18-04561-E

foiapa

From: Mark Edwards <medwards@biosciadvisors.com>
Sent: Saturday, June 02, 2018 6:43 PM
To: foiapa
Subject: FOIA Request

I would like to request access to Exhibit 10.14 to the 6/30/15 10-Q, filed by bluebird bio, Inc. on 8/7/2015. Confidential treatment was sought as to certain portions when initially filed with the Commission.

In the event that confidential treatment has not expired or has been extended, I further request that you send me the expiration date(s) from the relevant CT order(s) so I will know when I should resubmit my request.

I authorize up to $61 in search and retrieval fees. Please send the exhibit(s) by PDF if possible.

Sincerely,

Mark

Mark G Edwards
Managing Director
Bioscience Advisors
2855 Mitchell Dr., Suite 103
Walnut Creek, CA 94598
medwards@biosciadvisors.com
925 954-1397

UNITED STATES
SECURITIES AND EXCHANGE COMMISSION
STATION PLACE
100 F STREET, NE
WASHINGTON, DC 20549-2465

Office of FOIA Services

June 22, 2018

Mr. Mark G. Edwards
Bioscience Advisors
2855 Mitchell Dr., Suite 103
Walnut Creek, CA 94598

RE: Freedom of Information Act (FOIA), 5 U.S.C. § 552
Request No. 18-04561-E

Dear Mr. Edwards:

This letter is in response to your request, dated June 02, 2018, and received in this office on June 04, 2018, for Exhibit 10.14 to the June 30, 2015, 10-Q, filed by bluebird bio, Inc., on August 7, 2015.

The search for responsive records has resulted in the retrieval of 95 pages of records that may be responsive to your request. They are being provided to you with this letter.

If you have any questions, please contact me at fultonc@sec.gov or 202-551-8186. You may also contact me at foiapa@sec.gov or (202) 551-7900. You also have the right to seek assistance from Lizzette Katilius as a FOIA Public Liaison or contact the Office of Government Information Services (OGIS) for dispute resolution services. OGIS can be reached at 1-877-684-6448 or Archives.gov or via e-mail at ogis@nara.gov.

Sincerely,

Charlotte Fulton
FOIA Research Specialist

Enclosure

10.14

Execution Copy

Amended and Restated Master Collaboration Agreement

by and between

bluebird bio, Inc.,

and

Celgene Corporation

and

Celgene European Investment Company LLC

June 3, 2015

Table of Contents

List of Exhibits

Amended and Restated Master Collaboration Agreement

This Amended and Restated Master Collaboration Agreement (this "Agreement"), dated as of June 3, 2015 (the "Amendment Date"), is made by and between bluebird bio, Inc., a Delaware corporation ("Bluebird"), and Celgene Corporation, a Delaware corporation ("Celgene Corp."), with respect to all rights and obligations under this Agreement in the United States (subject to Section 11.19), and Celgene European Investment Company LLC ("Celgene Europe"), a Delaware limited liability company, with respect to all rights and obligations under this Agreement outside of the United States (subject to Section 11.19) ("Celgene Europe" and Celgene Corp., together, "Celgene"). Each of Bluebird and Celgene may be referred to herein as a "Party" or together as the "Parties."

WHEREAS, Bluebird has developed and owns or has rights to certain Patents and technology relating to developing innovative gene therapies for genetic disorders;

WHEREAS, Celgene is a biopharmaceutical company focused on acquiring, Developing and Commercializing innovative anti-cancer agents;

WHEREAS, the Bluebird and Celgene Corp. entered into that certain Master Collaboration Agreement, dated as of March 19, 2013 (the "Original Agreement Date"), pursuant to which such Parties entered into a global strategic collaboration to research, develop and commercialize therapeutic products in the Field (the "Original Agreement"); and

WHEREAS, the Parties wish to amend and restate the Original Agreement as set forth herein in order to continue the research and development of Product Candidates, pursuant to the terms set forth therein.

NOW, THEREFORE, in consideration of the mutual covenants contained herein, and for other good and valuable consideration, the amount and sufficiency of which are hereby acknowledged, the Parties hereby agree as follows:

1. Definitions.

The following terms and their correlatives will have the following meanings:

1.1 "Affiliate" of a Person means any other Person which (directly or indirectly) is controlled by, controls or is under common control with such Person. A Person will be deemed to "control" another Person if it: (a) with respect to such other Person that is a corporation, owns, directly or indirectly, beneficially or legally, at least fifty percent (50%) of the outstanding voting securities or capital stock (or such lesser percentage which is the maximum allowed to be owned by such Person in a particular jurisdiction) of such other Person, or, with respect to such other Person that is not a corporation, has other comparable ownership interest; or (b) has the power, whether pursuant to contract, ownership of securities or otherwise, to direct the management and policies of such other Person.

1.2 "Baylor" means Baylor College of Medicine.

1.3 "Baylor Agreements" means (a) the Research and Collaboration Agreement (dated as of March 19, 2013) by and between Baylor and Celgene Corp. ("Baylor Research Agreement"), (b) the Platform Technology License Agreement (dated as of March 19, 2013) by and between Baylor and Celgene ("Baylor Platform License"), and (c) any Product License Agreement ("Baylor Product License"), in each case ((a) – (c)) as may be amended or restated.

1.4 "Biologics License Application" or "BLA" means, with respect to a country or extra-national territory, a request for permission to introduce, distribute, sell or market a biologic product in such country or some or all of such extra-national territory, including pursuant to 21 CFR 601.2 in the U.S.

1.5 "Bluebird In-Licensed IP" means all Patents, Materials and Know-How in-licensed by Bluebird or its Affiliates during the Collaboration Program Term pursuant to Bluebird In-Licenses that are necessary or useful to perform the Collaboration Program.

1.6 "Bluebird In-Licenses" means Pre-Existing In-Licenses and Bluebird Collaboration In-Licenses.

1.7 "Bluebird IP" means (a) Collaboration IP solely owned by Bluebird pursuant to Section 2.1(f), (b) Bluebird In-Licensed IP and (c) all Patents, Materials and Know-How Controlled by Bluebird or its Affiliates (other than Bluebird In-Licensed IP), in each case that is necessary or useful to perform the Collaboration Program. For avoidance of doubt, Collaboration IP jointly owned by the Parties pursuant to Section 2.1(f) will not be deemed Bluebird IP. **[For clarity, the Bluebird IP shall not include any Patents, Materials or Know-How relating to Gene Editing.]**

1.8 "Bluebird New In-License" means a New In-License between Bluebird or any of its Affiliates and a Third Party.

1.9 "Business Combination" means with respect to a Party, any of the following events: (a) any Third Party (or group of Third Parties acting in concert as a "group" within the meaning of Section 13(d) of the Exchange Act) acquires (including by way of a tender or exchange offer or issuance by such Party), directly or indirectly, beneficial ownership or a right to acquire beneficial ownership of shares of such Party representing fifty percent (50%) or more of the voting shares (where voting refers to being entitled to vote for the election of directors) then outstanding of such Party, but excluding for such purposes any transaction or series of transactions with Financial Investors made for bona fide equity financing purposes in which cash is received by Bluebird or indebtedness of Bluebird is cancelled or converted or a combination thereof; (b) such Party consolidates with or merges into another corporation or entity which is a Third Party, or any corporation or entity which is a Third Party consolidates with or merges into such Party, in either event pursuant to a transaction in which more than fifty percent (50%) of the voting shares of the acquiring or resulting entity outstanding immediately after such consolidation or merger is not held by the holders of the outstanding voting shares of such Party immediately preceding such consolidation or merger; or (c) such Party sells, transfers, leases or otherwise disposes of all or substantially all of its assets to a Third Party. "Financial Investor" means any investor or series of Affiliated investors whose primary business is the investment of capital for financial gain (including venture capital funds, private equity funds, pension funds and so-called "angel investors"), but in all cases excluding so-called "strategic investors" such as biotechnology companies, specialty pharmaceutical companies, pharmaceutical companies, generic pharmaceutical companies, and medical device companies and their Affiliates such as strategic venture arms.

1.10 "CAR" means chimeric antigen receptor.

1.11 "Celgene In-Licensed IP" means all Patents, Materials and Know-How in-licensed by Celgene or its Affiliates during the Collaboration Program Term pursuant to Applicable Celgene

In-Licenses that are necessary or useful for the research, Development or Manufacture of Product Candidates in the Field.

1.12 "Celgene In-Licenses" means the (a) Celgene Pre-Existing In-Licenses and (b) Celgene New In-Licenses. For clarity, the Baylor Agreements will not be considered a Celgene In-License hereunder.

1.13 "Celgene IP" means, collectively:

(a) "Celgene Know-How," which means Know-How and Materials that (i) are Controlled by Celgene or any of its Affiliates (other than pursuant to a Celgene In-License) as of the Original Agreement Date or thereafter during the Term, (ii) arise outside of the Collaboration Program, (iii) are provided by Celgene to the Collaboration Program pursuant to Section 2.1(i) for the Parties' research, Development or Manufacture of Product Candidates in the Field and (iv) are necessary or useful for the research, Development or Manufacture of Product Candidates in the Field; and

(b) "Celgene Patents," which means Patents Controlled by Celgene or any of its Affiliates (other than pursuant to a Celgene In-License) as of the Original Agreement Date or thereafter during the Term that Cover Celgene Know-How that are provided by Celgene to the Collaboration Program pursuant to Section 2.1(i);

(c) Any Celgene In-Licensed IP; and

(d) Any Collaboration IP solely owned by Celgene pursuant to Section 2.1(f).

For avoidance of doubt, Collaboration IP jointly owned by the Parties pursuant to Section 2.1(f) will not be deemed Celgene IP.

1.14 "Celgene New In-License" means a New In-License between Celgene or any of its Affiliates and a Third Party.

1.15 "Celgene Pre-Existing In-Licenses" means any agreement between Celgene or any of its Affiliates and a Third Party executed prior to the Original Agreement Date pursuant to which Celgene or any of its Affiliates in-licenses any Know-How, Materials or Patents that is necessary or useful for the research, Development, Manufacture or commercialization of Product Candidates in the Field. For clarity, the Baylor Agreements and Celgene New In-Licenses will not be considered Celgene Pre-Existing In-Licenses hereunder.

1.16 "cGMP" means all applicable standards relating to manufacturing practices for pharmaceutical products, including (a) all applicable requirements detailed in the FDA's current Good Manufacturing Practices regulations, 21 CFR Parts 210 and 211 and The Rules Governing Medicinal Products in the European Community, Volume IV, Good Manufacturing Practice for Medicinal Products, as each may be amended from time to time, and (b) all applicable Laws promulgated by any governmental authority having jurisdiction over the Manufacture of a Product Candidate, Licensed Candidate or Licensed Product, as applicable.

1.17 "Clinical Study" means any human clinical trial of a Product Candidate.

1.18 "Collaboration IP" means all Collaboration Know-How and Patents arising therefrom that Cover the Collaboration Know-How.

1.19 "Collaboration Know-How" means all Know-How and Materials discovered, created, conceived, developed or reduced to practice in the course of performing activities under the

Collaboration Program (whether solely by one Party or jointly by the Parties, in each case with their Affiliates or any Third Parties or any employees, consultants or agents of any of the foregoing which perform activities under the Collaboration Program).

1.20 "Collaboration Program" means the program of research and Development in the Field that is engaged in by or on behalf of the Parties under this Agreement during the Collaboration Program Term.

1.21 "Commercially Reasonable Efforts" means, with respect to the research and Development of Product Candidates, that level of efforts and resources that such Party would normally devote to the research or Development, as the case may be, of a product owned by it or to which it has rights of the type it has hereunder, which is of a similar commercial potential at a similar stage in its lifecycle, in each case taking into account issues of safety and efficacy, product profile, the proprietary position, the then current competitive environment for such product and the likely timing of such product's entry into the market, the pricing and launching strategy for the respective product, the regulatory environment and status of such product, and other relevant scientific, technical and commercial factors.

1.22 "Control" or "Controlled" means, with respect to any Know-How, Material, Patent, Regulatory Data, Regulatory Filings or Regulatory Approvals, the possession (whether by ownership or license or sublicense) by a Party of the ability to use or practice such Know-How, Material, Patent, Regulatory Data, Regulatory Filings or Regulatory Approvals to perform the Collaboration Program or otherwise to grant to the other Party a license or access as provided herein to such item, without violating the terms of any agreement or other arrangement with any Third Party or, other than under the Bluebird In-Licenses, being obligated to pay any royalties or other consideration therefor ("Additional Payments"). For clarity, Bluebird New In-Licenses are not "Controlled" for purposes of this Agreement, unless and only after such Bluebird New In-License is converted into a Bluebird Collaboration In-License pursuant to Sections 4.1(b) or 4.1(d) and all required payments thereunder have been made by Celgene to Bluebird. For clarity, Celgene In-Licenses are not "Controlled" for purposes of this Agreement, unless and only after the Parties mutually agree to include such Celgene In-License in the Collaboration Program pursuant to Section 4.1(c). Notwithstanding the foregoing, if on or after the Original Agreement Date and for such time as the other Party agrees to pay and does in fact pay all Additional Payments with respect to such Party's access or license to such Know-How, Material, Patent, Regulatory Data, Regulatory Filings and Regulatory Approvals (other than that in-licensed by Bluebird pursuant to a Bluebird In-License), such Know-How, Material, Patent, Regulatory Data, Regulatory Filings and Regulatory Approvals will be deemed to be included in the definition of "Control".

1.23 "Covers", with reference to (a) a Patent, means that the making, using, selling, offering for sale or importing of a product or practice of a method would infringe a valid claim of such Patent in the country in which such activity occurs, and (b) Materials or Know-How, means that the Manufacture, Development or commercialization of a product incorporates, embodies or otherwise makes use of such Know-How.

1.24 "Development" means preclinical and clinical drug development activities, including: test method development and stability testing, toxicology, formulation, process development, qualification and validation, Manufacture scale-up, development-stage Manufacturing, quality assurance/quality control, clinical studies, statistical analysis and report writing, the preparation

and submission of BLAs and MAAs, regulatory affairs with respect to the foregoing and all other activities necessary or useful or otherwise requested or required by a Regulatory Authority as a condition or in support of obtaining or maintaining a Regulatory Approval.

1.25 "Development & Commercialization Agreements" means the Amended and Restated License Agreement attached hereto as Exhibit A (the "License Agreement") and the Amended and Restated Co-Development, Co-Promote and Profit Share Agreement attached hereto as Exhibit B (the "Co-Development, Co-Promote and Profit Share Agreement").

1.26 "EMA" means the Regulatory Authority known as either the European Medicines Agency or the European Agency for the Evaluation of Medicinal Products and any successor agency thereto.

1.27 "FDA" means the United States Food and Drug Administration and any successor agency thereto.

1.28 "Field" means the targeting of the Target Antigen by the use of (a) T-cells expressing a CAR (with or without other engineering to enhance functionality and/or safety), including virus specific genetically modified T-cells expressing a synthetic CAR, and (b) T-cells expressing native antigen receptors or engineered antigen receptors in which the T-cells are genetically modified to enhance their performance, persistence or safety, in each case under (a) and (b) for the treatment, modulation, palliation or prevention of cancer in humans.

1.29 "Gene Editing" means homing endonuclease (HE) and megaTAL gene editing technologies, including HE/megaTAL-mediated homology directed recombination and Bluebird's proprietary DARIC cell signaling technology.

1.30 "IND" means an investigational new drug application filed with the FDA for authorization to commence clinical studies, and its equivalent in a foreign country.

1.31 "Know-How" means all commercial, technical, scientific and other know-how and information, trade secrets, knowledge, technology, methods, processes, practices, formulae, instructions, skills, techniques, procedures, experiences, ideas, technical assistance, designs, drawings, assembly procedures, computer programs, specifications, data and results (including biological, chemical, pharmacological, toxicological, pharmaceutical, physical and analytical, preclinical, clinical, safety, manufacturing and quality control data and know-how, including Regulatory Data, study designs and protocols), in all cases, whether or not confidential, proprietary, patented or patentable, in written, electronic or any other form now known or hereafter developed.

1.32 "Knowledge" means the actual knowledge or good faith understanding of the vice presidents, senior vice presidents, president or chief executive officer of a Party of the facts and information then in their possession.

1.33 "Law" or "Laws" means all laws, statutes, rules, regulations, orders, judgments, or ordinances having the effect of law of any federal, national, multinational, state, provincial, county, city or other political subdivision.

1.34 "Lead Product Candidate" means the Product Candidate identified on Exhibit D.

1.35 "license" means license or sublicense, as applicable.

1.36 "Manufacturing" means the production, manufacture, processing, filling, finishing, packaging, labeling, shipping and holding of product or any intermediate thereof, including process development, process qualification and validation, scale-up, commercial manufacture and analytic development, product characterization, stability testing, quality assurance and quality control. With reference to any Product Candidate, Manufacturing includes Vector and associated Payload supply.

1.37 "Materials" means any tangible chemical or biological material, including any compounds, DNA, RNA, clones, Vectors, Payloads, cells, and any expression product, progeny, derivative or other improvement thereto, along with any tangible chemical or biological material embodying any Know-How.

1.38 "MAA" means an application for the authorization to market a product in any country or group of countries outside the United States, as defined in the applicable Laws and filed with the Regulatory Authority of a given country or group of countries.

1.39 "Next Generation Product Candidate" means the Product Candidate identified on Exhibit D.

1.40 **["Non-Coding Sequences" means those sequences of a Vector that modulate the expression of coding elements and (a) are not derived from the virus used to create such Vector, and (b) are not expressed as part of the Payload coding sequence. For clarity, "non-coding sequences" include engineered promoter sequences and splicing sequences.]**

1.41 "Option Fees" means the Initial Option Fee and the Additional Option Fee.

1.42 "Optioned Candidate" means a Product Candidate for which Celgene has exercised its option pursuant to Sections 5.1 or 5.6.

1.43 "Other In-Licenses" means Bluebird Collaboration In-Licenses that Celgene does not elect to include within the definition of Applicable New In-Licenses in an applicable Development & Commercialization Agreement in accordance with Section 5.7.

1.44 "Patent" means a patent or a patent application, including any additions, divisions, continuations, continuations-in-part, invention certificates, substitutions, reissues, reexaminations, extensions, registrations, supplementary protection certificates and renewals, including all U.S. and foreign counterparts thereof, but not including any rights that give rise to regulatory exclusivity periods (other than supplementary protection certificates, which will be treated as "Patents" hereunder).

1.45 "Patent Costs" means the out-of-pocket costs and expenses paid to outside legal counsel and other Third Parties (including to any licensor pursuant to any in-license), and filing and maintenance expenses, incurred in Prosecuting and Maintaining Patents and enforcing and defending them.

1.46 "Payload" means **[peptide coding sequences. For clarity peptide coding sequences include peptide sequences encoding chimeric antigen receptor elements including targeting domain, spacer, transmembrane domains, cytoplasmic domains and other coding sequences]**.

1.47 "Person" means any individual, partnership, joint venture, limited liability company, corporation, firm, trust, association, unincorporated organization, governmental authority or agency, or any other entity not specifically listed herein.

1.48 "Phase 1 Study" means a clinical trial of a product, the principal purpose of which is preliminary determination of safety in healthy individuals or patients as described under 21 C.F.R. §312.21(a) (as amended or any replacement thereof), or a similar clinical study prescribed by the Regulatory Authorities in a foreign country. For purposes of this Agreement, "completion of Phase 1 Study" means the date on which a final and complete clinical study report for the Phase 1 Study, based on an Initial Primary Analysis, is provided to Celgene. "Initial Primary Analysis" means, with respect to a Phase 1 Study, an analysis performed on the complete and cleaned dataset from such Phase 1 Study, which dataset includes a minimum of three (3) months follow-up of all patients in such Phase 1 Study.

1.49 "Phase 2/3 Study" means a clinical trial of a product that is (a) initiated to determine the safety and efficacy in the target patient population, as described in 21 C.F.R. 312.21(b) (as amended or any replacement thereof), or a similar clinical study prescribed by the Regulatory Authorities in a foreign country and (b) converted to a Phase 3 Study following an interim analysis of safety and efficacy data generated from the initial patents enrolled in such clinical trial.

1.50 "Phase 3 Study" means a clinical trial of a product on a sufficient number of subjects that is designed to establish that a pharmaceutical product is safe and efficacious for its intended use, and to determine warnings, precautions, and adverse reactions that are associated with such pharmaceutical product in the dosage range to be prescribed, which trial is intended to support Regulatory Approval of such product, as described in 21 C.F.R. 312.21(c) (as amended or any replacement thereof), or a similar clinical study prescribed by the Regulatory Authorities in a foreign country. For purposes of this Agreement and the Development & Commercialization Agreements, (a) "commencement of Phase 3 Study" for a product means (I) the first dosing of such product in a human patient in a Phase 3 Study, or (ii) the date on which the sponsor elects to continue enrollment of patients in a Phase 2/3 Study following an interim analysis of safety and efficacy data generated from the initial patents enrolled in such Phase 2/3 Study, and (b) "completion of Phase 3 Study" means the final dosing of the last patient to be dosed in such Phase 3 Study.

1.51 "Pre-Existing In-Licenses" means the agreements listed in Exhibit C.

1.52 "Product Candidate(s)" means any therapeutic candidate designed, discovered or developed as part of the Collaboration Program that comprises a T-Cell transduced with recombinant viral agent(s) encoding CAR(s) with targeting domain(s) that specifically targets the Target Antigen and optionally encoding additional protein(s) that may modulate the efficacy and safety of such therapeutic candidate. As of the Amendment Date, the Product Candidates include the Lead Product Candidate and the Next Generation Product Candidate.

1.53 "Prosecution and Maintenance" means, with regard to a particular Patent, the preparation, filing, prosecution and maintenance of such Patent, as well as re-examinations, reissues and the like with respect to that Patent, together with the conduct of interferences, the defense of oppositions and other similar proceedings with respect to that Patent.

1.54 "Regulatory Approval" means, with respect to a country or extra-national territory, any and all approvals (including BLAs and MAAs), licenses, registrations or authorizations of any Regulatory Authority necessary in order to commercially distribute, sell or market a product in such country or some or all of such extra-national territory, excluding any pricing or reimbursement approvals.

1.55 "Regulatory Authority" means any national (*e.g.*, the FDA), supra-national (*e.g.*, the EMA), regional, state or local regulatory agency, department, bureau, commission, council or other governmental authority, in any jurisdiction in the world, involved in the granting of Regulatory Approval.

1.56 "Regulatory Data" means all information with respect to a product made, collected or otherwise generated under or in connection with clinical studies and such other tests and studies in patients that are (a) required by applicable Law, or otherwise recommended by Regulatory Authorities, to obtain or maintain Regulatory Approvals, or (b) conducted solely in support of pricing or reimbursement for such product or are not otherwise strictly required in order to obtain or maintain Regulatory Approval for such product (including epidemiological studies, modeling and pharmacoeconomic studies, post-marketing surveillance studies, investigator sponsored studies and health economics studies).

1.57 "Regulatory Filings" means any submission to a Regulatory Authority of any appropriate regulatory application together with any related correspondence and documentation, and will include any submission to a regulatory advisory board, marketing authorization application, and any supplement or amendment thereto. For the avoidance of doubt, Regulatory Filings will include any IND, BLA, MAA or the corresponding application in any other country or group of countries.

1.58 "Target Antigen" means the antigen designated as B-cell maturation antigen (BCMA) as further set forth on Exhibit D, and naturally occurring variants thereof.

1.59 "T-Cell" means any of the lymphocytes that mature in the thymus and have the ability to recognize specific peptide antigens presented by major histocompatibility complex antigens through the receptors on their cell surface.

1.60 "Third Party" means any Person other than Bluebird, Celgene and their respective Affiliates.

1.61 **["Tier-One Countries" means Australia, Canada, China (including Hong Kong) European Region (Member States of the European Patent Office), Japan, Korea, New Zealand and United States].**

1.62 **["Tier-Two Countries" means Argentina, Brazil, India, Indonesia, Israel, Mexico and Russia].**

1.63 "United States" or "U.S." means the United States of America, including its territories and possessions, the District of Columbia and Puerto Rico.

1.64 "Vector" means **[recombinant viral agent(s) (including all components therein other than Payloads) for gene therapy intended to deliver a nucleotide sequence, including those recombinant viral agent(s) (including all components therein other than Payloads) for a Product Candidate or Optioned Candidate under this Agreement or any Elected Candidate or Licensed Product under any Development & Commercialization Agreement. For avoidance of doubt, Vectors do not include Payloads].**

Definitions for each of the following terms are found in the body of this Agreement as indicated below:

Defined Term	*Location*
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Defined Term	*Location*
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HSR Filing	Section 5.8(b)
Implementation Date	Section 5.8(b)
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Indemnification Claim Notice	Section 9.6(c)
Indemnified Party	Section 9.6(c)
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Initial Primary Analysis	Section 1.48
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Defined Term	*Location*
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2. Collaboration Program.

2.1 Collaboration Program.

(a) *General.* During the Collaboration Program Term, the Parties will conduct the Collaboration Program on the terms and conditions set forth in this Agreement to identify, research and Develop Product Candidates. **[The focus of the Collaboration Program will be the research and Development of Product Candidates, with the goals of (i) commencing an initial Phase 1 Study for the Lead Product Candidate, and (ii) filing an IND for the Next Generation Product Candidate. Bluebird will conduct one (1) initial Phase 1 Study for up to two (2) Product Candidates under the Collaboration Program, and each initial Phase 1 Study will enroll up to forty (40) patients for such Product Candidate (unless otherwise mutually agreed by the Parties) in order to provide an early, non-statistical assessment of potential safety and efficacy; provided that for any patients included in an initial Phase 1 Study beyond the forty (40) patients referenced above, Celgene will, if Celgene has consented in its sole discretion to the inclusion of such additional patients in such initial Phase 1 Study(ies), reimburse Bluebird for all costs and expenses of such additional patients included in such initial Phase 1 Study(ies) at a cost equal to four hundred thousand dollars ($400,000) per additional patient within thirty (30) days of Celgene's receipt of Bluebird's written invoice therefor.]** Under the Collaboration Program, Bluebird will be responsible for all research and Development activities performed through completion of the initial Phase 1 Study with respect to each Product Candidate, and Celgene will be a critical advisor for oncology drug development, ex vivo human cell processing, assay development and release testing. Bluebird will keep Celgene reasonably informed of Bluebird's research and Development activities and will reasonably consult with Celgene and reasonably consider Celgene's comments and advice with respect to all material decisions relating to such activities. Research and Development activities of the Parties with respect to the Collaboration Program will be described in a "Collaboration Plan," an initial version of which is attached hereto as Exhibit E. Any modifications or amendments to the Collaboration Plan that are proposed by either Party will be subject to review by the JSC pursuant to and in accordance with the terms of Section 3.2(d) and to the prior written approval of both Parties. The selection of Product Candidates for additional work under the Collaboration Program will be subject to the oversight and supervision of the JSC, provided that if the JSC is unable to unanimously agree with respect to the selection of a Product Candidate for additional work under the Collaboration Program, either Party may, by written notice to the other Party, have such dispute referred to the Bluebird CEO and the Celgene CEO or in either case his or her designee (who will be a senior executive), who will attempt in good faith to resolve such dispute by negotiation and consultation **[for a thirty (30) day period following receipt of such written notice]**, and if not so resolved,

Bluebird will have the tie-breaking vote, provided that if a Business Combination has occurred with respect to Bluebird, Celgene will have the tie-breaking vote.

(b) *Obligations Under the Collaboration Plan.* Each Party will use Commercially Reasonable Efforts to perform (itself or through its Affiliates or by permitted subcontracting pursuant to Section 2.4) its respective obligations under the Collaboration Plan, and will cooperate with and provide reasonable support to the other Party in such other Party's performance of its responsibilities under the Collaboration Plan. The Collaboration Plan will not assign to Celgene, and Bluebird will not request that Celgene perform, any research or Development activity that would require a sublicense under any Bluebird In-License. If, notwithstanding the foregoing, the Collaboration Plan assigns to Celgene, or Bluebird requests that Celgene perform, any such research or Development activity, Bluebird will be responsible for any and all obligations to its licensors under any Bluebird In-License that arise out of such research or Development. **[Bluebird will not use any Patents, Materials or Know-How relating to Gene Editing in connection with the performance of the Collaboration Program, without the prior written consent of Celgene, and Bluebird shall not be entitled to any compensation from Celgene in the event of any breach by Bluebird of this sentence. As of the Amendment Date, Bluebird represents and warrants that none of the Product Candidates will be Covered by any Patents, Materials or Know-How Controlled by Bluebird relating to Gene Editing.]** The Parties acknowledge and agree, however, that no outcome or success is or can be assured and that failure to achieve desired results will not in and of itself constitute a breach or default of any obligation in this Agreement (notwithstanding the focus of the Collaboration Program described above).

(c) *Manufacturing.*

(i) The Parties mutually agree that, subject to mutual agreement on a work order under that certain Manufacturing and Clinical Supply Agreement, dated as of December 15, 2014 (as the same may be amended, restated or otherwise modified from time to time), as a part of the Collaboration Program, Celgene will use and operate an existing cGMP suite, for the processing of the Lead Product Candidate which incorporates Vectors and associated Payloads supplied by Bluebird **[for the initial Phase 1 Clinical Study for the Lead Product Candidate]**. The Parties will use commercially reasonable efforts to enter into such additional agreements as may be necessary for Celgene to do so, including a Vector and Payload supply agreement. The Parties will determine which Party will have responsibility for (A) the processing of the Lead Product Candidate which incorporates Vectors and associated Payloads supplied by Bluebird for use in any Clinical Studies **[other than the initial Phase 1 Clinical Study]**, and (B) the processing of any other Product Candidates which incorporates Vectors and associated Payloads supplied by Bluebird for any Clinical Studies of such other Product Candidates**[; provided that, in each case if the Parties are unable to agree on which Party will have responsibility for the processing activities described in clauses (A) and (B) above, then Bluebird will have the right to decide whether to use Bluebird or its Affiliate or a Third Party to conduct such processing activities]**.

(ii) Prior to or during initial proof of concept studies, Celgene and Bluebird will mutually assess the capability for sole supply manufacture of Vector supply, and agree to provisions to ensure the Manufacture and distribution, of Vector Supplies, in adequate quantities, of adequate quality, and in acceptable timeframes so as to not delay clinical Development and

commercialization of Product Candidates. Multiple sites may be required to supply and store inventories of Vector supplies.

(d) *Collaboration Program Term.* Unless terminated or extended pursuant to the terms hereof, the term of the Collaboration Program will commence on the Original Agreement Date and continue until the third (3rd) anniversary of the Amendment Date the "Collaboration Program Term"). The Collaboration Program Term may be extended only upon the mutual written agreement of the Parties.

(e) **Exclusivity. [**

(i) **During the Collaboration Program Term, neither Party nor its Affiliates (nor any others on behalf of or with, or under license (including a covenant not to sue) or sublicense from, such Party or any its Affiliates) will research, Develop, Manufacture or commercialize any actual or potential products (including Vectors and associated Payloads) to be used in the Field that specifically target the Target Antigen, other than as a part of the Collaboration Program, and other than with respect to Declined Product Candidates in accordance with Section 5.6. The Parties agree that, for the purposes of this Section 2.1(e)(i), the activities contemplated with Baylor under the Baylor Research Agreement are part of the Collaboration Program**

(ii) **Notwithstanding Section 2.1(e)(i), if (A) a Business Combination occurs with respect to either Party with a Third Party or (B) a Party acquires a Third Party (including by a merger or consolidation) so that such Third Party becomes an Affiliate over which the acquiring Party has control (as defined in Section 1.1), or (C) a Party acquires all or substantially all of the assets of a Third Party (including any Subsidiaries or divisions thereof) (each of (A), (B) and (C), a "Business Acquisition"; such Party, the "Business Party"), and, in each case, the Third Party (or any of such Third Party's Affiliates or any successors or assigns of such Third Party or such Third Party's Affiliates, other than the Business Party and its Affiliates as of the Business Acquisition) (I) already has, or the acquired assets contain, as applicable, a program that existed prior to, or was planned prior to and is demonstrably to be implemented shortly after, the Business Acquisition or (II) initiates and pursues a new program following such Business Acquisition, in each case that would otherwise violate Section 2.1(e)(i) (a "Business Program"), then such Third Party (or any of such Third Party's Affiliates or any successors or assigns of such Third Party or such Third Party's Affiliates, other than the Business Party and its Affiliates as of the Business Acquisition), as applicable, will be permitted to initiate, pursue and continue such Business Program after such Business Acquisition and such initiation, pursuit and continuation will not constitute a violation of Section 2.1(e)(i); provided that (y) none of the Collaboration IP or other Patents, Materials or Know-How Controlled by the other Party and, in each case, licensed to the Business Party will be used in the Business Program, and (z) the research or Development activities required under this Agreement will be conducted separately from any research or Development activities directed to such Business Program, including the maintenance of separate lab notebooks and records (password-protected to the extent kept on a computer network) and separate personnel working on each of the activities under this Agreement and the activities covered under such Business Program.**

(iii) **Notwithstanding Section 2.1(e)(i), and except as provided in Section 2.1(e)(iv), nothing in this Agreement shall prevent a Party or its Affiliates from conducting**

any research, Development, Manufacture or commercialization programs on any actual or potential product (including Vectors and associated Payloads) that targets an antigen that is not a Target Antigen, internally or with Third Party collaborators, licensors, licensees or partners.

(iv) **Notwithstanding anything in this Section 2.1(e), Bluebird and its Affiliates shall be entitled to conduct internal research, pre-clinical Development and Manufacture programs using Gene Editing technology on any actual or potential products (including Vectors and associated Payloads) that target the Target Antigen.]**

(f) *Collaboration Know-How and IP.*

(i) Each Party will promptly (and at least on a calendar quarterly basis) disclose to the other Party any Collaboration Know-How discovered, created, conceived, developed or reduced to practice by or on behalf of such Party, and will provide the other Party such documentation regarding the same as the other Party may reasonably request.

(ii) Except as set forth in this Section 2.1(f)(ii) and in Section 2.1(f) (iv) below, each Party will solely own all right, title and interest in and to all Collaboration IP that is discovered, created, conceived, developed or reduced to practice solely by or on behalf of such Party, and all right, title and interest in and to all Collaboration IP will automatically vest solely in such Party. The Parties acknowledge and agree that (A) subject to Section 2.1(f)(iv) with respect to improvements to, or modifications or derivative works of, Bluebird IP that is directed to Vectors, the Parties will jointly own all right, title and interest in and to all Know-How and Materials, and Patents arising therefrom, that are discovered, created, conceived, developed or reduced to practice by or on behalf of the Parties (whether solely by or on behalf of a Party or jointly by or on behalf of both Parties) in the course of performing activities as a part of the "Project Research" (as defined in the Baylor Research Agreement), (B) as between Celgene and Bluebird, Know-How and Materials, and Patents arising therefrom, discovered, created, conceived, developed or reduced to practice by Dr. Malcolm K. Brenner during the Term in connection with his participation on the Collaboration Program Advisory Committee that relate to "Project Research" will be subject to the terms of the Baylor Agreements and (C) as between Celgene and Bluebird, Know-How and Materials, and Patents arising therefrom, that are discovered, created, conceived, developed or reduced to practice by Dr. Malcolm K. Brenner during the Term in connection with his participation on the Collaboration Program Advisory Committee that do not relate to "Project Research" and (I) are within the Baylor Field will be jointly owned by the Parties and (II) are outside the Baylor Field will be solely owned by the Party with which Dr. Malcolm K. Brenner discovered, created, conceived, developed or reduced to practice the subject Know-How and Materials, or will be jointly owned by the Parties if Dr. Malcolm K. Brenner discovered, created, conceived, developed or reduced to practice the subject Know-How and Materials with both Parties, subject, in each case of clauses (C)(I) and (C)(II) above, to Section (iv) with respect to improvements to, or modifications or derivative works of, Bluebird IP that is directed to Vectors. Each Party agrees to execute such written assignments and confirmations as are necessary to effect the allocation of ownership of Patents, Know-How and Materials as provided in the immediately preceding sentence, and any Patents, Know-How and Materials addressed by the immediately preceding sentence (other than clause (C)(II)) shall be considered Collaboration IP. **[The Parties acknowledge and agree that the Collaboration Program Advisory Committee established under the Original Agreement may be terminated upon mutual agreement of the Parties. "Baylor Field" means, collectively, the**

use of: (y) T-Cells expressing a CAR (with or without other engineering to enhance functionality and/or safety), including T-Cells expressing native T-Cell receptors with specificity to a viral antigen or a tumor-associated antigen (TAA), in which said T-cells are genetically modified by the inclusion and expression of a synthetic CAR, with or without other engineering to enhance functionality or safety; and (z) T-Cells expressing native-virus antigen receptors or tumor-specific antigen receptors in which the T-Cells are genetically modified to enhance their performance, persistence and/or safety; for, in each case, the diagnosis, treatment, modulation, palliation or prevention of cancer or any other disease, disorder or condition in humans. For clarification with respect to the Baylor Field, modification to enhance performance, persistence or safety could include addition or introduction of modified cytokine or other receptors, inducible elements to control cell viability or function or selection of T-Cell subsets, including, for example, the inclusion of a novel suicide gene in such T-Cell. "Collaboration Program Advisory Committee" means the Collaboration Program Advisory Committee established under the Original Agreement.]

(iii) Except as set forth in Section 2.1(f)(iv) below, the Parties will jointly own any and all Collaboration IP that is discovered, created, conceived, developed or reduced to practice jointly by or on behalf of the Parties. Each Party will have an undivided one-half interest in and to such jointly-owned Collaboration IP. Each Party will exercise its ownership rights in and to such jointly-owned Collaboration IP, including the right to license and sublicense or otherwise to exploit, transfer or encumber its ownership interest, without an accounting or obligation to, or consent required from, the other Party, but subject to the licenses hereunder and the other terms and conditions of this Agreement, including Section 2.1(e). At the reasonable written request of a Party, the other Party will in writing grant such consents and confirm that no such accounting is required to effect the foregoing regarding jointly-owned Collaboration IP. Each Party, for itself and on behalf of its Affiliates, licensees and sublicensees, and employees, subcontractors (subject to Section 2.4), consultants and agents of any of the foregoing, hereby assigns (and to the extent such assignment can only be made in the future hereby agrees to assign), to the other Party a joint and undivided interest in and to all jointly-owned Collaboration IP.

(iv) Notwithstanding the first sentence of Section 2.1(f)(ii) and notwithstanding Section 2.1(f)(iii), but subject to the second sentence of Section 2.1(f)(ii), (A) Celgene will solely own any Collaboration IP that is an improvement to, or modification or derivative work of, any Celgene IP, and Bluebird, for itself and on behalf of its Affiliates, licensees and sublicensees, and employees, subcontractors (subject to Section 2.4), consultants and agents of any of the foregoing, hereby assigns (and to the extent such assignment can only be made in the future hereby agrees to assign), all of its rights, title and interest in such Collaboration IP to Celgene, and (B) Bluebird will solely own any Collaboration IP that is an improvement to, or modification or derivative work of, any Bluebird IP, and Celgene, for itself and on behalf of its Affiliates, licensees and sublicensees, and employees, subcontractors (subject to Section 2.4), consultants and agents of any of the foregoing, hereby assigns (and to the extent such assignment can only be made in the future hereby agrees to assign), all of its rights, title and interest in such Collaboration IP to Bluebird. To the extent that a particular item of Collaboration IP constitutes an improvement to, or modification or derivative work of, both Celgene IP and Bluebird IP, the Parties will jointly own such particular item of Collaboration IP pursuant to Section 2.1(f)(iii).

(v) The Parties acknowledge and agree that all Collaboration Know-How (as defined under the Original Agreement) existing as of the Amendment Date and Patents arising therefrom that Cover such Collaboration Know-How are and shall continue to be owned by the Parties pursuant to the terms of the Original Agreement, and shall be considered Collaboration IP for purposes of this Agreement. As of the Amendment Date, (A) all Patents within such Collaboration IP that are solely owned by Bluebird are set forth on Exhibit I-1, (B) all Patents within such Collaboration IP that are solely owned by Celgene are set forth on Exhibit I-2, and (C) all Patents within such Collaboration IP that are jointly owned by Bluebird and Celgene are set forth on Exhibit I-3.

(vi) Inventorship determination for all Patents worldwide arising from any Know-How or Material discovered, created, conceived, developed or reduced to practice by or on behalf of the Parties under or in connection with this Agreement and thus the ownership thereof will be made in accordance with applicable United States patent laws.

(g) *Regulatory*. Bluebird will exclusively own the INDs for the Development of Product Candidates and will, after reasonable consultation with Celgene under the oversight of the JSC: (i) determine the regulatory plans and strategies for Product Candidates, (ii) prepare and file all Regulatory Filings with respect to Product Candidates, and (iii) be responsible for conducting all meetings with Regulatory Authorities in connection with the Development of Product Candidates, in each case unless and until such time that such Product Candidate becomes an Optioned Candidate. Bluebird will provide Celgene with reasonable prior notice of all such meetings with Regulatory Authorities, and Celgene will have the right to participate in such meetings.

(h) *Licenses*.

(i) During the Term, Bluebird hereby grants to Celgene the co-exclusive (with Bluebird and its Affiliates), worldwide, royalty-free right and license in the Field, without the right to grant sublicenses (other than to permitted subcontractors under Section 2.4), under Collaboration IP solely owned by Bluebird pursuant to Section 2.1(f) and Bluebird's interest in jointly owned Collaboration IP, in each case solely to conduct research and Development under the Collaboration Plan as part of the Collaboration Program in accordance with the terms of this Agreement. Except as may be permitted under an applicable Development & Commercialization Agreement, Celgene will not practice or otherwise use any Collaboration IP solely owned by Bluebird pursuant to Section 2.1(f) other than in accordance with the license granted in this Section 2.1(h)(i).

(ii) Subject to the terms and conditions of this Agreement, during the Term and thereafter, Celgene hereby grants to Bluebird a worldwide, fully paid-up, non-exclusive license, with the right to sublicense through multiple tiers, under (A) Collaboration IP solely owned by Celgene pursuant to Section 2.1(f), (B) all improvements to, or modifications or derivative works of, any Bluebird IP that are discovered, created, conceived, developed or reduced to practice by or on behalf of Celgene or its Affiliates during the Collaboration Program Term in the course of Developing an Optioned Candidate, Elected Candidate or Licensed Product under a Development & Commercialization Agreement, and (C) **[Patents, Know-How and Materials that are in-licensed by Celgene pursuant to a Celgene New In-License that is an Applicable Celgene In-License]**, in each case of (A) through (C), that are related to the Manufacture of Vectors, solely to research, Develop, Manufacture and commercialize Vectors,

provided that (I) the foregoing license does not include any Patents and Know-How for Manufacturing (other than Manufacturing of Vectors), (II) **[the scope of the foregoing license with respect to Patents, Know-How and Materials that are in-licensed by Celgene pursuant to a Celgene New In-License that is an Applicable Celgene In-License is limited to the Field and to Vectors (including components therefor, but, for clarity, excluding Payloads) actually used or Developed in the course of performing Collaboration Program activities]**, (III) during the Term and the term of any applicable Development & Commercialization Agreement, the foregoing license does not include the right to research, Develop, Manufacture or commercialize any Vectors that are used in connection with Optioned Candidates, Elected Candidates or Licensed Products under such Development & Commercialization Agreement, other than with and for Celgene, and (IV) **[with respect to Non-Coding Sequences, the foregoing license is limited to use of Non-Coding Sequences solely with and as part of a Vector (and not on a standalone basis or with anything other than a Vector)]**. Further, the Parties acknowledge and agree that, upon written notice to Celgene, Bluebird may decline the taking of or terminate such sublicense from Celgene with respect to any Patents, Know-How or Materials that are in-licensed by Celgene pursuant to a Celgene New In-License that is an Applicable Celgene In-License. If any royalty, milestone or other payment, **[excluding (w) annual maintenance fee payments, (x) payments triggered by the grant of a sublicense to Bluebird (but including payments triggered by further grants of sublicenses by Bluebird or its sublicensees), (y) payments for Patent Costs or (z) payments arising from Bluebird's performance of activities as a part of this Agreement or any applicable Development & Commercialization Agreement, which payments are addressed in Section 4.1(e)(ii),]** becomes due under any Celgene New In-License that is attributable to Bluebird as a sublicensee thereunder with respect to such research, Development, Manufacture or commercialization of Vectors, Celgene will pay same, provided that Bluebird will reimburse Celgene for any such payment within thirty (30) days of Bluebird's receipt of Celgene's written invoice therefor, and Bluebird's failure to pay such reimbursement within such time period will entitle Celgene to terminate Bluebird's sublicense under the applicable Celgene New In-License upon thirty (30) days written notice. Upon Bluebird's request, Celgene agrees to provide Bluebird with a copy of any Celgene New In-License that is an Applicable Celgene In-License under which Bluebird is granted a sublicense under this Section 2.1(h)(ii), which Celgene may reasonably redact (other than with respect to provisions applicable to the determination of Bluebird's reimbursement obligations under this Section 2.1(h)(ii)).

(iii) **[Subject to the remainder of this Section 2.1(h)(iii), during the Collaboration Program Term, Celgene hereby grants to Bluebird the co-exclusive (with Celgene and its Affiliates), worldwide, royalty-free right and license in the Field, without the right to grant sublicenses (other than to permitted subcontractors under Section 2.4), under the Celgene IP and Celgene's interest in jointly owned Collaboration IP, solely to conduct research and Development under the Collaboration Plan as part of the Collaboration Program in accordance with the terms of this Agreement. In addition, to the extent that Bluebird continues, at Celgene's election, to be responsible for the performance of an initial Phase 1 Study until completion of such initial Phase 1 Study pursuant to Section 2.1 of the License Agreement (if applicable) or Section 4.1 of the Co-Development, Co-Promote and Profit Share Agreement (if applicable), the license grants set forth in this Section 2.1(h)(iii) will continue following the expiration of the Collaboration Program Term to the extent necessary for Bluebird to perform such initial Phase 1 Study. Except as**

set forth in Section 5.6(a), Bluebird will not practice or otherwise use any Celgene IP other than in accordance with the license granted in Section 2.1(h)(ii) and this Section 2.1(h)(iii).]

(i) *Celgene IP.* If either Party desires that Celgene make available any Patents, Know-How or Material Controlled by Celgene or its Affiliates (other than pursuant to a Celgene In-License, which is governed by Section 4.1(c), and other than Collaboration IP) for use in the Collaboration Program, such Party will notify the JSC and the JSC will discuss whether or not such Patents, Know-How or Materials would be useful for the Collaboration Program. If the JSC concludes that such Patents, Know-How or Materials would be useful for the Collaboration Program, the JSC will invite Celgene to make such intellectual property available to the Collaboration Program. Celgene will have sole discretion whether or not to make such intellectual property available to the Collaboration Program, and if Celgene so elects it will make such intellectual property available by providing the JSC with written notice specifying the Patents, Know-How and/or Materials that will be made available to the Collaboration Program as "Celgene IP". Except by such written notice provided to the JSC, no Patents, Know-How or Materials Controlled by Celgene or its Affiliates (other than pursuant to a Celgene In-License, which is governed by Section 4.1(c) and other than Collaboration IP) will be made available for, or used in, the Collaboration Program, and no such Patents, Know-How or Materials shall be considered "Celgene IP".

2.2 Collaboration Program Expenses. Except for any amounts that may be payable by Celgene under a Vector and associated Payload supply agreement described in Section 2.1(c), each of Bluebird and Celgene is and will remain solely responsible for all of its internal costs and expenses that are incurred by or on its behalf in connection with the performance of the Collaboration Plan. Subject to Sections 4.1, 4.2, 6.4 and 7.2, and except for any amounts that may be payable by Celgene under a Vector and associated Payload supply agreement described in Section 2.1(c) or a Celgene In-License, Bluebird will be responsible for all out-of-pocket costs and expenses payable to Third Parties in connection with the performance of the Collaboration Plan.

2.3 Collaboration Program Records, Reports and Materials.

(a) *Records.* Each Party will maintain, or cause to be maintained, records of its activities under the Collaboration Program in sufficient detail and in good scientific manner appropriate for scientific, Patent and regulatory purposes, that will properly reflect all work included in the Collaboration Program, for a period of at least ten (10) years after the creation of such records, but in no event less than required by applicable Laws. Each Party will have the right to request and receive a copy of any such records.

(b) *Collaboration Program Reports.* Each Party will furnish to the JSC a high-level summary written report within thirty (30) days after each June 30th and December 31st occurring during the Collaboration Program Term, describing its progress under the Collaboration Plan as part of the Collaboration Program during the previous six (6) month period. Each Party agrees that it will promptly respond to the other Party's reasonable questions regarding any of such Party's reports.

(c) *Materials.*

(i) Each Party will, during the Collaboration Program Term, as a matter of course as described in the Collaboration Plan or upon the other Party's reasonable written request,

furnish to each other samples of Materials that are in such Party's Control and are necessary for the other Party to carry out its responsibilities under the Collaboration Plan, provided that, prior to Celgene providing any Materials to Bluebird, Celgene will notify Bluebird of the cost of such Materials and Bluebird may elect whether or not to receive such Materials from Celgene. Subject to the foregoing, after Celgene has provided Materials costing more than **[two hundred and fifty thousand dollars ($250,000) in the aggregate]**, Bluebird will reimburse Celgene for the costs of any additional Materials.

(ii) Each Party will use such Materials only in accordance with the Collaboration Plan and otherwise in accordance with the terms and conditions of this Agreement and any instructions provided by the Party furnishing the Materials. Except with the prior written consent of the supplying Party (such consent not to be unreasonably withheld, delayed or conditioned), the Party receiving any Materials will not distribute or otherwise allow the release of Materials to any Affiliate (other than wholly-owned subsidiaries) or Third Party, except for subcontracting as permitted hereunder. All Materials delivered to the receiving Party will remain the sole property of the supplying Party and will be used in compliance with all applicable Law. The Materials supplied under this Agreement will be used with prudence and appropriate caution in any experimental work because not all of their characteristics may be known.

2.4 Permitted Subcontracting. Each Party may subcontract any of its activities to be performed under the Collaboration Plan to an Affiliate or Third Party, provided that any such Affiliate or Third Party will have entered into a written agreement with such Party that includes terms and conditions protecting and limiting use and disclosure of Confidential Information and Materials and Know-How at least to the same extent as under this Agreement, and requiring such Affiliate or Third Party and its personnel to assign to such Party all right, title and interest in and to any Patents, Know-How and Materials created, conceived or developed in connection with the performance of subcontracted activities to the extent required to research, Develop, Manufacture and commercialize Product Candidates, provided that with respect to Third Parties that are academic or other non-commercial Persons, a Party will be required only to use commercially reasonable efforts to obtain such assignment, and in the absence of such assignment, the Parties will mutually agree on the rights (*e.g.*, a license or option to license) to be obtained from such academic or non-commercial Persons. Any such subcontracting activities will be described in the reports for the Collaboration Program required by Section 2.3(b).

3. Governance.

3.1 Management. Management of the Collaboration Program activities will be under the responsibility of one person to be designated by Celgene (the "Celgene Program Director") and one person to be designated by Bluebird (the "Bluebird Program Director," and together with the Celgene Program Director, the "Program Directors").

3.2 Joint Steering Committee.

(a) *Steering Committee.* The Parties will establish a Joint Steering Committee, comprised of three (3) representatives of Bluebird and three (3) representatives of Celgene (the "JSC"). Each Party may replace its representatives on the JSC or its Program Director at any time upon written notice to the other Party. With the consent of the other Party (such consent not to be unreasonably withheld, delayed or conditioned), each Party may invite non-voting employees and consultants (including Dr. Malcolm K. Brenner) to attend meetings of the

JSC, subject to their agreement to be bound to the same extent as a permitted subcontractor under Section 2.4.

(b) *Meetings*. While in existence, the JSC will meet each calendar quarter and, at a minimum, two (2) of such meetings each calendar year will be in person (which in-person meeting will be held at locations mutually agreed by the Parties). Meetings of the JSC will be effective only if at least one (1) representative of each Party is present or participating. Each Party will be responsible for all of its own expenses of participating in the meetings. The Parties will endeavor to schedule meetings of the JSC at least six (6) months in advance. Bluebird will prepare and circulate a meeting agenda prior to each such meeting. The Parties will alternate in preparing written minutes of such meeting, and the preparing Party will circulate such minutes within fifteen (15) days after such meeting. The Parties will agree on the minutes of each meeting promptly, but in no event later than the next meeting of the JSC.

(c) *Responsibilities*. The JSC will oversee and supervise the overall performance of the Collaboration Plan and within such scope will:

(i) Periodically review the Parties' efforts and progress under the Collaboration Plan;

(ii) Review the Collaboration Program;

(iii) Review any proposed modifications or amendments to the Collaboration Plan and the Collaboration Program;

(iv) Prioritize and oversee execution of specific activities to be performed under the Collaboration Plan and the Collaboration Program;

(v) Review Patent Committee advice with regard to scientific activities to be performed under the Collaboration Plan and the Collaboration Program;

(vi) Review and select Product Candidates for additional work as part of the Collaboration Program;

(vii) Review and evaluate Product Candidates for which Development work should be performed as part of the Collaboration Program;

(viii) Review and approve of the regulatory plans and strategies for Product Candidates;

(ix) Review all Regulatory Filings with respect to Product Candidates;

(x) Form such other committees ("Sub-Committees") as the JSC may deem appropriate. Any such Sub-Committee may make recommendations to the JSC but may not be delegated JSC decision-making authority;

(xi) Address such other matters relating to the activities of the Parties under this Agreement as either Party may bring before the JSC, including any matters that are expressly for the JSC to decide as provided in this Agreement; and

(xii) Attempt to resolve any disputes on an informal basis.

(d) *Decision-making*. The three (3) JSC representatives of each Party will collectively have one (1) vote, and the JSC will make decisions only by unanimous consent in the sole discretion of each Party with respect to its vote. **[In the event of a dispute between the**

Parties with respect to the Collaboration Program or otherwise within the scope of the JSC, the matter will be first considered by the JSC for resolution, and if not resolved, Bluebird will have the tie-breaking vote, provided that (i) if a Business Combination occurs with respect to Bluebird, Celgene thereafter will have the tie-breaking vote and (ii) at such time Celgene has exercised its option for a Product Candidate and entered into a Development & Commercialization Agreement, Celgene thereafter will have the tie-breaking vote for such Optioned Candidate, Elected Candidate or Licensed Product, as applicable, provided that, if Bluebird is responsible for completing any Phase 1 Study under a Development & Commercialization Agreement, Bluebird will retain the tie-breaking vote with respect to matters related to the performance of such Phase 1 Study.]

(e) *Limits on JSC Authority*. Each Party will retain the rights, powers and discretion granted to it under this Agreement and no such rights, powers, or discretion will be delegated to or vested in the JSC unless such delegation or vesting of rights is expressly provided for in this Agreement or the Parties expressly so agree in writing. The JSC will not have the power to, nor will the Party having the tie-breaking vote in the JSC have the power to (i) amend, modify or waive compliance with this Agreement (other than as expressly permitted hereunder), (ii) alter, increase or expand the Parties' rights or obligations under this Agreement, (iii) determine that a Party has fulfilled any obligations under this Agreement or that a Party has breached any obligation under this Agreement, (iv) make a decision that is expressly stated to require the mutual agreement of the Parties, (v) amend or modify the Collaboration Plan, (vi) change the Collaboration Program in any manner that would alter the fundamental objectives of the Collaboration Program as generally described in Section 2.1(a), or (vi) determine that milestone events required for the payment of milestone payments have or have not occurred.

(f) *Term*. The JSC and any subcommittees thereof will cease to exist three (3) months after the end of the Collaboration Program Term.

3.3 Patent Committee.

(a) The Parties will (i) each designate representative(s) to consult with the other Party's representative(s) with respect to Patent ownership, Prosecution and Maintenance, enforcement and defense matters (the "Patent Liaisons"), and (ii) establish a patent committee (the "Patent Committee"). The purpose of the Patent Committee is to determine ownership of intellectual property, and facilitate the discussion and coordination of Prosecution and Maintenance, enforcement and defense matters, in accordance with and subject to the terms of this Agreement. The Patent Liaisons will be the primary point of contact for the Parties regarding the foregoing activities and will facilitate all such activities hereunder, including preparing and finalizing minutes of the Patent Committee and will be responsible for assisting the Patent Committee in performing its oversight responsibilities.

(b) Decisions. All decisions of the Patent Committee will be made by consensus, with each Party having one vote. If the Patent Committee cannot agree on a matter within the Patent Committee's authority within five (5) days after it has met and attempted to reach such decision, then, either Party may, by written notice to the other, have such issue referred to the Program Directors for resolution. The Parties' respective Program Directors will meet within five (5) days after such matter is referred to them, and will negotiate in good faith to resolve the matter. If the Program Directors are unable to resolve the matter within five (5) days after the matter is referred to them, then the decision will be resolved as set forth below:

(i) *IP Ownership.* The Patent Committee will determine ownership of Collaboration IP in accordance with and subject to the terms of Section 2.1(f); provided that the Patent Committee may allocate ownership of a particular item of intellectual property to improve the prospects of obtaining patent protection with respect to such item of intellectual property, even if such allocation is not in accordance with the terms of Section 2.1(f), so long as the Parties mutually agree to such allocation. In the event the Patent Committee cannot agree on a matter regarding ownership of an item of intellectual property, and the Program Directors are unable to resolve such matter, then such dispute will be resolved by a Third Party patent counsel selected by the Patent Committee who (and whose firm) is not, and was not at any time during the five (5) years prior to such dispute, an employee, consultant, legal advisor, officer, director or stockholder of, and does not have any conflict of interest with respect to, either Party. Such patent counsel will determine ownership of such intellectual property in accordance with U.S. patent law and Section 2.1(f). Expenses of the patent counsel will be shared equally by the Parties.

(ii) *Patent Prosecution.* The Patent Committee will discuss material issues and provide input to each other regarding the Prosecution and Maintenance, enforcement and defense of Bluebird IP, Celgene IP and jointly owned Collaboration IP. The Patent Liaisons will be responsible for coordinating the implementation of each Party's strategies for the protection of the foregoing intellectual property rights related to Product Candidates. All final decisions related to the Prosecution and Maintenance, enforcement or defense of any Bluebird IP, Celgene IP and jointly-owned Collaboration IP will be made by the Party with the right to control such Prosecution and Maintenance, enforcement or defense, as applicable, as set forth in Section 7.

4. Third Party Licenses.

4.1 New Licenses.

(a) *Identification.* **[In the event that either Party identifies Patents, Know-How or Materials of a Third Party that may be necessary or useful to research and Develop Product Candidates under the Collaboration Program in any field (other than Patents, Know-How and Materials that would constitute a new Product Candidate as described in Section 4.2), such Party may, but is under no obligation to, bring such Patents, Know-How or Materials to the attention of the JSC. If such Party elects not to bring such Patents, Know-How or Materials to the attention of the JSC, such Party may independently negotiate and enter into an agreement to obtain a license or other rights to Patents, Know-How or Materials (a "New In-License"). If a Party brings such Patents, Know-How or Materials to the attention of the JSC prior to entering into such New In-License, the Parties agree to discuss in good faith which, if either, Party should pursue a New In-License with respect to such Patents, Know-How or Materials. If the Parties mutually agree that one Party should pursue a New In-License with respect to such Patents, Know-How or Materials, that Party will use commercially reasonable efforts to enter into an agreement to obtain a license or other rights to Patents, Know-How or Materials. If the Parties do not so agree, either Party may independently negotiate and enter into such New In-License.]**

(b) *Bluebird Contribution to the Collaboration.* **[If Bluebird acquires any Bluebird New In-License, Bluebird will bring such Bluebird New In-License to the attention of the**

JSC. If a Bluebird New In-License is brought to the attention of the JSC pursuant to this Section 4.1(b), the Parties will, through the JSC, discuss in good faith whether such Bluebird New In-License should be made available for use by Bluebird in the Collaboration Program for research, Development or Manufacture of Product Candidates in the Field. If Celgene concludes that such Bluebird New In-License should be made available for use by Bluebird in the Collaboration Program for research, Development or Manufacture of Product Candidates (each such Bluebird New In-License, a "Bluebird Collaboration In-License"), then the Patents, Know-How and Material in-licensed under such Bluebird New In-License will be deemed Bluebird In-Licensed IP and Exhibit F will be updated accordingly to add such Bluebird New In-License as a Bluebird Collaboration In-License thereto and the provisions of this Agreement applicable to Bluebird Collaboration In-Licenses will apply with respect to such New In-License. If Celgene concludes that such Bluebird New In-License should not be made available for use by Bluebird in the Collaboration Program for research, Development or Manufacture of Product Candidates, then, subject to Section 4.1(d), (i) the Patents, Know-How and Material in-licensed under such Bluebird New In-License will not be deemed Bluebird In-Licensed IP and will not be deemed "Controlled" by Bluebird, (ii) such Bluebird New In-License will not be deemed a Bluebird Collaboration In-License, and (iii) Bluebird will not use any Patents, Know-How or Materials in-licensed under such Bluebird New In-License in connection with the performance of the Collaboration Program.

(c) *Celgene Contribution to the Collaboration.* If Celgene has or acquires any Celgene In-License, Celgene may, but will not be obligated to, bring such Celgene In-License to the attention of the JSC. If, however, Celgene desires that such Celgene In-License be made available for use by the Parties in connection with the performance of the Collaboration Program, Celgene will bring such Celgene New In-License to the attention of the JSC. If a Celgene In-License is brought to the attention of the JSC pursuant to this Section 4.1(c), the Parties will, through the JSC, discuss in good faith whether such Celgene In-License should be made available for use by the Parties in the Collaboration Program for the Parties' research, Development or Manufacture of Product Candidates in the Field. If the Parties mutually agree in writing that such Celgene In-License should be made available for use by the Parties in the Collaboration Program for the Parties' research, Development or Manufacture of Product Candidates (each such Celgene In-License, an "Applicable Celgene In-License"), then the Patents, Know-How and Material in-licensed under such Celgene In-License will be deemed Celgene In-Licensed IP, and the terms of Section 4.1(e) will apply. If the Parties do not so mutually agree in writing, then (i) the Patents, Know-How and Material in-licensed under such Celgene In-License will not be deemed Celgene In-Licensed IP and will not be deemed "Controlled" by Celgene, (ii) such Celgene In-License will not be deemed an Applicable Celgene In-License, and (iii) the Parties will not use any Patents, Know-How or Materials in-licensed under such Celgene In-License in connection with the performance of the Collaboration Program.

(d) *Conversion of Bluebird New In-Licenses.* Celgene may elect to convert any Bluebird New In-License to a Bluebird Collaboration In-License by (i) providing notice to Bluebird of same and (ii) reimbursing Bluebird for fifty percent (50%) of any amounts that were paid by Bluebird under such Bluebird New In-License for the acquisition of licenses or other rights thereunder, or that are attributable to the Collaboration Program, in accordance with Section 6.4(b) within thirty (30) days of Celgene's receipt of Bluebird's

invoice therefor (excluding payments resulting from Bluebird's breach of such Bluebird New In-License not attributable to Celgene or its contract Third Parties or sublicensees, which excluded payments will be the sole responsibility of Bluebird). Upon Bluebird's receipt of such notice and reimbursement, such Bluebird New In-License will be a Bluebird Collaboration In-License hereunder, Exhibit F will be updated accordingly, and the provisions of this Agreement applicable to Bluebird Collaboration In-Licenses will apply with respect to such New In-License.]

(e) *Celgene Applicable/New In-Licenses.* With respect to each Applicable Celgene In-License that is a Celgene New In-License:

(i) Celgene will be solely responsible for any upfront payment payable to the licensor under such Applicable Celgene In-License.

(ii) Except as provided in Sections 2.1(h)(ii) and 5.6, Celgene and Bluebird will each be responsible for **[fifty percent (50%)]** of any other payments required to be paid to the licensor under such Applicable Celgene In-License in respect of Collaboration Program activities or the research, Development, Manufacture or commercialization of Product Candidates, but excluding any payments that are (A) triggered by the grant of a sublicense under the Applicable Celgene In-License (other than sublicenses granted by Bluebird or its sublicensees), (B) annual fees paid to maintain the Applicable Celgene In-License in effect, (C) Patent Costs, (D) any payments that are royalty payments (including sales-based milestone payments), and (E) payments resulting from Celgene's breach of the Applicable Celgene In-License not attributable to Bluebird or its contract Third Parties or sublicensees, which excluded payments will be the sole responsibility of Celgene; provided that Bluebird's **[fifty percent (50%)]** share of such payments will become due and payable within **[thirty (30)]** days after the execution of the first Development & Commercialization Agreement.

(iii) Any payments that are royalties payable by Celgene or its Affiliates under the Applicable Celgene In-License will be subject to Section 4.3(d) of such License Agreement or Section 11.3(d) of any Co-Development, Co-Promote and Profit Share Agreement, as applicable.

(f) *Celgene Pre-Existing/Applicable In-Licenses.* With respect to any Applicable Celgene In-License that is a Celgene Pre-Existing In-License, except as provided in Sections 2.1(h)(ii) and 5.6, Celgene will be solely responsible for all payments required to be paid to the licensor under such Applicable Celgene In-License, and any payments that are royalties payable by Celgene or its Affiliates under the Applicable Celgene In-License will be subject to Section 4.3(d) of such License Agreement or Section 11.3(d) of any Co-Development, Co-Promote and Profit Share Agreement, as applicable.

4.2 Product Candidate In-Licenses. Other than with respect to Baylor as contemplated by the Baylor Agreements, which are governed by Sections 4.5 and 5.5 hereof, in the event that the Parties desire to enter into an agreement with any Third Party to obtain rights to Patents, Know-How or Materials that would constitute solely a new Product Candidate (if developed pursuant to this Agreement) in the Field, as opposed to only being necessary or useful for supporting research, Development or commercialization of existing Product Candidates (a "Product Candidate In-License"), the Parties will jointly determine a strategy for endeavoring to procure rights under such Patents, Know-How or Materials, including with respect to allocation of the Parties' responsibilities for any payments that may become due during the Collaboration Program Term under such Product Candidate In-License. Any such Product Candidate In-

License addressing any such new Product Candidate will require the prior written approval of both Parties, will be with both Parties and will be committed to the Collaboration Program (and not the Parties on an individual basis). Accordingly, any product candidate in-licensed pursuant to a Product Candidate In-License will be a "Product Candidate" hereunder, and will only be Developed or commercialized by either Party as a part of the Collaboration Program or under an executed Development & Commercialization Agreement, unless and until such Product Candidate becomes a Declined Product Candidate in accordance with Section 5.6. If the Parties agree that any Patents, Know-How or Materials in-licensed under a Product Candidate In-License will be used to Develop and commercialize a Product Candidate under a Development & Commercialization Agreement, the Parties will discuss in good faith and agree on the allocation of the Parties' applicable rights and obligations thereto, including with respect to amounts payable under such Product Candidate In-License (other than a Baylor Product License), which terms will be set forth in such Development & Commercialization Agreement. If an in-license from a Third Party of rights to Patents, Materials or Know-How that would constitute a new Product Candidate also includes other rights that potentially have broader applicability (e.g., that may be useful for supporting research, Development or commercialization of Product Candidates that are against Target Antigens different than the Target Antigen in the Product Candidate in such Third Party in-license), such in-license will be treated as a "Product Candidate In-License" hereunder and the Parties will discuss in good faith the allocation of such other rights and obligations, along with costs, in accordance with the principles set forth in Section 4.1 and this Section 4.2. The Parties acknowledge that the terms of this Section 4.2 may need to be discussed and modified with respect to any particular Product Candidate In-License (other than a Baylor Product License) depending on the then existing facts and circumstances relating to such Product Candidate In-License.

4.3 Maintenance of Bluebird In-Licenses. Bluebird (a) will duly perform and observe all of its obligations under the Bluebird In-Licenses in all material respects and maintain in full force and effect the Bluebird In-Licenses, and (b) will not, without Celgene's prior written consent (such consent not to be unreasonably withheld, conditioned or delayed), (i) amend, modify, restate, cancel, supplement or waive any provision of any Bluebird In-License, or grant any consent thereunder, or agree to do any of the foregoing, or (ii) exercise any right to terminate any Bluebird In-License, in each case ((i) and (ii)) that would reasonably be expected to adversely affect in any respect the rights of Celgene under this Agreement or any potential or executed Development & Commercialization Agreement. Bluebird will provide Celgene with written notice as promptly as practicable (and in any event within five (5) business days) after becoming aware of any of the following: (A) any material breach or default by Bluebird or any of its Affiliates of any covenant, agreement or other provision of any Bluebird In-License, (B) any notice or claim from the counterparty to any Bluebird In-License terminating or providing notice of termination of any Bluebird In-License, (C) any notice or claim alleging any breach of default under any Bluebird In-License, or (D) the existence of any facts, circumstances or events which alone or together with other facts, circumstances or events would reasonably be expected (with or without the giving of notice or passage of time or both) to give rise to a breach of or default under or right to terminate any Bluebird In-License. If Bluebird fails to pay any amounts due under any Bluebird In-License and if such nonpayment would permit the counterparty to such Bluebird In-License to terminate or suspend the same or any rights thereunder, Celgene will have the right, but not the obligation, in its sole discretion, to pay such amounts on Bluebird's behalf, and any amounts so paid by Celgene may be taken by Celgene as a credit against any

amounts payable to Bluebird under this Agreement or any Development & Commercialization Agreement.

4.4 Maintenance of Celgene In-Licenses. Celgene **[(a)]** will duly perform and observe all of its obligations under the Applicable Celgene In-Licenses in all material respects and maintain in full force and effect the Applicable Celgene In-Licenses in the Field**[, and (b) will not, without Bluebird's prior written consent (such consent not to be unreasonably withheld, conditioned or delayed), (i) amend, modify, restate, cancel, supplement or waive any provision of any Applicable Celgene In-License, or grant any consent thereunder, or agree to do any of the foregoing, or (ii) exercise any right to terminate any Applicable Celgene In-License, in each case ((i) and (ii)) that would reasonably be expected to adversely affect in any respect the rights of Bluebird under this Agreement in the Field or any potential or executed Development & Commercialization Agreement].** Celgene will provide Bluebird with written notice as promptly as practicable (and in any event within **[five (5)]** business days) after becoming aware of any of the following: (A) any material breach or default by Celgene or any of its Affiliates of any covenant, agreement or other provision of any Applicable Celgene In-License, (B) any notice or claim from the counterparty to any Applicable Celgene In-License terminating or providing notice of termination of any Applicable Celgene In-License, (C) any notice or claim alleging any breach of default under any Applicable Celgene In-License, or (D) the existence of any facts, circumstances or events which alone or together with other facts, circumstances or events would reasonably be expected (with or without the giving of notice or passage of time or both) to give rise to a breach of or default under or right to terminate any Applicable Celgene In-License. **[In addition, Celgene will provide Bluebird with written notice as promptly as practicable if Celgene elects to not maintain an Applicable Celgene In-License outside of the Field.]** If Celgene fails to pay any amounts due under any Applicable Celgene In-License and if such nonpayment would permit the counterparty to such Applicable Celgene In-License to terminate or suspend the same or any rights thereunder, Bluebird will have the right, but not the obligation, in its sole discretion, to pay such amounts on Celgene's behalf, and Celgene will reimburse Bluebird for any such payments within **[thirty (30)]** days of Celgene's receipt of Bluebird's written invoice therefor.

4.5 Baylor Agreements.

(a) *Maintenance.* Celgene **[(i)]** will duly perform and observe all of its obligations under the Baylor Agreements in all material respects**[, and (ii) will not, without Bluebird's prior written consent (such consent not to be unreasonably withheld, conditioned or delayed), amend, modify, restate, cancel, supplement or waive any provision of any Baylor Agreement, or grant any consent thereunder, or agree to do any of the foregoing, in any manner that would reasonably be expected to adversely affect Bluebird's rights thereunder or under this Agreement or any Development & Commercialization Agreement, provided that Celgene will provide prior written notice to Bluebird of all of the foregoing notwithstanding whether or not any of the foregoing would reasonably be expected to adversely affect in any respect Bluebird's rights thereunder or under this Agreement or any Development & Commercialization Agreement. In the event that Celgene requires and receives Bluebird's consent to amend, modify, restate, cancel, supplement or waive any Baylor Agreement (such event, a "Baylor Agreement Change"), Bluebird will have the right to participate in the negotiations of such Baylor Agreement Change. Celgene will promptly provide Bluebird with a copy of all correspondence to or from Baylor regarding**

the Baylor Agreement Change and will not provide Baylor any proposed drafts of the Baylor Agreement Change unless such drafts have been provided to and approved by Bluebird. Within ten (10) business days of Celgene's provision of a Baylor Agreement Change to Bluebird, Bluebird will review and provide in writing its requested comments or changes or approval to any drafts of a Baylor Agreement Change. Bluebird's failure to provide such comments, changes or approval to a draft Baylor Agreement Change within such ten (10) business day period will be deemed Bluebird's approval of such draft. To the extent Bluebird has any obligations with respect to any Baylor Agreement (including as may be sublicensed or delegated to Bluebird), Bluebird will duly perform and observe all such obligations in all material respects].

(b) *Notices*. Each Party will provide the other Party with written notice as promptly as practicable (and in any event within **[five (5)]** business days) after becoming aware of any of the following: (i) any material breach or default by such Party or any of its Affiliates of any covenant, agreement or other provision of any Baylor Agreement, (ii) any notice or claim from the counterparty to any Baylor Agreement terminating or providing notice of termination of any Baylor Agreement, (iii) any notice or claim alleging any breach of default under any Baylor Agreement, or (iv) the existence of any facts, circumstances or events which alone or together with other facts, circumstances or events would reasonably be expected (with or without the giving of notice or passage of time or both) to give rise to a breach of or default under or right to terminate any Baylor Agreement. If Celgene fails to pay any amounts due under any Baylor Agreement and if such nonpayment would permit Baylor to terminate or suspend the same or any rights thereunder, Bluebird will have the right, but not the obligation, to pay such amounts on Celgene's behalf, and Celgene will reimburse Bluebird for any such payments within thirty (30) days of Celgene's receipt of Bluebird's written invoice therefor.

(c) *Exercise of Rights*. **[(i)]** Celgene will not exercise any rights under any of the Baylor Agreements without first consulting with Bluebird and obtaining Bluebird's prior consent (such consent not to be unreasonably withheld, delayed or conditioned), provided that no such consent will be required (A) for Celgene to enter into a Baylor Product License, (B) to terminate any Baylor Agreement other than a Baylor Product License, (C) after consultation with Bluebird, to terminate any Baylor Product License provided Celgene either (I) intends to maintain in force the corresponding Development & Commercialization Agreement or (II) if such Development & Commercialization Agreement is not intended to remain in effect, offers to assign such Baylor Product License to Bluebird before initiating termination of same, (D) for Celgene to exercise any licenses or other similar license rights (such as the right to sublicense) granted to Celgene under any Baylor Agreement, (E) for Celgene to exercise any rights under the Platform License Agreement that do not require Bluebird's consent under the sublicense agreement between Celgene and Bluebird under the Baylor Platform License, and (F) for Celgene to extend or not extend the term of any Baylor Agreement**[, and (ii) Celgene will take any action that Bluebird may reasonably request under any of the Baylor Agreements if such action is permitted under and complies with such Baylor Agreement, does not require Celgene to incur any costs or expenses (other than incidental costs and expenses), and Celgene agrees to take such action, provided that upon Bluebird's further request, and provision by Bluebird to Celgene of a written indemnity in a form reasonably acceptable to Celgene (including for Baylor counter-claims) and a reasonably sized cash escrow pursuant to a written escrow agreement if warranted by the claims, Celgene will take such action as Bluebird may reasonably request subject to Celgene's consent (such consent not to be unreasonably**

withheld, conditioned or delayed)]. In addition, Bluebird may exercise its third-party beneficiary rights under any of the Baylor Agreements and Celgene will not interfere with any such exercise by Bluebird. For avoidance of doubt, Celgene's election to not exercise a right, such as an election to not provide research or development funding to Baylor, will not be deemed "an exercise of rights" under the Baylor Agreements for purposes of this Section 4.5(c). The foregoing will apply, without limitation, to the Prosecution and Maintenance, and enforcement and defense, of all Patents, Know-How and Materials licensed under any of the Baylor Agreements, provided that Celgene will not require Bluebird's consent to terminate Prosecution and Maintenance, or to commence, conduct or terminate the enforcement and defense of, any Patents, Know-How and Materials licensed under any of the Baylor Agreements so long as Celgene provides Bluebird with written notice thereof and, if permitted by the Baylor Agreements (including as a third-party beneficiary thereunder), affords Bluebird the right to take such actions, which if taken by Bluebird will be at Bluebird's sole expense, provided that in such an event under the Baylor Platform License, (x) Celgene will agree in writing with Bluebird not to exercise (or grant others the right to exercise) any rights to any such Patent for which Prosecution or Maintenance has been terminated or a defense has not been commenced or conducted or has been terminated, and (y) Bluebird will solely control and not share any recoveries from any such enforcement, in all such cases subject to the Baylor License Agreements. Notwithstanding the foregoing in this Section 4.5(c), if Celgene determines in good faith that any action or inaction under any of the Baylor Agreements is legally required of Celgene (under any of the Baylor Agreements or otherwise) or is required to maintain any rights under the Baylor Agreements (including with respect to confidentiality and indemnification), or if Bluebird does not promptly respond to Celgene's request after prior written notice to Bluebird, Celgene will have the right to take such action, or refrain from taking such action, but will remain subject to the terms of the Baylor Agreements, this Agreement and any Development & Commercialization Agreements.

(d) *Other Agreements.* During the Term, other than as permitted by the Baylor Agreements and pursuant to Section 2.1(f)(ii), neither Party nor its Affiliates will enter into any agreements with Baylor regarding the Baylor Field, nor collaborate with Baylor in the Baylor Field, nor have Baylor work or fund work by Baylor in the Baylor Field, without the prior written consent of the other Party (such consent not to be unreasonably withheld, delayed or conditioned). It is understood and agreed that references to "Baylor" in this Section 4.5(d) include all faculty members, scientists, employees and students working at Baylor. This Section 4.5(d) will not apply to any Business Program, subject to the requirements of the last proviso in Section 2.1(e).

(e) *Development & Commercialization Agreements.* Celgene will not enter into any Baylor Product License without also entering into the applicable Development & Commercialization Agreement. For clarity this obligation will apply to all product candidates subject to any option rights under the Baylor Research Agreement, even if this Agreement has terminated or expired.

(f) *Payments.* Except as set forth below, Celgene will be responsible for one hundred percent (100%) of all amounts accrued and required to be paid under (i) the Baylor Research Agreement for as long as Celgene is the contracting party thereunder, (ii) the Baylor Platform License for as long as Celgene is the contracting party thereunder (save for those amounts for which Bluebird is responsible under the sublicense agreement between Celgene and Bluebird

under the Baylor Platform License), and (iii) all Baylor Product Licenses that correspond to License Agreements between Celgene and Bluebird for as long as Celgene is the contracting party thereunder, provided that any royalties payable under such Baylor Product Licenses will be subject to Section 4.3(d) of such License Agreement, and provided further that the foregoing will not be interpreted to require Celgene to make any payments under the Baylor Agreements that are payments which Celgene has the option to pay or not pay under the terms of the Baylor Agreements. Bluebird will be responsible for one hundred percent (100%) of amounts required to be paid to Baylor to fund the research and Development of Product Candidates by Baylor through Phase 1 Study if Bluebird elects by written notice to Celgene to have Baylor work under the Collaboration Program and such Product Candidates are included in the Collaboration Plan; provided that Baylor-Only Candidates will not be included in this payment obligation. All amounts accrued and required to be paid under those Baylor Product Licenses arising from the applicable Co-Development, Co-Promote and Profit Share Agreements between Celgene and Bluebird will be treated as follows: (A) with respect to the Development and commercialization of Elected Candidate and Licensed Product for U.S. Administration thereunder, such amounts will be treated as U.S. Development Expenses or Allowable Expenses thereunder, (B) with respect to the Development and commercialization of Elected Candidate and Licensed Product for both U.S. Administration and ROW Administration thereunder, such amounts will allocated to and be treated as U.S. Development Expenses or Allowable Expenses thereunder in accordance with Section 4.3(b) thereunder, and (C) with respect to the Development and Commercialization of Elected Candidate and Licensed Product solely for ROW Administration thereunder (including the Manufacture of Vectors and associated Payloads therefor pursuant to Section 7.4 thereunder), Celgene will be responsible for one hundred percent (100%) of all such amounts, provided that any royalties payable under such Baylor Product License will be subject to Section 11.3(d) thereunder.

(g) *Recoveries.* All recoveries arising from any enforcement or defense of any "Licensed Intellectual Property" (as defined in the Baylor Agreements) licensed to Celgene under any of the Baylor Product Licenses will be, after deducting any amounts owed to Baylor thereunder, subject to the recovery provisions of the applicable Development & Commercialization Agreement.

(h) *Baylor Declined Product.* If Celgene receives any payments from Baylor pursuant to Section 4.8(b) of the Baylor Research Agreement with respect to the commercialization of a "Declined Product" (as defined in the Baylor Research Agreement), Celgene will pay to Bluebird (i) **[fifty]** percent **[(50%)]** of any such payment paid to Celgene with respect to a Declined Product that is not a Baylor-Only Candidate, and (ii) **[twenty]** percent **[(20%)]** of any such payment paid to Celgene with respect to a Declined Product that is a Baylor-Only Candidate, in each case ((i) and (ii)) within thirty (30) days of Celgene's receipt thereof.

(i) *Survival.* This Section 4.5 will survive any termination or expiration of this Agreement.

4.6 No Implied Rights. No license, sublicense or other right is or will be created or granted hereunder by implication, estoppel or otherwise. Any licenses, sublicenses or rights will be granted only as expressly provided in this Agreement or any executed Development & Commercialization Agreement.

5. Option for Licensed Candidates.

5.1 Option Period. Bluebird will provide written notice to Celgene of the enrollment of the first patient in each initial Clinical Study for each Product Candidate (the "Clinical Study Initiation Notice"). On a Product Candidate-by-Product Candidate basis, from the period commencing on the date of a Clinical Study Initiation Notice for such Product Candidate, and ending **[thirty (30) days]** thereafter (the "Celgene Option Period"), Celgene will have the exclusive option to take a license to such Product Candidate. Celgene may exercise such option by providing to Bluebird, prior to the expiration of the Celgene Option Period, (a) written notice that a Product Candidate is selected by Celgene to be an Optioned Candidate hereunder, and (b) the additional information set forth in Exhibit G (collectively, the "Celgene Option Notice"). A separate Celgene Option Notice and Initial Option Fee will be required for each Product Candidate optioned by Celgene pursuant to this Section 5.1, and Celgene will pay to Bluebird the Initial Option Fee for each such Optioned Candidate as set forth in Section 6.2. Subject to Section 5.6, (i) if Celgene does not exercise its option for a Product Candidate prior to the expiration of the applicable Celgene Option Period, the option and other rights granted to Celgene under this Section 5 with respect to a Product Candidate will terminate in full and will no longer be exercisable, and (ii) if (A) Bluebird provides a Clinical Study Initiation Notice for the Lead Product Candidate, and (B) Celgene does not exercise its option for such Lead Product Candidate prior to the expiration of the applicable Celgene Option Period, then all options and other rights granted to Celgene under this Section 5 with respect to the Next Generation Product Candidate and any other Product Candidate or Optioned Candidate (unless Celgene has previously exercised its option for such Lead Product Candidate) will terminate in full and will no longer be exercisable, and all remaining Celgene Option Periods will expire.

5.2 Celgene's Exercise of Option. Within **[five (5) business days]** of Celgene's delivery of a Celgene Option Notice to Bluebird, Celgene (or an Affiliate designated by Celgene) and Bluebird will enter into a License Agreement in the form attached hereto as Exhibit A with respect to such Optioned Candidate (updating the appendices thereto), modified, if appropriate, as provided in Sections 4.2 or 5.5, and subject to Section 5.8. Upon execution of such License Agreement, such Optioned Candidate will be an "Elected Candidate" thereunder.

5.3 Co-Promotion/Co-Development Option Exercise. On an Optioned Candidate-by-Optioned Candidate basis, within **[ninety (90) days]** after completion of the initial Phase 1 Study with respect to such Optioned Candidate, and subject to Section 5.8, Bluebird may exercise an option, by delivery of written notice to Celgene (the "Bluebird Option Notice") to co-promote and co-Develop such Optioned Candidate in the U.S. as set forth in the Co-Development, Co-Promote and Profit Share Agreement attached hereto as Exhibit B, provided that (a) if Bluebird does not exercise such option to co-promote and co-Develop the Optioned Candidate that is the Lead Product Candidate, then this Section 5.3 shall not apply to, and for clarity Bluebird shall not have any option to co-promote or co-Develop, the Next Generation Product Candidate or any other Optioned Candidate, and (b) with respect to a Baylor-Only Candidate for which Celgene has delivered a Celgene Option Notice, such option will end on the earlier of (i) **[ninety (90) days]** following Celgene's commencement of a Pivotal Study (as defined in the License Agreement) for such Baylor-Only Candidate, and (ii) the date that Bluebird delivers written notice to Celgene that Bluebird is declining to exercise such option. Prior to the expiration of such option for **[an Optioned Candidate, if requested in writing by Bluebird, Celgene shall provide to Bluebird information pertaining to the commercial launch plan that Celgene is**

contemplating for such Optioned Candidate and the costs associated therewith. Prior to the expiration of such option for] a Baylor-Only Candidate, upon Bluebird's written request, Celgene will provide Bluebird with (A) a reasonably detailed accounting of any payments made or other actions taken by Celgene pursuant to the License Agreement executed pursuant to Section 5.2 that would be the responsibility of Bluebird under the Co-Development, Co-Promote and Profit Share Agreement, including, for avoidance of doubt, costs incurred by Celgene in Developing such Baylor-Only Candidate through and including the Pivotal Study for such Baylor-Only Candidate, and (B) all safety and efficacy data in Celgene's possession as of the date of such request generated with respect to such Baylor-Only Candidate in all clinical studies conducted by Celgene for such Baylor-Only Candidate, all correspondence to and from any Regulatory Authority in Celgene's possession as of the date of such request regarding such Baylor-Only Candidate, and any other information relating to such Baylor-Only Candidate reasonably requested by Bluebird and in Celgene's possession as of the date of such request. In the event that Bluebird exercises such option, the Parties will promptly, but in any event within **[thirty (30) days]**, terminate the License Agreement executed pursuant to Section 5.2 with respect to such Optioned Candidate, and enter into a Co-Development, Co-Promote and Profit Share Agreement in the form attached hereto as Exhibit B with respect to such Optioned Candidate, with appropriate amendments to reflect and reimburse Celgene for any payments made or other actions taken by Celgene pursuant to the License Agreement executed pursuant to Section 5.2 that are the responsibility of Bluebird under the Co-Development, Co-Promote and Profit Share Agreement, including, for avoidance of doubt, costs incurred by Celgene in Developing a Baylor-Only Candidate through and including the Pivotal Study for the Baylor-Only Candidate. Upon execution of such Co-Development, Co-Promote and Profit Share Agreement, such Optioned Candidate will be an "Elected Candidate" thereunder.

5.4 Non-Co-Promotion/Co-Development Option Exercise. If during the **[ninety (90) days]** following Celgene's delivery of a Celgene Option Notice to Bluebird, Bluebird notifies Celgene in writing that Bluebird will not exercise the option set forth above in Section 5.3, or Bluebird does not deliver a Bluebird Option Notice to Celgene prior to the expiration of the **[ninety (90) day]** period following Celgene's delivery of a Celgene Option Notice to Bluebird, Celgene will pay to Bluebird the Additional Option Fee as set forth in Section 6.3, subject to Section 5.5.

5.5 Baylor-Only Candidate Royalty & Milestone Payments. In the event that any Optioned Candidate is also a Baylor-Only Candidate (as reasonably determined by the Parties), (a) the Initial Option Fee and the Additional Option Fee will each be reduced **[by eighty percent (80%) (each to two million dollars ($2,000,000) instead of ten million dollars ($10,000,000))]**, and (b) any royalties or milestone payments payable under the applicable Development & Commercialization Agreement with respect to such Optioned Candidate will be reduced **[by eighty percent (80%)]**. All such payments will become due and payable only upon the commencement of a Pivotal Study (as defined in the applicable Development & Commercialization Agreement) for such Optioned Candidate. At such time that the Optioned Candidate no longer satisfies all of the requirements of the definition of Baylor-Only Candidate as set forth below in this Section 5.5, all future milestone and royalty payments thereunder will be payable in the original amounts thereunder **[(*i.e.*, at the one hundred percent (100%) level)]**. For clarity, such **[eighty percent (80%)]** reduction will only apply to royalties and milestone payments and no other payments under the applicable Development & Commercialization Agreement (and for clarity, in the Co-Development, Co-Promote and Profit

Share Agreement attached hereto as Exhibit B, the profit share/loss will be unaffected). **[For purposes of this Agreement, "Baylor-Only Candidate" means a Product Candidate that (i) is in-licensed under a Baylor Product License, (ii) is not changed in any material way through the activities conducted as a part of the Collaboration Program, including with respect to the Vector, Payload, gene construct, or vector or viral delivery system, and (iii) is not Covered by any Bluebird IP or Collaboration IP, provided that, for purposes of this clause (iii), Bluebird IP and Collaboration IP will not include any Patents, Know-How or Material covered by Section 2.1(f)(ii) clauses (A)-(C) provided that Bluebird made no material contribution to the Product Candidate. If the Parties cannot agree whether or not Bluebird has made a material contribution to the Product Candidate for the purposes of the proviso in the foregoing clause (iii), the dispute will be referred to a mutually agreeable, disinterested, conflict-of-interest-free individual not affiliated or consulting with either Party and who is a recognized expert in the Field. Any such arbitration will be conducted under the then-current rules of the American Arbitration Association, and the decision of the arbitrator will be final. For clarity, a Product Candidate that satisfies all of the foregoing requirements will cease to be a "Baylor-Only Candidate" at such time as any of the foregoing requirements are no longer satisfied.]**

5.6 Declined Product Candidates.

(a) *Bluebird Development.* If (i) Celgene does not exercise its option with respect to a Product Candidate as set forth in Section 5.1, such Product Candidate will become a "Declined Product Candidate" hereunder, (ii) Celgene does not exercise its option with respect to the Lead Product Candidate as set forth in Section 5.1, all Product Candidates will become "Declined Product Candidates" hereunder, and (iii) if this Agreements expires or terminates for any reason prior to Celgene's right to exercise its options with respect to one or more Product Candidate(s) as set forth in Section 5.1, then such Product Candidate(s) will become "Declined Product Candidate(s)" hereunder. On a Declined Product Candidate-by-Declined Product Candidate basis, Bluebird will have the option, exercisable upon written notice to Celgene (a "Bluebird Development Notice"), to Develop such Declined Product Candidate outside of the scope of the Collaboration Program, and Celgene hereby grants to Bluebird an exclusive, worldwide, perpetual, irrevocable, royalty-free right and license, with the right to grant sublicenses, under the Celgene IP and Celgene's interest in jointly owned Collaboration IP, solely to Develop such Declined Product Candidate. If any royalty, milestone or other payment, **[excluding any (A) annual maintenance fee payment, (B) payment triggered by the grant of a sublicense to Bluebird (but including payments triggered by further grants of sublicenses by Bluebird or its sublicensees), or (C) payments for Patent Costs,]** becomes due under any Applicable Celgene In-License that is attributable to Bluebird as a sublicensee thereunder with respect to such Development work, Celgene will pay same, provided that Bluebird will reimburse Celgene for any such payment within thirty (30) days of Bluebird's receipt of Celgene's written invoice therefor, and Bluebird's failure to pay such reimbursement within such time period will entitle Celgene to terminate Bluebird's sublicense under the Applicable Celgene In-License upon thirty (30) days written notice. In connection with any such Development activities, Bluebird will (I) maintain, or cause to be maintained, records of its activities with respect to the Development of such Declined Product Candidate in sufficient detail and in good scientific manner appropriate for scientific, Patent and regulatory purposes, for a period of at least ten (10) years after the creation of such records, but in no event less than required by applicable Laws, and Celgene will have the right to request and receive a copy of any such records, and (II) furnish Celgene with a

copy of any safety and efficacy data generated by Bluebird or its Affiliates in connection with a Clinical Study performed with respect to such Declined Product Candidate, and all correspondence to and from any Regulatory Authority regarding such Declined Product Candidate, at least thirty (30) days prior to initiating a Declined Product Candidate Study for such Declined Product Candidate.

(i) On a Declined Product Candidate-by-Declined Product Candidate basis, (A) the Development license granted by Celgene to Bluebird under Section 5.6(a) will also include the rights to Manufacture and commercialize such Declined Product Candidate, provided that such license shall be limited to the Celgene IP and jointly owned Collaboration IP as it exists at the time Celgene's option to such Declined Product Candidate has expired or been terminated (including in each case any additions, divisions, continuations, continuations-in-part, invention certificates, substitutions, reissues, reexaminations, extensions, registrations, supplementary protection certificates and renewals of such Celgene IP and Joint Collaboration IP), (B) such Declined Product Candidate will continue to be excluded from the scope of the Collaboration Program, (C) Bluebird will reimburse Celgene within ten (10) days of the expiration of Celgene's option for such Declined Product Candidate for any royalty, milestone or other payments made by Celgene under the Applicable Celgene In-License (other than any upfront payment) in respect of such Declined Product Candidate; (D) if any royalty, milestone or other payment becomes due under any Applicable Celgene In-License that is attributable to Bluebird as a sublicensee (together with its licensees and their respective Affiliates) thereunder with respect to such Development, Manufacture or commercialization of such Declined Product Candidate, Celgene will pay same, provided that Bluebird will reimburse Celgene for any such payment within thirty (30) days of Bluebird's receipt of Celgene's written invoice therefor, and Bluebird's failure to pay such reimbursement within such time period will entitle Celgene to terminate Bluebird's sublicense under the Applicable Celgene In-License upon thirty (30) days written notice; and (E) subject to the exclusivity restrictions set forth in Section 2.1(e), Section 3.5 of the License Agreement (if applicable) or Section 10.4 of the Co-Development, Co-Promote and Profit Share Agreement (if applicable), Bluebird will be free to research, Develop, Manufacture and commercialize such Declined Product Candidate alone or with others with no further obligation to Celgene other than with respect to any payment that may become due under any Applicable Celgene In-License that is attributable to Bluebird as a sublicensee (together with its licensees and their respective Affiliates) thereunder with respect to such Development, Manufacture and commercialization.

5.7 Bluebird In-Licenses. Any Pre-Existing In-Licenses that are necessary or useful for a Product Candidate under a Development & Commercialization Agreement will automatically be included within the definition of Applicable Pre-Existing In-Licenses in such Development & Commercialization Agreement, and any Bluebird Collaboration In-Licenses that Celgene elects to include within the definition of Applicable New In-Licenses in such Development & Commercialization Agreement will be so included. Any Bluebird Collaboration In-Licenses that Celgene does not elect to include in such Development & Commercialization Agreement will be an Other In-License with respect to such Development & Commercialization Agreement unless and until Celgene elects to convert such Other In-License to an Applicable New In-License in accordance with the terms of the applicable Development & Commercialization Agreement. Promptly following Celgene's delivery of a Celgene Option Notice with respect to a Product Candidate, the Parties will mutually update the applicable Appendices to the Development & Commercialization Agreement. If the Parties cannot agree on such update, Celgene will have the

right to make the final decision with respect to such update. For clarity, if, during the Collaboration Program Term, Celgene elects to convert a Bluebird New In-License into a Bluebird Collaboration In-License pursuant to Section 4.1(d), such Collaboration In-License will be an "Other In-License" with respect to any Development & Commercialization Agreement in effect at the time of such election, and Celgene may elect to convert such Other In-License to an Applicable New In-License in accordance with the terms of such applicable Development & Commercialization Agreement.

5.8 Government Approvals.

(a) Each of Celgene and Bluebird shall use its commercially reasonable good faith efforts to eliminate any concern on the part of any court or government authority regarding the legality of any proposed Development & Commercialization Agreement, including, if required by federal or state antitrust authorities, promptly taking all steps to secure government antitrust clearance, including cooperating in good faith with any government investigation including the prompt production of documents and information demanded by a second request for documents and of witnesses if requested. Notwithstanding anything to the contrary in this Agreement, this Section 5.8 and the term "commercially reasonable good faith efforts" do not require that either Party (i) offer, negotiate, commit to or effect, by consent decree, hold separate order, trust or otherwise, the sale, divestiture, license or other disposition of any capital stock, assets, rights, products or businesses of Celgene, Bluebird or their respective Affiliates, (ii) agree to any restrictions on the businesses of Celgene, Bluebird or their respective Affiliates, or (iii) pay any material amount or take any other action to prevent, effect the dissolution of, vacate, or lift any decree, order, judgment, injunction, temporary restraining order, or other order in any suit or proceeding that would otherwise have the effect of preventing or delaying the transactions contemplated by any proposed Development & Commercialization Agreement.

(b) Each of Celgene and Bluebird shall, within ten (10) business days after the execution of a Development & Commercialization Agreement (or such later time as may be agreed to in writing by the Parties) file with the United States of America Federal Trade Commission ("FTC") and the Antitrust Division of the United States of America Department of Justice ("DOJ") any HSR Filing required of it under the HSR Act in the reasonable opinion of either Party with respect to the transactions contemplated by such Development & Commercialization Agreement. The Parties shall cooperate with one another to the extent necessary in the preparation of any such HSR Filing. **[Each Party shall be responsible for its own costs, expenses, and filing fees associated with any HSR Filing; provided, however, Celgene shall be responsible for all fees (other than penalties that may be incurred as a result of actions or omissions on the part of Bluebird, which penalties shall be the sole financial responsibility of Bluebird) required to be paid to any government authority in connection with making any such HSR Filing.]** In the event that the Parties make an HSR Filing under this Section 5.8, the relevant Development & Commercialization Agreement shall terminate (i) at the election of either Party, immediately upon notice to the other Party, in the event that the FTC or the DOJ obtains a preliminary injunction under the HSR Act against the Parties to enjoin the transactions contemplated by such Development & Commercialization Agreement or (ii) at the election of either Party, immediately upon notice to the other Party, in the event that the HSR Clearance Date shall not have occurred on or prior to one hundred eighty (180) days after the effective date of the HSR Filing. Notwithstanding anything to the contrary contained herein, except for the terms and conditions of this Section 5.8, none of the terms and

conditions contained in a Development & Commercialization Agreement shall be effective until the "Implementation Date," which is agreed and understood to mean the later of (A) the execution date of the Development & Commercialization Agreement, (B) if a determination is made pursuant to this Section 5.8 that a notification of this Agreement is not required to be made under the HSR Act, the date of such determination, or (C) if notification of this Agreement is required to be made under the HSR Act, the HSR Clearance Date. As used herein: (I) "HSR Act" means the Hart-Scott-Rodino Antitrust Improvements Act of 1976, as amended, and the rules and regulations promulgated thereunder; (II) "HSR Clearance Date" means the earliest date on which the Parties have actual knowledge that all applicable waiting periods under the HSR Act with respect to the transactions contemplated by a Development & Commercialization Agreement have expired or have been terminated; and (III) "HSR Filing" means a filing by Celgene and Bluebird with the FTC and the DOJ of a Notification and Report Form for Certain Mergers and Acquisitions (as that term is defined in the HSR Act) with respect to the matters set forth in this Agreement, together with all required documentary attachments thereto.

(c) Each of Celgene and Bluebird shall, in connection with any HSR Filing, (i) reasonably cooperate with each other in connection with any communication, filing or submission and in connection with any investigation or other inquiry, including any proceeding initiated by a private party; (ii) keep the other Party and/or its counsel informed of any communication received by such Party from, or given by such Party to, the FTC, the DOJ or any other U.S. or other governmental authority and of any communication received or given in connection with any proceeding by a private party, in each case regarding the transactions contemplated by any proposed Development & Commercialization Agreement; (iii) consult with each other in advance of any meeting or conference with the FTC, the DOJ or any other governmental authority or, in connection with any proceeding by a private party, with any other person, and to the extent permitted by the FTC, the DOJ or such other governmental authority or other person, give the other Parties and/or their counsel the opportunity to attend and participate in such meetings and conferences; and (iv) permit the other Parties and/or their counsel to review in advance any submission, filing or communication (and documents submitted therewith) intended to be given by it to the FTC, the DOJ or any other governmental authority; provided, that materials may be redacted to remove references concerning the valuation of the business of Bluebird. Bluebird and Celgene, as each deems advisable and necessary, may reasonably designate any competitively sensitive material to be provided to the other under this Section 5.8(c) as "Antitrust Counsel Only Material." Such materials and the information contained therein shall be given only to the outside antitrust counsel of the recipient and will not be disclosed by such outside counsel to employees, officers or directors of the recipient unless express permission is obtained in advance from the source of the materials (Celgene or Bluebird, as the case may be) or its legal counsel.

(d) Celgene and Bluebird shall cooperate and use respectively all reasonable efforts to make all other registrations, filings and applications, to give all notices and to obtain as soon as practicable all governmental or other consents, transfers, approvals, orders, qualifications authorizations, permits and waivers, if any, and to do all other things necessary or desirable for the consummation of the transactions as contemplated hereby. Neither Party shall be required, however, to divest or out-license products or assets or materially change its business if doing so is a condition of obtaining approval of the transactions contemplated by this Agreement.

(e) If a Development & Commercialization Agreement is terminated pursuant to this Section 5.8, then, notwithstanding any provision in this Agreement to the contrary, neither Party shall have any further obligation to the other Party with respect to the subject matter of such Development & Commercialization Agreement.

5.9 Section 365(n) of the Bankruptcy Code. All rights and licenses granted pursuant to any section of this Agreement are, and will be deemed to be, rights and licenses to "intellectual property" (as defined in Section 101(35A) of title 11 of the United States Code and of any similar provisions of applicable Laws under any other jurisdiction (the "Bankruptcy Code")). Each Party agrees that the other Party, as a licensee of rights and licenses under this Agreement, will retain and may fully exercise all of its rights and elections under the Bankruptcy Code. The Parties further agree that, in the event of the commencement of a bankruptcy proceeding by or against a Party under the Bankruptcy Code or analogous provisions of applicable Law outside the United States, the other Party will be entitled to a complete duplicate of (or complete access to, as appropriate) any intellectual property licensed to such Party and all embodiments of such intellectual property, which, if not already in such Party's possession, will be promptly delivered to it (a) upon any such commencement of a bankruptcy proceeding upon such Party's written request therefor, unless the Party in the bankruptcy proceeding elects to continue to perform all of its obligations under this Agreement or (b) if not delivered under clause (a), following the rejection of this Agreement by the Party in the bankruptcy proceeding upon written request therefor by the other Party.

6. Payments.

6.1 Research Fee.

(a) Within **[ten (10) calendar days]** of the Amendment Date, Celgene will pay to Bluebird a one-time payment of twenty five million dollars ($25,000,000) in consideration for the research and Development work to be performed by or on behalf of Bluebird as a part of the Collaboration Program for the Lead Product Candidate and Next Generation Product Candidate, which will be non-refundable and non-creditable and not subject to set-off, as follows:

(i) **[Celgene Corp. will pay $15,000,000 of such amount; and**

(ii) **Celgene Europe will pay $10,000,000 of such amount.]**

(b) **[In the event that the Parties decide that Bluebird will perform research and Development work on any additional Product Candidate(s) as a part of the Collaboration Program, the Parties will agree to appropriate compensation for such work prior to initiation of any such work.]**

6.2 Initial Option Fee. Subject to Section 5, Celgene will pay to Bluebird (a) ten million dollars ($10,000,000) within **[ten (10) days]** after the Implementation Date for the first License Agreement, which fee will, except as otherwise set forth in Sections 4.1(e), 4.3 and 10.6 hereof, Section 10.6 of the License Agreement (if applicable) or Section 17.6 of the Co-Development, Co-Promote and Profit Share Agreement (if applicable), be non-refundable and non-creditable and not subject to set-off, such payment to be made as follows: Celgene Corp. will pay **[$6,000,000]** of such amount and Celgene Europe will pay **[$4,000,000]** of such amount, and (b) fifteen million dollars ($15,000,000) within **[ten (10)]** days after the Implementation Date for each subsequent License Agreement, which fee will, except as otherwise set forth in Sections 4.1(e), 4.3 and 10.6 hereof, Section 10.6 of the License Agreement (if applicable) or Section 17.6

of the Co-Development, Co-Promote and Profit Share Agreement (if applicable), be non-refundable and non-creditable and not subject to set-off, such payment to be made as follows: Celgene Corp. will pay **[$9,000,000]** of such amount and Celgene Europe will pay **[$6,000,000]** of such amount (any such fee under clause (a) or (b), an "Initial Option Fee").

6.3 Additional Option Fee. Subject to Section 5, Celgene Corp. will pay to Bluebird ten million dollars ($10,000,000) (the "Additional Option Fee") within **[ten (10) days]** after the later to occur of (a) Bluebird's written notice to Celgene that that Bluebird will not exercise the option set forth above in Section 5.3, (b) Bluebird does not deliver a Bluebird Option Notice to Celgene prior to the expiration of the applicable **[ninety (90) day]** period following completion of the initial Phase 1 Study with respect to such Optioned Candidate, and (c) the Implementation Date, which Additional Option Fee will, except as otherwise set forth in Sections 4.1(e), 4.3 and 10.6 hereof, Section 10.6 of the License Agreement (if applicable) or Section 17.6 of the Co-Development, Co-Promote and Profit Share Agreement (if applicable), be non-refundable and non-creditable and not subject to set-off.

6.4 In-Licenses; New Celgene In-Licenses.

(a) *Pre-Existing In-Licenses.* If any payments become due during the Term under any Pre-Existing In-License, Bluebird will be solely responsible for such payments, other than as expressly provided in Section 7.2 and, provided such payment obligation is not specifically attributable to any executed Development & Commercialization Agreement, which will be addressed thereunder. Bluebird will not use any Patents, Know-How or Materials in-licensed pursuant to a Pre-Existing In-License in the Collaboration Program if Bluebird does not have the right under such Pre-Existing In-License to use such Patents, Know-How or Materials in the Field.

(b) *Bluebird Collaboration In-Licenses.* If any payments become due during the Term under any Bluebird Collaboration In-License, Bluebird will be solely responsible for such payments, other than as expressly provided in Section 7.2, provided that **[(i) Celgene will reimburse Bluebird for fifty percent (50%) of any such payments within thirty (30) days of Celgene's receipt of Bluebird's invoice therefore (A) that is an up-front payment, or (B) to the extent such payments become due as a result of the Parties' performance of Collaboration Program activities under this Agreement (excluding (I) any payments paid or payable by Bluebird that are triggered by the granting of a sublicense to Celgene (but including payments triggered by further grants of sublicenses by Celgene or its sublicensees), (II) any payment based on any payments made by Celgene to Bluebird (e.g., sublicense revenue sharing), (III) any payments based on a breach by Bluebird of such Bluebird Collaboration In-License, (IV) any payments based on a Business Combination of Bluebird or Celgene, (V) any annual maintenance payments and (VI) any payments not attributable to the performance of the Collaboration Program activities under this Agreement (other than the up-front payment referenced in subclause (A) above), and (ii) such payment obligation is not specifically attributable to any executed Development & Commercialization Agreement, which will be addressed thereunder].**

(c) *Celgene In-Licenses.* Except as otherwise provided in Sections 2.1(h)(ii) and 5.6, payments that become due under any Applicable Celgene In-License will be paid as set forth in Section 4.1(e), and any royalties payable under such applicable Celgene In-License will be paid

by Celgene and will be subject to Section 4.3(d) of any License Agreement or Section 11.3(d) of any Co-Development, Co-Promote and Profit Share Agreement, as applicable.

6.5 Taxes. **[Other than with respect to the up-front payment set forth in Section 6.1, Celgene may withhold from payments due to Bluebird amounts for payment of any withholding tax that is required by law to be paid to any taxing authority with respect to such payments. Celgene will provide Bluebird all relevant documents and correspondence, and will also provide to Bluebird any other cooperation or assistance on a reasonable basis as may be necessary to enable Bluebird to claim exemption from such withholding taxes and to receive a refund of such withholding tax or claim a foreign tax credit. Celgene will give proper evidence from time to time as to the payment of any such tax. The Parties will cooperate with each other in seeking deductions under any double taxation or other similar treaty or agreement from time to time in force. Such cooperation may include Celgene making payments from a single source in the U.S., where possible. Notwithstanding the foregoing, if Celgene assigns its rights and obligations hereunder to, or otherwise causes payments to be made to, Bluebird by an Affiliate or Third Party outside the United States pursuant to Section 11.13, and if such Affiliate or Third Party is required by applicable Law to withhold any additional taxes from or in respect of any amount payable under this Agreement as a result of such assignment, then any such amount payable under this Agreement shall be increased to take into account the additional taxes withheld as may be necessary so that, after making all required withholdings (including withholdings on the withheld amounts), Bluebird receives an amount equal to the sum it would have received had no such withholding been made, provided, however, that that Celgene will have no obligation to pay any additional amount to the extent that the withholding tax would not have been imposed but for (a) the failure by Bluebird to take advantage of an otherwise available exemption from or reduction in the rate of withholding tax under any applicable income tax convention between the United States and the jurisdiction in which such Affiliate or Third Party is domiciled, (b) the assignment by Bluebird of its rights under this Agreement or any redomiciliation of Bluebird outside of the United States, or (c) the assertion by a taxing authority in a jurisdiction other than the United States or the jurisdiction in which such Affiliate or Third Party is domiciled that a payment to Bluebird hereunder is derived from sources within such other jurisdiction and therefore is subject to withholding tax in such other jurisdiction. Apart from any such permitted withholding and those deductions expressly included in the definition of Net Sales, the amounts payable by Celgene to Bluebird hereunder will not be reduced on account of any taxes, charges, duties or other levies. Notwithstanding the foregoing, if Bluebird wishes to be entitled under any applicable tax treaty to a reduction of the rate of, or the elimination of, applicable withholding tax, Bluebird shall deliver to Celgene or the applicable tax authority the prescribed forms necessary to reduce the applicable rate of withholding or to relieve the paying party of its obligation to withhold such tax.]**

7. Patent Prosecution and Maintenance.

7.1 Generally. Subject to Sections 7.2 and 7.3, Bluebird will have the sole right to Prosecute and Maintain Patents within the Bluebird IP, Celgene will have the sole right to Prosecute and Maintain Patents with the Celgene IP, and the Parties will jointly control the Prosecution and Maintenance of any Patents within jointly-owned Collaboration IP.

7.2 Celgene Input; Expenses. Bluebird will regularly provide Celgene with copies of all applications for Patents within the Bluebird IP, and all other material submissions and correspondence with any patent authorities regarding such Patents, in sufficient time to allow for review and comment by Celgene. In addition, Bluebird will provide Celgene and its counsel with an opportunity to consult with Bluebird and its counsel regarding Prosecution and Maintenance of any such Patents in the Field, and Bluebird will consider in good faith all comments timely made by Celgene and its counsel. In the event of any disagreement between any of Bluebird or Celgene, Bluebird will have the final decision-making authority with respect to the matter involved as long as Bluebird acts in good faith, provided that if Celgene requests that Bluebird Prosecute and Maintain Patents in a particular jurisdiction, Bluebird will comply with such request, and provided further that Bluebird will not abandon Prosecution and Maintenance of any Patents within the Bluebird IP without Celgene's prior written consent (such consent not to be unreasonably withheld, delayed or conditioned). In addition, for each Product Candidate, the Parties shall cooperate to develop a mutually acceptable patent strategy designed to obtain Patents that include only claims Covering the Product Candidate, pharmaceutical compositions comprising the Product Candidate, or their manufacture or use, and no other product (or its manufacture or use), and Bluebird shall, to the extent permitted under applicable Law, use its reasonable best efforts to implement such strategy. **[During the Term, (a) Bluebird will be solely responsible for one hundred percent (100%) of all Patent Costs incurred in connection with the Prosecution and Maintenance of Patents within the Bluebird IP that have been filed in any country as of the Original Agreement Date and, except as set forth below with respect to validation costs, all other Patents within the Bluebird IP (excluding Collaboration IP solely owned by Bluebird pursuant to Section 2.1(f)) in the Tier-One Countries, and (b) Celgene will be solely responsible for (i) except as set forth below with respect to validation costs, fifty percent (50%) of Bluebird's Patent Costs incurred in connection with the Prosecution and Maintenance of Patents within the Collaboration IP solely or jointly owned by Bluebird pursuant to Section 2.1(f) in the Tier-One Countries, (ii) seventy five percent (75%) of Bluebird's Patent Costs incurred in connection with the Prosecution and Maintenance of all Patents within the Bluebird IP in the Tier-Two Countries (other than as provided in subclause (a) above) and (iii) one hundred percent (100%) of Bluebird's Patent Costs incurred in connection with the Prosecution and Maintenance of all other Patents within the Bluebird IP in jurisdictions other than the Tier-One Countries and Tier-Two Countries (other than as provided in subclause (a) above), and Celgene will reimburse Bluebird for such Patent Costs within thirty (30) days of Celgene's receipt of Bluebird's written invoice therefor. Except for Patent Costs associated with validation in France, Germany, Italy, Spain and the United Kingdom of a European regional Patent within the Bluebird IP (which will be the sole responsibility of Bluebird), during the Term Celgene will be responsible for one hundred percent (100%) of Bluebird's Patent Costs associated with the validation of European regional Patents within the Bluebird IP, unless and until any such Patents are licensed pursuant to a Development & Commercialization Agreement, whereupon the Prosecution and Maintenance provisions therein will control. Notwithstanding anything to the contrary herein, Bluebird will be solely responsible for one hundred percent (100%) of all Patent Costs incurred in connection with the Prosecution and Maintenance of Patents in-licensed under Bluebird New In-Licenses. If Celgene reasonably believes that the countries in which Bluebird is seeking Patent protection is overly broad, Celgene may ask that the**

Parties meet to discuss same. In addition, to the extent there are multiple licensees of Bluebird benefiting from the Patents within the Bluebird IP, the Parties shall mutually agree upon an appropriate allocation of the Patent Costs for such Patents.]

7.3 Bluebird Input; Expenses. Celgene will regularly provide Bluebird with copies of all applications for Patents (a) within Collaboration IP solely owned by Celgene pursuant to Section 2.1(f) and (b) within the Celgene IP that are in-licensed by Celgene pursuant to an Applicable Celgene New In-License (other than those sublicensed to Bluebird on a non-exclusive basis), and all other material submissions and correspondence with any patent authorities regarding such Patents, in sufficient time to allow for review and comment by Bluebird. In addition, Celgene will provide Bluebird and its counsel with an opportunity to consult with Celgene and its counsel regarding Prosecution and Maintenance of any such Patents in the Field, and Celgene will consider in good faith all comments timely made by Bluebird and its counsel. In the event of any disagreement between any of Bluebird or Celgene, Celgene will have the final decision-making authority with respect to the matter involved as long as Celgene acts in good faith. During the Term, Celgene will be solely responsible for all Patent Costs incurred in connection with the Prosecution and Maintenance of Patents within the Celgene IP.

7.4 Jointly Owned Collaboration IP. The Prosecution and Maintenance and the enforcement and defense of any Patents within jointly-owned Collaboration IP will be jointly managed by the Parties on mutually agreeable terms to be entered into by the Parties at the time any such Patents are first filed, provided that (a) absent further agreement, the enforcement and defense of any Patents within jointly-owned Collaboration IP will be governed by, and all recoveries and Patent Costs arising from the enforcement or defense of any Patents within jointly-owned Collaboration IP will be retained or borne, as applicable, in accordance with the principles set forth in Section 2.1(f)(iii) (i.e., U.S. patent law for joint ownership of Patents will apply), and (b) Patent Costs incurred in connection with the Prosecution and Maintenance of Patents within jointly-owned Collaboration IP will be apportioned as set forth in Section 7.2, for the purposes of which, such Patents will be treated as Patents within the Bluebird IP, provided that in each case ((a) and (b)), if either Party elects not to pay any such Patent Costs for any such Patent, the Parties will meet and agree upon an equitable way to treat such Patent.

7.5 Third Party Rights.

(a) To the extent that a Third Party licensor of Bluebird has retained any right to Prosecute or Maintain any Patent within the Bluebird IP licensed to Bluebird pursuant to a Bluebird In-License, or otherwise be involved in such activities, Bluebird will use commercially reasonable efforts to cause such Third Party licensor to take the actions specified by Section 7. in a manner consistent with the Bluebird In-Licenses applicable thereto, but Bluebird will not be deemed to be in breach of its obligations under Section 7 if, after using such commercially reasonable efforts, it is unable to comply with such obligations because of actions taken or not taken by such Third Party licensor.

(b) To the extent that a Third Party licensor of Celgene has retained any right to Prosecute or Maintain any Patent within the Celgene In-Licensed IP licensed to Celgene pursuant to an Applicable Celgene In-License, or otherwise be involved in such activities, Celgene will use commercially reasonable efforts to cause such Third Party licensor to take the actions specified by Section 7 in a manner consistent with the Applicable Celgene In-Licenses applicable thereto, but Celgene will not be deemed to be in breach of its obligations under

Section 7 if, after using such commercially reasonable efforts, it is unable to comply with such obligations because of actions taken or not taken by such Third Party licensor.

7.6 Common Interest Disclosures. With regard to any information or opinions disclosed pursuant to this Agreement by one Party to the other Party regarding Prosecution and Maintenance of Patent within the Bluebird IP, Celgene IP or Collaboration IP or enforcement or defense of intellectual property and/or technology by or against Third Parties, Bluebird and Celgene agree that they have a common legal interest in determining the ownership, scope, validity and/or enforcement of the Bluebird IP, Celgene IP or Collaboration IP, and whether, and to what extent, Third Party intellectual property rights may affect the conduct of the Development and commercialization of any Product Candidate, and have a further common legal interest in defending against any actual or prospective Third Party claims based on allegations of misuse or infringement of intellectual property rights relating to the Development or commercialization of any Product Candidate. Accordingly, the Parties agree that all such information and materials obtained by the Parties from each other will be used solely for purposes of the Parties' common legal interests with respect to the conduct of the Agreement and otherwise for each Party to exercise its rights and perform its obligations hereunder. All such information and materials will be treated as protected by the attorney-client privilege, the work product privilege, and any other privilege or immunity that may otherwise be applicable. By sharing any such information and materials, neither Party intends to waive or limit any privilege or immunity that may apply to the shared information and materials. Neither Party will have the authority to waive any privilege or immunity on behalf of the other Party without such other Party's prior written consent, nor will the waiver of privilege or immunity resulting from the conduct of one Party be deemed to apply against any other Party. This Section 7.6 will be subject to any right granted by Bluebird to any Third Party or by Celgene to any Third Party, provided that the grant of such right to such Third Party does not conflict with the other Party's rights or a Party's obligations under this Agreement.

8. Confidentiality.

8.1 Confidential Information.

(a) *Confidential Information.* Each Party ("Disclosing Party") may have disclosed or will disclose to the other Party ("Receiving Party"), and Receiving Party may acquire during the course and conduct of activities under this Agreement or any executed Development & Commercialization Agreement, certain proprietary or confidential information of Disclosing Party. The term "Confidential Information" means (i) all Materials and (ii) all ideas and information of any kind, whether in written, oral, graphical, machine-readable or other form, whether or not marked as confidential or proprietary, which are transferred, disclosed or made available by Disclosing Party or at the request of Receiving Party, including any of the foregoing of Third Parties. Without limiting the foregoing, Collaboration IP solely owned by Bluebird will be considered Confidential Information of Bluebird, Collaboration IP solely owned by Celgene will be considered Confidential Information of Celgene, and Collaboration IP jointly owned by the Parties will be considered Confidential Information of both Parties.

(b) *Restrictions.* During the Term and for ten (10) years thereafter, Receiving Party will keep all Disclosing Party's Confidential Information in confidence with the same degree of care with which Receiving Party holds its own confidential information, provided that the foregoing obligation will apply to any Confidential Information that constitutes a trade secret for

so long as such Confidential Information is afforded trade secret protection under applicable Law. Receiving Party will not use Disclosing Party's Confidential Information except for in connection with the performance of its obligations and exercise of its rights under this Agreement or any executed Development & Commercialization Agreement. Receiving Party has the right to disclose Disclosing Party's Confidential Information without Disclosing Party's prior written consent (such consent not to be unreasonably withheld, delayed or conditioned), to the extent and only to the extent reasonably necessary, to Receiving Party's Affiliates and their employees, subcontractors, sublicensees, consultants or agents who have a need to know such Confidential Information in order to perform its obligations and exercise its rights under this Agreement or any executed Development & Commercialization Agreement and who are required to comply with restrictions on use and disclosure similarly restrictive as those in this Section 8.1(b). Receiving Party will use diligent efforts to cause those entities and persons to comply with such restrictions on use and disclosure. Receiving Party assumes responsibility for those entities and persons maintaining Disclosing Party's Confidential Information in confidence and using same only for the purposes described herein.

(c) *Exceptions.* Receiving Party's obligation of nondisclosure and the limitations upon the right to use the Disclosing Party's Confidential Information will not apply to the extent that Receiving Party can demonstrate that the Disclosing Party's Confidential Information: (i) was known to Receiving Party or any of its Affiliates prior to the time of disclosure; (ii) is or becomes public knowledge through no fault or omission of Receiving Party or any of its Affiliates; (iii) is obtained by Receiving Party or any of its Affiliates from a Third Party under no obligation of confidentiality to Disclosing Party; or (iv) has been independently developed by employees, subcontractors, consultants or agents of Receiving Party or any of its Affiliates without the aid, application or use of Disclosing Party's Confidential Information, as evidenced by contemporaneous written records.

(d) *Permitted Disclosures.* Receiving Party may disclose Disclosing Party's Confidential Information to the extent (and only to the extent) such disclosure is reasonably necessary in the following instances:

(i) in order to comply with applicable Law (including any securities law or regulation or the rules of a securities exchange) or with a legal or administrative proceeding;

(ii) in connection with prosecuting or defending litigation, Regulatory Approvals and other regulatory filings and communications, and filing, prosecuting and enforcing Patents in connection with Receiving Party's rights and obligations pursuant to this Agreement or any executed Development & Commercialization Agreement; and

(iii) in connection with performing its obligations or exercising its rights hereunder or any executed Development & Commercialization Agreement, to its Affiliates; and subject to Section 8.3(a), to potential and future collaborators, licensees, sublicensees and permitted acquirers or assignees, and investment bankers, investors and lenders;

provided that (A) with respect to Sections 8.1(d)(i) or 8.1(d)(ii), where reasonably possible, Receiving Party will notify Disclosing Party of Receiving Party's intent to make any disclosure pursuant thereto sufficiently prior to making such disclosure so as to allow Disclosing Party adequate time to take whatever action it may deem appropriate to protect the confidentiality of the information to be disclosed, and (B) with respect to Section 8.1(d)(iii), each of those named people and entities are required to comply with restrictions on use and disclosure at least as

restrictive as those in Section 8.1(b) (other than investment bankers, investors and lenders, which must be bound prior to disclosure by commercially reasonable obligations of confidentiality).

8.2 Publications. The Parties may desire to publish in scientific journals and present at scientific conferences the results of the Collaboration Program, subject to the following process. Notwithstanding anything to the contrary herein, either Party may propose publication of the results of the Collaboration Program following scientific review by the JSC (if in force) and subsequent written approval by Bluebird's and Celgene's management, which approval will not be unreasonably withheld, delayed or conditioned. After receipt of the proposed publication by both Celgene's and Bluebird's managements, such written approval or disapproval will be provided within thirty (30) days. Both Parties understand that a reasonable commercial strategy may require delay of publication of information or filing of Patent applications, therefore the Parties agree to review and consider delay of publication and filing of Patent applications under certain circumstances for a reasonably limited period of time. Once publications have been reviewed by each Party and have been approved for publication, the same publications do not have to be provided again to the other Party for review for a later submission for publication. Expedited reviews for abstracts or poster presentations may be arranged if mutually agreeable to the Parties. Each Party will acknowledge the other Party's technical, non-financial contributions in any such publication. For the avoidance of doubt, the foregoing requirements and restrictions will not apply with respect to either Party's proposed publication of results of any work performed (a) following the expiration or termination of the Collaboration Program, or (b) with respect to any Declined Product Candidate, in each case except as such results specifically relate to any Optioned Candidate or to any Product Candidate for which Celgene has an option hereunder (unless such option expires without Celgene having exercised such option), in which case Bluebird may not publish or present such results without Celgene's prior written approval, which will not be unreasonably withheld, delayed or conditioned.

8.3 Terms of this Agreement; Publicity.

(a) *Restrictions*. The Parties agree that the terms of this Agreement (including, for clarity, for this Section 8.3(a), the Exhibits hereto) and any executed Development & Commercialization Agreement will be treated as Confidential Information of both Parties, and thus may be disclosed only as permitted by Section 8.1(d). Each Party shall also be permitted to disclose the terms of this Agreement, in each case under appropriate confidentiality provisions at least as protective as those contained in this Agreement, on a need to know basis, to a bona fide potential or future permitted acquirer or assignee, investment banker, investor, licensee, sublicensee, collaborator or lender with whom a Party has entered into good faith negotiations regarding a proposed transaction, provided that (i) such disclosure is solely in the form of redacted versions of this Agreement and any Development & Commercialization Agreement in such forms as are consistent with the corresponding redacted versions filed by Bluebird with the United States Securities and Exchange Commission (the "SEC") in connection with the Original Agreement) and (ii) a corresponding summary of financial terms for each such agreement also attached as an Exhibit or Appendix (as applicable) thereto. Only after negotiations with any such Third Party have progressed so that such Party reasonably and in good faith believes it will execute a definitive agreement with such Third Party with respect to the proposed transaction within the following fifteen (15) business days may such Party provide an unredacted version of this Agreement and any executed Development & Commercialization Agreement to such Third Party. In addition to the foregoing, (I) Bluebird may provide an unredacted version of this

Agreement and any executed Development & Commercialization Agreement to its investment bankers and other advisors, and (II) if Bluebird desires to enter into any such proposed transaction through an auction process, Bluebird may disclose the redacted form of this Agreement and any executed Development & Commercialization Agreement as part of that process, along with the financial summary, and may provide an unredacted version of this Agreement and any executed Development & Commercialization Agreement to those Third Parties that make a bona fide bid as part of such process. Except as required by Law, each Party agrees not to issue any press release or public statement disclosing information relating to this Agreement, any executed Development & Commercialization Agreement, the transactions contemplated hereby or thereby or any of the terms hereof or thereof without the prior written consent of the other Party (such consent not to be unreasonably withheld, delayed or conditioned), or as such consent may be obtained in accordance with Section 8.3(b), or as permitted by Section 8.3(d).

(b) *Review*. In the event either Party (the "Issuing Party") desires to issue a press release or other public statement disclosing information relating to this Agreement, any executed Development & Commercialization Agreement, the transactions contemplated hereby or thereby or the terms hereof or thereof, the Issuing Party will provide the other Party (the "Reviewing Party") with a copy of the proposed press release or public statement (the "Release"). The Issuing Party will specify with each such Release, taking into account the urgency of the matter being disclosed, a reasonable period of time within which the Reviewing Party may provide any comments on such Release and if the Reviewing Party fails to provide any comments during the response period called for by the Issuing Party, the Reviewing Party will be deemed to have consented to the issuance of such Release. If the Reviewing Party provides any comments, the Parties will consult on such Release and work in good faith to prepare a mutually acceptable Release. If the Reviewing Party does not provide its consent, not to be unreasonably withheld, conditioned or delayed, to the issuance of the Release, the Issuing Party will not issue the Release except as required by Law. Either Party may subsequently publicly disclose any information previously contained in any Release so consented to.

(c) *Joint Press Release*. The Parties agree to issue the joint press release on Exhibit H.

(d) *Securities Filings*. Each Party acknowledges and agrees that the other Party may submit this Agreement (including, for clarity, the Exhibits hereto) and any executed Development & Commercialization Agreement to the SEC and if a Party does submit this Agreement or any executed Development & Commercialization Agreement to the SEC, such Party agrees to consult with the other Party with respect to the preparation and submission of a confidential treatment request for this Agreement or such executed Development & Commercialization Agreement. If a Party is required by Law to make a disclosure of the terms of this Agreement or any executed Development & Commercialization Agreement in a filing with or other submission to the SEC, and (i) such Party has provided copies of the disclosure to the other Party as far in advance of such filing or other disclosure as is reasonably practicable under the circumstances, (ii) such Party has promptly notified the other Party in writing of such requirement and any respective timing constraints, and (iii) such Party has given the other Party a reasonable time under the circumstances from the date of notice by such Party of the required disclosure to comment upon, request confidential treatment or approve such disclosure, then such Party will have the right to make such public disclosure at the time and in the manner reasonably

determined by its counsel to be required by Law. Notwithstanding anything to the contrary herein, it is hereby understood and agreed that if a Party seeking to make a disclosure to the SEC as set forth in this Section 8.3(d), and the other Party provides comments within the respective time periods or constraints specified herein or within the respective notice, the Party seeking to make such disclosure or its counsel, as the case may be, will in good faith (A) consider incorporating such comments and (B) use reasonable efforts to incorporate such comments, limit disclosure or obtain confidential treatment to the extent reasonably requested by the other Party.

8.4 Relationship to the Confidentiality Agreement. This Agreement supersedes that certain "Mutual Confidentiality Agreement" between the Parties dated May 21, 2012; provided that all "Confidential Information" disclosed or received by the Parties thereunder will be deemed "Confidential Information" hereunder and will be subject to the terms and conditions of this Agreement.

9. Warranties; Limitations of Liability; Indemnification.

9.1 Representations and Warranties. Each Party represents and warrants to the other as of the Amendment Date that it has the legal right and power to enter into this Agreement, to extend the rights granted or to be granted to the other in this Agreement, and to fully perform its obligations hereunder.

9.2 Additional Representations and Warranties of Bluebird. Bluebird represents and warrants to Celgene as of the Amendment Date that:

(a) Except for the Pre-Existing In-Licenses and Bluebird Collaboration In-Licenses, neither Bluebird nor any of its Affiliates is a party to any license, sublicense or other agreement pursuant to which Bluebird or such Affiliate has received a license or other rights relating to the Collaboration Program or the Field.

(b) The Pre-Existing In-Licenses and Bluebird Collaboration In-Licenses in effect as of the Amendment Date are valid and binding obligations of Bluebird and, to the Knowledge of Bluebird, the applicable licensor, enforceable against Bluebird and, to the Knowledge of Bluebird, the applicable licensor, in accordance with their terms, except as may be limited by general principles of equity (regardless of whether considered in a proceeding at law or in equity) and by applicable bankruptcy, insolvency, moratorium and other similar Laws of general application relating to or affecting creditors' rights generally. Neither Bluebird nor any of its Affiliates has received any notice of any counterparty's intention to terminate any Pre-Existing In-Licenses or Bluebird Collaboration In-Licenses in whole or in part or any notice requesting any amendment, alteration or modification of such Pre-Existing In-License or Bluebird Collaboration In-Licenses or any sublicense or assignment thereunder. There is no breach or default, or event which upon notice or the passage of time, or both, would give rise to any breach or default, in the performance of any Pre-Existing In-License or Bluebird Collaboration In-Licenses by Bluebird or any of its Affiliates or, to the Knowledge of Bluebird, the counterparty thereto, and Bluebird has not received any notice of any such breach, default or event. All Patents and Know-How licensed to Bluebird under the Pre-Existing In-Licenses and Bluebird Collaboration In-Licenses are Controlled by Bluebird for purposes of the licenses granted to Celgene under this Agreement and under any Development & Commercialization Agreement.

(c) Neither Bluebird nor any of its Affiliates has entered into any agreement or otherwise licensed, granted, assigned, transferred, conveyed or otherwise encumbered or

disposed of any right, title or interest in or to any of its assets, including any intellectual property rights, that would in any way conflict with or impair the scope of any rights or licenses granted to Celgene hereunder or that would be granted to Celgene under any Development & Commercialization Agreement, including under any of the agreements which Bluebird has identified to Celgene prior to the Amendment Date.

(d) Exhibit I sets forth a complete and accurate list of all Patents included in the Bluebird IP, indicating the owner, licensor and/or co-owner(s), if applicable. Bluebird Controls the Patents listed on Exhibit I and the Know-How within the Bluebird IP, and is entitled to grant the licenses specified herein. To Bluebird's Knowledge, the Patents listed on Exhibit I have been procured or are being procured from the respective patent offices in accordance with applicable Law. None of the Patents included in the Bluebird IP is or has been involved in any opposition, cancellation, interference, reissue or reexamination proceeding, and no Bluebird IP is the subject of any judicial, administrative or arbitral order, award, decree, injunction, lawsuit, proceeding or stipulation. Neither Bluebird nor any of its Affiliates has received any notice alleging that the Patents in the Bluebird IP are invalid or unenforceable, or challenging Bluebird's ownership of or right to use any such rights.

(e) Exhibit J sets forth a complete and accurate list of all agreements relating to the licensing, sublicensing or other granting of rights by Bluebird to any Person with respect to the Bluebird IP and the Target Antigen, and Bluebird has provided complete and accurate copies of all such agreements to Celgene. Except for the Pre-Existing In-Licenses and Bluebird Collaboration In-Licenses, Bluebird and its Affiliates are not subject to any payment obligations to Third Parties as a result of the execution or performance of this Agreement. Neither Bluebird nor any of its Affiliates has granted any liens or security interests on the Bluebird IP and the Bluebird IP is free and clear of any mortgage, pledge, claim, security interest, covenant, easement, encumbrance, lien or charge of any kind.

(f) The execution, delivery and performance by Bluebird of this Agreement and the consummation of the transactions contemplated hereby will not result in any violation of, conflict with, result in a breach of or constitute a default under any understanding, contract or agreement to which Bluebird is a party or by which it is bound, including each of the agreements which Bluebird has identified to Celgene prior to the Amendment Date.

(g) There is no action, suit, proceeding or investigation pending or, to the Knowledge of Bluebird, currently threatened in writing against or affecting Bluebird that questions the validity of this Agreement or the right of Bluebird to enter into this Agreement or consummate the transactions contemplated hereby.

(h) Other than with respect to any Patents, Know-How or Materials licensed to Celgene pursuant to any of the Baylor Agreements, (i) neither Bluebird nor any of its Affiliates has received any notice of any claim that any Patent, Know-How or other intellectual property owned or controlled by a Third Party would be infringed or misappropriated by the production, use, research, Development, Manufacture or commercialization of any Product Candidate pursuant to this Agreement and any Development & Commercialization Agreement, and (ii) to the Knowledge of Bluebird, except as disclosed to Celgene in writing on the Amendment Date, there are no Patents, Know-How or other intellectual property owned by a Third Party and not included in the Bluebird IP that are necessary for the production, use, research, Development, Manufacture or commercialization of any Product Candidate.

9.3 Disclaimers. Without limiting the respective rights and obligations of the Parties expressly set forth herein, each Party specifically disclaims any guarantee that the Collaboration Program will be successful, in whole or in part. EXCEPT AS OTHERWISE EXPRESSLY PROVIDED IN THIS AGREEMENT, THE PARTIES MAKE NO REPRESENTATIONS AND EXTEND NO WARRANTY OF ANY KIND, EITHER EXPRESS OR IMPLIED, WITH RESPECT TO ANY BLUEBIRD IP, CELGENE IP, PRODUCT CANDIDATES, MATERIALS, INCLUDING WARRANTIES OF VALIDITY OR ENFORCEABILITY OF ANY PATENT RIGHTS, TITLE, QUALITY, MERCHANTABILITY, FITNESS FOR A PARTICULAR USE OR PURPOSE, PERFORMANCE, AND NONINFRINGEMENT OF ANY THIRD PARTY PATENTS OR OTHER INTELLECTUAL PROPERTY RIGHTS.

9.4 **[No Consequential Damages. NOTWITHSTANDING ANYTHING IN THIS AGREEMENT OR OTHERWISE, EXCEPT FOR DAMAGES DUE TO THE FRAUD OR WILLFUL, BAD FAITH BREACH OF THE LIABLE PARTY, AND EXCEPT FOR A PARTY'S BREACH OF SECTION 2.1(e), NEITHER PARTY WILL BE LIABLE TO THE OTHER OR ANY THIRD PARTY WITH RESPECT TO ANY SUBJECT MATTER OF THIS AGREEMENT FOR ANY INDIRECT, PUNITIVE, SPECIAL OR CONSEQUENTIAL DAMAGES, EVEN IF SUCH PARTY HAS BEEN INFORMED OR SHOULD HAVE KNOWN OF THE POSSIBILITY OF SUCH DAMAGES; PROVIDED THAT THIS SECTION 9.4 WILL NOT APPLY TO THE PARTIES' INDEMNIFICATION RIGHTS AND OBLIGATIONS UNDER SECTION 9.6.]**

9.5 Performance by Others. The Parties recognize that each Party may perform some or all of its obligations under this Agreement through Affiliates and permitted subcontractors provided, however, that each Party will remain responsible and liable for the performance by its Affiliates and permitted subcontractors and will cause its Affiliates and permitted subcontractors to comply with the provisions of this Agreement in connection therewith.

9.6 Indemnification.

(a) *Indemnification by Celgene.* Celgene will indemnify Bluebird, its Affiliates and their respective directors, officers, employees, Third Party licensors and agents, and their respective successors, heirs and assigns (collectively, "Bluebird Indemnitees"), and defend and save each of them harmless, from and against any and all losses, damages, liabilities, costs and expenses (including reasonable attorneys' fees and expenses) (collectively, "Losses") in connection with any and all suits, investigations, claims or demands of Third Parties (collectively, "Third Party Claims") against the Bluebird Indemnitees arising from or occurring as a result of: (i) the material breach by Celgene of any term of this Agreement; (ii) Celgene's performance of the Collaboration Program (other than with respect to claims of actual or alleged infringement, misappropriation or other violation of a Third Party's Patents, trade secrets, or other intellectual property or proprietary rights); or (iii) any gross negligence or willful misconduct on the part of Celgene in performing its obligations under this Agreement, except in each case for those Losses for which Bluebird has an obligation to indemnify Celgene pursuant to Section 9.6(b), as to which Losses each Party will indemnify the other to the extent of their respective liability; provided, however, that Celgene will not be obligated to indemnify Bluebird Indemnitees for any Losses to the extent that such Losses arise as a result of gross negligence or willful misconduct on the part of a Bluebird Indemnitee.

(b) *Indemnification by Bluebird.* Bluebird will indemnify Celgene, its Affiliates and their respective directors, officers, employees and agents, and their respective successors, heirs and assigns (collectively, "Celgene Indemnitees"), and defend and save each of them harmless, from and against any and all Losses in connection with any and all Third Party Claims against Celgene Indemnitees arising from or occurring as a result of: (i) the material breach by Bluebird of any term of this Agreement; (ii) Bluebird's performance of the Collaboration Program (other than with respect to claims of actual or alleged infringement, misappropriation or other violation of a Third Party's Patents, trade secrets, or other intellectual property or proprietary rights); (iii) **[an infringement or misappropriation claim or tortuous interference claim brought by a Third Party licensor that is a Party to a Bluebird In-License as a result of any research or Development activity performed by or on behalf of Celgene which has been performed at the request of Bluebird or assigned to Celgene in the Collaboration Plan and that would require a sublicense under any Bluebird In-License]**; or (iv) any gross negligence or willful misconduct on the part of Bluebird in performing its obligations under this Agreement, except in each case for those Losses for which Celgene has an obligation to indemnify Bluebird pursuant to Section 9.6(a), as to which Losses each Party will indemnify the other to the extent of their respective liability for the Losses; provided, however, that Bluebird will not be obligated to indemnify Celgene Indemnitees for any Losses to the extent that such Losses arise as a result of gross negligence or willful misconduct on the part of a Celgene Indemnitee.

(c) *Notice of Claim.* All indemnification claims provided for in Section 9.6(a) and 9.6(b) will be made solely by such Party to this Agreement (the "Indemnified Party"). The Indemnified Party will promptly notify the indemnifying Party (an "Indemnification Claim Notice") of any Losses or the discovery of any fact upon which the Indemnified Party intends to base a request for indemnification under Section 9.6(a) or 9.6(b), but in no event will the indemnifying Party be liable for any Losses that result from any delay in providing such notice. Each Indemnification Claim Notice must contain a description of the claim and the nature and estimated amount of such Loss (to the extent that the nature and amount of such Loss is known at such time). The Indemnified Party will furnish promptly to the indemnifying Party copies of all papers and official documents received in respect of any Losses and Third Party Claims.

(d) *Defense, Settlement, Cooperation and Expenses.*

(i) *Control of Defense.* At its option, the indemnifying Party may assume the defense of any Third Party Claim by giving written notice to the Indemnified Party within thirty (30) days after the indemnifying Party's receipt of an Indemnification Claim Notice, provided however that (A) the Third Party Claim solely seeks monetary damages and (B) the indemnifying Party expressly agrees in writing that as between the indemnifying Party and the Indemnified Party, the indemnifying Party will be solely obligated to satisfy and discharge the Third Party Claim in full and is able to reasonably demonstrate that it has sufficient financial resources (the matters described in (A) and (B), the "Litigation Conditions"). The assumption of the defense of a Third Party Claim by the indemnifying Party will not be construed as an acknowledgment that the indemnifying Party is liable to indemnify the Indemnified Party in respect of the Third Party Claim (except as provided in the immediately prior sentence), nor will it constitute a waiver by the indemnifying Party of any defenses it may assert against the Indemnified Party's claim for indemnification. Upon assuming the defense of a Third Party Claim, the indemnifying Party may appoint as lead counsel in the defense of the Third Party Claim any legal counsel selected by the indemnifying Party (the indemnifying Party will consult

with the Indemnified Party with respect to a possible conflict of interest of such counsel retained by the indemnifying Party). In the event the indemnifying Party assumes the defense of a Third Party Claim, the Indemnified Party will immediately deliver to the indemnifying Party all original notices and documents (including court papers) received by the Indemnified Party in connection with the Third Party Claim. Should the indemnifying Party assume the defense of a Third Party Claim, except as provided in Section 9.6(d)(ii), the indemnifying Party will not be liable to the Indemnified Party for any legal costs or expenses subsequently incurred by such Indemnified Party in connection with the analysis, defense or settlement of the Third Party Claim. The Indemnified Party may, at any time, assume the defense of a Third Party Claim if at any time the Litigation Conditions are not satisfied with respect to such Claim. In the event that it is ultimately determined that the indemnifying Party is not obligated to indemnify, defend or hold harmless the Indemnified Party from and against the Third Party Claim, the Indemnified Party will reimburse the indemnifying Party for any and all costs and expenses (including attorneys' fees and costs of suit) and any Third Party Claims incurred by the indemnifying Party in its defense of the Third Party Claim.

(ii) *Right to Participate in Defense.* Without limiting Section 9.6(d)(i), any Indemnified Party will be entitled to participate in, but not control, the defense of such Third Party Claim and to employ counsel of its choice for such purpose; provided, however, that such employment will be at the Indemnified Party's own cost and expense unless (A) the employment thereof has been specifically authorized by the indemnifying Party in writing, (B) the indemnifying Party has failed to assume the defense and employ counsel in accordance with Section 9.6(d)(i) (in which case the Indemnified Party will control the defense), (C) the interests of the Indemnified Party and the indemnifying Party with respect to such Third Party Claim are sufficiently adverse to prohibit the representation by the same counsel of both Parties under applicable Law, ethical rules or equitable principles, or (D) the indemnifying Party no longer satisfies the Litigation Conditions, in which case the indemnifying Party will assume one hundred percent (100%) of any such costs and expenses of counsel for the Indemnified Party.

(iii) *Settlement.* With respect to any Third Party Claims that relate solely to the payment of money damages in connection with a Third Party Claim and that will not result in the Indemnified Party's becoming subject to injunctive or other relief or otherwise adversely affecting the business of the Indemnified Party in any manner, and as to which the indemnifying Party will have acknowledged in writing the obligation to indemnify the Indemnified Party hereunder, and subject to the Litigation Conditions being satisfied, the indemnifying Party will have the sole right to agree to the entry of any judgment, enter into any settlement or otherwise dispose of such Loss, on such terms as the indemnifying Party, in its sole discretion, will deem appropriate. With respect to all other Losses in connection with Third Party Claims, where the indemnifying Party has assumed the defense of the Third Party Claim in accordance with Section 9.6(d)(i), the indemnifying Party will have authority to agree to the entry of any judgment, enter into any settlement or otherwise dispose of such Loss provided it obtains the prior written consent of the Indemnified Party (such consent not to be unreasonably withheld, delayed or conditioned). The indemnifying Party will not be liable for any settlement or other disposition of a Loss by an Indemnified Party that is reached without the prior written consent of the indemnifying Party. Regardless of whether the indemnifying Party chooses to defend or prosecute any Third Party Claim, no Indemnified Party will admit any liability with respect to or settle, compromise or discharge, any Third Party Claim without the prior written consent of the indemnifying Party, such consent not to be unreasonably withheld, delayed or conditioned.

(iv) *Cooperation*. If the indemnifying Party chooses to defend or prosecute any Third Party Claim, the Indemnified Party will, and will cause each other Indemnified Party to, cooperate in the defense or prosecution thereof and will furnish such records, information and testimony, provide such witnesses and attend such conferences, discovery proceedings, hearings, trials and appeals as may be reasonably requested in connection therewith. Such cooperation will include access during normal business hours afforded to indemnifying Party to, and reasonable retention by the Indemnified Party of, records and information that are reasonably relevant to such Third Party Claim, and making Indemnified Parties and other employees and agents available on a mutually convenient basis to provide additional information and explanation of any material provided hereunder, and the indemnifying Party will reimburse the Indemnified Party for all its reasonable out-of-pocket costs and expenses in connection therewith.

(v) *Costs and Expenses*. Except as provided above in this Section 9.6(d), the costs and expenses, including attorneys' fees and expenses, incurred by the Indemnified Party in connection with any claim will be reimbursed on a calendar quarter basis by the indemnifying Party, without prejudice to the indemnifying Party's right to contest the Indemnified Party's right to indemnification and subject to refund in the event the indemnifying Party is ultimately held not to be obligated to indemnify the Indemnified Party.

9.7 **[Insurance. Each Party will maintain at its sole cost and expense, an adequate liability insurance or self-insurance program (including product liability insurance) to protect against potential liabilities and risk arising out of activities to be performed under this Agreement, any executed Development & Commercialization Agreement, and any agreement related hereto and upon such terms (including coverages, deductible limits and self-insured retentions) as are customary in the U.S. pharmaceutical industry for the activities to be conducted by such Party under this Agreement or any executed Development & Commercialization Agreement. The coverage limits set forth herein will not create any limitation on a Party's liability to the other under this Agreement or any executed Development & Commercialization Agreement.]**

10. Term and Termination.

10.1 Term. This Agreement will commence as of the Original Agreement Date and, unless sooner terminated in accordance with the terms hereof or by mutual written consent, will continue until the later of the expiration of the Collaboration Program Term and expiration of the last-to-expire Celgene Option Period (the "Term"), **[it being understood that the Term will end on the date (if any) that all options and other rights granted to Celgene under Section 5 have expired pursuant to Section 5.1]**.

10.2 Termination by Bluebird. Bluebird will have the right to terminate this Agreement in full upon delivery of written notice to Celgene in the event of any material breach by Celgene of any terms and conditions of this Agreement in a manner that fundamentally frustrates the transactions contemplated by this Agreement, provided that such termination will not be effective if such breach has been cured within **[ninety (90)]** days after written notice thereof is given by Bluebird to Celgene specifying the nature of the alleged breach (or, if such default cannot be cured within such **[ninety (90) day period, within one hundred and eighty (180) days]** after such notice if Celgene commences actions to cure such default within such **[ninety (90) day]** period and thereafter diligently continues such actions, but fails to cure the default by

the end of such **[one hundred eighty (180) days]**); provided, however, that to the extent such material breach involves the failure to make a payment when due, such breach must be cured within **[thirty (30) days]** after written notice thereof is given by Bluebird to Celgene.

10.3 Termination by Celgene.

(a) *Breach.* Celgene will have the right to terminate this Agreement in full upon delivery of written notice to Bluebird in the event of any material breach by Bluebird of any terms and conditions of this Agreement in a manner that fundamentally frustrates the transactions contemplated by this Agreement, provided that such termination will not be effective if such breach has been cured within **[ninety (90) days]** after written notice thereof is given by Celgene to Bluebird specifying the nature of the alleged breach (or, if such default cannot be cured within such **[ninety (90) day period, within one hundred and eighty (180) days]** after such notice if Bluebird commences actions to cure such default within such **[ninety (90) day]** period and thereafter diligently continues such actions, but fails to cure the default by the end of such **[one hundred eighty (180) days]**).

(b) *Discretionary Termination.* Celgene will have the right to terminate this Agreement in full at its discretion for any reason **[ninety (90)]** days after delivery of written notice to Bluebird.

10.4 Effects of Termination or Expiration. Upon termination or expiration of this Agreement for any reason, all rights granted by Bluebird to Celgene hereunder will terminate, provided that:

(a) Other than with respect to the rights and licenses granted to Bluebird hereunder pursuant to Sections 2.1(h)(ii) or 5.6, all rights granted by Celgene to Bluebird hereunder will terminate.

(b) All executed Development & Commercialization Agreements will continue in full force and effect, provided that if Celgene has terminated this Agreement pursuant to Section 10.3(a), then (i) Bluebird's rights to co-develop, co-promote and share in profits under any Co-Development, Co-Promote and Profit Share Agreements will terminate, and the Parties promptly will execute a License Agreement to replace each such Co-Development, Co-Promote and Profit Share Agreement, and (ii) all up-front payments, milestone payments and royalty payments under any License Agreement will be reduced by **[fifty percent (50%)]**, provided that such reduction will not apply to the extent any such up-front payments, milestone payments and royalty payments have already been reduced pursuant to Section 10.3(c) of such License Agreement.

10.5 Survival. In addition to the termination consequences set forth in Section 10.4, the following provisions will survive termination or expiration of this Agreement: Sections 1, 2.1(f), 2.1(h)(ii), 2.2, 2.3(a), 2.3(c), 4.3 (through the expiration of any options granted to Celgene hereunder), 4.4, 4.5, 4.6, 5.5, 5.6, 5.8, 5.9, 6.5, 7.4, 8, 9, 10.4, 10.5 and 11, and any other provisions of this Agreement that are required to survive to give effect to any Development & Commercialization Agreement. Termination or expiration of this Agreement will not relieve the Parties of any liability or obligation which accrued hereunder prior to the effective date of such termination or expiration nor preclude either Party from pursuing all rights and remedies it may have hereunder or at law or in equity with respect to any breach of this Agreement nor prejudice

either Party's right to obtain performance of any obligation. All other rights and obligations will terminate upon expiration of this Agreement.

10.6 Right to Set-off. Notwithstanding anything to the contrary in this Agreement, each Party has the right at all times to retain and set off against all amounts due and owing to the other Party as determined in a final judgment any damages recovered by such Party for any Losses incurred by such Party.

11. General Provisions.

11.1 Dispute Resolution for this Agreement and Executed Development & Commercialization Agreements.

(a) *Disputes.* Disputes arising under or in connection with this Agreement or any executed Development and Commercialization Agreement will be resolved pursuant to this Section 11.1.

(b) *Dispute Escalation.* In the event of a dispute between the Parties, the Parties will first attempt in good faith to resolve such dispute by negotiation and consultation between themselves or the Program Directors. In the event that such dispute is not resolved on an informal basis within twenty (20) days, any Party may, by written notice to the other, have such dispute referred to the Bluebird CEO and the Celgene CEO or in either case his or her designee (who will be a senior executive), who will attempt in good faith to resolve such dispute by negotiation and consultation for a thirty (30) day period following receipt of such written notice.

(c) *Dispute Resolution.* In the event the Parties are not able to resolve such dispute in accordance with Section 11.1(b), either Party may at any time after such twenty (20) day period submit such dispute to be finally settled in the federal courts located in the Southern District of New York. Each Party hereby irrevocably and unconditionally consents to submit to the exclusive jurisdiction of the federal courts located in the Southern District of New York, for any actions, suits or proceedings arising out of or relating to this Agreement and the transactions contemplated hereby. Each Party hereby irrevocably and unconditionally waives any objection to the laying of venue of any action, suit or proceeding arising out of or relating to this Agreement and the transactions contemplated hereby in the federal courts located in the Southern District of New York, and waives and agrees not to plead or claim in any such court that any such action, suit or proceeding brought in such court has been brought in an inconvenient forum. Notwithstanding the foregoing, a Party will be entitled to seek enforcement of a judgment entered pursuant to this Section in any court having competent jurisdiction thereof where enforcement is deemed necessary.

(d) *Injunctive Relief.* Notwithstanding the dispute resolution procedures set forth in this Section 11.1, in the event of an actual or threatened breach hereunder (or any executed Development & Commercialization Agreement, if applicable), the aggrieved Party may seek equitable relief (including restraining orders, specific performance or other injunctive relief) in any court or other forum, without first submitting to any dispute resolution procedures hereunder.

(e) *Tolling.* The Parties agree that all applicable statutes of limitation and time-based defenses (such as estoppel and laches) will be tolled while the dispute resolution procedures set forth in this Section 11.1 are pending, and the Parties will cooperate in taking all actions reasonably necessary to achieve such a result. In addition, during the pendency of any dispute

under this Agreement initiated before the end of any applicable cure period under Section 10.2 or 10.3 (or the cure periods under any executed Development & Commercialization Agreement, if applicable), (i) this Agreement (or any executed Development & Commercialization Agreement, if applicable) will remain in full force and effect, (ii) the provisions of this Agreement (or any executed Development & Commercialization Agreement, if applicable) relating to termination for material breach will not be effective, (iii) the time periods for cure under Section 10 (and the time periods from any executed Development & Commercialization Agreement, if applicable) as to any termination notice given prior to the initiation of the court proceeding will be tolled, and (iv) neither Party will issue a notice of termination pursuant to this Agreement (or any executed Development & Commercialization Agreement, if applicable) based on the subject matter of the court proceeding (and no effect will be given to previously issued termination notices), until the court has confirmed the existence of the facts claimed by a Party to be the basis for the asserted material breach.

11.2 Cumulative Remedies and Irreparable Harm. All rights and remedies of the Parties hereunder will be cumulative and in addition to all other rights and remedies provided hereunder or available by agreement, at law or otherwise. Each Party acknowledges and agrees that breach of any of the terms or conditions of this Agreement would cause irreparable harm and damage to the other and that such damage may not be ascertainable in money damages and that as a result thereof the non-breaching Party would be entitled to seek from a court equitable or injunctive relief restraining any breach or future violation of the terms contained herein by the breaching Party without the necessity of proving actual damages or posting bond. Such right to equitable relief is in addition to whatever remedies either Party may be entitled to as a matter of law or equity, including money damages.

11.3 Business Combination and IP.

(a) *Bluebird Business Combination.* Notwithstanding anything to the contrary herein, for purposes of this Agreement and any Development & Commercialization Agreement, no Know-How, Materials, Patents, Regulatory Data, Regulatory Filings or Regulatory Approvals not Controlled by Bluebird or any of its Affiliates prior to a Business Combination of Bluebird will be Controlled for purposes of this Agreement or any Development & Commercialization Agreement after such Business Combination of Bluebird, other than (i) Collaboration IP, (ii) Bluebird In-Licenses to the extent in effect immediately prior to such Business Combination of Bluebird and later Bluebird Collaboration In-Licenses (provided that after any such Business Combination, Bluebird may, but will not be obligated to, make any Bluebird New In-License available to Celgene or the JSC for review, election or conversion into a Bluebird Collaboration In-License pursuant to Section 4.1), and (iii) any Patent that claims priority, directly or indirectly, to any other Patent first Controlled before such Business Combination of Bluebird will be Controlled thereafter no matter when such Patent is filed or issued.

(b) *Celgene Business Combination.* Notwithstanding anything to the contrary herein, for purposes of this Agreement and any Development & Commercialization Agreement, no Know-How, Materials, Patents, Regulatory Data, Regulatory Filings or Regulatory Approvals not Controlled by Celgene or any of its Affiliates prior to a Business Combination of Celgene will be Controlled for purposes of this Agreement or any Development & Commercialization Agreement after such Business Combination of Celgene, other than (i) Collaboration IP, (ii) Applicable Celgene In-Licenses, and (iii) any Patent that claims priority, directly or indirectly, to

any other Patent first Controlled before such Business Combination of Celgene will be Controlled thereafter no matter when such Patent is filed or issued.

11.4 Relationship of Parties. Nothing in this Agreement is intended or will be deemed to constitute a partnership, agency, employer-employee or joint venture relationship between the Parties. No Party will incur any debts or make any commitments for the other, except to the extent, if at all, specifically provided therein. There are no express or implied third party beneficiaries hereunder (except for Bluebird Indemnitees and Celgene Indemnitees, and any Third Party indemnitees under any executed Development & Commercialization Agreement, if applicable, for purposes of Section 9.6).

11.5 Compliance with Law. Each Party will perform or cause to be performed any and all of its obligations or the exercise of any and all of its rights hereunder in good scientific manner and in compliance with all applicable Law. Without limiting the foregoing, Bluebird will comply with comply with all applicable Laws and regulations (including U.S. Foreign Corrupt Practices Act and any other applicable anti-bribery or anti-kickback laws or regulations).

11.6 Force Majeure. Neither Party will be liable to the other for failure of or delay in performing obligations set forth in this Agreement (other than any obligation to pay monies when due), and neither will be deemed in breach of such obligations, if such failure or delay is due to natural disasters or any causes reasonably beyond the control of such Party and without the fault or negligence of the Party so failing or delaying; provided that the Party affected will promptly notify the other of the force majeure condition and will exert reasonable efforts to eliminate, cure or overcome any such causes and to resume performance of its obligations as soon as possible.

11.7 Governing Law. This Agreement will be governed by and construed in accordance with the Laws of the state of New York, without respect to its conflict of laws rules; provided, however, that any dispute relating to the scope, validity, enforceability or infringement of any Patents or Know-How will be governed by, and construed and enforced in accordance with, the substantive Laws of the jurisdiction in which such Patents or Know-How apply.

11.8 Counterparts; Facsimiles. This Agreement may be executed in one or more counterparts, each of which will be deemed an original, and all of which together will be deemed to be one and the same instrument. Facsimile or PDF execution and delivery of this Agreement by either Party will constitute a legal, valid and binding execution and delivery of this Agreement by such Party

11.9 Headings. All headings in this Agreement are for convenience only and will not affect the meaning of any provision hereof.

11.10 Waiver of Rule of Construction. Each Party has had the opportunity to consult with counsel in connection with the review, drafting and negotiation of this Agreement. Accordingly, the rule of construction that any ambiguity in this Agreement will be construed against the drafting party will not apply.

11.11 Interpretation. Whenever any provision of this Agreement uses the term "including" (or "includes"), such term will be deemed to mean "including without limitation" (or "includes without limitations"). "Herein," "hereby," "hereunder," "hereof" and other equivalent words refer to this Agreement as an entirety and not solely to the particular portion of this Agreement in which any such word is used. All definitions set forth herein will be deemed applicable whether

the words defined are used herein in the singular or the plural. Unless otherwise provided, all references to Sections and Exhibits in this Agreement are to Sections and Exhibits of this Agreement. References to any Sections include Sections and subsections that are part of the related Section (*e.g.*, a section numbered "Section 2.1" would be part of "Section 2", and references to "Section 2.1" would also refer to material contained in the subsection described as "Section 2.1(a)").

11.12 Binding Effect. This Agreement will inure to the benefit of and be binding upon the Parties, their Affiliates, and their respective lawful successors and assigns.

11.13 Assignment. This Agreement may not be assigned by either Party, nor may either Party delegate its obligations or otherwise transfer licenses or other rights created by this Agreement, except as expressly permitted hereunder or otherwise without the prior written consent of the other Party, which consent will not be unreasonably withheld, delayed or conditioned; provided that without consent (a) Celgene may assign this Agreement to (i) an Affiliate or (ii) its successor in connection with the merger, consolidation, or sale of all or substantially all of its assets, and (b) Bluebird may assign this Agreement to (i) an Affiliate or (ii) its successor in connection with the merger, consolidation, or sale of all or substantially all of its assets or that portion of its business pertaining to the subject matter of this Agreement; provided however that, except in the case where a Party is involved in a merger or consolidation where it is the surviving entity and no assets of such Party have been transferred as a result of such merger or consolidation, that (A) such assigning Party provides the other Party to this Agreement with at least thirty (30) business days advance written notice of such assignment(s) and the assigning Party agrees in a written agreement delivered prior to such assignment(s) to the non-assigning Party (and upon which such non-assigning Party may rely) to remain fully liable for the performance of its obligations under this Agreement by its assignee(s), (B) the assignee(s) agree in a written agreement delivered prior to such assignment(s) to the non-assigning Party (and upon which such non-assigning Party may rely) to assume performance of all such assigned obligations, (C) in the case of any assignment(s) by Bluebird, all Bluebird IP licensed to Celgene or subject to Celgene's option rights under this Agreement, along with all Product Candidates will be transferred to such assignee(s) effective as of such assignment(s), (D) all of the matters referred to in clauses (A), (B) and (C), as applicable, will be set forth in documentation reasonably acceptable to the non-assigning Party prior to any such assignment(s) (and with such reasonable acceptance not to be unreasonably withheld, conditioned or delayed) and in all cases will provide the non-assigning Party with the full benefits of its rights under this Agreement (after taking into account all risks involving applicable counter-party performance and bankruptcy and insolvency risks, including those involving contractual rejection under 11 USC §365) as if no such assignment(s) had occurred, and (E) in the case of any assignment(s), the assigning Party will reimburse the non-assigning Party for all of the legal fees and expenses incurred by such non-assigning Party in connection with the matters set forth in clause (D) of this sentence in an aggregate amount not to exceed fifty thousand dollars ($50,000); and provided, further, that if Bluebird wishes to assign any Bluebird IP to its Affiliates, it will be permitted to do so conditioned on such Affiliate becoming a party to this Agreement, in the form of an amendment to this Agreement executed by Celgene, Bluebird and such Affiliate, pursuant to which such Affiliate would agree to assume all obligations hereunder, and grant to Celgene all rights hereunder, with respect to the Bluebird IP so assigned. The terms of this Agreement will be binding upon and will inure to the benefit of the successors, heirs, administrators and

permitted assigns of the Parties. Any purported assignment in violation of this Section 11.13 will be null and void *ab initio.*

11.14 Notices. All notices, requests, demands and other communications required or permitted to be given pursuant to this Agreement will be in writing and will be deemed to have been duly given upon the date of receipt if delivered by hand, recognized international overnight courier, confirmed facsimile transmission, or registered or certified mail, return receipt requested, postage prepaid to the following addresses or facsimile numbers:

If to Bluebird:	bluebird bio, Inc. 150 Second Street Third Floor Cambridge, MA 02142 Attention: General Counsel Facsimile:
With a copy to:	Goodwin|Procter LLP 53 State Street Boston, MA 02109 Attention: Michael Bison, Esq. & Kingsley Taft, Esq. Facsimile: 617-523-1231
If to Celgene: Corp.:	Celgene Corporation 86 Morris Avenue Summit, NJ 07901 Attention: George Golumbeski, Ph. D. Facsimile: 908-673-2791
If to Celgene: Europe:	Celgene European Investment Company LLC c/o Celgene International Sarl Route de Perreux 1 2017 Boudry Switzerland Attention: Nakisa Serry Facsimile: 011-41-32-729-8604

with copies to (in the case of Celgene Corp., Celgene Europe, or both):

Celgene Legal
86 Morris Avenue
Summit, NJ 07901
Attention: General Counsel
Telephone: (908) 673-9000
Facsimile: (908) 673-2771

and:

Dechert LLP
902 Carnegie Center
Suite 500
Princeton, NJ 08540
Attention: James J. Marino, Esq.
David E. Schulman, Esq.
Telephone: (609) 955-3230
Facsimile: (609) 873-9138

Either Party may change its designated address and facsimile number by notice to the other Party in the manner provided in this Section 11.14.

11.15 Amendment and Waiver. This Agreement may be amended, supplemented, or otherwise modified only by means of a written instrument signed by both Parties; provided that any unilateral undertaking or waiver made by one Party in favor of the other will be enforceable if undertaken in a writing signed by the Party to be charged with the undertaking or waiver. Any waiver of any rights or failure to act in a specific instance will relate only to such instance and will not be construed as an agreement to waive any rights or fail to act in any other instance, whether or not similar.

11.16 Severability. In the event that any provision of this Agreement will, for any reason, be held to be invalid or unenforceable in any respect, such invalidity or unenforceability will not affect any other provision hereof, and the Parties will negotiate in good faith to modify this Agreement to preserve (to the extent possible) their original intent.

11.17 Payment Floor. Except as permitted by Section 10.6, Section 10.6 of any License Agreement or Section 17.6 of any Co-Development, Co-Promote and Profit Share Agreement, in no event will any credits permitted to be taken by Celgene under this Agreement or any Development & Commercialization Agreement against any particular Milestone Payment, royalty payment or Profit & Loss Share payment owed to Bluebird under any Development & Commercialization Agreement act to reduce such payment by more than **[fifty percent (50%)]** than would otherwise be payable to Bluebird thereunder or thereunder (and for clarity "otherwise payable" above means that (a) any reductions pursuant to Section 10.3(c) of any License Agreement or Section 17.3 of any Co-Development, Co-Promote and Profit Share Agreement will be made before determining the **[fifty percent (50%)]** floor specified above, but (b) any royalty reductions pursuant to Section 4.3(d) of any License Agreement or Section 11.3(d) of any Co-Development, Co-Promote and Profit Share Agreement will be included in calculating the up to **[fifty percent (50%)]** reduction permitted above).

11.18 Entire Agreement. This Agreement is the sole agreement with respect to the subject matter and supersedes all other agreements and understandings between the Parties with respect to same (including the Confidential Agreement and the Original Agreement).

11.19 **Celgene Parties. [The Parties hereby acknowledge and agree that (a) Celgene Corp. is the party to this Agreement with respect to all rights and obligations under this Agreement in the United States, provided that with respect to payment obligations under this Agreement, Celgene Corp. is the responsible party with respect to all such payment obligations; (b) Celgene Europe is the party to this Agreement with respect to all rights and obligations under this Agreement outside of the United States, provided that with respect to payment obligations under this Agreement, Celgene Europe is not a responsible party with respect to any such payment obligations; and (c) as between Bluebird, on the one hand, and Celgene Corp. and Celgene Europe, on the other, Celgene Corp. shall undertake all actions permitted or required to be taken by Celgene Corp. and/or Celgene Europe.]**

[*Remainder of this Page Intentionally Left Blank*]

IN WITNESS WHEREOF, the Parties have caused this Master Collaboration Agreement to be executed by their respective duly authorized officers as of the Amendment Date.

BLUEBIRD BIO, INC.

By: _____
(Signature)

Name: _____

Title: _____

Date: _____

CELGENE CORPORATION

By: _____
(Signature)

Name: _____

Title: _____

Date: _____

CELGENE EUROPEAN INVESTMENT COMPANY LLC (CEICO)

By: Celgene International Sarl, the sole member of CEICO

By: _____
(Signature)

Name: _____

Title: _____

Date: _____

and

By: _____
(Signature)

Name: _____

Title: _____

Date: _____

Exhibit A

Amended and Restated License Agreement

Appendix I

Manufacturing and Supply Agreement Terms

[

1. ***Supply*:**

- Vector Supply will be governed by the Manufacturing and Supply Agreement. The terms of the Manufacturing and Supply Agreement will be consistent with the terms of Section 2.4 and will include, but will not be limited to, the following:
    - Bluebird will use commercially reasonable efforts to Manufacture and supply Celgene with Vector Supplies in adequate quantities (as set forth in Celgene's binding forecasts and purchase orders), of adequate quality, and in acceptable time in accordance with agreed upon lead-times, for preclinical and clinical needs for Elected Candidate and Licensed Product. Bluebird will create repositories for Vector Supplies in mutually agreed quantities to rebuild Vector Supply inventories in a reasonable period of time as to not affect the initiation or resupply of trials.
        - Such repositories shall be maintained at more than one site (if agreed upon, Celgene may be one of them) as a disaster mitigation strategy.
    - At Celgene's discretion and expense, but subject to reasonably prior notice and customary and reasonable access restrictions, Celgene will have the right to audit Bluebird's manufacturing facilities, and Bluebird's supply chain (as it relates to supplied Vector Supplies). Bluebird promptly will remediate any deficiencies or other adverse observations, at Bluebird's expense.
    - For the term of the Manufacturing and Supply Agreement, maintain adequate reference samples for appropriate retesting of plasmids, packaging cell lines, and Vector Supply.
- Quality of the Vector Supplies supplied will be governed by a separate Quality Service Agreement, to be agreed between the Parties.

2. ***Forecasts*:**

- The Supply Agreement will define the conditions for non-binding and binding forecasts.
- Bluebird will use Commercially Reasonable Efforts to supply Vector Supplies in a mutually agreeable amount in excess of the binding forecast defined in the Supply Agreement if requested by Celgene.

3. ***Minimum Supply Quantities*:**

- Manufacture and deliver (FCA, Incoterms 2010) sufficient Vector Supplies on time in accordance with binding forecasts and purchase orders to adequately supply preclinical and clinical needs per forecasts.

4. ***Manufacture*:**

- As indicated in Section 2.4(c)(i) of the License Agreement, Bluebird will Manufacture Vector Supply in-house or utilize Third Party contract manufacturers. Bluebird will have the right to make all necessary decisions regarding arrangements with Third Party manufacturers, provided that Bluebird will reasonably consult with Celgene with respect to all such arrangements and obtain Celgene's prior written consent, which will not be unreasonably withheld, conditioned or delayed.
- Celgene will have the right to conduct GMP audits of Bluebird (and its supply chain) as agreed upon in the Quality Service Agreement.

5. ***Step-In Right***

- Celgene acknowledges that Bluebird may contract one or more Third Parties to accommodate Manufacturing, in order for Bluebird to provide supply of Vector.

In connection with Celgene's ability to Manufacture (itself or through an Affiliate or Third Party), upon the occurrence of certain triggering events that will be set forth in the Manufacturing and Supply Agreement, within thirty (30) days after Celgene's request following any such trigger event, Bluebird shall commence transferring to the party that will be Manufacturing Vector Supply (i.e., Celgene, its Affiliate or a Third Party selected by Celgene to Manufacture (each, a "Manufacturing Party")), all relevant Know-How and Materials (including a chemistry, manufacturing, and controls (CMC) package and relevant Manufacturing information) Controlled by Bluebird at such time to the extent necessary for the Manufacture of Vector Supply, and shall use Commercially Reasonable Efforts to complete such a transfer in a timely fashion. Before any such transfer, the Manufacturing Party shall enter into a reasonable confidentiality agreement with Bluebird with respect to the use and handling of such Know-How and Materials. In addition, upon Celgene's reasonable request and at Celgene's cost and expense, Bluebird shall provide all reasonable assistance, including making its personnel available for meetings or teleconferences, to instruct Celgene in the Manufacture of Vector Supply (through the first commercial batch of Vector Supply). Notwithstanding the foregoing, Bluebird shall only be required to deliver Know-How and Materials in its actual possession and shall not be required to produce or create any additional Know-How or Materials.]

Exhibit B

Amended and Restated Co-Development, Co-Promote and Profit Share Agreement

Appendix F

Profit & Loss Share

[This Appendix F to the CCPS Agreement covers financial planning, accounting policies and procedures to be followed in determining the Profit & Loss Share. The Profit & Loss Share is not a legal entity and has been defined for identification purposes only.

1. Principles of Reporting

1.1 **The presentation of results of operations of the Parties with respect to Licensed Product for U.S. Administration will be based on each Party's respective financial information presented separately and on a consolidated basis in the reporting format depicted as follows:**

	Bluebird	Celgene	Total
Net Sales			
less Cost of Goods Sold			
= Gross Profits			
less Marketing Costs			
less U.S. Development Costs			
less Sales Costs			
less Other Operating Income/Expense			
less Distribution Costs			
= Operating Profit (Loss)			

1.2 **It is the intention of the Parties to interpret definitions to be consistent with this Appendix F and GAAP; it being understood and agreed that (a) "Operating Profits or Losses" shall be calculated in accordance with Celgene's then current GAAP practices and (b) costs incurred by Bluebird under this Appendix F will be calculated in accordance with Bluebird's then current GAAP practices. Where such costs will be determined based on either Party's system of cost or project accounting, each Party agrees to provide reasonable supporting documentation, as may be requested by the other Party, to ensure that each Party's methodologies are reasonable and consistently applied. To the extent that such costs are not readily determinable based on the respective Parties system of cost or project accounting, the JGC, will develop a reasonable methodology for determining such costs. Reasonable methodologies may include a standard rate or some other appropriate basis for allocating costs. For billing and reporting, the statement of operations will be translated into U.S. dollars in accordance with Section 11.5(d) of the CCPS Agreement.**

1.3 **If necessary, a Party will make the appropriate adjustments to the financial information it supplies under this Appendix F to conform to the above**

format of reporting results of operation.

1.4 **The Parties understand that all Net Sales of Licensed Product for U.S. Administration will be booked by Celgene. No Net Sales of Licensed Product for U.S. Administration will be booked by Bluebird without Celgene's prior written consent.**

2. Frequency of Reporting

2.1 **The fiscal year for the purposes of reporting and other activities undertaken by the Parties pursuant to this Appendix F will be a calendar year. Unless the schedule of such reporting is altered by the JGC, reporting by each Party for revenues and expenses will be as set forth in this Section 2.**

2.2 **Celgene will prepare a consolidated reporting of the activities undertaken by the Parties hereunder (including Operating Profit or Loss), the calculation of the Operating Profit or Loss sharing and determination of the cash settlement. Celgene will provide Bluebird within forty-five (45) days of the end of each Calendar Quarter, a detailed statement showing the consolidated results and calculations of the Operating Profit or Loss sharing and cash settlement required in a format agreed to by the Parties (the "Report"). Bluebird will cooperate as appropriate and provide Celgene with financial statements, within ten (10) days of the end of each Calendar Quarter, for Bluebird's activities with respect to Licensed Product for U.S. Administration, prepared in accordance with the terms contained in the financial planning, accounting and reporting procedures set forth in this Appendix F in order for Celgene to prepare the consolidated reports, including in reasonable detail, the following costs and expenses incurred by Bluebird in such Calendar Quarter: (a) Cost of Goods Sold, (b) Marketing Costs, (c) U.S. Development Costs, (d) Sales Costs, (e) Other Operating Income/Expense, and (f) Distribution Costs.**

2.3 **On a monthly basis, each Party selling Licensed Product for U.S. Administration will supply the other with an estimate of Gross Sales and Net Sales during the prior month of such Licensed Product for U.S. Administration in units, local currency and U.S. dollars (using the conversion method set forth in Section 11.5(d) of the CCPS) according to such Party's sales reporting system, which will be consistent with the financial planning, accounting and reporting procedures set forth in this Appendix F. Each such report will be provided as early as possible, but no later than fifteen (15) working days after the last day of the month in question, and will separately provide monthly and year-to-date cumulative figures.**

3. Financial Records

With respect to all financial records and reports required by this Appendix F, each Party to the extent applicable hereunder will keep financial records in accordance with GAAP. All cost reporting will be based on the appropriate costs definition stated in Section 7 of this Appendix F or elsewhere in the CCPS Agreement or Master Collaboration Agreement, and each Party will report costs in a manner consistent with its project cost system. In general, these project cost systems report time spent on specific projects, apply the payroll direct labor costs, including taxes, bonuses and benefits based on hours captured by time reports, capture direct costs of specific projects and allocate other expenses to projects. Each Party will disclose the project cost system methodologies used, and any material changes thereto, to the other Party.

4. Operating Profits and Loss Sharing

4.1 **The Parties agree to share the Operating Profit or Loss with respect to Licensed Product for U.S. Administration set forth in Section 11.4 of the CCPS Agreement.**

4.2 **If the Operating Profits or Loss is a net loss, Celgene shall invoice Bluebird, at the time the Report is delivered to Bluebird, an amount such that Bluebird will be bearing its Profit & Loss Share (as defined in Section 11.4 of the CCPS Agreement). Bluebird shall make payment in full to Celgene within thirty (30) days after the date of such invoice. If the Operating Profits or Loss is a net profit, Celgene shall pay Bluebird within thirty (30) days after the Report is delivered to Bluebird, an amount such that Bluebird will receive its Profit & Loss Share. All payments to be made by either Party hereunder will be made in U.S. dollars by wire transfer to such bank account as such Party may designate.**

4.3 **In the event any payment is made after the date specified in Section 4.2 and provided that such payment is not otherwise subject to good faith dispute, the paying Party will pay the additional amounts or the receiving Party will reimburse such excess payments, with interest from the date originally due as provided in Section 11.5(g) of the CCPS Agreement.**

5. Start of Operations and Effective Accounting Date Termination

5.1 **With respect to Licensed Product for U.S. Administration, operation of the Profit & Loss Share will be deemed to have commenced as of the CCPS Agreement Effective Date. Except as otherwise provided herein, costs and expenses incurred prior to such date are not chargeable to the Profit & Loss Share.**

5.2 **Unless otherwise set forth in the CCPS Agreement, for reporting and accounting purposes with respect to the Profit & Loss Share, the effective termination date of the CCPS Agreement with regard to the last detailing year for Licensed Product for U.S. Administration will be the nearest month end to which such termination takes place.**

6. Audits

Each Party will keep, and will cause its Affiliates and Sublicensees, as

applicable, to keep, accurate books and records of accounting as required under GAAP for the purpose of calculating all amounts payable by either Party to the other Party under the Profit & Loss Share, including with respect to the calculation of Allowable Expenses, Gross Profit and Net Sales of Licensed Product for U.S. Administration. Such records shall be retained by each party or any of its Affiliates or Sublicensees (in such capacity, the "Recording Party") for a period of no less than three (3) calendar years after the calendar year to which such records relate. At the request of either Party, the other Party will, and, will cause its Affiliates and Sublicensees, as applicable, to, permit the requesting Party and its representatives (including an independent auditor), at reasonable times and upon reasonable notice to the Recording Party, to inspect, review and audit the books and records maintained pursuant to this Section 6. Such examinations may not (i) be conducted for any calendar year more than three (3) years after the end of such calendar year, (ii) be conducted more than once in any twelve (12) month period or (iii) be repeated for any calendar year. Except as provided below, the cost of this examination will be borne by the Party that requested the examination, unless the audit reveals a variance of more than five percent (5%) from the reported amounts, in which case the audited Party will bear the cost of the audit. Unless disputed as described below, if such audit concludes that additional payments were owed or that excess payments were made during such period, the paying Party will pay the additional amounts or the receiving Party will reimburse such excess payments, with interest from the date originally due as provided in Section 11.5(g) of the CCPS Agreement, within sixty (60) days after the date on which a written report of such audit is delivered to the Parties. In the event of a dispute regarding such books and records, including the amounts owed to a Party under Section 11.4 of the CCPS Agreement or the calculation Allowable Expenses, Net Sales of Licensed Product for U.S. Administration or Gross Profit, the Parties will work in good faith to resolve the disagreement. If the Parties are unable to reach a mutually acceptable resolution of any such dispute within thirty (30) days, such dispute will be resolved in accordance with the dispute resolution procedures set forth in the Master Collaboration Agreement. The receiving Party will treat all information subject to review under this Section 6 in accordance with the confidentiality provisions of Section 15 of the CCPS Agreement and the Parties will cause any auditor or arbitrator to enter into a reasonably acceptable confidentiality agreement with the audited Party obligating such firm to retain all such financial information in confidence pursuant to such confidentiality agreement.

7. Definitions

7.1 **"Allocable Overhead" will mean the following costs, attributable to the Profit & Loss Share, all of which will be consistent with GAAP in accordance with Celgene's then current practices:**

(a) **indirect supplies and department overhead, such as indirect labor and other department expenses;**

(b) **facility overhead, such as rent, depreciation, utilities and facility support;**

(c) general overhead, including infrastructure services such as purchasing, information systems, and related expenses; and

(d) general and administrative costs, such as executive management, investor relations, human resources, business development, legal affairs, accounting and finance.

7.2 "Allowable Expenses" means the sum of the following costs and expenses incurred during the term of Profit & Loss Share, which will coincide with the CCPS Agreement Term unless earlier terminated in accordance with Section 17.2(c) of the CCPS Agreement, by the Parties, their Affiliates or Sublicensees, pursuant to the Manufacturing, Development or Commercialization of U.S. Administered Licensed Products in accordance with this CCPS Agreement, during the applicable Calendar Quarter or the applicable calendar year: (i) Cost of Goods Sold, (ii) U.S. Development Costs, (iii) Marketing Costs, (iv) Sales Costs, (v) Distribution Costs, (vi) Patent Costs and (vii) Other Operating Income/Expense, in each case that are incurred in accordance with the U.S. Commercialization Budget, the U.S. Development Budget and the terms and conditions of the CCPS Agreement.

Notwithstanding anything to the contrary in this Appendix F, to the extent that any Development or Commercialization activity is conducted or cost is incurred in support of both a Licensed Product for U.S. Administration and other products, services or efforts of a Party (including Licensed Products for ROW Administration), or is not solely attributable to a Licensed Product for U.S. Administration, then the costs and expenses thereof will be included in the Allowable Expenses only to the extent expressly and specifically included the U.S. Commercialization Budget or U.S. Development Budget or as otherwise permitted in the CCPS Agreement, including Sections 4.3(b) and 5.3(c).

7.3 "Calendar Quarter" means for each calendar year, each of the three (3) month periods ending March 31, June 30, September 30 and December 31; provided, however, that the first Calendar Quarter for the first calendar year shall extend from the CCPS Agreement Effective Date to the end of the first complete calendar quarter thereafter.

7.4 "Cost of Goods Sold" or "COGS" means the sum of (i) Manufacturing Cost incurred in the normal business process in connection with Licensed Product for U.S. Administration or components therefore or product (or components for products) for Licensed Product for U.S. Administration, plus, if applicable, any mark-up to such Manufacturing Cost as set forth in Section 7.4(b)(iii) of the CCPS Agreement, (ii) freight, insurance, customs charges, duty, temporary storage and other costs of shipping Licensed Product for U.S. Administration to Third Parties (to the extent actually incurred by the shipping Party and not reimbursed by the Third Party) (iii) any Third Party royalties payable with respect to the manufacture, use or sale of Licensed Products for U.S. Administration or components therefore or product (or components for products) for Licensed Product for U.S. Administration; and (iv) applicable Allocable Overhead.

7.5 "Distribution Costs" means the costs, including applicable Allocable Overhead, specifically identifiable to the distribution of a Licensed Product for U.S.

Administration by a Party including storage and distribution activities, customer services, collection of data about sales to hospitals and other end users, order entry, billing, credit and credit and collection services and other such activities.

7.6 **"GAAP" means U.S. generally accepted accounting principles or International Financial Reporting Standards, consistently applied, as designated and used by the applicable Party from time to time.**

7.7 **"Gross Profit" means Net Sales of Licensed Product for U.S. Administration less Cost of Goods Sold for sales of such Licensed Product for U.S. Administration.**

7.8 **"Gross Sales" means the gross amount invoiced by a Party for sales of Licensed Product for U.S. Administration to Third Parties.**

7.9 **"Manufacturing Costs" means costs to supply applicable therapeutic ingredients, finished products, related inputs and services (a) supplied by an unaffiliated Third Party or (b) manufactured directly by either Party or its Affiliates; it being understood and agreed that (i) in the case of costs referred to in clause (a) of this sentence where an unaffiliated Third Party is the manufacturer, Manufacturing Costs will equal one hundred percent (100%) of the amounts invoiced by (1) such unaffiliated Third Party and (2) any other unaffiliated Third Party engaged by such Party or its Affiliates to provide product quality assurance/control services (e.g., release testing, stability testing) with respect to the applicable product, and (ii) in the case of costs referred to in clause (b) of this sentence where either Party or its Affiliates is the manufacturer, Manufacturing Costs will equal the costs of manufacturing the applicable product, which manufacturing costs: (x) will include the cost of raw materials, direct and identifiable labor, product quality assurance/control costs and other direct and identifiable variable costs and appropriate direct and identifiable costs (or appropriate allocation thereof) for equipment pools, plant operations, yield losses (to the extent consistent with industry practice) and plant support services (including utilities, maintenance, engineering, safety, human resources, finance, plant management and other similar activities), and (y) will be calculated in accordance with GAAP and the manufacturing party's policies and procedures for its other products, in each case consistently applied (and such plant operations and support services costs will be allocated consistent with GAAP and the other manufacturing party's products in that facility), and (z) notwithstanding anything to the contrary, will exclude all costs which cannot be linked to a specific manufacturing activity such as charges for corporate overhead which are not controllable by the manufacturing plant.**

7.10 **"Marketing Costs" means direct costs incurred by the Parties, their Affiliates or Sublicensees, arising from activities dedicated to marketing of Licensed Product for U.S. Administration (*i.e.*, marketing (including telemarketing), promotion, advertising, product promotional materials, professional education, product related public relations, relationships with opinion leaders and professional societies, market research (before and after Regulatory Approval), healthcare economics studies, post-marketing studies not required to maintain Regulatory**

Approvals, recalls of Licensed Product for U.S. Administration or components therefore or product (or components for products) for Licensed Product for U.S. Administration, medical monitoring, Manufacturing Costs of samples (and costs relating to the destruction of unused samples) and other similar activities related to the Licensed Product for U.S. Administration and approved by the JGC, in each case that are incurred in accordance with the U.S. Development Budget and U.S. Commercialization Budget. Such costs will include both internal costs (*e.g.*, salaries, benefits, bonuses, payroll taxes, supplies and materials, etc.), applicable Allocable Overhead and outside services and expenses (*e.g.*, consultants, agency fees, meeting costs, etc.). "Marketing Costs" will also include activities related to obtaining reimbursement from payers and costs of sales and marketing data. "Marketing Costs" will specifically exclude the costs of activities which promote either Party's products or services (including Licensed Product for ROW Administration) or business as a whole without being product specific (such as corporate image advertising).

7.11 **"Operating Profits or Losses" means Gross Profit for Licensed Product for U.S. Administration less the Allowable Expenses. The Parties agree that Operating Profit or Loss will not include costs or expenses of a Party or its Affiliates or Sublicensees that are: (i) caused by a breach of this CCPS Agreement by such Party or Affiliate or Sublicensee; or (ii) subject to indemnification by such Party pursuant to Section 16.6 of the CCPS Agreement (and for clarity, if a Third Party makes a Third Party Claim directly against Bluebird (or any of its Affiliates) or Celgene (or any of its Affiliates), respectively, then Losses incurred by Bluebird or Celgene in connection with such direct Third Party Claim will not be included in the calculation of Operating Profit or Loss).**

7.12 **"Other Operating Income/Expense" means the following items, to the extent incurred with respect to and reasonably related to the Development and Commercialization of Licensed Product for U.S. Administration under the CCPS Agreement:**

(a) **Costs and expenses incurred by a Party or its Affiliates in connection with the Prosecution and Maintenance of those U.S. Patents within its Licensed IP;**

(b) **U.S. Administration Liabilities;**

(c) **Payments made by a contracting party under an Applicable Pre-Existing In-License, Applicable New In-Licenses or Co-Co In-Licenses during the CCPS Agreement Term, excluding any such payments trigged by the grant of a sublicense by Bluebird under the Applicable Pre-Existing In-License;**

(d) **Product liability insurance to the extent the Parties or their Affiliates obtain a joint policy; and**

(e) **Other expenses approved by the JGC.**

7.13 **"Sales Costs" means costs, arising from activities expressly set forth in the U.S. Commercialization Plan or otherwise approved by the JGC which are specifically and directly identifiable, attributable and allocable to the sales efforts of Licensed Product for U.S. Administration (including the managed care market).**

Subject to the foregoing, "Sales Costs" will include direct costs of the Parties arising from the retention of sales representatives for Licensed Product for U.S. Administration, consisting of reasonable compensation, benefits and travel, supervision and training of the sales representatives, sales meetings, and other sales expenses, including Allocable Overhead, all to the extent such costs are set forth in the U.S. Commercialization Budget or otherwise approved by the JGC. "Sales Costs" will include the start-up costs associated with either Party's sales force, including recruiting, relocation and other similar costs. A mutually agreeable methodology for determining such costs which may include a standard cost per sales representative or other appropriate methodology will be set forth in the U.S. Commercialization Budget.

7.14 **"U.S. Development Costs" means the costs, actually incurred by Parties, their Affiliates or Sublicensees in accordance with the U.S. Development Budget with respect to those Development activities performed pursuant to the U.S. Development Plan, including applicable Allocable Overhead, from and after the CCPS Agreement Effective Date.**

"U.S. Development Costs" will include costs of Phase 3 Studies conducted internally or by individual investigators in accordance with the U.S. Development Plan and the U.S. Development Budget, including (i) the cost of clinical supplies (including Vectors therefor), or consultants necessary for the purpose of obtaining and maintaining Regulatory Approval of a Licensed Product for U.S. Administration, (ii) regulatory and validation activities for Manufacturing plant and product, including GMP certification, process development, process improvement and scale-up and recovery costs, qualification lots, costs for preparing, submitting, reviewing or developing Regulatory Data for the purpose of submission to a Regulatory Authority to obtain and maintain Regulatory Approval for Licensed Product for U.S. Administration, and (iii) expenses for data management, statistical designs and studies, document preparation, and other administration expenses associated with the Phase 3 Studies required to obtain and maintain Regulatory Approval of Licensed Product for U.S. Administration, in each case to the extent such activities are included in the U.S. Development Plan and the U.S. Development Budget. In determining "U.S. Development Costs" chargeable under this CCPS Agreement, each Party will use its respective project accounting systems, and will review and approve its respective project accounting systems and methodologies with the other Party.

Notwithstanding anything to the contrary in this Appendix F, to the extent that any Development activity is conducted or cost is incurred in support of both a Licensed Product for U.S. Administration and other products, services or efforts of a Party (including Licensed Products for ROW Administration), or is not solely attributable to a Licensed Product for U.S. Administration, then the costs and expenses thereof will be included in U.S. Development Costs only to the extent (a) expressly and specifically included in the U.S. Development Budget as set forth in Section 4.3 of the CCPS Agreement, or (b) otherwise approved in advance by the JGC and directly related to the Development and Commercialization of Licensed Product for U.S. Administration under the CCPS Agreement, but subject in all

cases to Section 4.3 and all of the other terms and conditions of this CCPS Agreement.]

Appendix B to Schedule C

Appendix J

Certain Manufacturing Definitions

["Fully Burdened Manufacturing Costs" means costs to supply applicable therapeutic ingredients, finished products, related inputs and services (a) supplied by an unaffiliated Third Party or (b) manufactured directly by Bluebird; it being understood and agreed that (i) in the case of costs referred to in clause (a) of this sentence where an unaffiliated Third Party is the manufacturer, Fully Burdened Manufacturing Costs will equal one hundred percent (100%) of the amounts invoiced by (1) such unaffiliated Third Party or (2) any other unaffiliated Third Party engaged by Bluebird to provide product quality assurance/control services (e.g., release testing, stability testing) with respect to the applicable product, and (ii) in the case of costs referred to in clause (b) of this sentence where Bluebird is the manufacturer, Fully Burdened Manufacturing Costs will equal the fully burdened costs of manufacturing the applicable product, which manufacturing costs: (x) will include the cost of raw materials, direct and identifiable labor, product quality assurance/control costs and other direct and identifiable variable costs and appropriate direct and identifiable costs (or appropriate allocation thereof) for equipment pools, plant operations, yield losses (to the extent consistent with industry practice) and plant support services (including utilities, maintenance, engineering, safety, human resources, finance, plant management and other similar activities), and (y) will be calculated in accordance with GAAP and Bluebird's policies and procedures for its other products, in each case consistently applied (and such plant operations and support services costs will be allocated consistent with GAAP and the other Bluebird products in that facility), and (z) notwithstanding anything to the contrary, will exclude all costs which cannot be linked to a specific manufacturing activity such as charges for corporate overhead which are not controllable by the manufacturing plant.]

[Appendix K

Manufacturing and Supply Agreement Terms

1. **Supply:**

- **Vector Supply will be governed by the Manufacturing and Supply Agreement. The terms of the Manufacturing and Supply Agreement will be consistent with the terms of Section 7.4 and will include the following:**
    - **Bluebird will use commercially reasonable efforts to Manufacture and supply Celgene with Vector Supplies in adequate quantities (as set forth in Celgene's binding forecasts and purchase orders), of adequate quality, and in acceptable time in accordance with agreed upon lead-times, for preclinical and clinical needs for Elected Candidate and Licensed Product. Bluebird will create repositories for Vector Supplies in mutually agreed quantities to rebuild Vector Supply inventories in a reasonable period of time as to not affect the initiation or resupply of trials.**
        - **Such repositories shall be maintained at more than one site (if agreed upon, Celgene may be one of them) as a disaster mitigation strategy.**
    - **At Celgene's discretion and expense, but subject to reasonably prior notice and customary and reasonable access restrictions, Celgene will have the right to audit Bluebird's manufacturing facilities, and Bluebird's supply chain (as it relates to supplied Vector Supplies). Bluebird promptly will remediate any deficiencies or other adverse observations, at Bluebird's expense.**
    - **For the term of the Manufacturing and Supply Agreement, maintain adequate reference samples for appropriate retesting of plasmids, packaging cell lines, and Vector Supply.**
- **Quality of the Vector Supplies supplied will be governed by a separate Quality Service Agreement, to be agreed between the Parties.**

2. **Forecasts:**

- **The Supply Agreement will define the conditions for non-binding and binding forecasts.**
- **Bluebird will use Commercially Reasonable Efforts to supply Vector Supplies in a mutually agreeable amount in excess of the binding forecast defined in the Supply Agreement if requested by Celgene.**

3. **Minimum Supply Quantities:**

- **Manufacture and deliver (FCA, Incoterms 2010) sufficient Vector Supplies on time in accordance with binding forecasts and purchase orders to adequately supply preclinical and clinical needs per forecasts.**

4. **Manufacture:**

- **As indicated in Section 7.4(c)(i) of the CCPS Agreement, Bluebird will Manufacture Vector Supply in-house or utilize Third Party contract manufacturers. Bluebird will have the right to make all necessary decisions regarding arrangements with Third Party manufacturers, provided that Bluebird will reasonably consult with Celgene with respect to all such arrangements and obtain Celgene's prior written consent, which will not be unreasonably withheld, conditioned or delayed.**
- **Celgene will have the right to conduct GMP audits of Bluebird (and its supply chain) as agreed upon in the Quality Service Agreement.**

5. **Step-In Right**

- **Celgene acknowledges that Bluebird may contract one or more Third Parties to accommodate Manufacturing, in order for Bluebird to provide supply of Vector.**
- **In connection with Celgene's ability to Manufacture (itself or through an Affiliate or Third Party), upon the occurrence of certain triggering events that will be set forth in the Manufacturing and Supply Agreement, within thirty (30) days after Celgene's request following any such trigger event, Bluebird shall commence transferring to the party that will be Manufacturing Vector Supply (i.e., Celgene, its Affiliate or a Third Party selected by Celgene to Manufacture (each, a "Manufacturing Party")), all relevant Know-How and Materials (including a chemistry, manufacturing, and controls (CMC) package and relevant Manufacturing information) Controlled by Bluebird at such time to the extent necessary for the Manufacture of Vector Supply, and shall use Commercially Reasonable Efforts to complete such a transfer in a timely fashion. Before any such transfer, the Manufacturing Party shall enter into a reasonable confidentiality agreement with Bluebird with respect to the use and handling of such Know-How and Materials. In addition, upon Celgene's reasonable request and at Celgene's cost and expense, Bluebird shall provide all reasonable assistance, including making its personnel available for meetings or teleconferences, to instruct Celgene in the Manufacture of Vector Supply (through the first commercial batch of Vector Supply). Notwithstanding the foregoing, Bluebird shall only be required to deliver Know-How and Materials in its actual possession and shall not be required to produce or create any additional Know-How or Materials.]**

Exhibit C

Pre-Existing In-Licenses

[

1. **Nonexclusive License Agreement by and between bluebird bio, Inc. and Childrens Hospital Los Angeles, dated October 11, 2010**

2. **License Agreement by and between bluebird bio, Inc. and Research Development Foundation, dated December 7, 2011**

3. **License Agreement by and between bluebird bio, Inc. and Institut Pasteur, dated September 13, 2011, as amended by Amendment No. 1, dated April 27, 2012, Amendment No. 2, dated October 16, 2012, Amendment No.3, dated September 10, 2013, and Amendment No. 4, dated April 1, 2015**

4. **Novation Agreement by and between bluebird bio, Inc. and The Board of Trustees of the Leland Stanford Junior College, dated April 2, 2012**

5. **License Agreement for Internal Research, Development, Manufacturing and Commercialization of Products by and between bluebird bio, Inc. and TET Systems GmbH & Co. KG, dated August 26, 2011]**

Exhibit D

Additional Definitions

"**Target Antigen**" means:

B cell maturation antigen (BCMA, gene name TNFRSF17)

Approved symbol

TNFRSF17

Approved name

tumor necrosis factor receptor superfamily, member 17

HGNC ID

HGNC:11913

Previous symbols & names

BCMA

Synonyms

BCM, CD269, TNFRSF13A

Locus type

gene with protein product

Chromosomal location

16p13.1

Gene family

CD molecules

Tumor necrosis factor receptor superfamily

HCOP

Orthology Predictions for TNFRSF17

"**Lead Product Candidate**" means:

The anti-BCMA product candidate known as bb 2121

"**Next Generation Product Candidate**" means:

An anti-BCMA product candidate **[other than bb 2121, which uses an scFv sequence that is of human origin or is a non-human sequence that has been humanized to potentially lessen immunogenicity.]**

Exhibit E

Collaboration Plan

[Lead Product Candidate

bluebird bio will undertake a phase I clinical trial to evaluate bb2121. bb2121 drug product is defined as autologous T lymphocytes (T cells) transduced ex-vivo with anti-BCMA02 CAR lentiviral vector encoding the chimeric antigen receptor (CAR) targeted to human B cell maturation antigen (anti-BCMA CAR) suspended in cryopreservative solution in the final container for the intended use. bb2121 active drug substance is defined as anti-BCMA CAR+ T cells.

In order to enable the clinical trial bluebird will conduct the appropriate pre-clinical activities, including but not limited to IND-enabling studies, lenti viral development, compliance, and regulatory to advance bb2121 through IND.

The design of the clinical trial will be made in consultation with Celgene and as currently drafted will have these objectives:

Primary objective

Evaluate the safety of treatment with bb2121 in subjects with multiple myeloma whose tumors express BCMA

Secondary objective

Evaluate the anti-tumor effects of treatment with bb2121 in subjects with multiple myeloma whose tumors express BCMA

Exploratory objectives

- **Evaluate the persistence, immune phenotype, and function of bb2121 in the blood, bone marrow and/or tumor tissue**
- **Evaluate cytokine/chemokine induction in the blood of subjects after infusion of bb2121 drug product**
- **Evaluate the level of BCMA-expressing cells in blood and bone marrow, and the level of circulating BCMA**
- **Evaluate measures of tumor sensitivity/resistance to bb2121**
- **Evaluate minimal residual disease (MRD) in subjects achieving a complete response (CR)**
- **Evaluate the development of an anti-CAR immune response**

As currently drafted, the clinical protocol will treat up to approximately 20 adults with BCMA-expressing multiple myeloma who will be enrolled using a 3x3 dose escalation approach in the following manner:

- **Initially, 3 subjects will be enrolled into Dose Level 1. If no dose limiting toxicities (DLT) are observed after a 28 day follow up period post-infusion in 3 subjects evaluable for a DLT, Dose Level 2 will be evaluated. If 1 DLT is observed, an additional 3 subjects will be enrolled into Dose Level 1. If 2 or more DLTs are observed at any time, then the Safety Research Committee (SRC) will determine whether to open Dose Level -1 (defined as a dose level lower than that in Dose Level 1).**
- **If Dose Level 2 is opened, 3 subjects will be enrolled. If no DLTs are observed in 3 subjects evaluable for a DLT, Dose Level 3 will be evaluated. If 1 DLT is observed, an additional 3 subjects will be enrolled into Dose Level 2. If 2 or more DLTs are observed at any time, then Dose Level 2 is above the maximally tolerated dose and dose escalation will halt.**

- **If Dose Level 3 is opened, 6 subjects will be enrolled. If 0-1 DLTs are observed amongst 6 subjects evaluable for a DLT, Dose Level 3 will be below the MTD, and dose escalation will halt. If 2 or more DLTs are observed at any time, then Dose Level 3 is above the maximally tolerated dose and dose escalation will halt.**

A subject evaluable for DLT is one who received at least the minimum planned bb2121 dose, and who either completed 28-days of follow-up on this study after drug product infusion or who experienced a DLT.

Enrolled subjects will be treated under the following dose cohort schedule:

Dose Cohorts

Dose Cohort	Lymphodepletion	Dose Range[a] (single intravenous dose of bb2121)
-1	Y	$1x10^7$-$3x10^7$
1	Y	$0.31x10^8$-$1x10^8$
2	Y	$1.1x10^8$-$3x10^8$
3	Y	$0.31x10^9$-$1x10^9$

[a] *bb2121 dose is expressed as number of anti-BCMA CAR+ T cells per subject*

Following completion of the dose escalation phase, a total of up to 3 expansion cohorts may be initiated. The expansion cohorts are defined by diagnosis and include only the BCMA-expressing subset of each disease. Potential cohorts include the following:

Diffuse Large B Cell Lymphoma (DLBCL)

Indolent B Cell Non-Hodgkins Lymphoma (iNHL), including Mantle Cell Lymphoma (MCL) , Follicular Lymphoma (FL) and Marginal Zone Lymphoma (MZL)

Multiple Myeloma (MM)

The SRC will decide which expansion cohorts to open, when to open them, the cohort size, and the dose to be used (must be at or below the MTD). With each expansion cohort at least 14 but no more than 20 evaluable subjects will be enrolled.

Next Generation Product Candidate work plan.

1) **Sequences for anti-BCMA CAR candidates will be constructed from the following:**
   a. ***Humanized anti-BCMA10 with a PD-1 or CTLA4 hinge/transmembrane domain*: Anti-BCMA mAb clone C11D5.3 (Biogen) was used to construct the mouse anti-BCMA02 CAR molecule (bb2121) currently in preclinical development. Anti-BCMA10 CAR is a humanized version of anti-BCMA02. Unlike anti-BMCA02, we observed "tonic" antigen-independent activity with anti-BCMA10 after expression in human T cells which prevented using it directly for further development. Original sequences for anti-BCMA10 were obtained from a Biogen patent after the mouse antibody (clone C11D5.3) specific for BCMA was modified to contain sequences typical for a human antibody. Using these humanized sequences, we exchanged the CD8a hinge/transmembrane domains with**

sequences from PD-1 or CTLA-4. We will test up to two humanized anti-BCMA CAR candidates composed using this strategy.

b. *CDR grafted anti-BCMA02 or anti-BCMA10*: Celgene antibody group provided sequences which the antigen binding domains (complementary determining regions (CDR)) of anti-BCMA02 and anti-BCM10 were grafted onto sequences from either Herceptin or Avastin. Up to 14 humanized anti-BCMA candidates CAR candidates will be constructed and tested.
c. *Bona fide human anti-BCMA from phage display*: Fully human libraries will be panned for single chain variable fragments (scFv) with binding to human recombinant BCMA protein. Potential scFvs specific for BCMA will then be screened for binding to natively expressed BCMA on cell lines. We have contracted with two companies to provide us anti-BCMA scFv sequences: Abcheck and BioInvent. Using sequences from both companies, up to 30 human anti-BCMA CAR candidates will be constructed and tested.

2) Initial screen of human/humanized anti-BCMA CAR T cells
    a. Initial screen of CAR T cells will be done at small scale using transient lentiviral supernatants.
    b. Primary human T cells will be transduced and CAR expression determined by flow cytometry using goat anti-mouse antibodies
    c. Binding of anti-BCMA CAR T cells to BCMA will be determined by flow cytometry using recombinant human BCMA-IgG1 Fc conjugated to PE.

3) In vitro evaluation of human/humanized anti-BCMA CAR T cells
    a. CARs will be further screened for biological activity to natively processed BCMA by IFNg ELISA after co-culture with BCMA-positive or BCMA-negative cells.
    b. CARs will be selected based on activity to BCMA-positive cells with little (<200pg/mL) IFNg released in the absence of BCMA

4) In vivo testing of human/humanized anti-BCMA CAR T cells
    a. Lentivirus will be manufactured and purified using our proprietary clinical-scale processes
    b. Purified lentiviral vectors will be used to generate CAR T cells scalable to our clinical cell manufacturing process.
    c. Anti-BCMA CAR T cells will be evaluated for tumor cytotoxic activity in in vitro assays and in animal models
        i. Mice with ~100mm3 subcutaneous RPMI-8226 tumors will be treated with minimum effective dose already determined with anti-BCMA02 CAR T cells (bb2121)
    d. Only human/humanized anti-BCMA CARs with substantially equivalent activity compared to bb2121 will be considered for candidate nomination.]

Exhibit F

Bluebird Collaboration In-Licenses

[License Agreement, dated as of August 13, 2014, between bluebird bio, Inc. and Biogen Idec MA Inc.]

Exhibit G

Additional Celgene Option Information

Celgene will provide to Bluebird, along with the Option Exercise Notice:

- The clinical Development plan that Celgene is contemplating to achieve Regulatory Approval for such Optioned Candidate, together with the cost estimates for such a clinical program;
- The U.S. Development Budget, which for purposes of this Exhibit G will be for the first twelve (12) months of the Co-Development, Co-Promote and Profit Share Agreement. Celgene may update such U.S. Development Budget within ten (10) business days of first providing the same; and
- Such other supporting information related to the items listed in the foregoing bullet points as Bluebird may reasonably request, to the extent such information is in Celgene's possession (for clarity, without any obligation to create or generate new information.)

Exhibit H

Press Release

Exhibit I-1

Bluebird Patents

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Patent /App Number	Title	Bluebird owned/ licensed	Priority Date
AE 311/2014 AU 2012315699 BH BR 11 2014 007782 7 CA 2,850,484 CN 201280056851.7 EA 201490627 EP 12836507.9 ID P00201402267 IL 231812 IN 2518/CHENP/2014 IS 9042 JP 2014530012 KR10-2014-7011495 MX MX/A/2014/003923 NZ 623341 OM OM/P/2014/00067 QA QA/201403/00099 SA SG 11201401077P TH 14010018909 UA 2014 03867 ZA 2014/02963 US 20140234278 WO 2013049615	COMPOUNDS FOR IMPROVED VIRAL TRANSFECTION	Owned	09/30/2011
US14/420,640 WO2014026110	COMPOUNDS FOR IMPROVED VIRAL TRANSFECTION	Owned	08/10/2012
US 5,789,156 US 5,814,618 US 5,859,310 US 5,866,755 US 5,888,981 US 5,912,411 US 6,004,941	TIGHT CONTROL OF GENE EXPRESSION IN EUCARYOTIC CELLS BY TETRACYCLINE-RESPONSIVE PROMOTERS AND VARIOUS OTHER TITLES	Licensed from TET-Systems GmbH & Co. – Exclusive/non-exclusive	06/14/1993
CA 2193122 EP 0804565 EP 1092771 JP 4054058 JP 4682176 JP 4820344 NO 0315375 WO 9601313	TETRACYCLINE REGULATED TRANSCRIPTIONAL MODULATORS WITH ALTERED DNA BINDING SPECIFICITIES	Licensed from TET-Systems GmbH & Co. – Exclusive/non-exclusive	6/7/1995
AU 746850	TETRACYCLINE-REGULATED TRANSCRIPTIONAL MODULATORS	Licensed from TET-Systems GmbH & Co. – Exclusive/non-exclusive	6/29/1995

US 6,087,166 US 6,271,341 AU 755417 CA 2294598 EP 0990030 EP 2050818 JP 4424761 JP 2009106288 WO 99/01549	TRANSCRIPTIONAL ACTIVATORS WITH GRADED TRANSACTIVATION POTENTIAL	Licensed from TET-Systems GmbH & Co. – Exclusive/non-exclusive	7/3/1997
DE 19851413 WO 2000/75362	METHOD FOR IDENTIFYING NOVEL TRANSCRIPTIONAL REGULATORY PROTEINS	Licensed from TET-Systems GmbH & Co. – Exclusive/non-exclusive	6/4/1999
US 7,541,446 AU 783233 CA 2376665 EP 1200607 JP 4836375 WO 2000/75347	TET REPRESSOR-BASED TRANSCRIPTIONAL REGULATORY PROTEINS	Licensed from TET-Systems GmbH & Co. – Exclusive/non-exclusive	6/7/1999
US 7,666,668 AU 2003263199 CA 2497263 EP 1532260 WO 2004/020645	CHROMOSOMAL LOCI FOR THE STRINGENT CONTROL OF GENE ACTIVITIES VIA TRANSCRIPTION ACTIVATION SYSTEMS	Licensed from TET-Systems GmbH & Co. – Exclusive/non-exclusive	8/28/2002
US 2010/0040649 AU 2006316288 CA 2630348 EP 1954811 JP 2009515550 WO 2007/058527	INDUCIBLE EXPRESSION SYSTEMS	Licensed from TET-Systems GmbH & Co. – Exclusive/non-exclusive	11/17/2005
US 2011/0247088 AU 2009299987 CA 2739192 EP 2352833 JP 2012504395 WO 2010/037593	TETRACYCLINE INDUCIBLE CONTROL SEQUENCES	Licensed from TET-Systems GmbH & Co. – Exclusive/non-exclusive	10/1/2008
US 7,575,924 US 8,329,462 US 8,551,773 US 20140220678	METHODS AND COMPOSITIONS RELATING TO IMPROVED LENTIVIRAL VECTORS AND THEIR APPLICATIONS	Licensed from Research Dev. Foundation: Exclusive	11/13/2000
US 7,629,153 US 8,900,858 US 14/525,520 CA 2456169 EP 1412493 IL 160132 WO 2003/012054	METHODS AND COMPOSITIONS RELATING TO IMPROVED LENTIVIRAL VECTOR PRODUCTION SYSTEMS	Licensed from Research Dev. Foundation: Exclusive	08/01/2001
US 7,198,950 US 8,748,169 US 20140335607 AU 2002343458 CA 2462628 NZ 532060 RU 2305708 ZA 2004/2527 WO 2003/029412	METHODS AND COMPOSITIONS RELATING TO RESTRICTED EXPRESSION LENTIVIRAL VECTORS AND THEIR APPLICATIONS	Licensed from Research Dev. Foundation: Exclusive	10/02/2001

US 6,682,907 US 7,981,671 US 8,367,068 US 8,450,087 US 8,460,678 AU 2003271326 AU 2007216712 CA 2326719 EP 1071804 EP 2292778 FR 2777909 JP 4571306 HK 1034283 WO 1999/055892	USE OF TRIPLEX STRUCTURE DNA SEQUENCES FOR TRANSFERRING NUCLEOTIDE SEQUENCES	Licensed from Institute Pasteur: Exclusive for field of use	04/24/1998
US 7,968,332 US 8,349,606 US 8,652,807 AU 785060 AU 2006252062 AU 2010203111 CA 2,387,182 EP 1222300 EP 1650309 EP 2169073 EP 1092779 HK 1049861 HK 1093523 IL 148901 IL 204703 JP 4663943 JP 5265643 WO 200127300	LENTIVIRAL VECTORS FOR THE PREPARATION OF IMMUNOTHERAPEUTICAL COMPOSITIONS	Licensed from Institute Pasteur: Exclusive for field of use	10/11/1999
US 8,093,042 US 8,512,993 US 8,512,994 US 20150011006 AU 2000079217 AU 2006233199 CA 2382832 CN 100425702 CN 101363029 EP 1224314 EP 1792997 HK 1050210 HK 1109167 IL 148900 IL 198076 JP 4436024 WO 2001/027304	LENTIVIRAL TRIPLEX DNA, AND VECTORS AND RECOMBINANT CELLS CONTAINING LENTIVIRAL TRIPLEX DNA	Licensed from Institute Pasteur: Exclusive for field of use	10/12/1999
PCT/US2015/027518#	METHODS FOR MANUFACTURING ADOPTIVE T CELL THERAPIES	Owned	04/25/2014
US 62/008,957#	T CELL COMPOSITIONS	Owned	06/06/2014
US 62/028,664# US 62/044,103# US 62/152,575#	BCMA CHIMERIC ANTIGEN RECEPTORS	Owned	07/24/2014
US 62/091,419#	BCMA CHIMERIC ANTIGEN RECEPTORS	Owned	12/12/2014

US 9,034,324 US 14/596,769 AU 2014204447 CA 2754938 CN 201080020559.0 EP 10708865 HK 1217062.4 IL 214996 JP 2011-554150 KR 10-2011-702394 MX MX/a/2011/009430 MX MX/a/2013/013076 NZ 594985 NZ 612647 WO 2010104949	ANTI-BCMA ANTIBODIES	Licensed from Biogen: Exclusive for field of use	03/10/2009
US 8,084,030 US 8,828,948 US 14/449,564 IN 1942/DELNP/2006 JP 2013-272321 ZA 2006/031123 WO 2005042009	THERAPEUTIC REGIMENS FOR BAFF ANTAGONISTS	Licensed from Biogen: Exclusive for field of use	10/20/2003

 # = Patents within the Collaboration IP that are solely owned by Bluebird as of the Amendment Date.

Exhibit I-2

Patents within the Collaboration IP that are Solely Owned by Celgene as of the Amendment Date

"Modified T Lymphocytes Having Improved Specificity"

PCT/US2014/014113

AU201304923

"Modified T Lymphocytes

PCT/US2014/027039

"Chimeric Antigen Receptors"

PCT/US2013/076486

AU2013204922

"Methods of Expanding T Cells"

PCT/US2014/043609

"Methods of Improving Vector Transduction Efficiency Into T Lymphocytes"

62/023,618

"CAR T Lymphocytes Engineered to Home to Lymph Node B Cell Zone, Skin or Gastrointestinal Tract"

62/036,447

Exhibit I-3

Patents within the Collaboration IP that are Jointly Owned by Bluebird and Celgene as of the Amendment Date

None]

Exhibit J

Bluebird Agreements

[None.]