Salarius PHARMACEUTICALS

Company Overview

1Q 2021

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

Salarius's mission is to develop treatments for patients who need them most

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 and Ewing-related 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

- Original $18.7M[1] award from Cancer Prevention Research Institute of Texas (CPRIT) with $4.8M remaining
- Financial support from the National Pediatric Cancer Foundation

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

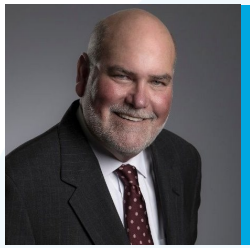
[1] As of January 13, 2021, the Company had received $11.3M from CPRIT and there is up to $4.8M available subject to certain requirements and spending restrictions.

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

Rebecca Griffith-Eskew
VP Clinical Operations
Boehringer Ingelheim · WORLDWIDE CLINICAL TRIALS

Daniela Y. Santiesteban, PhD
Director
Corporate Development
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, Orphan Status Designation, and Fast Track Designation	2017-2019
✓ Phase 1 Ewing data (pediatric subcommittee Oncologic Drug Advisory Committee)	1H 2020
✓ CPRIT Distribution	2H 2020
✓ Additional Phase 1 Ewing data - RP2D Established *(Press release 02/17/21)*	1Q2021
✓ Initiate Ewing sarcoma and Ewing-related sarcoma expansion *(Press release 02/24/21)*	1Q 2021
Initiate potential immunotherapy combo trial	1H2021
Initiate potential hematologic trial	1H2021
Phase 1 Ewing early safety and efficacy data readouts	1H 2021
Phase 1 AST early safety and efficacy data readouts	1H 2021
Potential early readouts from the Ewing and Ewing-related sarcoma Expansion Phase	2H 2021
Full data readouts from completed Ewing and Ewing-related sarcoma Expansion Phase	2022
Early readouts from immunotherapy combo and hematologic trials	2022

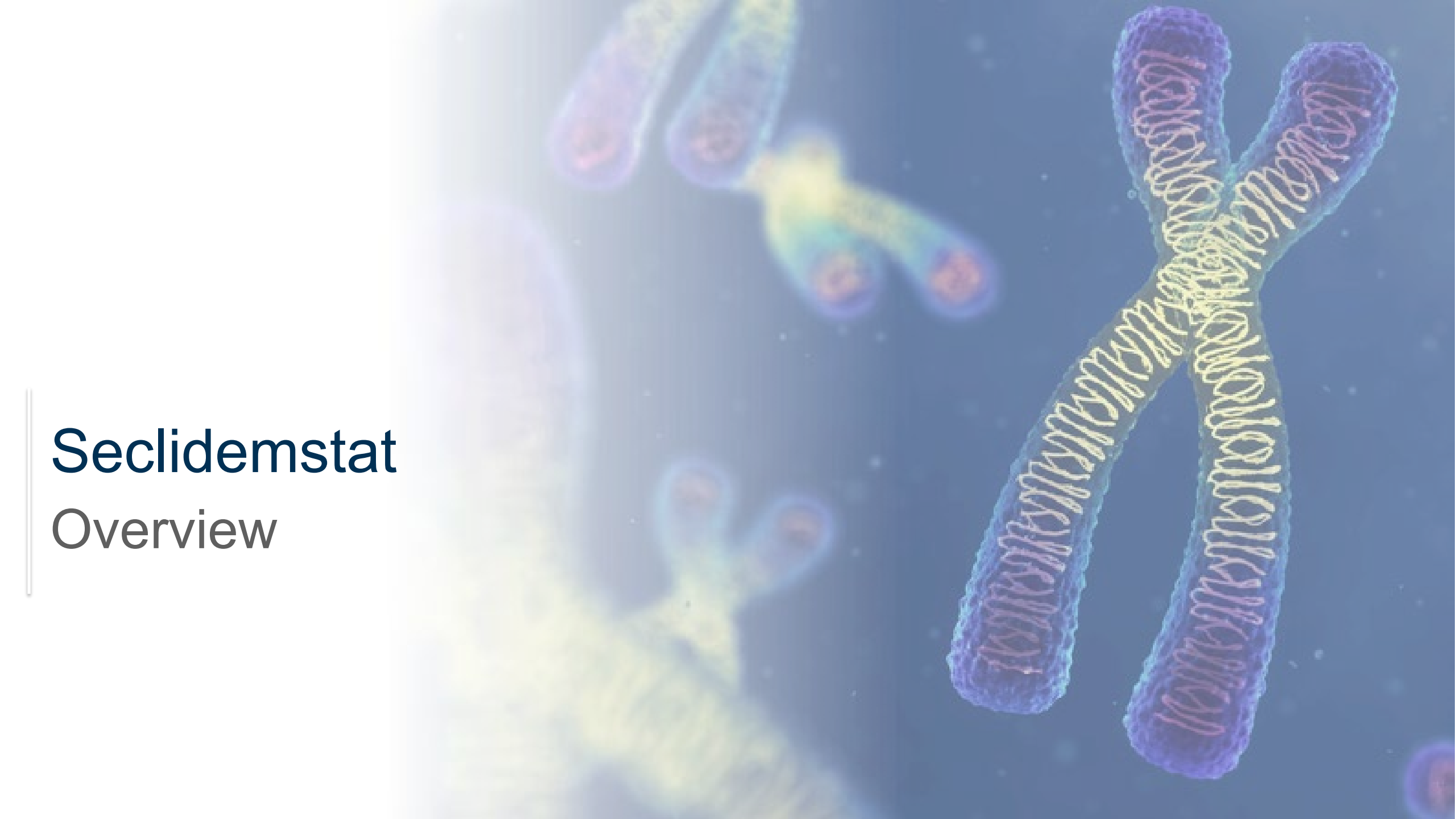
Development Pipeline

	Indication	Preclinical	Phase 1	Phase 2[1]	Status
Seclidemstat	Ewing and Ewing-related Sarcomas	**Dose Expansion at RP2D**			• Phase 1/Phase 2 enrolling up to 80 patients • Recommended Phase 2 Dose (PR2D) established
	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

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

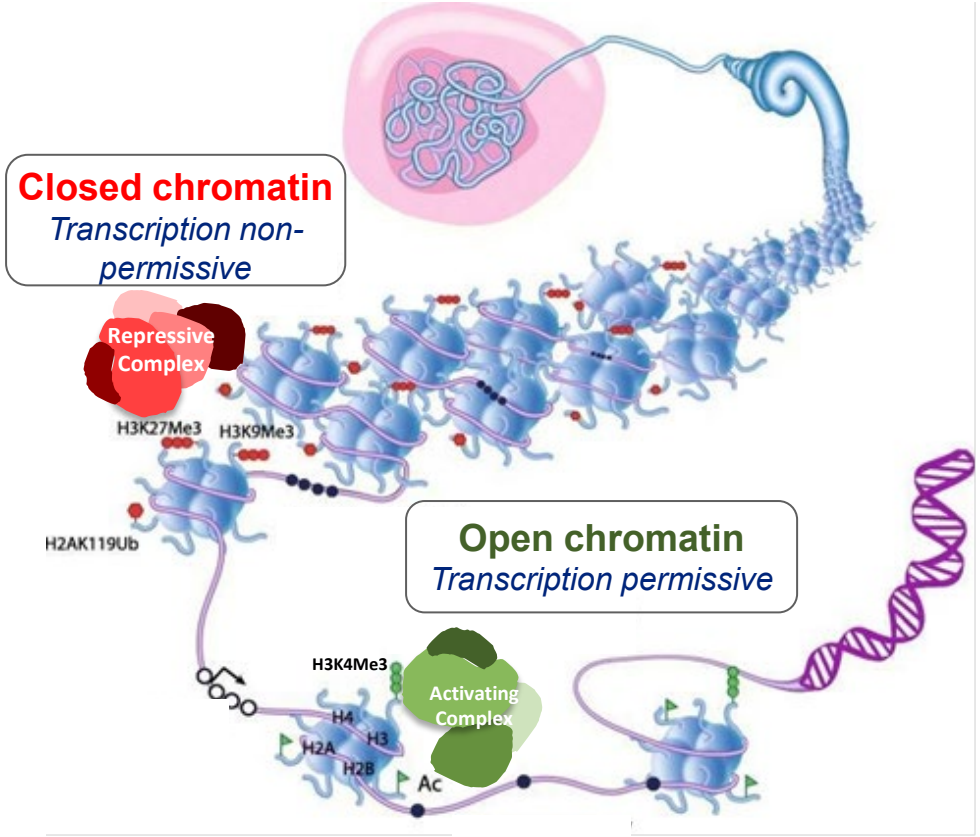
Seclidemstat

Overview



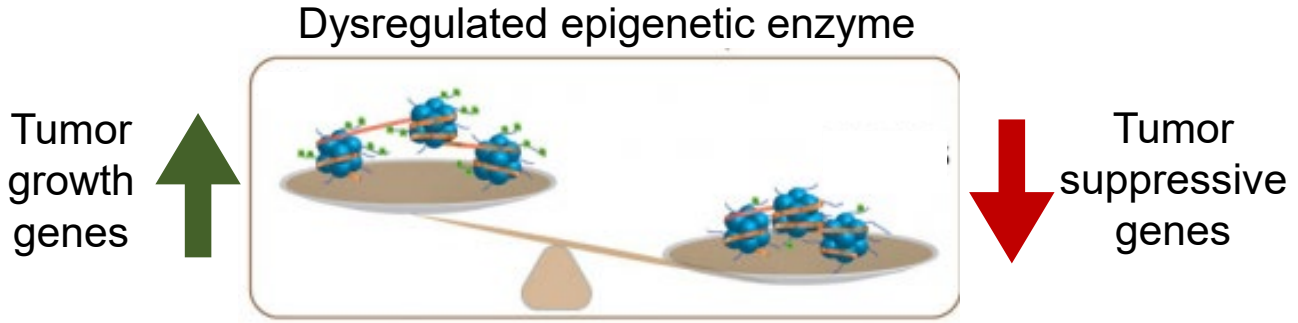
Epigenetic enzymes are attractive targets for cancer therapy

Epigenetic modifying enzymes affect gene expression by manipulating the chromatin structure

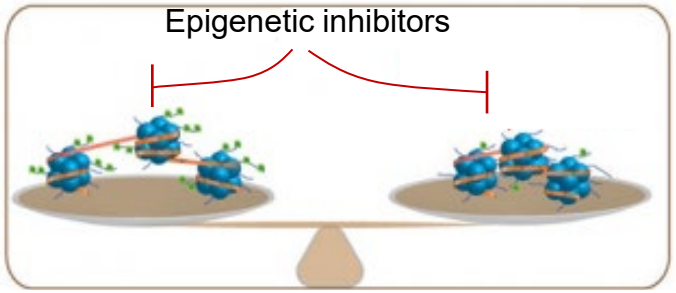


Adapted from Holliday, H. Breast Cancer Research *2018*

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 Space Is Gaining Momentum And Epigenetic Focused Biotechs Are Increasing In Valuation

Epigenetic Space

Epizyme™
(NASDAQ: EPZM)

EZH2 inhibitor (tazemetostat)
Approved in epithelioid sarcoma – monotherapy
Approved for R/R follicular lymphoma – monotherapy
Market Cap: ~$1.1B[1]

Constellation PHARMACEUTICALS
(NASDAQ: CNST)

BET inhibitor (CPI-0610)
Positive Phase 2 data in combination with existing standard of care in myelofibrosis
LSD1 (CPI-482) program recently announced
Market Cap: ~$1.7B[1]

LSD1 Inhibitor Space

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Reversible LSD1 inhibitor
- Single agent has shown preliminary (dose escalation) antitumor activity
- No significant hematologic toxicity to date

Celgene
Bristol-Myers Squibb

Reversible LSD1 inhibitor
- Single agent shows anti-tumor activity
- Initiating trial in combination with checkpoint inhibitors

ORYZON

Irreversible LSD1 inhibitor
- Shown success in AML in combo with 5-aza
- Hematological toxicity can be a limitation

IMAGO

Irreversible LSD1 inhibitor
- Showing success in myeloproliferative diseases
- Raised $80M Series C

1. Feb 18, 2021

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**

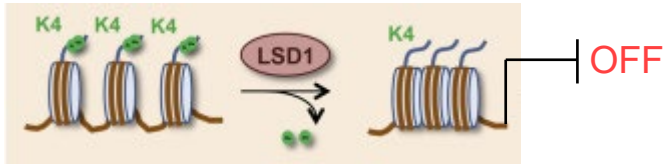
- Reverses incorrect gene expression, killing or preventing the growth of cancer cells
- Inhibits both the enzymatic and scaffolding activity

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

More Comprehensive Inhibition of LSD1 Positively Impacts Therapeutic Activity

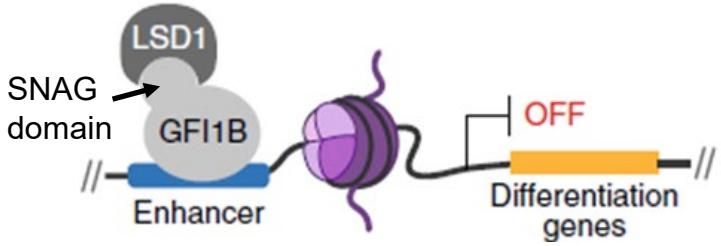
Degree of LSD1 inhibition

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

SPEED TO MARKET

Seclidemstat in Ewing Sarcoma and Ewing-related Sarcomas

Ewing Sarcoma - Unmet Need Represents a Meaningful Product Opportunity

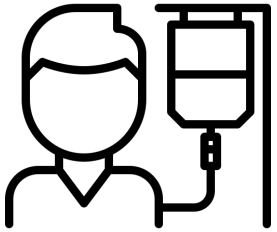
Diagnosis

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

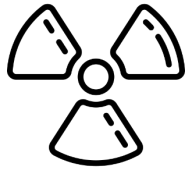
- 75% localized[1]
- 25% with metastasis[1]

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.

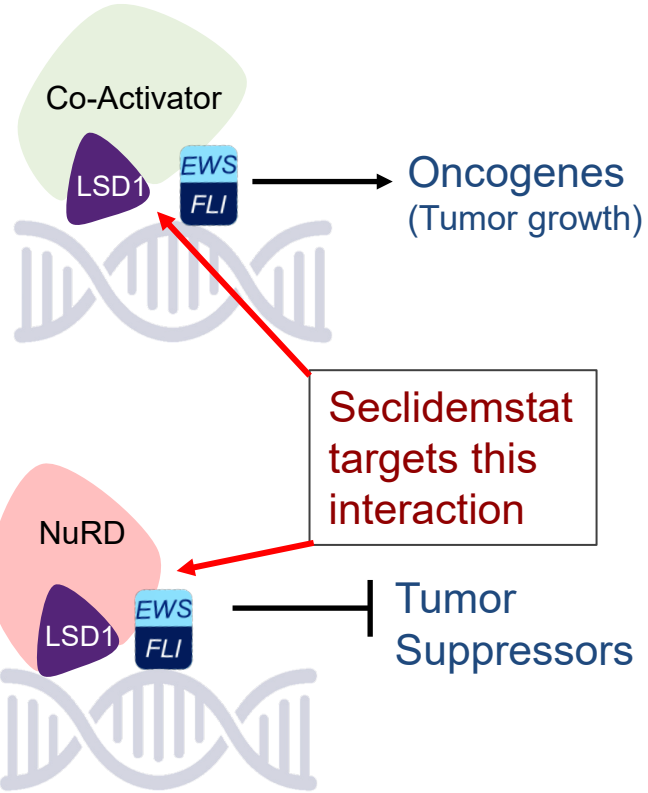
[1] Pishas, K. et al. (2016)

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

Targeting The Root Cause Of Ewing Sarcoma Via LSD1 Inhibition

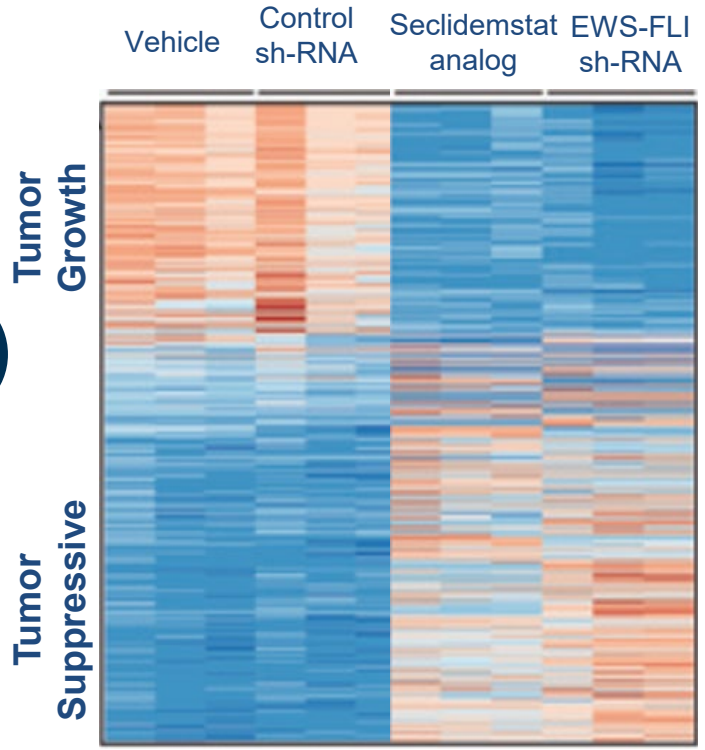
Ewing sarcoma is driven by an easily diagnosed chromosomal translocation, i.e., EWS-FLI

Incorrect transcription factor leads to gene dysregulation



Seclidemstat corrects gene expression

Ewing's cells (A673)



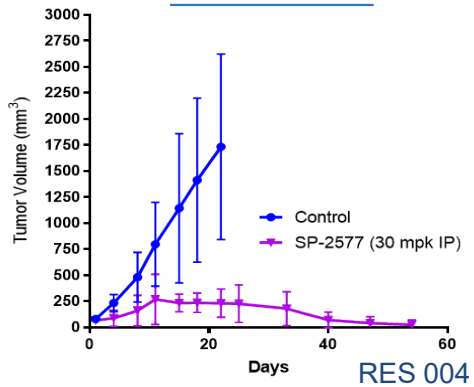
Red = turned ON

Blue = turned OFF

Genes correctly turned on/off

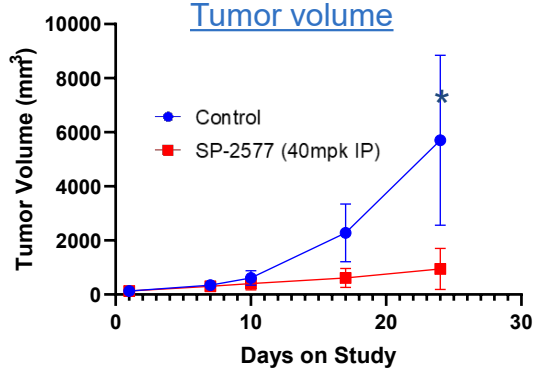
Potent anti-tumor activity in SKNMC (Ewing sarcoma cells) *in vivo* studies

Tumor volume



RES 004 Salarius

Tumor volume



*p<0.0003

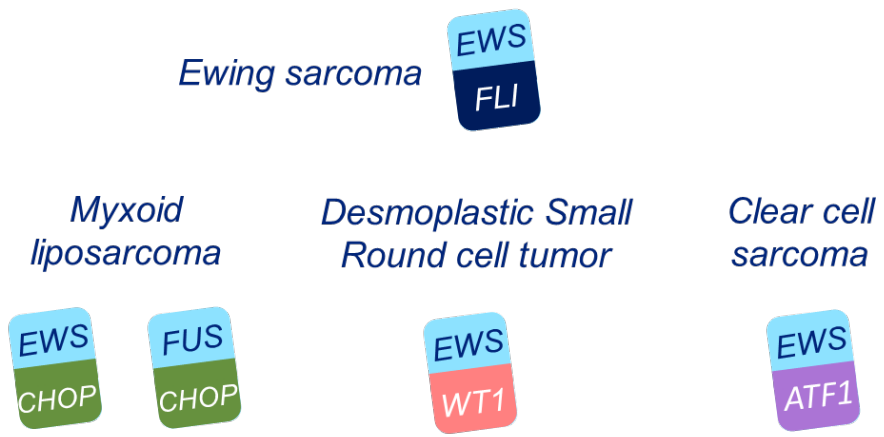
RES 006 Salarius

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

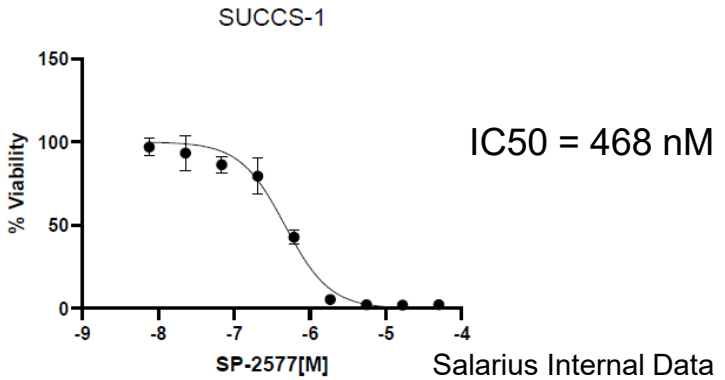
Seclidemstat's mechanism of action results in anti-proliferative activity in Ewing-related (FET-translocated) sarcomas

- Salarius's ongoing Ewing sarcoma trial amended to include Ewing-related sarcomas at the RP2D supported by preclinical and clinical data
  - Clinical data: FET-sarcoma patients[1] treated at doses below the RP2D have a median time to progression above a commonly used benchmark for assessing single agent activity in soft tissue sarcomas

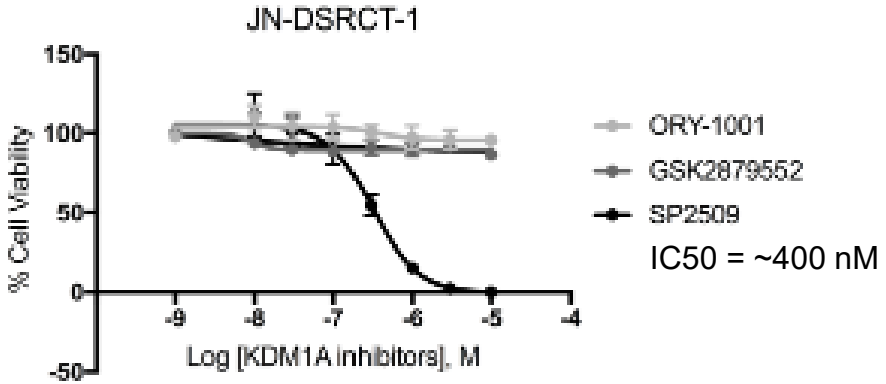
Ewing-related sarcomas :



Clear cell sarcoma



Desmoplastic Small Round Cell Tumor



Romo-Morales A et al. *Pediatr Blood Cancer*. 2019.

1. As of December 30, 2020 a small subset of FET-rearranged sarcomas have enrolled in Salarius's AST Trial

Ewing Sarcoma and Ewing-Related Sarcomas Phase 1/2 Trial

Open-label dose escalation / dose expansion trial design

Dose escalation (completed 1Q2021)

- Seclidemstat has a manageable safety profile
- RP2D established

Dose expansion amended to reach more sarcoma patients (initiating 1Q2021)

- **Arm 1**: Up to 30 Ewing sarcoma patients treated in combination with Topotecan/Cyclophosphamide
- **Arm 2**: Up to 30 Ewing-related sarcoma patients treated with single agent seclidemstat

Primary objective: Safety, Tolerability

Secondary objectives: Anti-tumor assessment

Exploratory: Hemoglobin F, cfDNA, CTCs

CURRENTLY ENROLLING AT

8 CLINICAL SITES

- Drug exposure at RP2D is above concentration that showed activity in preclinical models
- Signs of anti-tumor activity in patients at or below the RP2D

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

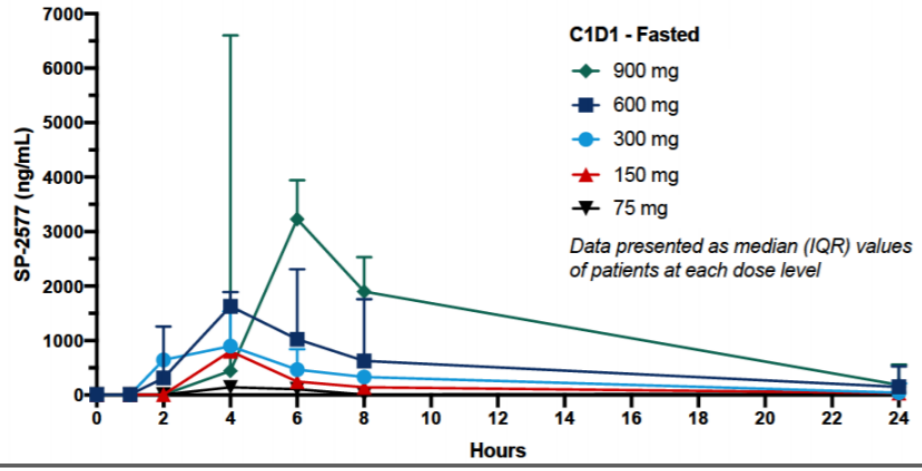
Early dose escalation results

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

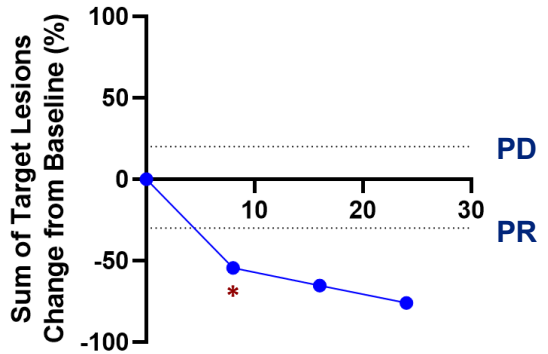
Preliminary drug activity in target lesions of refractory Ewing's patient

- 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 76% 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 Lesion Size



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

MARKET EXPANSION

Seclidemstat in Advanced Solid Tumors

Select Tumor Mutations

Immunotherapy

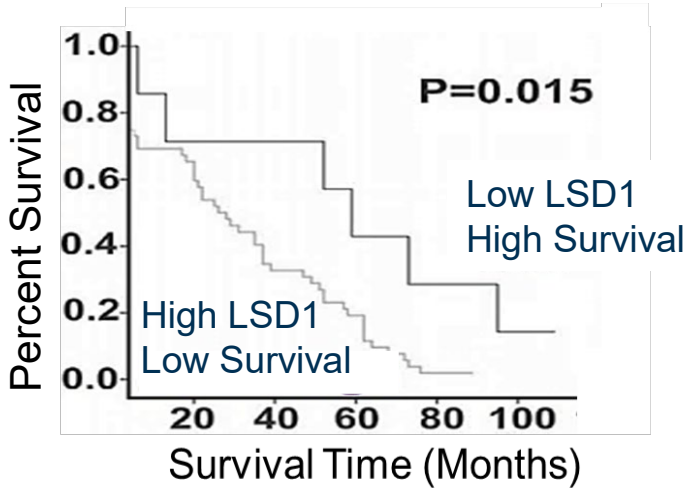
LSD1 Overexpression Increases With Disease Progression And Correlates With Poor Patient Prognosis – Seclidemstat Reduces LSD1 Activity

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

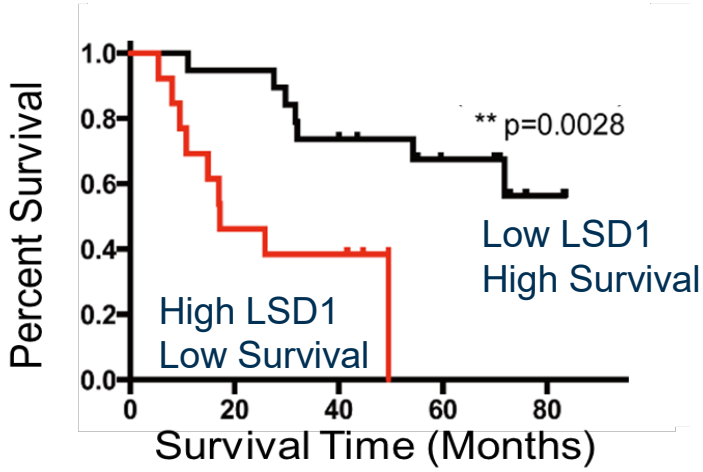
[1] Sehrawat, A. et. al., 2018

Castration Resistant Prostate Cancer



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

Triple Negative Breast Cancer (TNBC)

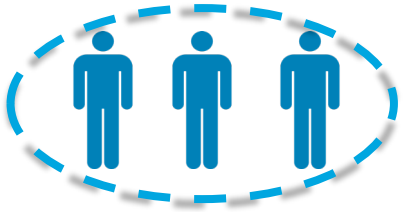


Nagasawa, S. et al (2015)

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

Seclidemstat Expansion Strategy Built Upon Patient Targeting, Increasing Immuno-oncology Response & Hematological Cancers

Patient Targeting

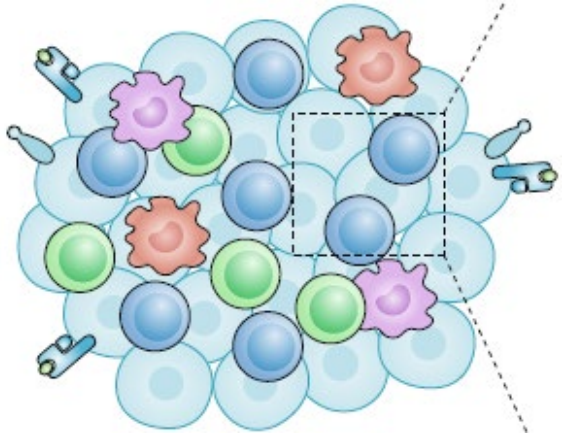


Potential enrollment to target patients with an increased chance of response to seclidemstat

Represents patient with potential sensitizing mutations identified by Salarius

Increase Response to Checkpoint Inhibitors

LSD1 inhibition can turn **cold** tumors to **hot** tumors

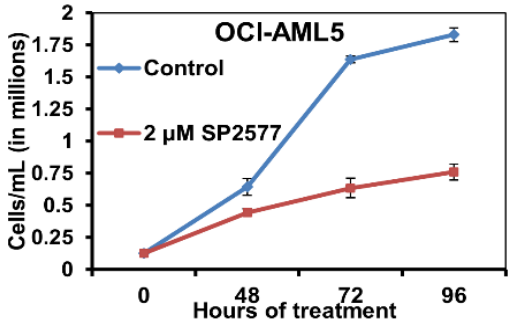


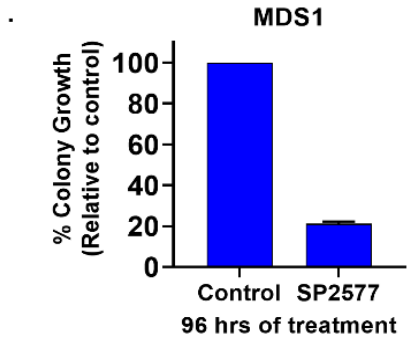
May help increase patient response to IO therapies

Topper, M.J., et al. *Nature Reviews* (2019)

Hematologic Cancers

Seclidemstat (SP-2577) inhibits Acute Myeloid Leukemia (AML) and Myelodysplastic Syndrome (MDS) cell growth





Combination of Possibilities Presents Significant Market Opportunity for Seclidemstat

SPEED TO MARKET

Ewing and Ewing related sarcomas
500 to 2000 patients diagnosed/year

Potential for accelerated approval, priority review

$80M-$150M
Possible Pediatric Priority Review Voucher (est.)

$400M+
Global Sales per year (est)[1]

EXPANDING INTO **LARGER MARKETS**

POTENTIAL TO IDENTIFY **SELECT PATIENT**

Ongoing work to identify genetic backgrounds that may increase patient response to LSD1 inhibition

Market Potential in Solid Tumors [2,3,4,5,6]
$1B+

POTENTIAL TO ENTER INTO **IMMUNOTHERAPY**

Sensitizing resistant cancers to checkpoint Inhibitors

$1B+ Market Potential[7]

POTENTIAL TO ENTER INTO **HEMATOLOGIC CANCERS**

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 2021

- ☑ Lead compound, seclidemstat, is in the growing epigenetic therapy space
  - Clinical data suggests seclidemstat has a manageable safety profile and has demonstrated anti-tumor activity in patients with advanced disease
- ☑ Extensive non-dilutive funding coupled with low quarterly burn rate
  - Original $18.7M[1] Award from CPRIT
  - Received financial support from NPCF
- ☑ Recipient of FDA designations that facilitates rapid product development
  - Orphan Drug Designation
  - Rare Pediatric Disease Designation
  - Fast Track Designation

Salarius anticipates several value-inflection announcements in the upcoming months:

- ☐ Safety, pharmacokinetic, and early efficacy data from our two ongoing clinical trials to be presented at an upcoming scientific conference
- ☐ Announcement of additional seclidemstat clinical trials in attractive indications

[1] As of January 13, 2021, the Company had received $11.3M from CPRIT and there is up to $4.8M available subject to certain requirements and spending restrictions.

Salarius PHARMACEUTICALS

Thank you!

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 (BMS)	CC-90011	**Reversible**	Non-Hodgkin's lymphoma and AST (Ph1), SCLC combo (Ph1b), IO combo (Ph 2), Prostate (Ph1), AML (Ph1/2)
	Imago	IMG-7289	Irreversible	Myelofibrosis (Ph2b), essential thrombocythemia (Ph2a), Polycythemia vera (Phase 2a)
Preclinic[2]	Beactica	BEA-17	**Reversible**	Glioblastoma, IO
	Rasna Therapeutics	RASP-201	**Reversible**	AML
	Hanmi	HM9XXX series	**Reversible**	AML and SCLC
	Constellation Pharmaceuticals	CPI-482	Irreversible	Myeloproliferative neoplasms

[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

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