain [***], then Licensee's only obligation under this Section 2.04(a) with respect to such sales under the [***] shall be to pay DUKE [***] percent [***] of the

running royalties paid by [***] to Licensee on the basis of net sales of such Licensed Product, Licensed Process, or Licensed Service.”

2. As consideration for Duke’s execution of this Amendment, PhaseBio shall pay Duke, in addition to any amounts due under the Existing License (as amended by this Amendment), [***] within [***] of PhaseBio’s receipt of the [***].

3. To the extent that the terms of the Existing License are varied by this Amendment, such variations shall be deemed to be lawfully made amendments to the Existing License. Except as it may be modified by this Amendment, the Existing License shall remain unchanged and in full force and effect.

4. This Amendment shall be governed by and interpreted in accordance with the laws of the State of North Carolina, regardless of the choice of law principles of such State or of any other jurisdiction.

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5. This Amendment may be executed in counterparts, each of which shall be deemed an original, but all such counterparts shall together constitute but one and the same instrument. Any counterpart hereof may be delivered via facsimile transmission, such counterpart to have the same effect as an original counterpart hereof.

IN WITNESS WHEREOF, the parties have executed and delivered this Amendment as of the Amendment Date.

DUKE UNIVERSITY

/s/ Rose Ritts

Name: Rose Ritts, Ph.D.

Title: OLV Executive Director

Date: May 24, 2010

PHASEBIO PHARMACEUTICALS, INC.

By: /s/ Chris Prior

Name: Chris Prior

Title: CEO

Date: May 24, 2010

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SIXTH AMENDMENT TO THE PHASEBIO-DUKE LICENSE AGREEMENT

THIS SIXTH AMENDMENT (“Amendment”) to that certain PhaseBio-Duke License Agreement effective as of October, 2006 (the “License Agreement”) is made and entered into as of February 25, 2015 (the “Amendment Effective Date”) by and between PhaseBio Pharmaceuticals, Inc., (“Licensee”), a corporation organized under the laws of Delaware, with its principal office at One Great Valley Parkway, Suite 30, Malvern, PA 19355, and DUKE UNIVERSITY, a nonprofit educational and research institution organized under the laws of North Carolina (“DUKE”), having its principal place of business in Durham, North Carolina 27710. PhaseBio and DUKE may each be referred to herein as a “Party” and collectively as the “Parties.”

AGREEMENT

NOW, THEREFORE, in consideration of the mutual covenants and for other good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, PhaseBio and DUKE hereby agree as follows:

1. Terms. All capitalized terms used in this Amendment and not otherwise defined herein shall have the same meaning as defined in the License Agreement. Small Molecule ELP will include molecules smaller than 1500 Daltons bound to ELPs whose primary mode of action is directly on tumor cells. Small Molecules shall in no event be or incorporate a peptide or protein, shall in no event involve a molecule with a mode of action acting on the immune system, and PhaseBio or its licensee shall have the right to reasonably withhold inclusion of a molecule or type or class of molecules provided they can demonstrate that they are in active clinical development or within two years of IND.

2. Amendments. The License Agreement shall be amended as follows:

a.

Article 3.04 is amended as follows to include Appendix B:

"In the event that (a) Licensee is a party to one or more license agreement(s) with any Third Party(ies), which license(s) is (are) (i) reasonably necessary to avoid infringement thereof by the manufacture, use and/or sale of a Licensed Product, Licensed Process, or Licensed Service, (ii) reasonably necessary to avoid infringement related litigation with respect to such patent(s), as determined by Licensee in its sole discretion, or (iii) reasonably necessary in order to practice any Third Party's rights that could improve, enhance, or modify a Licensed Product, Licensed Process, or Licensed Service, as determined in good faith by Licensee, and (b) Licensee's aggregate running royalty obligation (to DUKE and all such Third-Party licensors) on such Licensed Product (or Know-How Licensed Product) or Licensed Service (or Know-How Licensed Service) equals or exceeds [***] percent [***] of Net Sales (calculated without regard to any third party royalty offset provisions in this Agreement or any other relevant Third Party license(s)), then in such event, and provided that the royalty paid to all Third Parties will be decreased proportionately as specified below, Licensee may deduct [***] percent [***] of the amounts payable by Licensee to such Third Party(ies) from the

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1.

Running Royalties otherwise payable hereunder, provided, however, that in no event shall the Running Royalties payable to DUKE on Net Sales of any Licensed Product be reduced by more than [***] percent [***] the amounts that would otherwise have been payable to DUKE in respect of Net Sales of a Licensed Product, Licensed Service, Know-How Licensed Product or Know-How Licensed Service for all other applications and in all other circumstances.

For purposes of calculating the deduction hereunder when the aggregate running royalty obligation (to DUKE and all relevant Third-Party licensors) on net sales of a Licensed Product (or Know-How Licensed Product) or Licensed Service (or Know-How Licensed Service) (calculated without regard to any third party royalty offset provisions in this Agreement or any other relevant Third Party license(s)) (the "Aggregate Royalty") equals or exceeds [***] percent [***], then (i) if the Aggregate Royalty would be equal to or greater than [***] percent [***] after reducing such Aggregate Royalty by the maximum royalty offset amount on account of third party payments stated in each applicable license (including this Agreement), then the Running Royalties payable to DUKE on Net Sales of a Licensed Product (or Know-How Licensed Product) or Licensed Service (or Know-How Licensed Service) under this Agreement shall be reduced to the maximum extent permitted in accordance with the first paragraph of this Article 3.04, and (ii) if the Aggregate Royalty would be less than [***] percent [***] after reducing such Aggregate Royalty by the maximum royalty offset amount on account of third party payments stated in each applicable license (including this Agreement), then the Running Royalties payable to DUKE on Net Sales of a Licensed Product (or Know-How Licensed Product) or Licensed Service (or Know-How Licensed Service) under this Agreement shall be reduced by an amount equal to the product of (A) the Aggregate Royalty in excess of [***] percent [***] multiplied by (B) a fraction, the numerator of which is [***] and the denominator of which is [***].

Nothing herein, however shall be construed as reducing the minimum annual royalties due and payable as set forth in Article 3.07."

b.

Article 3.08 of the License Agreement (as amended by the 4th Amendment) is hereby deleted in its entirety.

c.

Article 4.04 of the License Agreement (as amended by the 3rd Amendment) is hereby deleted in its entirety.

d.

Article 6.03 of the License Agreement shall be deleted in its entirety and replaced with the following language:

"Licensee shall have the right to assume primary responsibility for all activities associated with the prosecution of both Unrestricted Patent Rights and Restricted Patent Rights under this Agreement with respect to any and all patents rights, other than those patents rights that are solely applicable to the development or commercialization of drug products responsibilities and obtains DUKE's written

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2.

approval. It is understood and agreed that in the event Licensee assumes such responsibilities, it shall keep DUKE advised as to the status of the Unrestricted Patent Rights and the Restricted Patent Rights by providing DUKE, in a timely manner, with copies of all official documents and

correspondences relating to the prosecution, maintenance, and validity of the Unrestricted Patent Rights and the Restricted Patent Rights. Licensee shall consult with DUKE in such prosecution and maintenance, shall diligently seek advice of DUKE on all matters pertaining to the Unrestricted Patent Rights and the Restricted Patent Rights, shall diligently seek reasonably strong and broad claims under the Unrestricted Patent Rights and Restricted Patent Rights, and shall not abandon prosecution of any Unrestricted Patent Rights or Restricted Patent Rights or any of the claims of the Unrestricted Patent Rights or Restricted Patent Rights without first notifying DUKE in a timely manner of Licensee's intention and reason therefore, and providing DUKE with reasonable opportunity to assume responsibility for prosecution and maintenance of the appertaining Unrestricted Patent Rights and Restricted Patent Rights (which thereafter shall be subject to the provisions of 6.01 as regards status as Unrestricted Patent Rights and Restricted Patent Rights and the Licensee's rights therein). All decisions with respect to other prosecution of the Unrestricted Patent Rights and the Restricted Patent Rights by Licensee pursuant to this Article 6.03 shall be made by Licensee, subject to the written approval of DUKE, such approval not to be unreasonably withheld or delayed. Licensee shall inform DUKE in a timely manner (no less than [***] prior to the appertaining filing deadlines) that Licensee will not pursue patents in any non-U.S. country so that DUKE may pursue such patents if it so desires. In such case, upon the date of such filing of such patent applications by DUKE, such patents and patent applications shall not be considered Unrestricted Patent Rights or Restricted Patent Rights, Licensee shall be deemed to have forfeited all rights under this Agreement to such patent applications and resulting patents, and Appendix A shall be deemed to be so amended. For avoidance of doubt, it is understood that Licensee shall assume direct and full responsibility for payment of expenses it incurs as a result of its assumption of responsibility for prosecution of Unrestricted Patent Rights or Restricted Patent Rights under this Article 6.03."

e.

The fourth bullet point of Appendix H to the License Agreement is hereby deleted in its entirety.

3. Effect of Amendment. The provisions of the License Agreement are hereby amended and modified by the provisions of this Sixth Amendment. All other provisions of the License Agreement remain in full force and effect, and are unchanged by this Sixth Amendment.

4. Miscellaneous. This Sixth Amendment and the License Agreement, as amended to date and by this Sixth Amendment, shall constitute and shall be construed as a single instrument. The provisions of the License Agreement, as amended and modified to date and by this Sixth Amendment, are incorporated herein by this reference and are hereby ratified and affirmed.

[Signature Page Follows]

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3.

IN WITNESS WHEREOF, the Parties have caused this Amendment to be executed by their duly authorized representatives as of the Amendment Effective Date set forth above.

Phase Bio Pharmaceuticals, Inc. Duke University

By:

/s/ Jonathan P. Mow

By:

/s/ Rose Ritts

Name: Jonathan P. Mow Name: Rose Ritts

Title: CEO Title: Executive Director, Licensing & Ventures

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4.

AMENDED AND RESTATED

SEVENTH AMENDMENT TO LICENSE AGREEMENT

THIS AMENDED AND RESTATED SEVENTH AMENDMENT TO LICENSE AGREEMENT ("Amendment") is made and entered into as of May 25, 2017 (the "Restatement Date"), and effective retroactive to February 24, 2016 (the "Amendment Date"), by and between DUKE UNIVERSITY, a North Carolina not-for-profit corporation ("Duke"), and PHASEBIO PHARMACEUTICALS, INC., a Delaware corporation

("Licensee").

WHEREAS, Licensee and Duke are parties to that certain License Agreement, dated October 18, 2006, as previously amended April 20, 2007, February 22, 2008, November 6, 2009, November 24, 2009, and February 25, 2015, and modified by that certain letter agreement dated March 24, 2010 (collectively, the "Existing License");

WHEREAS, pursuant to that certain Seventh Amendment to License Agreement dated as of the Amendment Date (the "Original Seventh Amendment"), the parties amended the Existing License to, among other things:

(a) provide for: (i) the reversion to Duke of certain of the Patent Rights licensed to Licensee under the Existing License related to HTT ELP-SMO Conjugates (defined below); and (ii) the grant to Duke of a non-exclusive sublicense under the other Patent Rights licensed to Licensee under the Existing License and a non-exclusive freedom-to-operate license under certain Licensee-owned patent rights, in each case, to develop and commercialize HTT ELP-SMO Conjugates for the treatment of cancer;

(b) set forth Duke's economic obligations to Licensee with respect to licensing and sublicensing of HTT ELP-SMO Conjugates; and

(c) modify the economic terms of the license granted to Licensee by Duke in light of the reversion to Duke of the Reverted Patent Rights and the license and sublicense granted to Duke by Licensee, and otherwise facilitate Licensee's ability to enter into sublicenses of the Patent Rights licensed to Licensee under the Existing License;

WHEREAS, the parties have identified inadvertent errors in Appendix L to the Original Seventh Amendment; and

WHEREAS, the parties now wish to amend and restate the Original Seventh Amendment in its entirety as set forth herein, effective as of the Amendment Date.

NOW, THEREFORE, in consideration of the foregoing premises and for other good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, the parties to this Amendment mutually agree as follows:

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1.

1. CAPITALIZED TERMS.

Capitalized terms used but not otherwise defined in this Amendment shall have the meanings provided in the Existing License.

2. AMENDMENTS TO DEFINED TERMS.

(a) Notwithstanding Articles 1.03 and 1.04 of the Existing License to the contrary, effective as of the Amendment Date, each of "Restricted Patent Rights" and "Unrestricted Patent Rights" shall exclude the Reverted Patent Rights (defined below). For clarity, by virtue of the preceding sentence, "Patent Rights" shall also exclude the Reverted Patent Rights effective as of the Amendment Date.

(b) Notwithstanding Article 1.06 of the Existing License to the contrary, effective as of the Amendment Date, each of "Licensed Product" and "Licensed Process" shall exclude:

(i) any HTT ELP-SMO Conjugate (defined below); and

(ii) any SMO that is chemically conjugated to any ELP (defined below) for use in the Oncology Field (defined below).

(c) Article 1.08 of the Existing License is hereby amended and restated to read in its entirety as follows:

"1.08 "Net Sales" means:

(a) in the case of Licensed Products or Licensed Processes, billings for Licensee's and its sublicensees' sales of Licensed Products or Licensed Processes; and

(b) in the case of Licensed Services, any and all amounts received by Licensee or its sublicensees for the provision of Licensed Services to a Third Party,

less the sum of the following in both 1.08(a) and 1.08(b):

(1) [***];

(2) [***];

(3) [***];

(4) [***];

(5) [***]; and

(6) [***].

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2.

No deductions from the amounts defined by 1.08(a) and 1.08 (b) may be made for commissions paid to individuals whether those individuals are associated with independent sales agencies or regularly employed by Licensee or its sublicensees, nor may deductions be made for cost of collections. Licensed Products, Licensed Processes, and Licensed Services are considered "sold" when billed out or invoiced or, in the event a Licensed Product, Licensed Process or Licensed Service is not billed out or invoiced, when the consideration for sale or provision of the Licensed Product, Licensed Process, or Licensed Service is received by the Licensee or a sublicensee. Notwithstanding the foregoing, Net Sales shall not include, and shall be deemed zero with respect to, [***]."

3. ADDITIONAL DEFINED TERMS.

The following terms shall have the respective meanings provided below:

(a) "Combination Product" shall mean a pharmaceutical product in a finished dosage form that contains both a Licensed Product and at least one other active pharmaceutical ingredient that is not a Licensed Product.

(b) "Duke FTO License" shall have the meaning provided in paragraph 5(b)(ii) of this Amendment.

(c) "Duke HTT ELP-SMO Conjugate Agreement" shall have the meaning provided in Section 5(c)(ii) of this Amendment.

(d) "Duke HTT ELP-SMO Conjugate Revenue" shall have the meaning provided in paragraph 5(d) of this Amendment.

(e) "Duke Licensee" shall mean any Third Party to which Duke has granted: (i) a license under the Reverted Patent Rights with respect to any HTT ELP-SMO Conjugate; (ii) a further sublicense under the Duke Sublicense; and/or (iii) a sublicense under the Duke FTO License.

(f) "Duke Sublicense" shall have the meaning provided in paragraph 5(b)(i) of this Amendment.

(g) "ELP" shall mean an elastin-like peptide sequence within the scope of the Patent Rights and/or the Reverted Patent Rights.

(h) "HTT ELP" shall mean an ELP that has a ratio of amino acids at the variable guest residue position and that has a [***].

(i) "HTT ELP-SMO Conjugate" shall mean an SMO that is chemically conjugated to an HTT ELP, wherein the [***].

(j) "License Agreement" shall mean, collectively, this Amendment and the Existing License, as amended and modified by this Amendment.

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3.

(k) "Named Oncologic Classes" shall mean: (i) the following classes of drugs: [***]; or (ii) any class of compounds that is added to this definition in accordance with paragraph 3(q) of this Amendment.

(l) "Oncology Field" shall mean the treatment of cancer.

(m) "PhaseBio Exclusive License" shall have the meaning provided in paragraph 4(a) of this Amendment.

(n) "PhaseBio FTO License" shall have the meaning provided in paragraph 4(a) of this Amendment.

(o) "PhaseBio Patent Rights" shall mean (i) the patents and patent applications listed in Appendix L attached to this Amendment (hereafter referred to as "PhaseBio Existing Patent Rights"); (ii) any patent (US or foreign) issuing on any such PhaseBio Existing Patent Rights; and (iii) all divisions, continuations, continuations-in-part (but only to the extent that the subject matter of each such continuation-in-part application is described in, claimed in, or enabled by the disclosure of the PhaseBio Existing Patent Rights), re-examinations, reissues, substitutions, or extensions of any PhaseBio Existing Patent Rights or patent issuing from those things described in (i) or (ii) above. It is understood and agreed

that subject matter that is novel and non-obvious over the subject matter described within the PhaseBio Existing Patent Rights (including, without limitation, novel and non-obvious improvements relating to the subject matter of the PhaseBio Patent Rights) is not within the scope of the PhaseBio Patent Rights even though that novel and non-obvious subject matter may fall within the scope of one or more claims of said PhaseBio Patent Rights.

(p) "Reverted Patent Rights" shall mean (i) the patent application listed in Appendix K attached to this Amendment (hereafter referred to as the "Reverted Patent Application"); (ii) any patent (US or foreign) issuing on the Reverted Patent Application; and (iii) all divisions, continuations, continuations-in-part (but only to the extent that the subject matter of each such continuation-in-part application is described in, claimed in, or enabled by the disclosure of the Reverted Patent Application), re-examinations, reissues, substitutions, or extensions of the Reverted Patent Application or patent issuing from those things described in (i) or (ii) above.

(q) "SMO" or "Small Molecule Oncologic" shall mean a small molecule, non-peptide compound that has a molecular weight of less than or equal to 1,500 Da and is within any of the Named Oncologic Classes but does not achieve its primary effect via immunomodulation (i.e., by inducing, enhancing or suppressing an immune response); provided, however, that if Duke (or a Duke Licensee) wishes to develop in the Oncology Field another class of small molecule, non-peptide compound having a molecular weight of less than or equal to 1,500 Da that has been demonstrated to have an oncologic application and does not achieve its primary effect via immunomodulation (i.e., by inducing, enhancing or suppressing an immune response), but such class is not within the Named Oncologic Classes, Duke (or the Duke Licensee) shall notify Licensee of such intent. Licensee shall have [***] (the "Reply Period") to reply to such notification as to whether Licensee has an active program in the same class of

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compound or not. If Licensee does not have an active program in the same class of compounds, then, effective as of the expiration of the Reply Period, such class of compounds shall automatically be added to the Named Oncologic Classes (i.e., such class of compounds shall automatically be deemed a "Named Oncologic Class" for purposes of the License Agreement, including, without limitation, paragraphs 4 and 5 of this Amendment). If Licensee has an active program in such class outside the Oncology Field, then such class of compounds may be added to the Named Oncologic Classes upon written approval of Licensee and Duke, provided that Licensee shall not be obligated to provide such written approval.

4. MODIFICATION OF PHASEBIO LICENSE.

(a) Amendment of Article 2.01. Effective as of the Amendment Date, Article 2.01 of the Existing License is hereby amended and restated to read in its entirety as follows:

"2.01 License Grants to PhaseBio.

(a) Subject to the terms and conditions of this Agreement, Duke grants to Licensee, and Licensee accepts from Duke, an exclusive (even as to Duke, except as provided in Article 2.05 of this Agreement), sublicensable license, under the Patent Rights, solely to:

(i) make, have made, use, sell, have sold, offer for sale, and import Licensed Products and Licensed Processes in the Field of Use in the Territory, and

(ii) sell, offer for sale, use, and practice Licensed Services in the Field of Use in the Territory.

For clarity, the license granted under this Article 2.01(a) (the "PhaseBio Exclusive License") excludes: (A) any right or license under the Reverted Patent Rights; and (B) any right or license under the Patent Rights to make, have made, use, lease, import, export, sell, or offer for sale: (1) any HTT ELP-SMO Conjugate; or (2) any SMO that is chemically conjugated to any ELP for use in the Oncology Field. The term of the PhaseBio Exclusive License extends on a country-by-country basis until expiration of all Unexpired Claims of the Patent Rights, unless this Agreement is sooner terminated according to its terms.

(b) Subject to the terms and conditions of this Agreement, Duke grants to Licensee, and Licensee accepts from Duke, a non-exclusive, sublicensable license under the Reverted Patent Rights solely to:

(i) develop, make, have made, use, sell, have sold, offer for sale, and import Licensed Products and Licensed Processes in the Field of Use in the Territory; and

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(ii) sell, offer for sale, use, and practice Licensed Services in the Field of Use in the Territory.

For clarity, the license granted under this Article 2.01(b) (the "PhaseBio FTO License") excludes any right or license under the Reverted Patent Rights to make, have made, use, lease, import, export, sell, or offer for sale (1) any HTT ELP-SMO Conjugate or (2) any SMO that is chemically conjugated to any ELP for use in the Oncology Field. The term of the PhaseBio FTO License extends on a country-by-country basis until expiration of all Unexpired Claims of the Reverted Patent Rights, unless this Agreement is sooner terminated according to its terms."

(b) Amendment of Article 2.04. Article 2.04 of the Existing License is hereby amended and restated to read in its entirety as follows:

"2.04 Sublicenses.

(a) Sublicenses shall include, without limitation, any relationship or agreement in which a Third Party is granted by Licensee any rights – temporary or otherwise – to any of the rights granted to Licensee under this Agreement. For the avoidance of doubt, neither the Duke Sublicense nor any sublicense granted by Duke to a Third Party under the Duke Sublicense is a "sublicense" for purposes of this Article 2.04 or any other provision of this Agreement relating to Licensee's financial obligations with respect to sublicenses of the rights granted to Licensee under this Agreement (including, without limitation, Articles 1.08 and 3.03 of this Agreement). Any sublicenses granted under authority of this Agreement are subject to the terms and conditions of this Agreement and shall be no less favorable to Duke than this Agreement, and not conflict, with the terms hereof. Duke shall not have any obligations in excess of those of Duke under this Agreement under any sublicense agreement made by Licensee or any sublicensee. Licensee agrees to provide Duke with a copy of any and all sublicenses of rights granted under this Agreement within 30 days of execution of each subject sublicense agreement.

(b) In addition to the royalties payable by Licensee to Duke under Article 3.03 with respect to Net Sales of Licensed Products, Licensed Processes, or Licensed Services by sublicensees, Duke will receive: (I) 100% of the first \$1,000,000 of Non-Royalty Sublicense Income (defined below) received by Licensee; and (II) [***] percent [***] of all additional Non-Royalty Sublicense Income (excluding the first \$1,000,000 thereof) received by Licensee. Beginning with the first calendar quarter in which Licensee receives any Non-Royalty Sublicense Income, and in addition to the reports required under Article 5 of this Agreement, Licensee must render to Duke within [***] after the end of each calendar quarter a written account of the Non-Royalty Sublicense Income received

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by Licensee during such calendar quarter. Licensee must simultaneously with the submission of each such report pay to Duke in United States dollars the applicable percentage of Non-Royalty Sublicense Income received by Licensee during such quarter.

For purposes of this Article 2.04(b), "Non-Royalty Sublicense Income" shall mean all sublicense income (specifically excluding sales-based royalties) received by Licensee as consideration for the grant to a Third Party of a sublicense to Patent Rights and/or Reverted Patent Rights licensed to Licensee hereunder. Non-Royalty Sublicense Income includes, but is not limited to, upfront license fees, annual license maintenance fees, payments on milestones, advance payments, option fees, damages recovered from enforcement or defense of the Patent Rights, equity issued to Licensee (to the extent issued solely or in part as consideration for the grant of rights), and the like. However, Non-Royalty Sublicense Income shall not include (i) any and all payments, regardless of amount, paid to Licensee as a result of the achievement of development milestones equivalent to those set forth in Appendix C, (ii) bona fide research and development funding (e.g., FTE funding at a commercially reasonable rate) received by Licensee for the performance by Licensee of specified research and development work after the date of the sublicense, and reimbursement of documented external costs incurred by Licensee in performing such specified research and development work after the date of the sublicense (e.g., costs of specialized materials or equipment needed for the performance of such work, and reimbursement of documented external costs incurred by Licensee for amounts paid by Licensee to Third Party service providers for the performance of any such specified research and development work that Licensee subcontracts to such service providers), (iii) amounts paid for purchases of equity or debt of Licensee, to the extent any amounts received do not exceed the fair market value of such equity or debt. Such fair market value shall be determined pursuant to Appendix D. Also, Non-Royalty Sublicense Income shall exclude private or government research or teaching grants to Licensee and "Alliance Fees" (as defined in Article 3.06). Licensee shall not agree to receive anything of value in lieu of cash payments in consideration for any sublicense without the express prior written permission of Duke, such permission not to be unreasonably withheld, provided that (i) such permission may be conditioned upon mutual agreement concerning the manner in which Duke shall be paid the applicable percentage share of such consideration under this Article 2.04 and (ii) Duke shall not, as a condition to such permission, require the payment or provision to Duke of more than the applicable percentage share of such non-cash consideration under this Article 2.04 unless mutually agreed upon by both Licensee and Duke. Duke shall provide Licensee notice of its approval or denial of such noncash

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7.

consideration within a reasonable period of time of any written request for such approval by Licensee."

5. REVERSION AND LICENSE GRANTS TO DUKE.

(a) Reversion of Reverted Patent Rights. Effective as of the Amendment Date, all licenses granted by Duke to Licensee under the Reverted Patent Rights pursuant to the Existing License shall terminate and revert to Duke, and the PhaseBio FTO License shall become effective. Subject only to the PhaseBio FTO License and to Duke's obligations under paragraphs 5(c) and 5(d) of this Amendment, from and after the Amendment Date, Duke shall be free to grant exclusive or non-exclusive licenses to Third Parties under the Reverted Patent Rights for any purpose; provided, however, that Duke's Office of Licensing and Ventures shall not knowingly grant any exclusive or non-exclusive license to any Third Party under the Reverted Patent Rights to make, have made, use, sell, have sold, offer for sale, or import any SMO that is chemically conjugated to any ELP, other than an HTT ELP.

(b) Grants to Duke. Subject to the terms and conditions of this Amendment, effective as of the Amendment Date, Licensee grants to Duke, and Duke accepts from Licensee:

(i) an exclusive (even as to Licensee) sublicense, with the right to further sublicense as expressly set forth in paragraph 5(c) of this Amendment, under the Patent Rights, solely to make, have made, use, sell, have sold, offer for sale and import HTT ELP-SMO Conjugates in the Oncology Field in the Territory (the "Duke Sublicense"); and

(ii) a non-exclusive license, with the right to sublicense as expressly set forth in paragraph 5(c) of this Amendment, under the PhaseBio Patent Rights, solely to make, have made, use, sell, have sold, offer for sale and import HTT ELP-SMO Conjugates in the Oncology Field in the Territory (the "Duke FTO License").

For clarity, the Duke Sublicense and the Duke FTO License exclude any right or license under the Patent Rights or PhaseBio Patent Rights to make, have made, use, lease, import, export, sell, or offer for sale any SMO that is chemically conjugated to any ELP, other than an HTT ELP. The Duke Sublicense and the Duke FTO License begin on the Amendment Date and extend on a country-by-country basis until the expiration of all Unexpired Claims of the Patent Rights and the PhaseBio Patent Rights, respectively, unless the License Agreement is sooner terminated according to its terms.

(c) Duke Licensing and Sublicensing.

(i) The Duke Sublicense and the Duke FTO License shall be sublicensable by Duke solely in conjunction with the grant by Duke to a Third Party of a license under the Reverted Patent Rights with respect to HTT ELP-SMO Conjugates in the Oncology Field in the Territory.

(ii) Duke shall include in each agreement under which Duke grants any Third Party (A) any license under the Reverted Patent Rights with respect to any HTT ELP-SMO

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8.

Conjugate, (B) any further sublicense under the Duke Sublicense, and/or (C) any sublicense under the Duke FTO License (each, a "Duke HTT ELP-SMO Conjugate Agreement"):

(1) an obligation on the part of the applicable Duke Licensee to indemnify Licensee, its Affiliates, and its and their respective, officers, directors, employees, consultants, and agents (collectively, the "Licensee Indemnitees") from and against any and all losses, damages, liabilities, judgments, fines, amounts paid in settlement, expenses and costs of defense, including without limitation reasonable attorneys' fees and witness fees ("Losses"), to which any Licensee Indemnitee may become subject as a result of any claim, action or proceeding based upon, arising out of, or otherwise relating to the research, development, manufacture or commercialization of any HTT ELP-SMO Conjugate by or on behalf of such Duke Licensee or its sublicensees; except, in each case, to the extent such Losses result from the gross negligence or willful misconduct of any Licensee Indemnitee, or Licensee's failure to comply with any applicable laws, rules, or regulations;

(2) an acknowledgment and agreement by such Duke Licensee that neither Licensee nor any other Licensee Indemnitee shall have any liability to such Duke Licensee or its sublicensees based upon, arising out of, or otherwise relating to the research, development, manufacture or commercialization of any HTT ELP-SMO Conjugate by or on behalf of such Duke Licensee or its sublicensees; and

(3) such Duke Licensee's acknowledgment and agreement that Licensee is an intended third party beneficiary of the foregoing provisions of the Duke HTT ELP-SMO Conjugate Agreement.

(iii) Duke agrees to provide Licensee with a copy of any and all Duke HTT ELP-SMO Conjugate Agreements within [***] of execution of each Duke HTT ELP-SMO Conjugate Agreement; provided, however, that Duke may redact from such copy any confidential or proprietary information not necessary for Licensee to ascertain Duke's compliance with its obligations under this Amendment.

(iv) Except for Duke's obligations under paragraph 5(c)(ii), Duke shall have no indemnification, diligence or infringement-related obligations to Licensee with respect to the research, development, manufacture or commercialization of HTT ELP-SMO Conjugate. Duke agrees that Licensee

shall have no indemnification obligation or other liability to Duke with respect to the research, development, manufacture or commercialization of HTT ELP-SMO Conjugate by Duke, any Duke Licensee, or any sublicensee of a Duke Licensee; provided, however, that Licensee shall indemnify the DUKE Indemnitees (as defined in the Existing License) from and against any and all Losses to which any DUKE Indemnitee may become subject as a result of any Claim by a Duke Licensee against such DUKE Indemnitee based on, and to the extent such Losses result from, Licensee's gross negligence or willful misconduct, or Licensee's failure to comply with any applicable laws, rules, or regulations; except, in each case, to the extent such Losses result from the gross negligence or willful misconduct of such Duke Licensee, any of its sublicensees, or any DUKE Indemnitee, or from such Duke Licensee's, its sublicensee's, or Duke's failure to comply with any applicable laws, rules, or regulations.

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9.

(d) Duke HTT ELP-SMO Conjugate Revenue. Duke shall pay to Licensee [***] percent [***] of all Duke HTT ELP-SMO Conjugate Revenue (defined below) received by Duke; provided, however, that Duke shall have no obligation to pay to Licensee any portion of the first [***] of Duke HTT ELP-SMO Conjugate received by Duke (the "Duke Retained Amount"). For the first calendar year in which Duke receives any HTT ELP-SMO Conjugate Revenue, Duke must render to Licensee within [***] after the end of each calendar year a written account of the Duke HTT ELP-SMO Conjugate Revenue received by Duke during such calendar year. For the calendar year in which the cumulative Duke HTT ELP-SMO Conjugate received by Duke first exceeds the Duke Retained Amount, Duke must render to Licensee within [***] after the end of such calendar year a written account of the Duke HTT ELP-SMO Conjugate Revenue received by Duke during such calendar year, and, within [***] of invoice by Licensee, pay to Licensee in United States dollars Licensee's [***]% share of the amount by which (x) the cumulative Duke HTT ELP-SMO Conjugate Revenue received by Duke up to the end of such calendar quarter exceeds (y) the Duke Retained Amount. For each subsequent calendar year, Duke must render to Licensee within [***] after the end of such calendar year a written account of the Duke HTT ELP-SMO Conjugate Revenue received by Duke during such calendar year, and, within [***] of invoice by Licensee, pay to Licensee in United States dollars Licensee's [***]% share of the Duke HTT ELP-SMO Conjugate Revenue received by Duke during such calendar year. The parties acknowledge and agree that neither the lateness of Duke's delivery to Licensee of any report of Duke HTT ELP-SMO Conjugate Revenue nor the lateness of Duke's payment of any amount due to Licensee with respect to Duke HTT ELP-SMO Conjugate Revenue shall constitute a material breach entitling Licensee to exercise its right to terminate the License Agreement pursuant to Article 10.03(b) of the Existing License. For purposes of this paragraph 5(d) of this Amendment, "Duke HTT ELP-SMO Conjugate Revenue" shall mean all license or sublicense income received by Duke as consideration for the grant to a Third Party of rights with respect to any HTT ELP SMO Conjugate. Duke HTT ELP-SMO Conjugate Revenue includes, but is not limited to, upfront license fees, annual license maintenance fees, payments on milestones, royalties on sales of HTT ELP SMO Conjugates, advance payments, option fees, damages recovered from enforcement or defense of the Reverted Patent Rights (to the extent attributable to infringing activity that is competitive with an HTT ELP SMO Conjugate), equity issued to Duke (to the extent issued solely or in part as consideration for the grant of rights), and the like. However, Duke HTT ELP-SMO Conjugate Revenue shall not include (i) reimbursement of patent costs incurred by Duke with respect to the Reverted Patent Rights; (ii) bona fide research and development funding (e.g., FTE funding at a commercially reasonable rate) received by Duke for the performance by Duke of specified research and development work after the date of the license or sublicense, and reimbursement of documented external costs incurred by Duke in performing such specified research and development work after the date of the license or sublicense (e.g., costs of specialized materials or equipment needed for the performance of such work, and reimbursement of documented external costs incurred by Duke for amounts paid by Duke to Third Party service providers for the performance of any such specified research and development work that Duke subcontracts to such service providers). Duke shall not agree to receive anything of value in lieu of cash payments in consideration for any the grant to a Third Party of rights with respect to any HTT ELP SMO Conjugate without the express prior written permission of Licensee, such permission not to be unreasonably withheld, provided that (i) such permission may be conditioned upon

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10.

mutual agreement concerning the manner in which Licensee shall be paid its [***] percent [***] share of such consideration under this paragraph 5(d) and (ii) Licensee shall not, as a condition to such permission, require the payment or provision to Licensee of more than [***] percent [***] of such non-cash consideration unless mutually agreed upon by both Licensee and Duke. Licensee shall provide Duke notice of its approval or denial of such noncash consideration within a reasonable period of time of any written request for such approval by Duke. Except as expressly set forth in this paragraph 5(d), Duke shall have no other payment obligations to Licensee with respect to the exercise or sublicense of the Duke Sublicense or the Duke FTO License.

6. MODIFICATION OF ECONOMIC TERMS OF PHASEBIO LICENSE.

(a) Amendment of Article 3.03. Article 3.03 of the Existing License is hereby amended and restated to read in its entirety as follows:

"3.03 Running Royalty—At the times and in the manner set forth in this Agreement, Licensee must pay to Duke a non-refundable, non-creditable [***] percent [***] running royalty on Net Sales of Licensed Products, Licensed Processes, or Licensed Services by Licensee and its sublicensees."

(b) Elimination of Article 3.04. Article 3.04 of the Existing License is hereby deleted in its entirety and shall be of no further force or effect.

(c) Combination Products. The parties acknowledge that neither the Existing License nor this Amendment provides for any adjustment to the calculation of Net Sales of Combination Products sold by Licensee or its sublicensees for purposes of royalty calculations under the License Agreement. However, if requested by Licensee in the future, the parties agree to negotiate in good faith regarding a commercially reasonable adjustment to the calculation of Net Sales of Combination Products for purposes of royalty calculations under the License Agreement that appropriately reflects the relative values of (i) the Licensed Product-only portion of the Combination Product and (ii) the other active pharmaceutical ingredient(s) contained in such Combination Product.

7. PATENT PROSECUTION AND MAINTENANCE.

(a) Reverted Patent Rights. Effective as of the Amendment Date, Articles 6 and 8 of the Existing License shall cease to apply to the Reverted Patent Rights, and neither party shall have any further rights or obligations under said Articles 6 and 8 with respect to the Reverted Patent Rights. From and after the Amendment Date, Duke shall have the sole right, but not the obligation, to prosecute, maintain, enforce and defend the Reverted Patent Rights, at Duke's sole expense.

(b) Patent Rights.

(i) In the event that Duke wishes to rely on coverage of a particular Patent Right (as the definition of such term has been modified by this Amendment) for protection of

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11.

any HTT ELP SMO Conjugate under development by Duke or a Duke Licensee, and Duke requests that PhaseBio file one or more claims specific to such HTT ELP SMO Conjugate under such Patent Right, Licensee shall not be obligated to file any such HTT ELP SMO Conjugate-specific claim(s) unless Duke commits to pay or reimburse, and does pay or reimburse, in full the direct incremental Patent Costs incurred by Licensee in filing, prosecuting, and maintaining such HTT ELP SMO Conjugate-specific claim(s) under the Patent Rights. Duke must pay Licensee all such incremental Patent Costs within [***] of receipt of an invoice for the same, provided that if Duke notifies Licensee in writing within [***] of receipt of invoice that the processing of such payment will require additional time and provides a good faith explanation for the delay in payment (such notice, a "Payment Delay Notice"), then the period for payment of such invoice shall be extended by an additional [***] or such greater number of days as may be mutually agreed by the parties in writing (as applicable, the "Extended Payment Period"). Failure to pay any such invoice, as applicable, (i) within [***] of receipt of invoice, or (ii) if Duke timely delivers a Payment Delay Notice to Licensee, within the applicable Extended Payment Period, shall entitle Licensee to cease prosecution and maintenance of such HTT ELP SMO Conjugate-specific claim(s), and any such cessation of prosecution and maintenance by Licensee for Duke's failure to make payment when due shall neither constitute a default by Licensee entitling Duke to terminate the License Agreement, nor result in any forfeiture of Licensee's rights to any Patent Rights.

(ii) Except as expressly amended by paragraphs 7(a) and 7(b)(i) of this Amendment, the provisions of Articles 6 and 8 of the Existing License shall remain in full force and effect in accordance with their terms as applicable to the Patent Rights (as the definition of such term has been modified by this Amendment).

(c) PhaseBio Patent Rights. Licensee shall at all times have the sole right, but not the obligation, to prosecute, maintain, enforce and defend the PhaseBio Patent Rights, at Licensee's sole expense.

8. ARTICLE 9 OF EXISTING LICENSE.

(a) Effective as of the Amendment Date, Section 9.02 of the Agreement shall terminate and be of no further force or effect.

(b) For clarity, the parties reaffirm their agreement regarding publication of the Patent Rights as set forth in Article 9.03 of the Existing License.

9. ARTICLE 10 OF EXISTING LICENSE.

Effective as of the Amendment Date, Article 10.06 of the Existing License is hereby amended and restated to read in its entirety as follows:

"10.06 Within [***] of termination (but not expiration) of this Agreement, or upon written approval by Duke within some extended period of time after said [***], Licensee must (i) as directed by Duke return or destroy all information, data, and any relevant materials provided to Licensee by Duke during the term of

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12.

this Agreement and (ii) except as expressly set forth in Article 10.07 below, destroy all Licensed Products and/or Licensed Processes in a safe and legal manner. Further, Licensee must provide Duke with a written statement signed by an authorized representative of Licensee certifying the destruction of all Licensed Products and/or Licensed Processes in a safe and legal manner (excluding any such Licensed Products and/or Licensed Processes that Licensee is permitted to sell in accordance with Article 10.07) and, if applicable, that all information, data, and relevant materials provided to Licensee by Duke during the term of this Agreement have been destroyed.”

10. ARTICLE 18 OF EXISTING LICENSE.

(a) Effective as of the Amendment Date, Article 18.01 of the Existing License is hereby amended and restated to read in its entirety as follows:

“18.01 The provisions of Articles 1, 3, 5, 6.06, 7, 8 (with respect to infringement occurring prior to expiration or termination), 9.04, 10.06, 10.07, 10.08, 11, 12, 13, 14.01, 14.04, 14.05, 15, 16, 17, 18, 19, and 20 shall survive the expiration or termination of this Agreement.”

(b) In addition to the provisions that survive expiration or termination of the License Agreement pursuant to Article 18.01 of the Existing License (as amended and restated by this Amendment):

(i) the PhaseBio FTO License shall survive expiration (but not termination) of the License Agreement; and

(ii) the Duke FTO License shall survive expiration or termination of the License Agreement, except in the case of termination of the License Agreement by Licensee pursuant to Article 10.03 of the Existing License; provided, however, that, in the event of termination of the License Agreement by Licensee pursuant to Article 10.03 of the Existing License, any sublicense under the Duke FTO License granted by Duke to a Duke Licensee under a Duke HTT ELP-SMO Conjugate Agreement that was in effect immediately prior to such termination shall survive such termination of the License Agreement as a direct license by Licensee to such Duke Licensee, provided that: (A) such Duke Licensee was not the cause of the breach giving rise to Licensee's termination of the License Agreement; and (B) such survival of the Duke FTO License as a direct license by Licensee to such Duke Licensee is subject to the Duke Licensee promptly agreeing in writing to pay to Licensee an amount equal to [***] percent [***] of each payment that such Duke Licensee would have been obligated to pay to Duke after termination of the License Agreement had the Duke HTT ELP-SMO Conjugate Agreement remained in effect and that would have constituted Duke HTT ELP-SMO Conjugate Revenue if paid to Duke, on or before the date when such payment would have been due and payable to Duke.

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11. TERMINATION OF FEBRUARY 2015 SIDE LETTER.

That certain side letter agreement between the parties dated February 25, 2015, entered into concurrently with that certain Sixth Amendment to License Agreement dated February 25, 2015, shall terminate and be of no further force or effect.

12. EFFECT OF AMENDED AND RESTATED SEVENTH AMENDMENT.

The provisions of the Existing License are hereby amended by the provisions of this Amendment effective as of the Amendment Date, and the Original Seventh Amendment is hereby deemed null and void ab initio. Except as expressly amended by this Amendment, the Existing License shall remain in full force and effect in accordance with its terms.

13. SINGLE INSTRUMENT.

This Amendment and the Existing License, as amended and modified by this Amendment (i.e., the License Agreement, as such term is defined in paragraph 3(j) of this Amendment), shall constitute and shall be construed as a single instrument. The provisions of the Existing License, as amended and modified by the provisions of this Amendment, are incorporated herein by this reference and are hereby ratified and reaffirmed.

14. COUNTERPARTS.

This Amendment may be executed in counterparts, each of which shall be deemed an original document, and all of which, together with this writing, shall be deemed one instrument. This Amendment may be executed by electronic, facsimile or PDF signatures, which signatures shall have the same force and effect as original signatures.

IN WITNESS WHEREOF, this Amended and Restated Seventh Amendment to License Agreement has been executed and delivered by each of the parties hereto as of the Restatement Date and is effective as of the Amendment Date.

PHASEBIO PHARMACEUTICALS, INC. DUKE UNIVERSITY

By:

/s/ Jonathan P. Mow

By:

/s/ Robin L. Rasor

Name: Jonathan P. Mow

Title: Chief Executive Officer

Date: May 25, 2017

Name: Robin L. Rasor, CLP

Title: Executive Director, Duke Office of Licensing and Ventures

Date: May 25, 2017

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14.

APPENDIX K

Reverted Patent Application

[***]

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APPENDIX L

PhaseBio Existing Patent Rights

Patent No. Title Filing Date

Priority Date

[***] [***] [***] [***]

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