UNITED STATES
SECURITIES AND EXCHANGE COMMISSION
Washington, D.C. 20549

FORM 8-K

CURRENT REPORT
Pursuant to Section 13 OR 15(d) of The Securities Exchange Act of 1934

Date of Report (Date of earliest event reported): January 15, 2020 (January 10, 2020)

Idera Pharmaceuticals, Inc.
(Exact Name of Registrant as Specified in Charter)

Delaware	**001-31918**	**04-3072298**
(State or Other Jurisdiction of Incorporation)	(Commission File Number)	(I.R.S Employer Identification No.)

505 Eagleview Blvd., Suite 212 **Exton, Pennsylvania** (Address of Principal Executive Offices)	**19341** (Zip Code)

Registrant's telephone number, including area code: **(484) 348-1600**

Securities registered pursuant to Section 12(b) of the Act:

Title of each class	Trading Symbol	Name of each exchange on which registered
Common Stock, par value $0.001 per share	**IDRA**	**Nasdaq Capital Market**

Check the appropriate box below if the Form 8-K filing is intended to simultaneously satisfy the filing obligation of the registrant under any of the following provisions:

☐ Written communications pursuant to Rule 425 under the Securities Act (17 CFR 230.425)

☐ Soliciting material pursuant to Rule 14a-12 under the Exchange Act (17 CFR 240.14a-12)

☐ Pre-commencement communications pursuant to Rule 14d-2(b) under the Exchange Act (17 CFR 240.14d-2(b))

☐ Pre-commencement communications pursuant to Rule 13e-4(c) under the Exchange Act (17 CFR 240.13e-4(c))

Indicate by check mark whether the registrant is an emerging growth company as defined in Rule 405 of the Securities Act of 1933 (§230.405 of this chapter) or Rule 12b-2 of the Securities Exchange Act of 1934 (§240.12b-2 of this chapter).

Emerging growth company ☐

If an emerging growth company, indicate by check mark if the registrant has elected not to use the extended transition period for complying with any new or revised financial accounting standards provided pursuant to Section 13(a) of the Exchange Act. ☐

Item 5.02 Departure of Directors or Certain Officers; Election of Directors; Appointment of Certain Officers; Compensatory Arrangements of Certain Officers.

2020 Compensation Changes for Named Executive Officers

On January 10, 2020, the Compensation Committee of the Board of Directors of Idera Pharmaceuticals, Inc. (the "Company") approved compensation for its current named executive officers as set forth in the bullets and the table below:

- The payment of cash bonus awards for 2019;
- The grant of options to purchase shares of common stock of the Company;
- The grant of restricted stock units; and
- Annual base salaries for 2020.

Name	2019 Bonus	Stock Options [1]	Restricted Stock Units [2]	2020 Annual Salary
Vincent J. Milano *President and Chief Executive Officer*	$ 315,000	92,000	37,000	$ 600,000**(3)(4)**
John J. Kirby *Senior Vice President and Chief Financial Officer*	$ 114,660**(5)**	50,000	20,000	$ 336,000
R. Clayton Fletcher *Senior Vice President, Business Development & Strategy*	$ 168,000	50,000	20,000	$ 400,000**(4)**
Jonathan Yingling *Senior Vice President, Chief Scientific Officer*	$ 168,000	50,000	20,000	$ 400,000**(4)**
Bryant D. Lim *Senior Vice President, General Counsel and Secretary*	$ 155,232	50,000	20,000	$ 336,000**(4)**

(1) Each grant of options to purchase shares of the Company's common stock was made effective as of January 10, 2020 and pursuant to the Company's 2013 Stock Incentive Plan. The exercise price is $1.79 per share, which is equal to the closing price of the Company's common stock on the Nasdaq Capital Market on the date of grant. Subject to the recipient's continued employment with the Company on the applicable vesting date, the option award shall vest with respect to 25% of the underlying shares on the first anniversary of the date of grant and with respect to the balance of the underlying shares shall vest in twelve equal quarterly installments following the first anniversary of the date of grant.

(2) Each of the restricted stock units, representing a right to receive one share of the Company's common stock, was granted effective as of January 10, 2020 and pursuant to the Company's 2013 Stock Incentive Plan. Subject to the recipient's continued employment with the Company on the applicable vesting date, 25% of the shares subject to each restricted stock unit award shall vest on each one-year anniversary of the date of grant.

(3) See below for discussion regarding the payment of Mr. Milano's 2020 annual salary.

(4) No change from base salary effective January 1, 2019.

(5) Mr. Kirby was appointed Senior Vice President and Chief Financial Officer on July 23, 2019; the 2019 Bonus was pro-rated.

Amendment to Employment Agreement

On January 10, 2020 (the "Effective Date"), the Company entered into an Amendment to Employment Agreement (the "Amendment") with its Chief Executive Officer, Mr. Vincent J. Milano, amending that certain Employment Agreement, by and between the Company and Mr. Milano, dated December 1, 2014 (as described in the Current Report on Form 8-K filed with the Securities Exchange Commission (the "SEC") on November 24, 2014).

Pursuant to the Amendment, Mr. Milano's annual base salary of $600,000 shall be payable as follows: (i) for the period from January 1, 2020 to the Effective Date, $18,181.84 was payable in cash; and (ii) for the period immediately following the Effective Date to December 31, 2020, an additional $6,600 shall be payable in cash and $575,218.16 shall be payable in the form of a restricted stock unit grant to be granted to Mr. Milano on December 18, 2020 (the "RSU Award"). The RSU Award will be granted pursuant to the Company's 2013 Stock Incentive Plan and in accordance with the terms and conditions set forth in a Restricted Stock Unit Agreement (the "Award Agreement") to be entered into by the Company and Mr. Milano at the time of the grant.

The descriptions of the Amendment and the form of Award Agreement are qualified in their entirety by references to the Amendment and the Award Agreement, copies of which are filed herewith as Exhibit 10.1 and Exhibit 10.2.

Item 7.01 Regulation FD Disclosure.

On January 15, 2020, the Company uploaded a presentation to its website, www.iderapharma.com, discussing the state of the Company. We may rely on all or part of this presentation any time we are discussing the current state of the Company in communications with investors or at conferences. A copy of the presentation is attached to this Current Report on Form 8-K as Exhibit 99.1 (the "Presentation").

The information contained in the Presentation is summary information that is intended to be considered in the context of the Company's SEC filings and other public announcements that the Company may make, by press release or otherwise, from time to time. The Company undertakes no duty or obligation to publicly update or revise the information contained in this report, although it may do so from time to time as its management believes is warranted. Any such updating may be made through the filing of other reports or documents with the SEC, through press releases or through other public disclosure.

The Company is furnishing the information in this Item 7.01 and the related Exhibit 99.1 filed herewith to comply with Regulation FD. Such information shall not be deemed to be "filed" for purposes of Section 18 of the Securities Exchange Act of 1934, as amended (the "Exchange Act"), or otherwise subject to the liabilities of that section, and shall not be deemed to be incorporated by reference into any of the Company's filings under the Securities Act of 1933, as amended, whether made before or after the date hereof and regardless of any general incorporation language in such filings, except to the extent expressly set forth by specific reference in such a filing. This Item 7.01 will not be deemed an admission as to the materiality of any information herein (including Exhibit 99.1) that is required to be disclosed solely by Regulation FD.

Item 9.01. Financial Statements and Exhibits.

(d) Exhibits.

Exhibit Number	Description
10.1	Amendment to Employment Agreement, dated January 10, 2020, by and between the Company and Vincent J. Milano
10.2	Form of Vincent J. Milano Restricted Stock Unit Agreement
99.1	Investor Presentation dated January 15, 2020

SIGNATURES

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

IDERA PHARMACEUTICALS, INC.

By: /s/ Bryant D. Lim
Bryant D. Lim
Senior V.P., General Counsel

Dated: January 15, 2020

Exhibit 10.1

AMENDMENT TO EMPLOYMENT AGREEMENT

This Amendment to Employment Agreement ("Amendment"), entered into as of January 10, 2020 ("the "Amendment Effective Date"), is by and between Vincent J. Milano ("Executive" or "you") and Idera Pharmaceuticals, Inc. (the "Company").

WHEREAS, Executive and the Company are parties to that certain Employment Agreement, dated as of December 1, 2014 (the "Agreement"); and

WHEREAS, Executive and the Company desire to amend the Agreement to specify the manner in which Executive will be paid his annual base salary following the Amendment Effective Date and for the remainder of 2020 and to make other corresponding changes.

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

A. Section 2(a) of the Agreement is hereby amended in its entirety to read as follows:

"(a) Your annual base salary shall be $600,000 per year and shall be payable to you as follows: (i) for the period from January 1, 2020 to the Amendment Effective Date, $18,181.84 shall be payable in cash in accordance with the Company's payroll practices for salaried employees, (ii) for the period immediately following the Amendment Effective Date to December 31, 2020, (x) $6,600 (the "Cash Value") shall be payable in cash in accordance with the Company's payroll practices for salaried employees and (y) $575,218.16 (the "RSU Value" and together with the Cash Value, the "Post-Amendment Compensation") shall be payable in the form of a restricted stock unit grant (the "RSU Grant") that will be granted to you on December 18, 2020 (the "Grant Date"), provided that you continue to be employed by, or provide service to, the Company on the Grant Date, the terms and conditions of which are set forth in Restricted Stock Unit Agreement in substantially the form attached hereto as Exhibit A (the "RSU Grant Agreement"). You and the Company agree that the RSU Value shall be treated as annual base salary for purposes of all benefit programs described in Section 3 below and the determination of any severance amounts due and owing to you under Section 7 below. Commencing January 1, 2021, you and the Company agree that your annual base salary will revert to being payable to you in cash in accordance with the Company's payroll practices for salaried employees unless you and the Company agree otherwise. Such annual base salary may be increased from time to time in accordance with normal business practices and in the sole discretion of the Company.

The number of shares subject to the RSU Grant shall be determined by the Company as of the Grant Date based on the RSU Value and the average fair market value of the Company's common stock for the 5 trading days immediately preceding the Grant Date. You agree and acknowledge that you will adopt a 10b5-1 Plan to permit you to conduct a Sell to Cover sufficient to satisfy the Withholding Taxes (as such terms are defined in the RSU Grant Agreement)."

B. Effective as of January 1, 2020, the following language shall be added to the end of Section 7(a) to read as follows:

"(a) In the event your employment with the Company terminates for any reason or you voluntarily terminate your employment for any reason, any Post Amendment Compensation due to you as of your date of termination (which shall be prorated for your employment through the date of the termination) shall be payable to you in a lump sum cash payment on or about the first payroll date immediately following your termination of employment"

C. A new Section 7(f) shall be added to read as follows:

"(f) Any severance due and owing to you under this Section 7 shall be payable in the form of cash in accordance with and at the times contemplated by the Company's then current payroll practices."

D. Except as set forth above, the Agreement shall remain unmodified and in full force and effect. Capitalized terms used herein but not defined shall have the meanings ascribed to them in the Agreement.

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

EXECUTIVE

VINCENT J. MILANO

Date: /s/ Vincent J. Milano

IDERA PHARMACEUTICALS, INC.

By: /s/ Jill Conwell
Name: Jill Conwell
Title: Senior Vice President, Human Resources
Date: January 10, 2020

EXHIBIT A

IDERA PHARMACEUTICALS, INC.
2013 STOCK INCENTIVE PLAN
RESTRICTED STOCK UNIT AGREEMENT

Exhibit 10.2

IDERA PHARMACEUTICALS, INC.
2013 STOCK INCENTIVE PLAN
RESTRICTED STOCK UNIT AGREEMENT

This RESTRICTED STOCK UNIT AGREEMENT (the "Agreement"), dated as of _____ (the "Date of Grant"), is delivered by Idera Pharmaceuticals, Inc. (the "Company") to Vincent J. Milano (the "Participant").

RECITALS

The Idera Pharmaceuticals, Inc. 2013 Stock Incentive Plan (the "Plan") provides for the grant of restricted stock units in accordance with the terms and conditions of the Plan. The Board has decided to make this grant of restricted stock units as an inducement for the Participant to promote the best interests of the Company and its stockholders. The Participant hereby acknowledges the receipt of a copy of the official prospectus for the Plan, which is available by accessing the Company's intranet at https://intranet.iderapharma.com. Paper copies of the Plan and the official Plan prospectus are available by contacting the General Counsel of the Company. This Agreement is made pursuant to the Plan and is subject in its entirety to all applicable provisions of the Plan. Capitalized terms used herein and not otherwise defined will have the meanings set forth in the Plan.

1. Grant of Stock Units. Subject to the terms and conditions set forth in this Agreement and in the Plan, the Company hereby grants the Participant _____ restricted stock units, subject to the restrictions set forth below and in the Plan (the "Stock Units"). Each Stock Unit represents the right of the Participant to receive a share of common stock of the Company ("Common Stock"), if and when the specified conditions are met in Section 3 below, and on the applicable payment date set forth in Section 5 below.

2. Stock Unit Account. Stock Units represent hypothetical shares of Common Stock, and not actual shares of stock. The Company shall establish and maintain a Stock Unit account, as a bookkeeping account on its records, for the Participant and shall record in such account the number of Stock Units granted to the Participant. No shares of Common Stock shall be issued to the Participant at the time the grant is made, and the Participant shall not be, and shall not have any of the rights or privileges of, a stockholder of the Company with respect to any Stock Units recorded in the Stock Unit account. The Participant shall not have any interest in any fund or specific assets of the Company by reason of this award or the Stock Unit account established for the Participant.

3. Vesting. The Stock Units shall be fully vested as of the Date of Grant.

4. Payment of Stock Units and Tax Withholding.

(a) Prior to, or on, _____, the Company shall issue to the Participant one share of Common Stock for each vested Stock Unit, subject to applicable tax withholding obligations.

(b) All obligations of the Company under this Agreement shall be subject to the rights of the Company and its subsidiaries (the "Employer") as set forth in the Plan to withhold amounts required by law to be withheld for any FICA, federal income, state, local and other tax liabilities ("Withholding Taxes"), if applicable. By accepting this Agreement, Participant hereby elects, effective on the date Participant accepts this Agreement, to sell shares of Common Stock issued in respect of the Agreement in an amount having an aggregate Fair Market Value equal to the Withholding Taxes, and to allow UBS Financial Services Inc. (the "Broker") to remit the cash proceeds of such sale to the Company (a "Sell to Cover"). The Participant represents that the Participant has adopted a 10b5-1 Plan to permit Participant to conduct a Sell to Cover sufficient to satisfy the Withholding Taxes. To the extent not paid in accordance with the immediately preceding sentences, the Participant shall be required to pay to the Employer, or make other arrangements satisfactory to the Employer to provide for the payment of, any federal, state, local or other taxes that the Employer is required to withhold with respect to the Stock Units.

(c) The obligation of the Company to deliver Common Stock shall also be subject to the condition that if at any time the Board shall determine in its discretion that the listing, registration or qualification of the shares upon any securities exchange or under any state or federal law, or the consent or approval of any governmental regulatory body is necessary or desirable as a condition of, or in connection with, the issuance of shares, the shares may not be issued in whole or in part unless such listing, registration, qualification, consent or approval shall have been effected or obtained free of any conditions not acceptable to the Board. The issuance of shares, if any, to the Participant pursuant to this Agreement is subject to any applicable taxes and other laws or regulations of the United States or of any state, municipality or other country having jurisdiction thereof.

5. No Stockholder Rights; Dividend Equivalents. Neither the Participant, nor any person entitled to receive payment in the event of the Participant's death, shall have any of the rights and privileges of a stockholder with respect to shares of Common Stock, including voting or dividend rights, until certificates for shares have been issued upon payment of Stock Units. The Participant acknowledges that no election under Section 83(b) of the Code is available with respect to Stock Units.

6. Grant Subject to Plan Provisions. This grant is made pursuant to the Plan, the terms of which are incorporated herein by reference, and in all respects shall be interpreted in accordance with the Plan. The grant and payment of the Stock Units are subject to the provisions of the Plan and to interpretations, regulations and determinations concerning the Plan established from time to time by the Board in accordance with the provisions of the Plan, including, but not limited to, provisions pertaining to (a) rights and obligations with respect to withholding taxes, (b) the registration, qualification or listing of the shares of Common Stock, (c) changes in capitalization of the Company and (d) other requirements of applicable law. The Board shall have the authority to interpret and construe the Stock Units pursuant to the terms of the Plan, and its decisions shall be conclusive as to any questions arising hereunder.

7. No Employment or Other Rights. The grant of the Stock Units shall not confer upon the Participant any right to be retained by or in the employ or service of any Employer and shall not interfere in any way with the right of any Employer to terminate the Participant's employment or service at any time. The right of any Employer to terminate at will the Participant's employment or service at any time for any reason is specifically reserved.

8. Assignment and Transfers. Except as the Board may otherwise permit pursuant to the Plan, the rights and interests of the Participant under this Agreement may not be sold, assigned, encumbered or otherwise transferred except, in the event of the death of the Participant, by will or by the laws of descent and distribution. In the event of any attempt by the Participant to alienate, assign, pledge, hypothecate, or otherwise dispose of the Stock Units or any right hereunder, except as provided for in this Agreement, or in the event of the levy or any attachment, execution or similar process upon the rights or interests hereby conferred, the Company may terminate the Stock Units by notice to the Participant, and the Stock Units and all rights hereunder shall thereupon become null and void. The rights and protections of the Company hereunder shall extend to any successors or assigns of the Company and to the Company's parents, subsidiaries, and affiliates. This Agreement may be assigned by the Company without the Participant's consent.

9. Applicable Law; Jurisdiction. The validity, construction, interpretation and effect of this Agreement shall be governed by and construed in accordance with the laws of the State of Delaware, without giving effect to the conflicts of laws provisions thereof. Any action arising out of, or relating to, any of the provisions of this Agreement shall be brought only in the United States District Court for the District of Massachusetts, or if such court does not have jurisdiction or will not accept jurisdiction, in any court of general jurisdiction in Boston, Massachusetts, and the jurisdiction of such court in any such proceeding shall be exclusive. Notwithstanding the foregoing sentence, on and after the date a Participant receives shares of Common Stock hereunder, the Participant will be subject to the jurisdiction provision set forth in the Company's bylaws.

10. Notice. Any notice to the Company provided for in this instrument shall be addressed to the Company in care of the General Counsel at the corporate headquarters of the Company, and any notice to the Participant shall be addressed to such Participant at the current address shown on the payroll of the Employer. Any notice shall be delivered by hand, or enclosed in a properly sealed envelope addressed as stated above, registered and deposited, postage prepaid, in a post office regularly maintained by the United States Postal Service or by the postal authority of the country in which the Participant resides or to an internationally recognized expedited mail courier.

11. Recoupment Policy. The Participant agrees that, subject to the requirements of applicable law, the Stock Units, and the right to receive and retain any Common Stock or cash payments covered by this Agreement, shall be subject to rescission, cancellation or recoupment, in whole or part, if and to the extent so provided under any "clawback" or similar policy of the Company in effect on the Date of Grant or that may be established thereafter.

12. Application of Section 409A of the Code. This Agreement is intended to be exempt from section 409A of the Code under the "short-term deferral" exception and to the extent this Agreement is subject to section 409A of the Code, it will in all respects be administered in accordance with section 409A of the Code. Any provision that would cause this Agreement to fail to satisfy section 409A of the Code shall have no force or effect until amended to comply with section 409A of the Code (which amendment may be retroactive to the extent permitted by section 409A of the Code and may be made by the Company without the consent of the Participant). Any reference in this Agreement to section 409A of the Code will also include any proposed, temporary or final regulations, or any other guidance, promulgated with respect to such Section by the U.S. Department of the Treasury or the Internal Revenue Service. Notwithstanding the foregoing, if the Stock Units constitute "deferred compensation" under section 409A of the Code and the Stock Units become vested and settled upon the Participant's separation from service, payment with respect to the Stock Units shall be delayed for a period of six (6) months after the Participant's separation from service if the Participant is a "specified employee" as defined under section 409A of the Code and if required pursuant to section 409A of the Code. If payment is delayed, the Stock Units shall be settled and paid within thirty (30) days after the date that is six (6) months following the Participant's separation from service. Payments with respect to the Stock Units may only be paid in a manner and upon an event permitted by section 409A of the Code, and each payment shall be treated as a separate payment, and the right to a series of installment payments under the Stock Units shall be treated as a right to a series of separate payments. In no event shall the Participant, directly or indirectly, designate the calendar year of payment.

[Signature Page Follows]

IN WITNESS WHEREOF, the Company has caused its duly authorized officer to execute this Agreement, and the Participant has executed this Agreement, effective as of the Date of Grant.

IDERA PHARMACEUTICALS, INC.

Name:
Title:

I hereby accept the award of Stock Units described in this Agreement, and I agree to be bound by the terms of the Plan and this Agreement. I hereby agree that all decisions and determinations of the Board with respect to the Stock Units shall be final and binding.

Date

Participant

Exhibit 99.1

Forward-Looking Statements & Other Important Cautions

- This presentation contains forward-looking statements within the meaning of safe harbor of the Private Securities Litigation Reform Act of 1995 and the Federal securities laws including statements about Idera Pharmaceuticals, Inc.'s (the "Company" or "Idera") expectations for, and obligations under, the content contained in this presentation. All statements, other than statements of historical fact, included or incorporated in this presentation, including statements regarding the Company's strategy, future operations, collaborations, intellectual property, cash resources, financial position, future revenues, projected costs, prospects, plans, objectives of management, stockholder value, commercial and expansion opportunities, possible indications, and clinical trial plans, including enrollment and timing of results, are forward-looking statements. The words "believes," "anticipates," "estimates," "plans," "expects," "intends," "may," "could," "should," "potential," "likely," "projects," "continue," "will," "schedule," and "would" and similar expressions are intended to identify forward-looking statements, although not all forward-looking statements contain these identifying words. These forward-looking statements are predictions based on the Company's current expectations and projections about future events and various assumptions. Idera cannot guarantee that it will actually achieve the plans, intentions or expectations disclosed in its forward-looking statements and you should not place undue reliance on the Company's forward-looking statements. These forward-looking statements involve known and unknown risks, uncertainties, and other factors, which may be beyond Idera's control, and which may cause the actual results, performance, or achievements of the Company to be materially different from future results, performance, or achievements expressed or implied by such forward-looking statements. There are a number of important factors that could cause Idera's actual results to differ materially from those indicated or implied by its forward-looking statements, including, without limitation: whether the Company's cash resources will be sufficient to fund the Company's continuing operations and the further development of the Company's programs; whether interim results from a clinical trial will be predictive of the final results of the trial; whether results obtained in preclinical studies and clinical trials will be indicative of the results that will be generated in future clinical trials, including in clinical trials in different disease indications; whether products based on Idera's technology will advance into or through the clinical trial process on a timely basis or at all and receive approval from the U.S. Food and Drug Administration or equivalent foreign regulatory agencies; and whether, if the Company's products receive approval, they will be successfully distributed and marketed. All forward-looking statements included in this presentation are made as of the date hereof, and are expressly qualified in their entirety by this cautionary notice and additional risks and uncertainties, including, without limitation, those risks and uncertainties described in the Company's Annual Report on Form 10-K for the year ended December 31, 2018, and otherwise in the Company's filings and reports filed with Securities and Exchange Commission. While Idera may elect to do so at some point in the future, the Company does not assume any obligation to update any forward-looking statements and it disclaims any intention or obligation to update or revise any forward-looking statement, whether as a result of new information, future events or otherwise, except as may be required by law.

Injecting a New Solution to Advance Cancer Immunotherapy

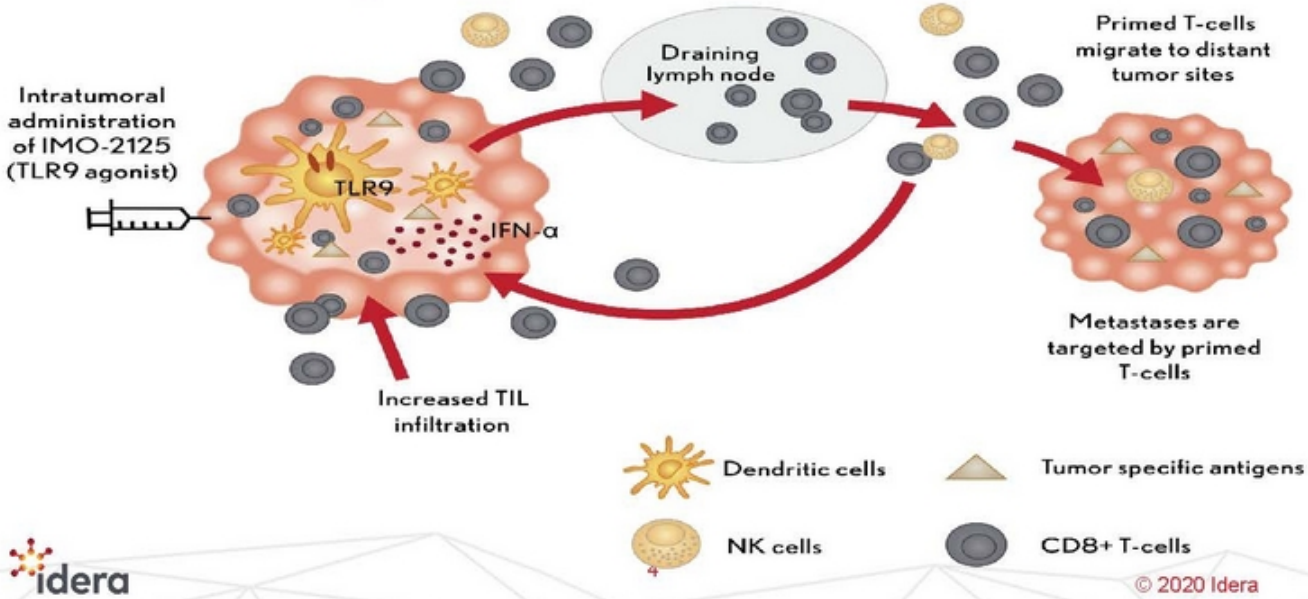
idera

Near Term Value Growth Driven by Tilsotolimod

- Phase 3 Trial at 94% of Target Enrollment
- MSS-CRC Cohort Underway
- Collaborations with BMS and AbbVie
- Strong Exclusivity Proposition
- Financial Flexibility Secured

Tilsotolimod is designed to stimulate the immune system

Administered locally, this potentially this will lead to better systemic patient outcomes with checkpoint inhibitors



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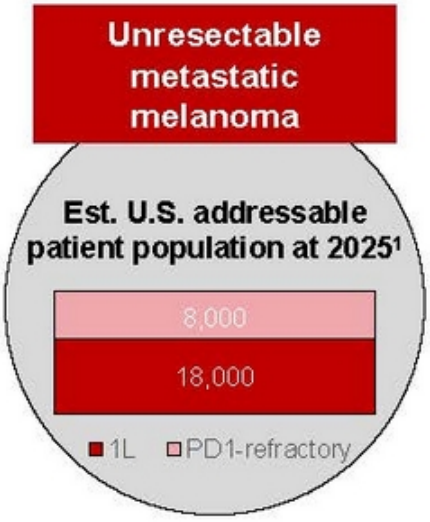
High Unmet Medical Need in Metastatic Melanoma for Patients who Progress after PD-1 Inhibitors

Historical Data of 321 Patients Suggest ipilimumab Monotherapy ORR Range of 4-16%*

N=	ORR	References
97	13%	Long, et al., Presentation at Society for Melanoma Research 2016 Congress, 2016 (post-hoc analysis of KEYNOTE-006 patients who received ipilimumab monotherapy following failure of pembrolizumab)
60	4%	Fujisawa, et al., Retrospective study of advanced melanoma patients treated with ipilimumab after nivolumab: Analysis of 60 Japanese patients, J. Dermatol. Sci. 2018 Jan ; 89(1): 60-66
47	4%	Weichenthal, et al., Presentation at the 2019 ASCO Annual Meeting, Salvage Therapy after Failure From Anti PD-1 Single Agent Treatment, A Study by the German ADOReg Melanoma Registry
47	16%	Zimmer, et al., Ipilimumab alone or in combination with nivolumab after progression on anti PD-1 therapy in advanced melanoma, Eur. J. Cancer 2017; 75-47-55
40	10%	Bowyer, et al., Efficacy and toxicity of treatment with the anti-CTLA-4 antibody ipilimumab in patients with metastatic melanoma after prior anti-PD-1 therapy. Br. J. Cancer. 2016;114(10):1084–1089.
30	7%	Muto, et al., Investigation of clinical factors associated with longer overall survival in advanced melanoma patients treated with sequential ipilimumab, J. Dermatology, 2019; 46; 498-506

* There are three additional studies of n=9, n=8, n=7 respectively: *Aya, et al.*, Future Oncol. 2016; 12(23):2683-2688 (ORR=22%); *Jacobsoone-Ulrich et al.*, Melanoma Research 2016, 26:2 (2016) (ORR=50%); Saijo, et al., Tohoku J. Exp. Med., 2019, 248, 37-43 (ORR=0%)

Heading Towards our First Commercial Opportunity



- High unmet need in anti-PD1-refractory patients
- **U.S. Peak year sales estimate > $500 million, if approved** [2]

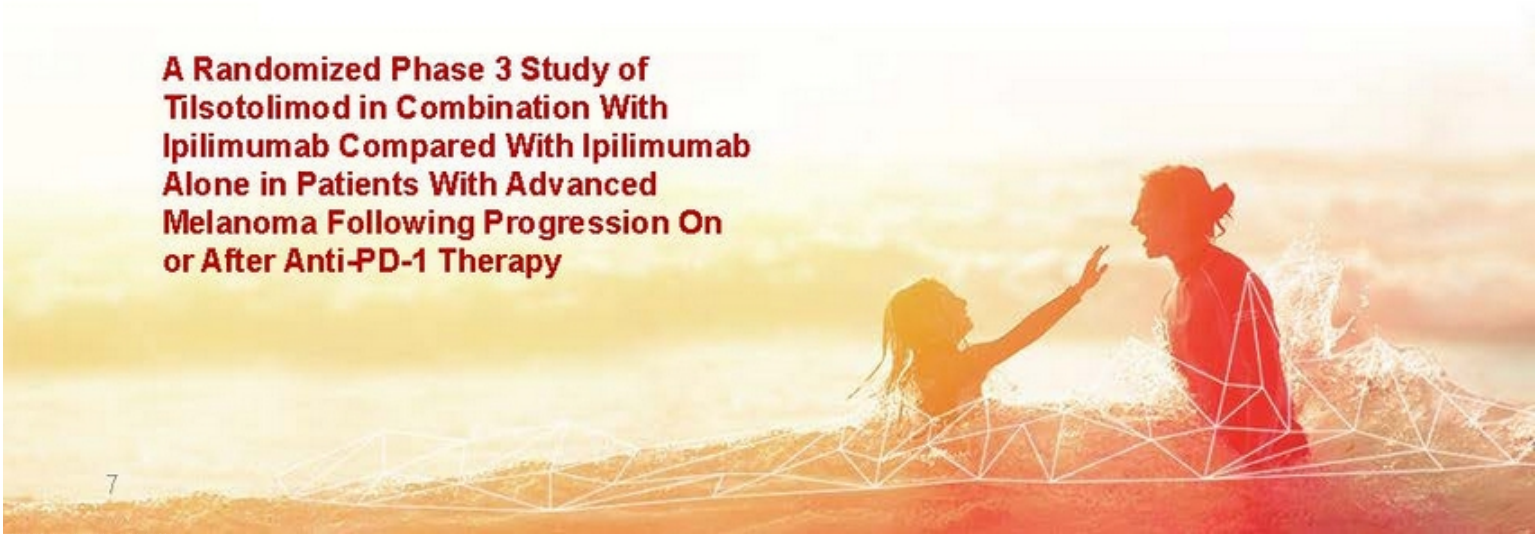
[1] Proprietary Idera Commercial Research
[2] Based on current company forecast through 2030

idera

illuminate
Tilsotolimod Clinical Trials

ILLUMINATE 301

A Randomized Phase 3 Study of Tilsotolimod in Combination With Ipilimumab Compared With Ipilimumab Alone in Patients With Advanced Melanoma Following Progression On or After Anti-PD-1 Therapy



ILLUMINATE-301

illuminate
Tilsotolimod Clinical Trials

Randomized Trial Design

Patient Stratification
- Duration of prior anti-PD-1 therapy (<12 or ≥12 weeks)
- Metastasis stage (M1c or other)
- BRAF mutation status and prior targeted therapy
  - BRAF wild type, mutation positive with, or without prior targeted

Key Inclusion Criteria:
- Age ≥18 years
- Stage III or Stage IV melanoma
- ≥ 1 measurable lesion accessible for injection
- ECOG PS <1
- Adequate organ function

Key Exclusion Criteria:
- Prior TLR agonists
- Prior ipilimumab
- CNS disease

Randomization
1:1
N≈454

Arm A
- Ipilimumab 3 mg/kg (4 doses: weeks 1, 4, 7, and 10)
- Treatment Duration: 10 weeks

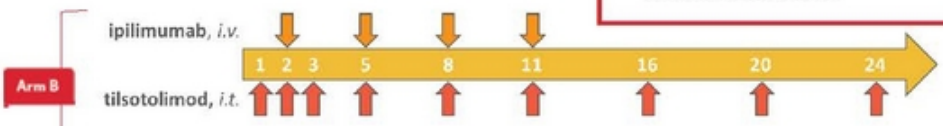
No crossover

Arm B
- Ipilimumab 3 mg/kg (4 doses: weeks 2, 5, 8, and 11) +
- Intratumoral tilsotolimod 8 mg (9 doses: weeks 1, 2, 3, 5, 8, 11, 16, 20, and 24)
- Treatment Duration: 24 weeks

Endpoints

Primary endpoint family
- ORR by independent review per RECIST v1.1
- OS

Key secondary endpoints
- Durable response rate
- Time to response
- Progression-free survival
- Patient-reported outcomes
- Safety



i.v., intravenous; i.t., intratumoral; ORR, overall response rate; OS, overall survival.

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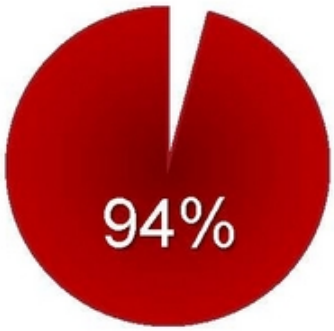
ILLUMINATE-301

illuminate
Tilsotolimod Clinical Trials

Progress Update

- **427 of 454** patients randomized
  - **94%** of target enrollment
- Enrollment completion expected **Q1 2020**
- Data expected **Q4 2020/Q1 2021**



* Enrollment Update as of 1/13/2020

Strong Exclusivity

Three Sources of Exclusivity for Tilsotolimod

- Composition of Matter Patent Exclusivity
  - Provides exclusivity until 2030 (estimated), inclusive of patent term extension
- Method-of-Use Patent
  - Covers certain melanoma treatments in combination with therapies targeting CTLA-4, PD-1, or PD-L1
  - Estimated expiration in September 2037
- Orphan Drug Designation
  - Granted *"for treatment of melanoma Stages IIb to IV."*

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Reasons to Believe

- Encouraging Clinical Data
- Translational Data

ILLUMINATE-204

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A Prelude to 301

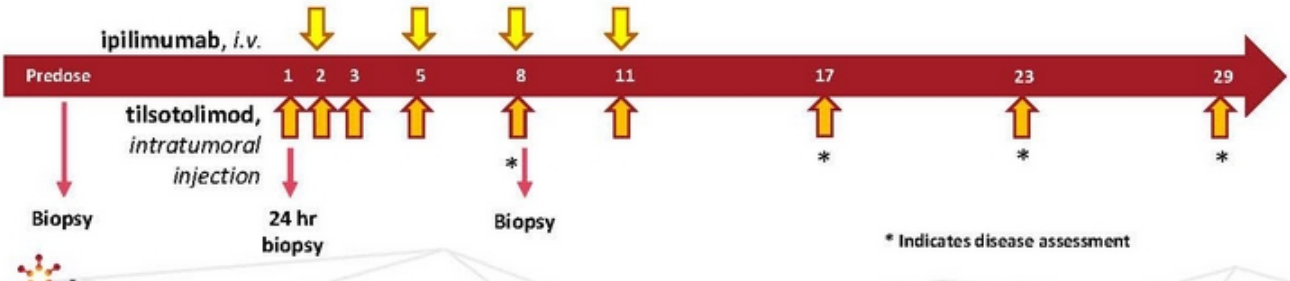
Patients:
Adults with unresectable or metastatic melanoma

- Radiologic (RECIST v1.1) or symptomatic progression on or after a PD-1 inhibitor
- ≥21d from most recent aPD-1
- Prior ipilimumab allowed
- BRAFwt: 2 lines systemic therapy
- $BRAF^{V600}$: 3 lines systemic therapy
- Ocular melanoma excluded

Phase 1 dose-finding (n=18)
tilsotolimod (4, 8, 16, 32 mg) + ipilimumab

↓

Phase 2 (n ≈ 52)
tilsotolimod 8mg + ipilimumab



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ILLUMINATE-204 Results to Date Imply Potential for Clinically Meaningful Benefit

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Best Overall Response	tilsotolimod + ipilimumab (N=49)[1]	ipilimumab monotherapy post PD-1 (N=321)[2] *(pooled post-hoc analysis of six studies)*
Overall Response Rate (CR or PR)	24% (12)	4-16%
Disease Control Rate (CR, PR, or SD)	71% (35)	17-45%

- 11 of 12 responses confirmed per RECIST v1.1
  - 3 Confirmed Complete Responses (CR)
- 5 of 10 RECIST v1.1 responses evaluable for durability (>6 mos.) to date
- Median OS (overall survival) not yet reached (min/max: 1.6 – 35 mos.)
- Safety profile observed consistent with previously reported results

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[1] 49 of 52 subjects had at least 1 post-baseline disease assessment at time of August data update further updated in October 2019 for confirmed responses.
[2] References available on Slide 5

ILLUMINATE 204

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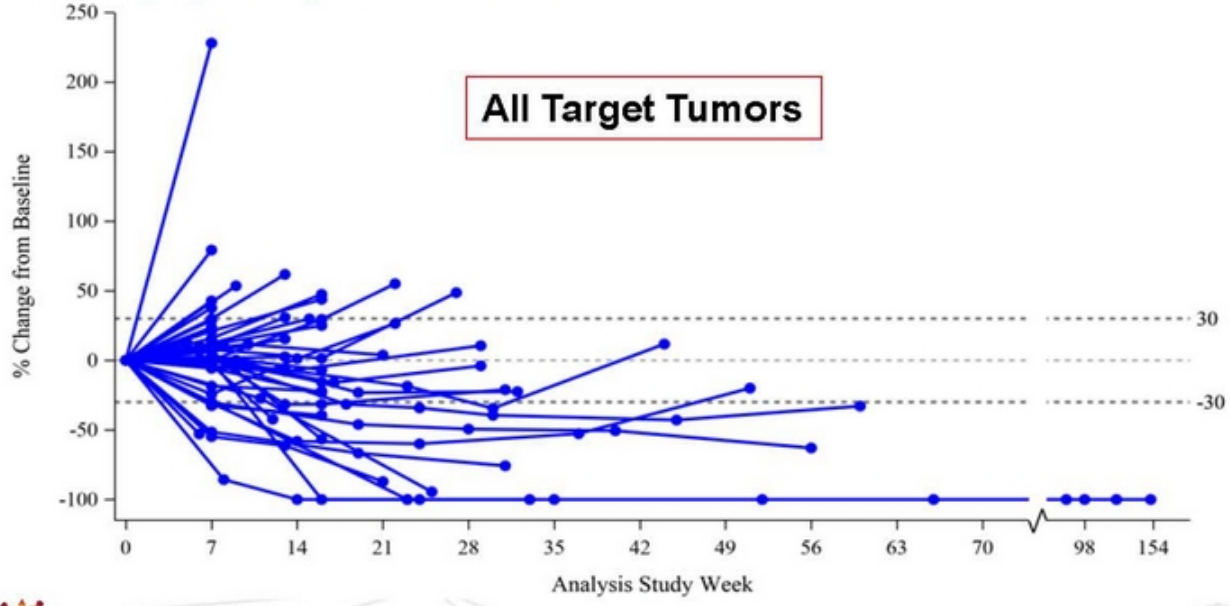
Percent (%) Change from Baseline



ILLUMINATE 204

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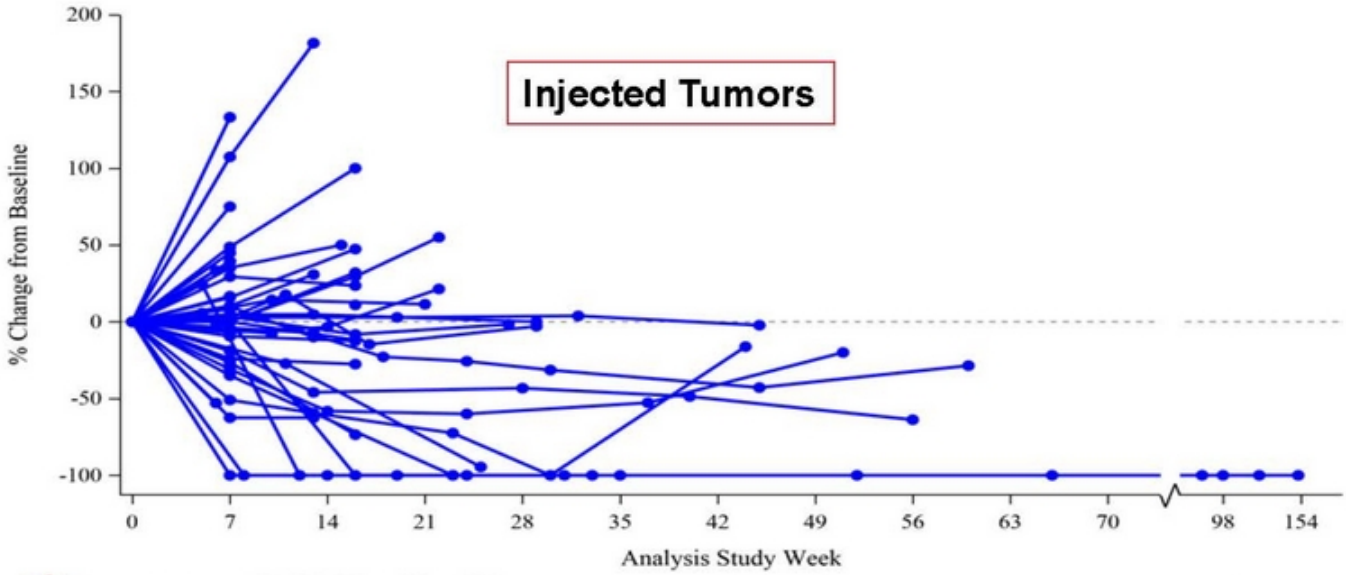
Percent (%) Change from Baseline



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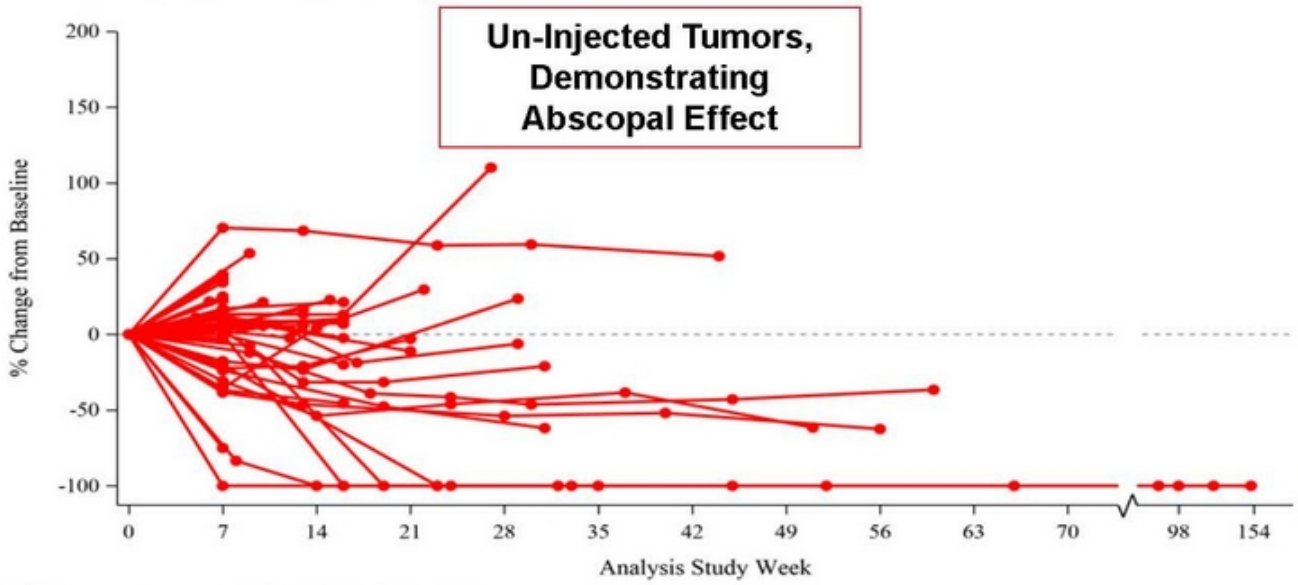
Percent (%) Change from Baseline



ILLUMINATE 204 Summary

Final Data Planned for Q2 2020

- As of the latest data update:[1]
  - Response rates (ORR/DCR) are greater than historical control
  - Median overall survival (OS) is not yet reached
- Translational data demonstrated proof of mechanism for tilsotolimod:
  - Rapid induction of IFNα (within 24 hours)
  - Responses observed in tumors not expected to respond to ipilimumab alone based on HLA-ABC low baseline expression

Final 204 Data to include Safety, ORR, Median OS and Durability

[1] *August 28, 2019 Data Update from ILLUMINATE-204, Form 8K*

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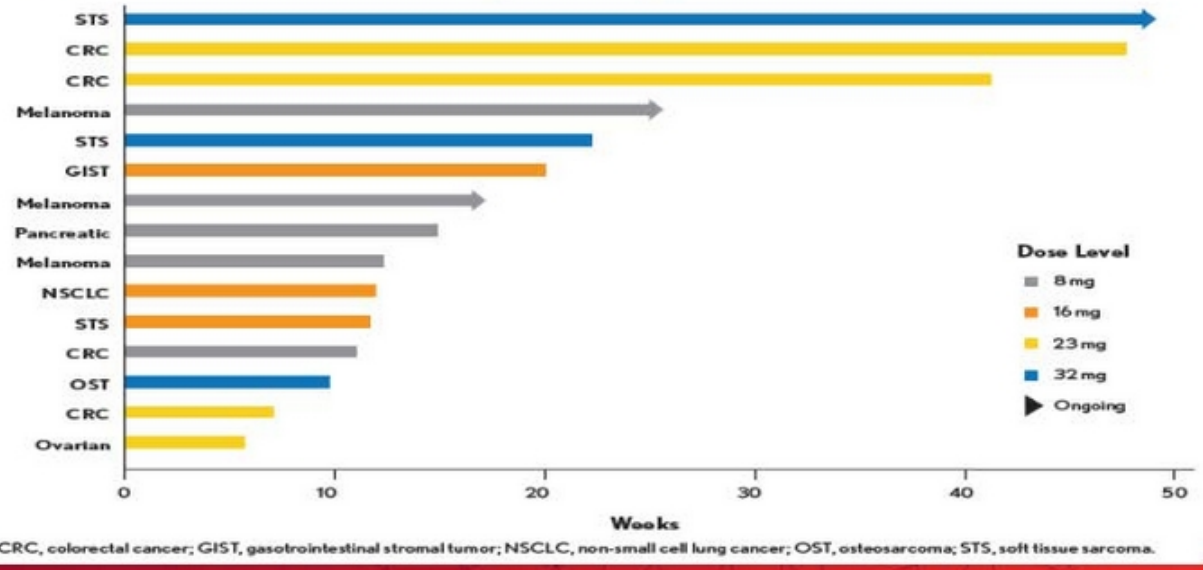
Tilsotolimod Expansion Opportunity

Beyond Melanoma

ILLUMINATE-101 Monotherapy Study

Duration of Stable Disease By Tumor Type



CRC, colorectal cancer; GIST, gasotrointestinal stromal tumor; NSCLC, non-small cell lung cancer; OST, osteosarcoma; STS, soft tissue sarcoma.

Tilsotolimod Induces Rapid Gene Expression in the Tumor Microenvironment, Regardless of Tumor Type

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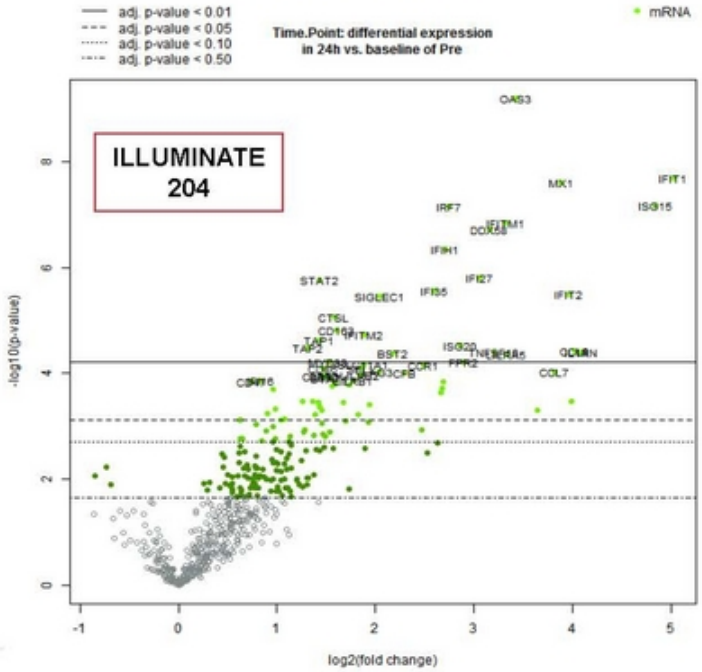

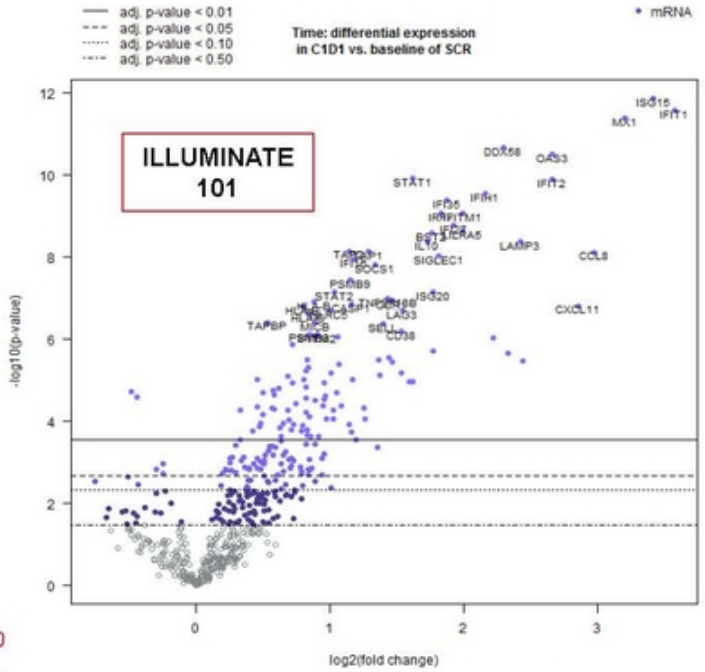

ILLUMINATE-206

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Evaluation of Tilsotolimod Combined with Immunotherapy Agents for the Treatment of Solid Tumors

- **Phase 2 multicohort protocol design**
  - Individual cohorts for each tumor type and combination
  - Cohorts designed with 2 parts
    - Part 1: Safety, signal finding
    - Part 2: Randomized, controlled expansion of Part 1 indications

First Indication

- MSS CRC cohort; tilso + nivo + ipi
- 1st 10 Patients Enrolled, Safety and initial ORR data expected Q2 2020

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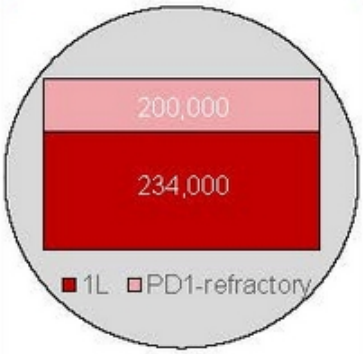
Expanding Potential Growth Opportunities

Emerging I/O addressable tumors

- Moderate response to cornerstone anti-PD1
- Goal to increase number of approved settings

Est. U.S. addressable patient population at 2025[1,2]



"Cold" tumors unaddressable with current I/O

- Significant opportunity in tumors with:
  - Low mutation load
  - Low dendritic cell infiltration
- Bioinformatics research ongoing to identify attractive tumor targets

[1] Proprietary Idera Commercial Research
[2] NSCLC, head and neck, colorectal, bladder and gastric

Clinical Collaboration with AbbVie

Further Broadens Expansion Efforts

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Idera Pharmaceuticals Announces Immuno-Oncology Clinical Research Collaboration with AbbVie

abbvie

Financials

- Recently completed private placement for up to $97.7M ($10.1M received at closing);
- Including initial recent proceeds, cash runway anticipated into Q1 2021; and
- Financing provides financial resources for critical upcoming catalyst and potentially beyond.

2020: Turning A "Cold" Company "Hot"?

- Completion of ILLUMINATE-301 Enrollment – 1Q 2020
- Interim Data (First 10 MSS-CRC patients) from ILLUMINATE-206 – 2Q 2020
- Topline Data from ILLUMINATE-204 – 2Q 2020
- Data from ILLUMINATE-301 – Q4 2020/Q1 2021