Salarius PHARMACEUTICALS

Company Overview

3Q 2020

Safe Harbor Statement

This presentation contains forward-looking statements within the meaning of the Private Securities Litigation Reform Act of 1995. Any statement in this presentation that is not a historical fact is a forward-looking statement. Forward-looking statements are subject to risks and uncertainties that could cause actual results to differ materially and reported results should not be considered as an indication of future performance. Examples of such statements include, but are not limited to: statements relating to the overall ability of epigenetic regulator drugs to correct gene changes in disease, including how modulation of LSD1 may increase responsiveness to checkpoint inhibition; the commercial or market opportunity and expansion for each therapeutic option, including the availability and value of a pediatric priority review voucher for in-clinic treatments and potential for accelerated approval; the adequacy of our capital to support our future operations and our ability to successfully initiate and complete clinical trials and regulatory submissions; Seclidemstat's impact in Ewing sarcoma and as a potential new and less-toxic treatment; expected dose escalation and dose expansion; expected cohort readouts; expected therapeutic options for SP-2577 and related effects and projected efficacy, including SP-2577's ability to inhibit LSD1; the potential for SP-2577 to differentiate itself from competing LSD1-inhibitors; timing of development and future milestones, including for each of SP-2577's indications; the nature, strategy and focus of Salarius; and the development, expected timeline and commercial potential of any of our product candidates or our competitors. We may not actually achieve the plans, carry out the intentions or meet the expectations, objectives or projections disclosed in the forward-looking statements and you should not place undue reliance on these forward-looking statements. Such statements are based on management's current expectations and involve risks and uncertainties. Actual results and performance could differ materially from those projected in the forward-looking statements as a result of many factors, including, without limitation: risks and uncertainties associated with the availability of sufficient resources to meet our business objectives and operational requirements, including amounts remaining available under the CPRIT grant; the risk that we may not obtain or maintain sufficient levels of reimbursement for our clinical trials and product development, including from CPRIT; the ability to project future cash utilization and reserves needed for contingent future liabilities and business operations; the fact that the results of earlier studies and trials may not be predictive of future clinical trial results; our quarter-end closing procedures and finalization of our quarterly financial results; the sufficiency of our intellectual property protections; risks related to the drug development and the regulatory approval process; other legal and regulatory uncertainties; the market price of our common stock and our ability to maintain the listing of our common stock on Nasdaq; the impact of the ongoing COVID-19 pandemic and the success of any measures we have taken or may take in response thereto; and the impact of competitive products and technological changes. We disclaim any intent or obligation to update these forward-looking statements to reflect events or circumstances that exist after the date on which they were made. You should review additional disclosures we make in our filings with the Securities and Exchange Commission, including our Quarterly Reports on Form 10-Q, Annual Reports on Form 10-K, and Current Reports on Form 8-K. You may access these documents for no charge at http://www.sec.gov. This presentation shall not constitute an offer to sell or the solicitation of an offer to buy, nor shall there be any sale of these securities in any state or other jurisdiction in which such offer, solicitation or sale would be unlawful prior to registration or qualification under the securities laws of any such state or other jurisdiction.

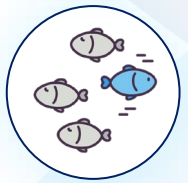
Mission Statement

Salarius PHARMACEUTICALS

Developing treatments for patients that need them the most

Corporate Overview

Drugs that regulate gene expression (“epigenetics”) have shown clinical efficacy plus immuno-oncology potential



Lead candidate, seclidemstat is a novel, oral, reversible LSD1 inhibitor that regulates gene expression and is currently in Phase 1/2 Ewing sarcoma and Phase 1/2 solid tumor clinical trials

Seclidemstat FDA designations for Ewing sarcoma:

(1) Rare Pediatric Disease Designation, (2) Orphan Drug Designation, and (3) Fast Track Approval

Non-Dilutive funding in addition to low monthly burn rate

- Up to an aggregate of $18.7M[1] from Cancer Prevention Research Institute of Texas (CPRIT)
- Financial support from the National Pediatric Cancer Foundation

Market expansion in targeted cancers with LSD1 sensitive mutations and immunotherapy (checkpoint inhibitor combos)

[1] As of June 30, 2020, the Company had received $9.6M from CPRIT and there is up to $9.1M available subject to certain requirements and spending restrictions.

Seasoned Leadership Team

David J. Arthur
Chief Executive Officer

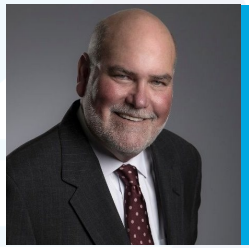
Lilly · Boehringer Ingelheim

Nadeem Q. Mirza, MD, MPH
Senior VP Clinical Development

SANOFI · abbvie

Bruce McCreedy, PhD
Acting Chief Scientific Officer

PRECISION · Triangle Pharmaceuticals

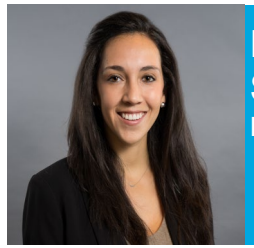


Mark Rosenblum
Chief Financial Officer

ADVAXIS · WELLMAN, INC. · Deloitte.

Phil Bauer, PhD
VP Chemistry, Manufacturing & Control

ILEX · APTINYX



Daniela Y. Santiesteban, PhD
Director of Research and BD

GRFP · Georgia Tech

Board of Directors

David Arthur, MBA	Jonathan Lieber, MBA	Tess Burleson, CPA	Paul Lammers, MD MSc	Bruce McCreedy, PhD	William McVicar, PhD	Arnold Hanish, CPA
Salarius Pharmaceuticals	Danforth Advisors	Translational Genomics Research Institute	Triumvira Immunologics	Precision BioSciences	Flex Pharma	Omeros Corporation
	Histogenics		Merck Serono	Triangle Pharmaceuticals	Sepracor	Eli Lilly
					Novartis	

Recent and Anticipated Milestones

Development Milestones	Timing
✓ Rare Pediatric Disease and Orphan Status Designation	2017
✓ FDA Fast Track Status	2H 2019
✓ Phase 1 Ewing data (pediatric subcommittee Oncologic Drug Advisory Committee)	1H 2020
✓ Presented at pediatric subcommittee of the Oncologic Drug Advisory Committee	1H 2020
Additional Phase 1 Ewing data	2H 2020
Initiate potential hematologic trial	2H 2020
Initiate potential immunotherapy combo trial	2H 2020
CPRIT Distribution	2H 2020
Initiate Ewing-related sarcoma expansion	1H 2021
Phase 1 Ewing early efficacy data readouts begin	1H 2021
Phase 1 AST early efficacy data readouts begin	1H 2021
Potential for Phase 1/2 Ewing and Ewing-related sarcoma readouts	2H 2021
Initiate potential Phase 1/2 targeted mutation solid tumor study	2H 2021

Development Pipeline

Seclidemstat

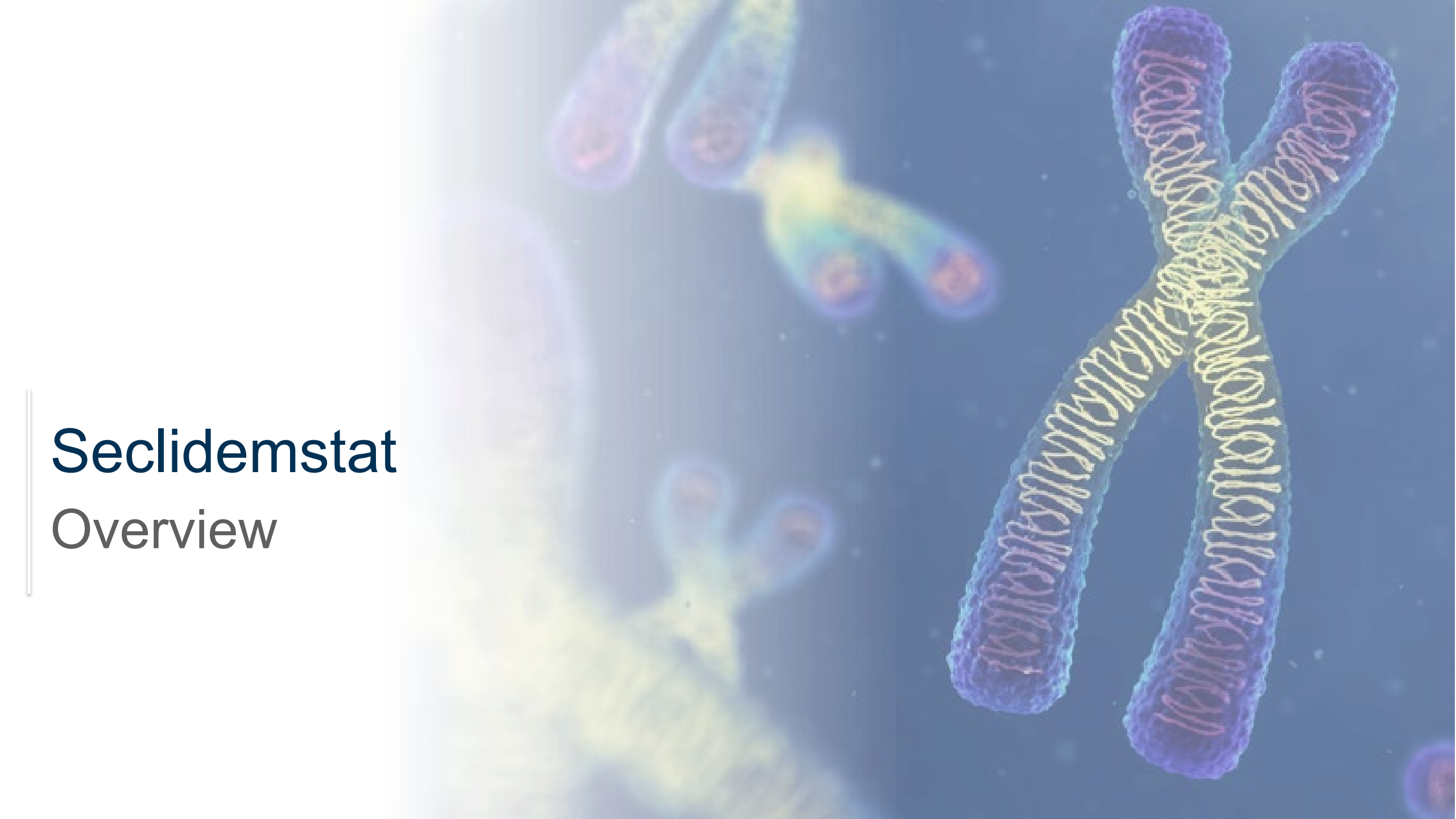
Indication	Preclinical	Phase 1	Phase 2[1]	Status
Ewing Sarcoma	**Dose Escalation and Expansion**			• Phase 1/Phase 2 enrolling up to 50 patients
Advanced Solid Tumors	**Dose Escalation and Expansion**[2]			• Phase 1/Phase 2 enrolling up to 50 patients
Immunotherapy	**In vitro and In vivo studies ongoing**			• Identifying combinations and indications for clinical trials
Hematologic cancers	**In vitro and In vivo studies ongoing**			• Identifying combinations and indication for clinical trials

Identifying opportunities in select tumor mutations

1. Expanded Phase 2 in Ewing sarcoma could potentially be a registration study with improvements in response or duration of response compared to the existing standard of care and FDA's agreement
2. Open to all non-Ewing sarcoma solid tumor patients except for primary CNS tumors, potential to enrich for patients with sensitive mutations and prostate cancer that can be monitored with prostate specific antigen

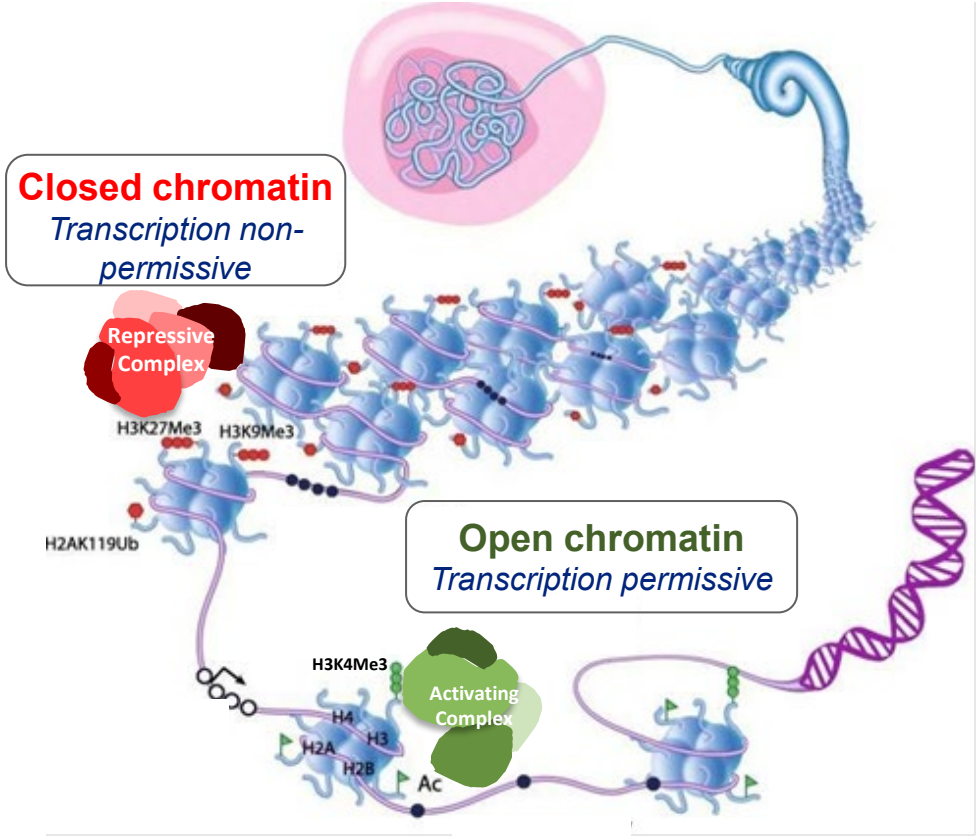
Seclidemstat

Overview



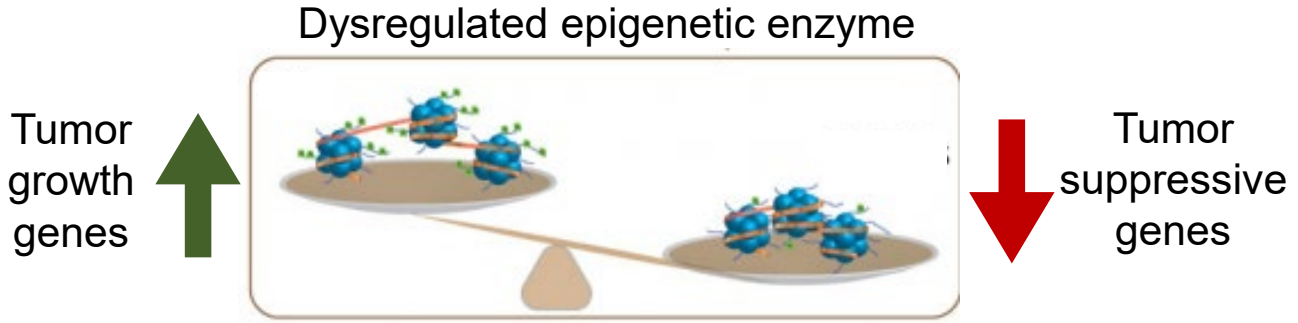
Epigenetic enzymes are attractive targets for cancer therapy

Epigenetic modifying enzymes affect gene expression by manipulating the chromatin structure

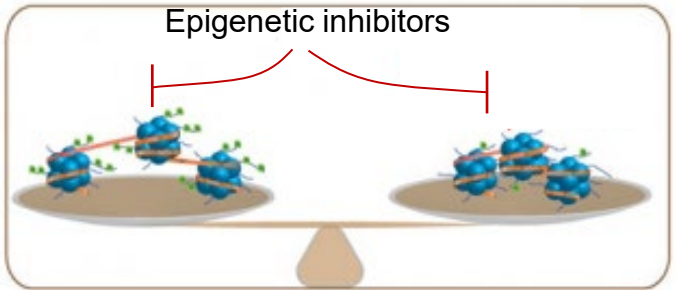


Adapted from Holliday, H. Breast Cancer Research *2018*

Dysregulated epigenetic enzymes can disrupt the transcriptional balance and lead to cancer development

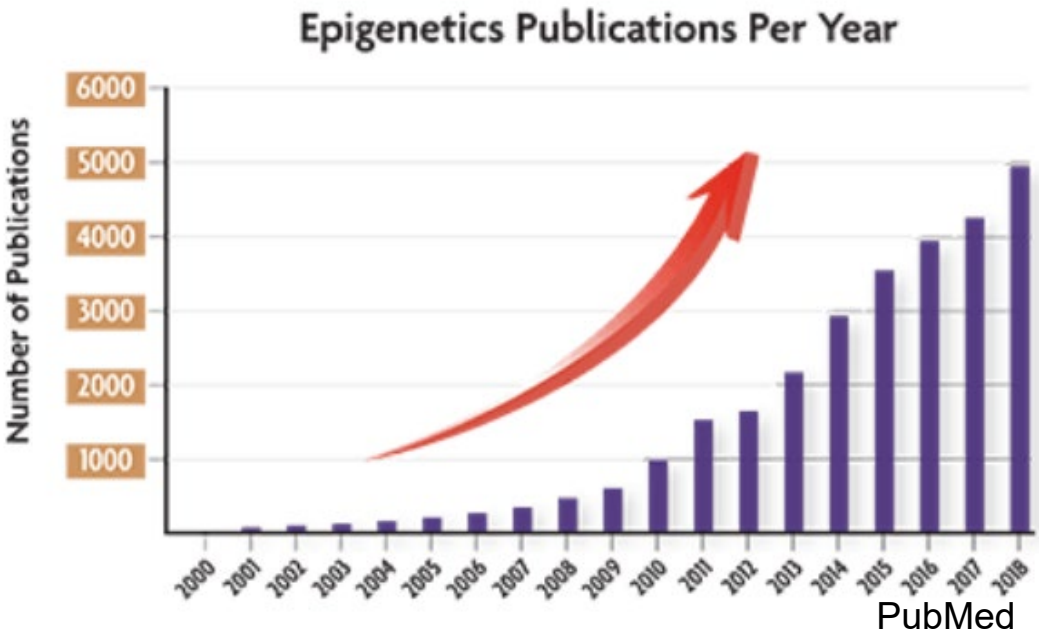


Drugs that correct dysregulated epigenetic enzymes can help treat cancer by restoring to a balanced transcriptional state



Adapted from Marcin et al. Biomed Intel *2018.*

Epigenetic Research is Gaining Momentum and Epigenetic Focused Biotechs are Increasing in Valuation



Novel epigenetic drugs with clinical proof of concept support billion-dollar valuations

Epizyme™

(NASDAQ: EPZM)

EZH2 inhibitor (tazemetostat)
Approved in epithelioid sarcoma – monotherapy
Approved for R/R follicular lymphoma – monotherapy
Market Cap: ~$1.5B[1]

Constellation PHARMACEUTICALS

(NASDAQ: CNST)

BET inhibitor (CPI-0610)
Positive Phase 2 data in combination with existing standard of care in myelofibrosis
Market Cap: ~$1.3B[1]

Other clinical companies include: GSK, Zenith Epigenetics, Resverlogix, 4SC, Viracta, Syndax

[1] As of 07/14/2020; not intended to be indicative of Company's current or potential market cap.

LSD1 - A Validated Target For Cancer Therapy

Lysine Specific Demethylase 1 (LSD1) affects gene expression through enzymatic activity and scaffolding properties (protein-protein interactions), making it an attractive target for solid tumors and hematological cancers.

LSD1 in Normal Cells and Cancer Cells[1]	
Normal Cells	• LSD1 is necessary for stem cell maintenance and cell development processes (e.g., blood cells)
Cancer Cells	• LSD1 is over expressed • LSD1 acts incorrectly to silence or activate genes leading to disease progression • Validated target: LSD1 CRISPR deletion often detrimental to cancer cells

Seclidemstat (SP-2577) reversibly inhibits **LSD1**

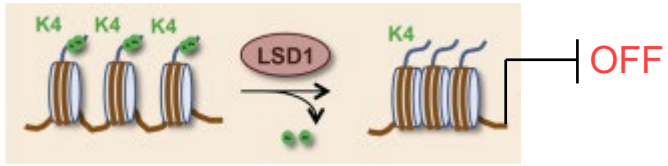
- Reverses incorrect gene expression, killing or preventing the growth of cancer cells
- Inhibits both the enzymatic and scaffolding activity

[1]Majello,B. *Cancers* 2019. [2]Appendix B

More Comprehensive Inhibition of LSD1 Positively Impacts Therapeutic Activity

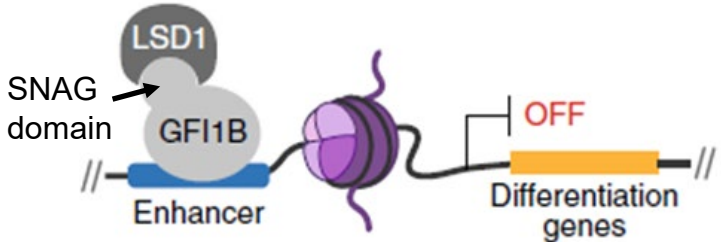
Degree of LSD1 inhibition

Enzymatic activity – Demethylation
Impact: Moderately alter gene expression



Salarius PHARMACEUTICALS and competitors

Partial scaffolding* inhibition of LSD1 – protein interaction
Impact: Alter gene expression in cancers (AML, SCLC) driven by SNAG domain proteins (e.g. GFI1B)



Salarius PHARMACEUTICALS and competitors

Broader scaffolding inhibition of LSD1 – protein interaction
Impact: Potential efficacy in broader range of cancer types, destabilize LSD1 and complexes

Salarius PHARMACEUTICALS

- ✓ Differential activity
- ✓ Reduces LSD1 expression
- ✓ Favorable Toxicology Profile

*scaffolding properties – protein to protein interactions

LSD1 Competitive Landscape Highlights Seclidemstat's Differentiation

	Company	Drug Name	Binding Mechanism	Indications and Phase
In clinic[1]	Salarius Pharmaceuticals	SP-2577 (Seclidemstat)	**Reversible**	Ewing sarcoma (Ph1/2), Advanced Solid Tumors (Ph1/2)
	Oryzon	ORY-1001 (RG6016)	Irreversible	AML combo (Ph2b), SCLC combo (Ph2a)
	Celgene	CC-90011	**Reversible**	Non-Hodgkin's lymphoma and AST (Ph1), SCLC combo (Ph1b), IO combo (Phase 2)
	Imago	IMG-7289	Irreversible	AML and myelodysplastic syndrome (Ph1/2a completed), myelofibrosis (Ph2b), essential thrombocythemia (Ph2a)
Preclinic[2]	Bectica	BEA-17	**Reversible**	Glioblastoma
	Rasna Therapeutics	RASP-201	**Reversible**	AML
	Hanmi	HM9XXX series	**Reversible**	AML and SCLC

[1]Clinicaltrials.gov

[2]Not an exhaustive list of companies in preclinical stage

Seclidemstat's differentiated binding mechanism (reversibility) and binding location shows potential **increased therapeutic activity** and **safety***

Preclinical research is shifting to develop reversible LSD1 inhibitors

GlaxoSmithKline and Incyte previously had clinical LSD1 programs (irreversible) that have since been terminated

*Being studied in our ongoing Phase 1 trials

SPEED TO MARKET

Seclidemstat in Ewing Sarcoma

Ewing Sarcoma - Unmet Need Represents a Meaningful Product Opportunity

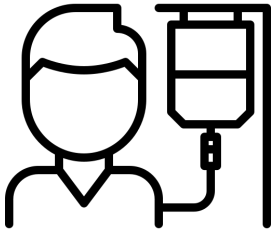
Diagnosis

~500 patients diagnosed each year
Median age of diagnosis ~15 years

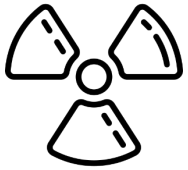
- 75% localized[1]
- 25% with metastasis[1]

Standard of Care

Surgery and Amputations



Chemo



Radiation

- About 40% of patients are refractory or relapse[2]
- 70-90% 5-year mortality rate[2]
- No standardized 2nd line treatment

Salarius' Vision

An effective, non-toxic, oral treatment option:

- Accelerated US approval
- Rapid market uptake
- $200M+ Global Sales[3] (est.)
- Possible Priority Review Voucher of $80M - $150M

- ✓ Fast Track Designation
- ✓ Orphan Drug Designation
- ✓ Rare Pediatric Drug Designation

[3] Represents longer term vision and does not represent estimate of future performance, financial or otherwise. There is no assurance that we will achieve our longer-term vision.

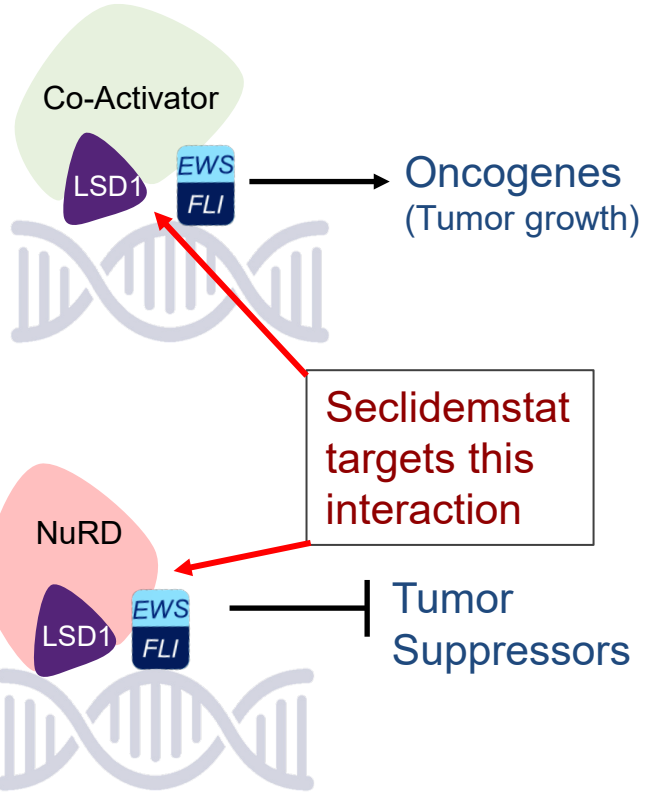
[1] Pishas, K. et al. (2016)

[2] Van Mater, et al. Oncotargets (2019)

Targeting The Root Cause Of Ewing Sarcoma Via LSD1 Inhibition

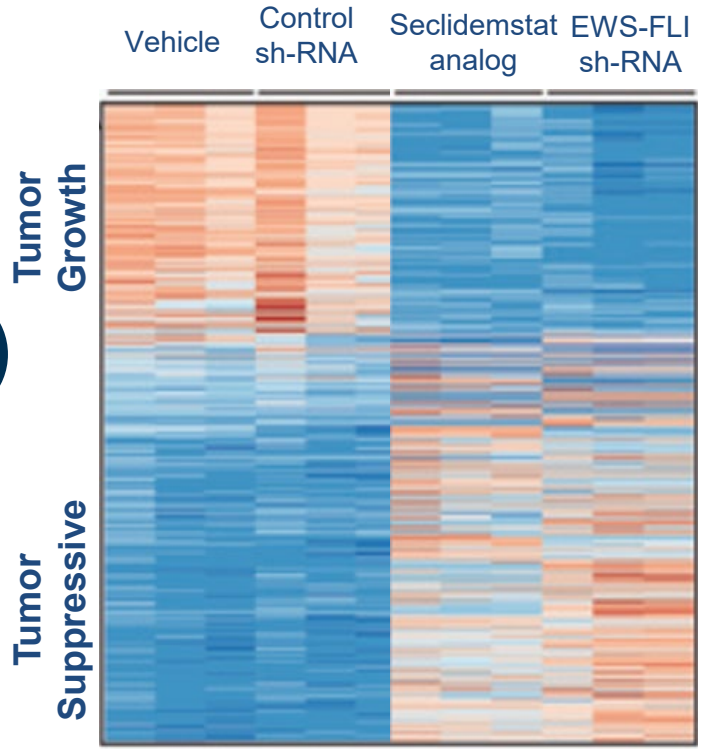
Ewing sarcoma is driven by an easily diagnosed chromosomal translocation, i.e., EWS-FLI

Incorrect transcription factor leads to gene dysregulation



Seclidemstat corrects gene expression

Ewing's cells (A673)



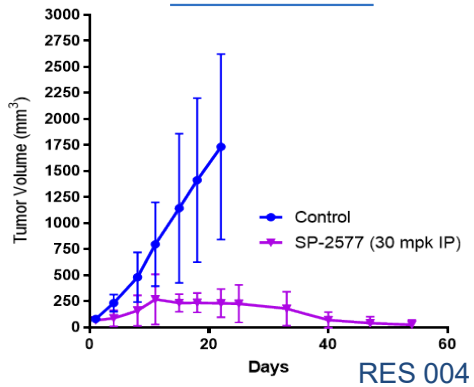
Red = turned ON

Blue = turned OFF

Genes correctly turned on/off

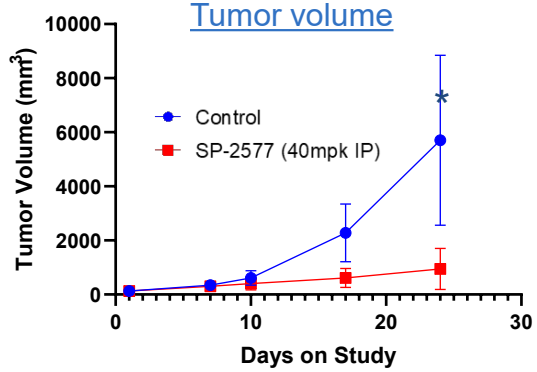
Potent anti-tumor activity in SKNMC (Ewing sarcoma cells) *in vivo* studies

Tumor volume



RES 004 Salarius

Tumor volume



*p<0.0003

RES 006 Salarius

Sankar et al. *Clinical cancer research* 20.17 (2014)

Ewing Sarcoma Phase 1/2: Safety and Efficacy Data in 2020

Open-label dose escalation / dose expansion trial design

Dose escalation (ongoing)

- Dose escalation in cohort 6
- Maximum Tolerated Dose (MTD) expected in 2H2020

Dose expansion (after MTD is established)

- ~20 patients at Recommended Phase 2 Dose
- Safety and early efficacy data in 1H2021

Primary objective: Safety, PK

Secondary objectives: Anti-tumor assessment

Exploratory: Hemoglobin F, cfDNA, CTCs

CURRENTLY ENROLLING AT

8 CLINICAL SITES

- ✓ Plasma PK is dose proportional
- ✓ Early clinical data presented at pediatric ODAC meeting in June 2020

Salarius Plans To Expand Ewing Sarcoma Trial To Include Ewing-related Sarcomas

- Preclinical activity and early clinical observations in sarcomas driven by FET family* gene rearrangements suggest seclidemstat may be a potential treatment option
  - Ongoing Ewing sarcoma trial amended to include these Ewing-related sarcomas at recommended phase 2 dose (RP2D)

Ewing sarcoma — EWS/FLI

Myxoid liposarcoma — EWS/CHOP, FUS/CHOP

Desmoplastic Small Round cell tumor — EWS/WT1

Clear cell sarcoma[1] — EWS/ATF1

At RP2D

Cohort 1: Ewing sarcoma expansion

- ❑ 20 evaluable Ewing sarcoma patients with known EWSR1 translocation at RP2D

Cohort 2: Ewing-related sarcoma expansion

- ❑ Myxoid liposarcoma (7-10 evaluable patients)
- ❑ Desmoplastic small round cell tumor (7-10 evaluable patients)
- ❑ Other sarcomas that also share similar chromosomal translocations (EWS-, FUS-, TAF15-) to Ewing sarcoma (up to 10 evaluable patients)

* FET family includes EWS, FUS and TAF15 gene rearrangements/mutations.

[1]Clear cell sarcoma represents an example of other sarcomas eligible for enrollment

Phase 1a Ewing Safety Data And Preliminary Drug Activity Observed In Patient's Target Lesions As Assessed By Investigator

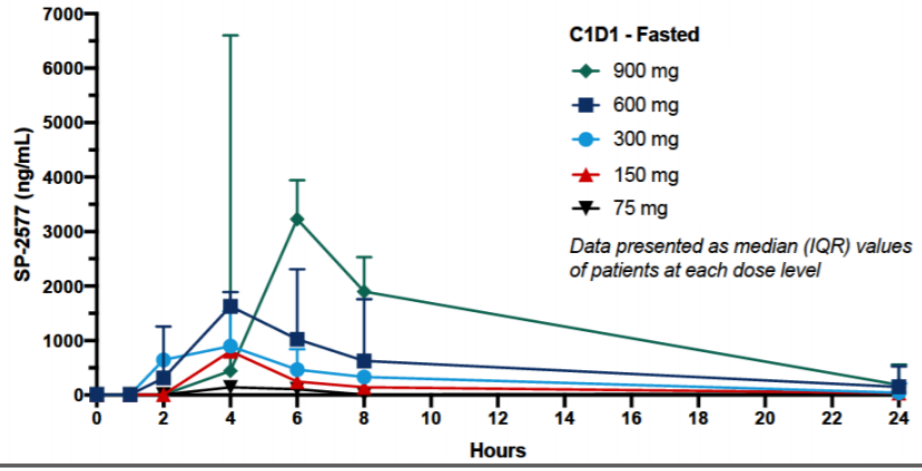
Early dose escalation results

Patients enrolled[1]: 21 patients

- No treatment related deaths or study discontinuations due to treatment-related adverse events
- Dose-limiting toxicities have not prevented dose escalation

Pharmacokinetics:

- At dose levels 900 mg BID and above cohorts achieving drug levels of preclinical efficacious concentrations
- 5-8 hour half-life supports BID dosing



[1] As of May 1, 2020

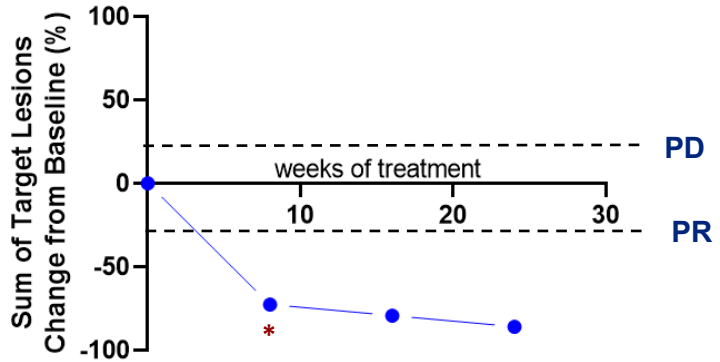
Preliminary drug activity in target lesions of refractory Ewing's patient

- Feb 2016: 30 year-old male diagnosed and treated with standard VDC/IE chemotherapy
- July 2017: Presented with bone lesion and treated with standard I/T chemotherapy
- Feb 2019: External beam radiation treatment
- Sep 2019: Enrolled in SP-2577 study at 600 mg BID dose cohort.

Prospectively defined target lesions decreased 86% in size after 6 months of treatment

- Partial Response (PR) of target lesions
- At cycle 2 non-target lesions increased resulting in overall assessment of Progressive Disease (PD) per RECIST 1.1.
- Patient continued treatment for additional 4 cycles (total of 6 cycles) due to response in target lesions and clinical benefit as determined by Investigator.

Decrease in Target lesions size



* PD in non-target lesions at 8 weeks, patient continued therapy

MARKET EXPANSION

Seclidemstat in Advanced Solid Tumors

Select Tumor Mutations

Immunotherapy

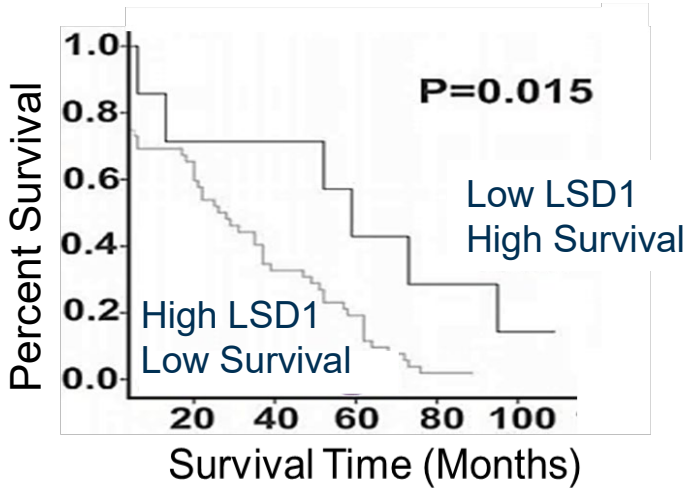
LSD1 Overexpression Increases With Disease Progression And Correlates With Poor Patient Prognosis – Seclidemstat Reduces LSD1 Activity

Increased LSD1 expression correlates with solid tumor progression

- High LSD1 expression in ~30% of primary prostate tumors, but >90% of advanced castration resistant prostate cancer[1]
- LSD1 expression associated with shorter survival in Triple Negative Breast cancer

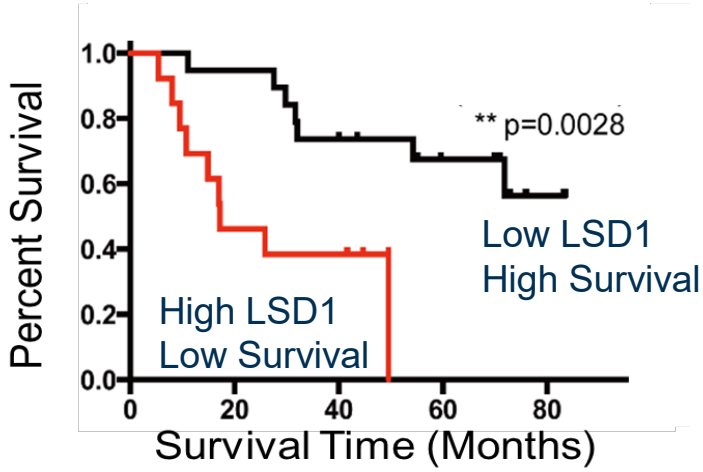
[1] Sehrawat, A. et. al., 2018

Castration Resistant Prostate Cancer



Kashyap, V., et al. (2013).

Triple Negative Breast Cancer (TNBC)

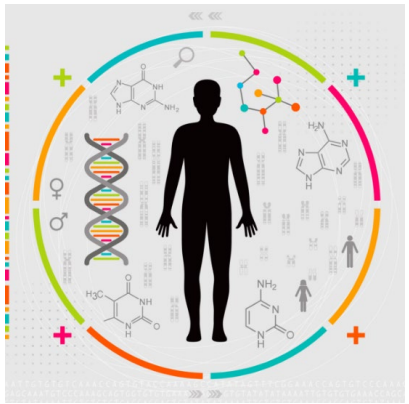


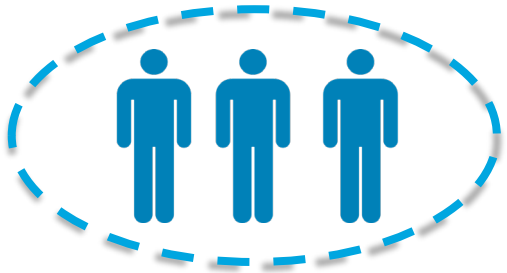
Nagasawa, S. et al (2015)

Ongoing Phase 1 Advanced Solid Tumor Study sites: Honor Health, Phoenix AZ and Sarcoma Oncology Center, Santa Monica CA

Increasing Probability Of Success Via Identification Of Known Sensitizing Mutations

Genetic screens (e.g., Foundation Medicine) can help identify patients with an increased chance of response to seclidemstat





Potential enrollment to target patients with an increased chance of response to seclidemstat

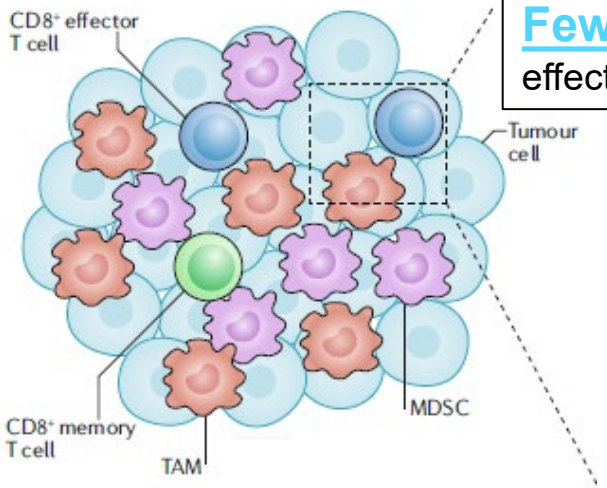
Represents patient with potential sensitizing mutations identified by Salarius

LSD1 Inhibition Turns Cold Tumors Hot And Increases Efficacy Of Checkpoint Inhibitors

Sensitizing cancers resistant to checkpoint inhibitors (CPI) increases patients available for treatment

- ~$15B CPI market[1] with ~70% patients[2] resistant to CI treatment (cold tumors)
- LSD1 inhibition turns cold tumors hot by increasing CD8+ effector T cells within the tumor
- Expands CPI market into patients currently resistant to CPI treatment

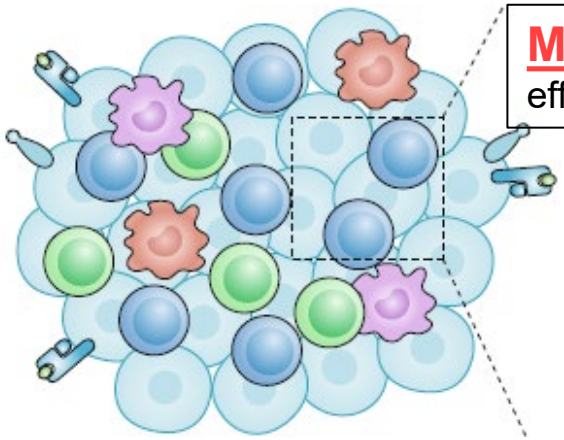
Cold tumor



Minimal or no response to checkpoint inhibition

LSD1 inhibition

Hot tumor



Increased response to checkpoint inhibition

1. GlobalData 2. Seliger, B. *Front in Immun* (2019)

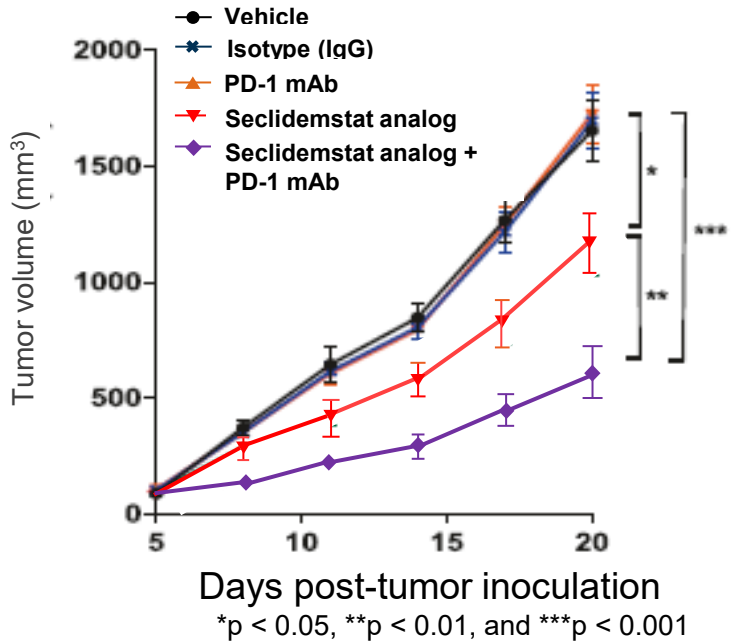
LSD1 Inhibition Sensitizes Triple Negative Breast Cancer to Checkpoint Blockade *in vivo*

Oncogene

Inhibition of histone lysine-specific demethylase 1 elicits breast tumor immunity and enhances antitumor efficacy of immune checkpoint blockade

- **LSD1 inhibition** (Seclidemstat analog) drives increased immune cell infiltration, and sensitizes resistant tumors to checkpoint inhibition
- "Cold" tumors turn "Hot" and then respond to checkpoint inhibition
- **Increased response by ~65%**

Syngeneic Breast Tumor Model (EMT-6)



*p < 0.05, **p < 0.01, and ***p < 0.001

Qin, Ye, et al. *Oncogene* (2018).

Combination of Possibilities Presents Significant Market Opportunity for Seclidemstat

SPEED TO MARKET

Ewing Sarcoma
~500 patients diagnosed/year

Potential for accelerated approval, priority review

$80M-$150M

Possible Pediatric Priority Review Voucher (est.)

$200M+

Global Sales per year (est)[1]

EXPANDING INTO **LARGER MARKETS**

ADVANCED SOLID TUMORS

Ongoing work to identify *SELECT TUMOR MUTATIONS*
that may increase patient response to LSD1 inhibition (e.g. SWI/SNF)

Market Potential in Solid Tumors [2,3,4,5,6]

$1B+

About 25% of solid tumors (e.g., breast, ovarian, prostate, lung) may have mutations that sensitize to seclidemstat[6]

POTENTIAL TO ENTER INTO **IMMUNOTHERAPY and HEMATOLOGIC CANCERS**

Sensitizing resistant cancers to checkpoint Inhibitors

$1B+ Market Potential[7]

Hematologic cancers with clinical evidence for LSD1i

$1B+ Market Potential[8]

Citations in Appendix A

Salarius Investment Opportunity: Clinical Stage Biotech With Several Value-driving Inflection Points Occurring In 2020/2021

- ☑ Lead compound is in the growing epigenetic therapy space
  - Attractive price for investors interested in this growing therapeutic area
- ☑ Extensive non-dilutive funding coupled with low quarterly burn rate
  - Up to $18.7M[1] from CPRIT
  - Financial support from NPCF
- ☑ Recipient of FDA designations that facilitates rapid product development
  - Orphan Drug Designation
  - Rare Pediatric Disease Designation
  - Fast Track Designation

Salarius is positioned for a newsworthy 2020 and 2021:

- ☐ Two ongoing clinical trials are expected to readout safety, pharmacokinetic, and early efficacy data. Potential to initiate additional trials.

[1] As of June 30, 2020, the Company had received $9.6M from CPRIT and there is up to $9.1M available subject to certain requirements and spending restrictions.

Salarius PHARMACEUTICALS

Thank you!

Appendix A: Additional Sources

- Combination of Possibilities Presents Significant Market Opportunity for Seclidemstat

[1] Represents longer term vision and does not represent estimate of future performance, financial or otherwise. There is no assurance that we will achieve our longer term vision.

[2] Cancer of the Ovary – Cancer Stat Facts, The National Cancer Institute: Surveillance, Epidemiology and End Results Program https://seer.cancer.gov/statfacts/html/ovary.html.

[3] GlobalData: Prostate Cancer: Global Drug Forecast and Market Analysis to 2028

[4] GlobalData and Epidemiology Market Size Database, TNBC

[5] GlobalData: Opportunity Analyzer: Ovarian Cancer - Opportunity Analysis and Forecast to 2025

[6] Morel, D., et al. Ann of Oncology 2017

[7] https://www.forbes.com/sites/greatspeculations/2019/03/12/how-much-can-mercks-share-price-grow-if-keytruda-gets-10-share-of-oncology-drug-market/#77edba677e18

[8] Hematological Malignancies. Apr 2020. Brand Essence Market Research.

Appendix B: US Intellectual Property Portfolio

- Composition of matter: #8,987,335
- Composition of matter: #9,266,838
- Methods of Use: #9,642,857
- Methods of Use: #9,555,024