



Using protein inhibition and protein degradation to develop cancer therapies for patients in need of new treatment options

NasdaqCM:SLRX

July 2023

Safe Harbor Statement

This presentation contains "forward-looking statements" within the meaning of the Private Securities Litigation Reform Act of 1995. All statements, other than statements of historical facts, included in this presentation are forward-looking statements. These forward-looking statements may be identified by terms such as "will," "future," "believe," "developing," "expect," "may," "progress," "potential," "could," "look forward," "might," "should," and similar terms or expressions or the negative thereof. Examples of such statements include, but are not limited to, statements relating to the following: the advantages of seclidemstat (SP-2577) as a treatment for Ewing sarcoma, Ewing-related sarcomas, and other cancers and its ability to improve the life of patients; expected cohort readouts from the Company's clinical trials and expected therapeutic options for SP-2577 and related effects and projected efficacy, including SP-2577's ability to inhibit LSD1; the future of the company's Phase 1/2 trial of seclidemstat as a treatment for Ewing sarcoma and FET-rearranged sarcomas following the October 2022 suspected unexpected severe adverse reaction (SUSAR) event and resulting partial clinical hold by the U.S. Food and Drug Administration (FDA); the advantages of protein degraders including the value of SP-3164 as a cancer treatment; the timing of clinical trials for SP-3164 and expected therapeutic options for SP-3164 and related effects and projected efficacy; impact that the addition of new clinical sites will have on the development of our product candidates; the timing of our IND submissions to the U.S. Food and Drug Administration (FDA) and subsequent timing for initiating clinical trials; interim data related to our clinical trials, including the timing of when such data is available and made public; our growth strategy; whether the company will develop additional undisclosed cancer-fighting assets in the targeted protein degradation space; expanding the scope of our research and focus to high unmet need patient populations; and 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. We may not actually achieve the plans, carry out the intentions or meet the expectations or objectives disclosed in the forward-looking statements. You should not place undue reliance on these forward-looking statements. These statements are subject to risks and uncertainties which could cause actual results and performance to differ materially from those discussed in the forward-looking statements. These risks and uncertainties include, but are not limited to, the following: Seclidemstat's impact in Ewing sarcoma and as a potential new and less toxic treatment; expected dose escalation and dose expansion; resolution of the FDA's partial clinical hold on the company's Phase 1/2 trial of seclidemstat as a treatment for Ewing sarcoma and FET-rearranged sarcomas following the SUSAR; our ability to resume enrollment in the clinical trial following its review of the available data surrounding the SUSAR; the adequacy of our capital to support our future operations and our ability to successfully initiate and complete clinical trials and regulatory submissions; the ability of, and need for, us to raise additional capital to meet our business operational needs and to achieve its business objectives and strategy; future clinical trial results and the impact of such results on us; that the results of studies and clinical trials may not be predictive of future clinical trial results; risks related to the drug development and the regulatory approval process; the competitive landscape and other industry-related risks; and other risks described in our filings with the Securities and Exchange Commission, including its Annual Report on Form 10-K for the fiscal year ended December 31, 2022, as revised or supplemented by its Quarterly Reports on Form 10-Q and other documents filed with the SEC. The forward-looking statements contained in this presentation speak only as of the date of this presentation and are based on management's assumptions and estimates as of such date. 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.

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Investment Highlights

SP-3164 is a next-generation cereblon-binding targeted protein degrader that is the preferred enantiomer of the drug CC-122 that has already been studied in over 400 patients across 10 clinical trials

SP-3164 is shown to be preclinically superior to lenalidomide and pomalidomide in Multiple Myeloma, superior to lenalidomide in Diffuse Large B-Cell Lymphoma & highly effective in Follicular Lymphoma



SP-3164 IND activated in July 2023. A Phase 1/2 trial is planned to begin in the 2H 2023. Market opportunity for SP-3164 could exceed \$5 billion

SP-2577, seclidemstat, showed encouraging clinical activity in a Phase 1 hematologic cancers trial and Phase 1/2 Ewing's sarcoma trial. Plans to advance both clinical trials pending FDA discussions

As of March 31, 2023, cash of \$9.3M and no debt



	Discovery	IND- Enabling	Phase 1	Phase 2	Phase 3	Next Milestones
Hematologic cancers SP-3164; Ikaros/Aiolos molecular glue			IND active	ated July 7!		Initiate trial in 2H 2023
Undisclosed SP-3204; GSPT1 molecular glue						Nominate as clinical candidate
Undisclosed SP-XXXX; molecular glue						
Ewing sarcoma Seclidemstat + TC ¹						Re-start enrollment Q4 trial update
Hematologic cancers ² Seclidemstat + azacytidine						Re-start enrollment and data update Q4 2023
Select gynecologic cancers ³ Seclidemstat + pembrolizumab						Trial activation



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Overview

P-3164

mstat Fi

Financials and Team

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Targeted Protein Degradation Space Has Witnessed Tremendous Growth

Cumulative Capital Invested in Development of Targeted Protein Degrader Therapies^{1,2}

(কুচ)
Number of Investments



Large Biopharma Companies Have Moved Aggressively to Gain Exposure³

Selected targeted protein partnerships and strategic collaborations since 2015



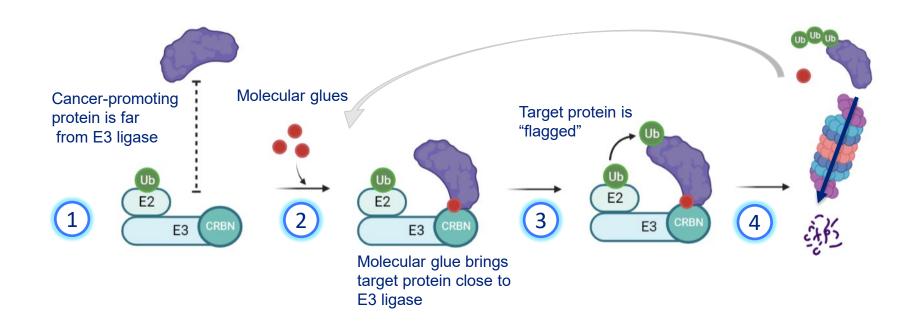
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¹ Roots Analysis, ² Nature.com, ³ Cortellis.

© 2023 Salarius Pharmaceuticals, Inc. Overview SP-3164 Seclidemstat Financials and Team

CRBN-Binding Molecular Glues Induce Proteasomal Degradation

Targeted Protein Degradation (TPD) utilizes the body's own degradation system to selectively eliminate cancer-promoting proteins AND provide the ability to pursue historically undruggable cancer-promoting targets



<u>Advantages</u>

- Low doses
- Undruggable targets
- Enzymatic/scaffolding inactivation

First-Generation Protein Degraders

IMiDs® (Immunomodulatory Drugs) – Approved for hematological malignancies

- \$16B in sales in 2021
- All exist as racemic mixtures

Thalidomide

Lenalidomide

Pomalidomide

First-generation degraders validated the concept, but there is room for improvement

Avadomide, a 2nd Generation Extensively Studied Degrader Exists as a Mixture of 2 Species

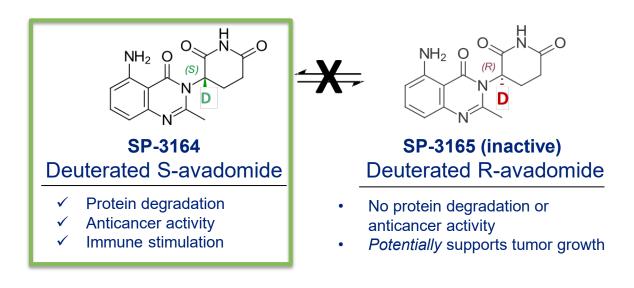


CELMoD – Cereblon E3 Ligase Modulation Drugs, a registered trademark of Celgene / BMS

SP-3164 is New Chemical Entity that Shows Potential to Improve Upon Avadomide's Efficacy and Safety

Development of SP-3164:

SP-3164 utilizes our deuteriumenabled chiral switching (**DECS**) platform to lock the enantiomer in place and therefore exists as only the active, S-enantiomer with minimal interconversion



Given avadomide's compelling clinical data, Salarius developed SP-3164, which is the stabilized, active enantiomer of avadomide, with potential for improved therapeutic properties

- SP-3164 is a new chemical entity with its own composition of matter patent (expires in 2039¹)
 - Developed independently of Celgene/Bristol Myers Squibb (no relationship with Salarius)
- SP-3164 can build off of avadomide's validated clinical development plan with improved efficacy, as supported by preclinical data, and potentially improved safety



SP-3164 Addresses a High Unmet Need in DLBCL and Has a Clear Development Path To A Launch Indication

The Problem

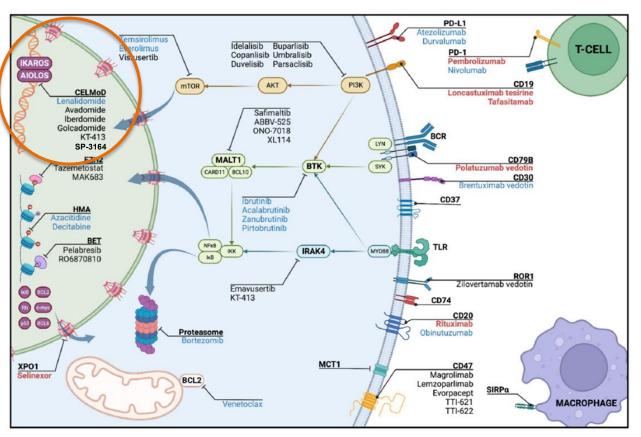
About 3,200 R/R DLBCL patients are ineligible for intensive treatments and face survival outcomes as low as six months

- Elderly patients may not tolerate SOC treatments
- Not all patients are eligible for curative treatments, e.g. CAR T
- ➤ Bispecifics have shown durable CRs, but >50% progress quickly or do not respond

Salarius's Solution

Salarius has developed **SP-3164**, a targeted Ikaros/Aiolos protein degrader (molecular glue) that shows compelling data in NHLs and **complete** regressions in DLBCL animal models¹

SP-3164

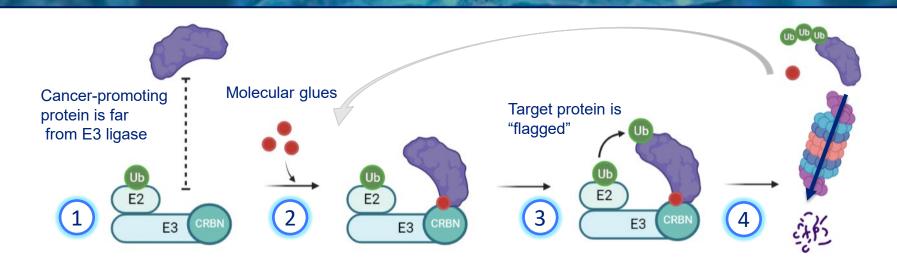


Adapted from Varma, G. et al. Heme Onc. 2023

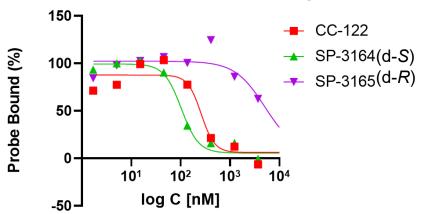
Abbreviations: R/R - relapsed/refractory, DLBCL - Diffuse Large B-cell Lymphoma, SOC - Standard of Care



SP-3164 Demonstrates Improved Protein Degradation Characteristics Compared to Avadomide (CC-122)



Cereblon Binding



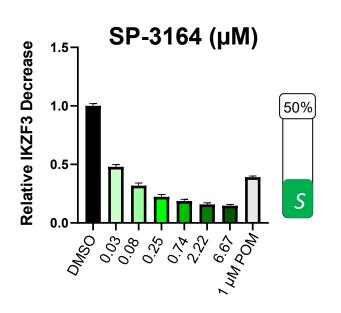
Compound	Kd (nM)		
CC-122	330		
SP-3164 (d-S)	110		
SP-3165 (d-R)	14000		

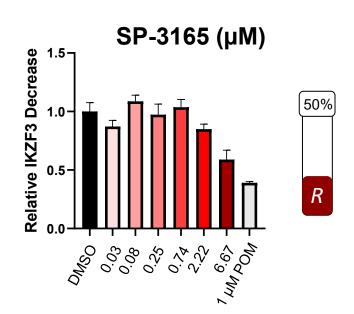
SP-3164 binds more potently to cereblon than the racemate (avadomide, CC-122) while SP-3165 (d-R-enantiomer) does not bind at meaningful concentrations.

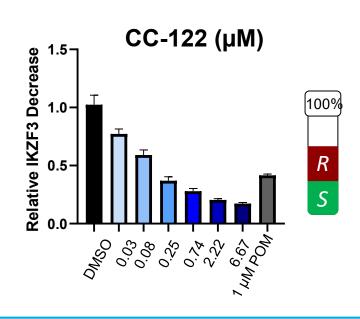


SP-3164 Rapidly Degrades IKZF3 (Aiolos) at Low Concentrations

HiBiT-IKZF3 MM.1S Degradation (2 hours)





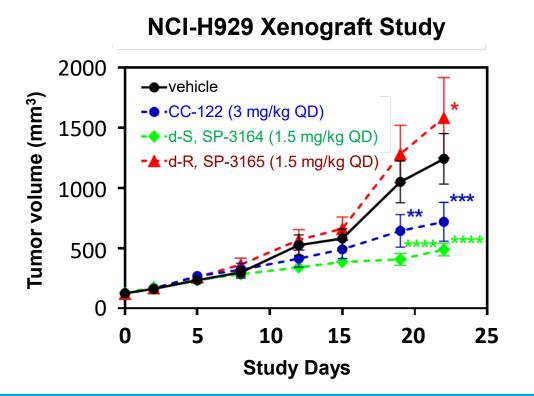


- Treatment with SP-3164 for 2 hrs results in deep and rapid degradation of the target protein, IKZF3.
- SP-3165 does not result in protein degradation except for at high concentrations.
- At comparable concentrations, SP-3164 induced more degradation of IKZF3 compared to CC-122

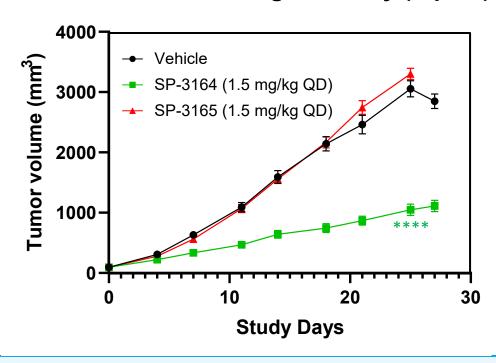




SP-3164 Shows Significant Activity in MM H929 Xenograft Model R-Enantiomer (SP-3165) is Inactive



NCI-H929 Xenograft Study (repeat)

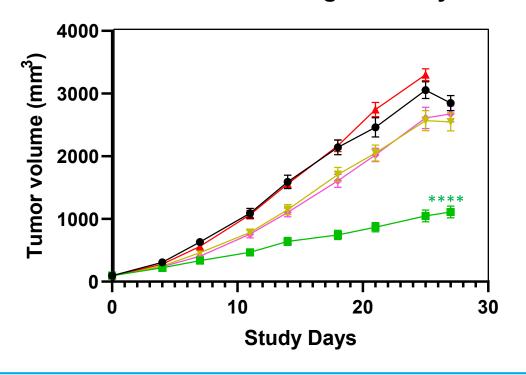


- SP-3164: Significant tumor growth inhibition (TGI) compared to vehicle
- SP-3164: Trended towards more TGI compared to CC-122
- SP-3165: No significant TGI, rather a trend towards supporting tumor growth



SP-3164 Shows Significant TGI Compared to Other IMiDs® In MM H929 Xenograft Model

NCI-H929 Xenograft Study



- Vehicle
- SP-3164 (1.5 mg/kg QD)
- SP-3165 (1.5 mg/kg QD)
- Lenalidomide (3 mg/kg QD)
- Pomalidomide (3 mg/kg QD)

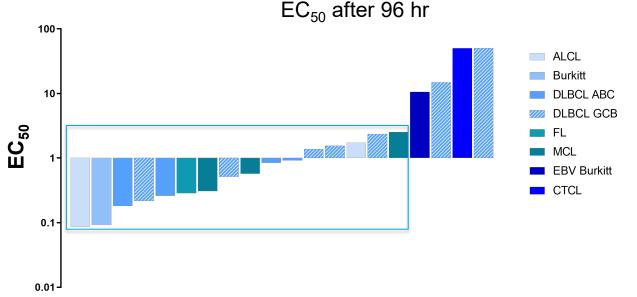
- SP-3164 exhibits significant TGI compared to approved IMiDs for MM¹
- Future studies will evaluate SP-3164 in IMiD-refractory MM cell lines





SP-3164 in vitro Activity in NHL Superior to Lenalidomide in Diffuse Large B Cell Lymphoma (DLBCL)

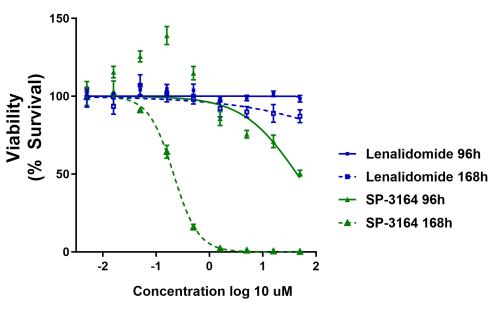
Antiproliferative Activity of SP-3164 in Lymphoma Cell Lines



In a panel of 20 lymphoma cancer cell lines representing various subtypes, SP-3164 demonstrated potent antiproliferative activity within 96 hrs of dosing in 16 cell lines (average EC $_{50}$ <1 μ M, range 0.092-2.523 μ M).

DLBCL (WSU-DLCL2) Cell Viability (IC₅₀)

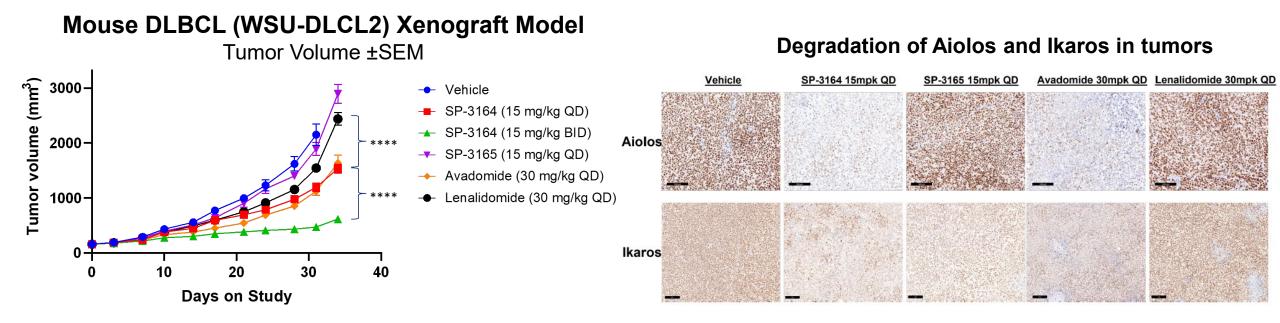
% Survival after 96 hr and 168 hrs



In WSU-DLCL2 cells, increased duration of treatment (168 hr vs 96 hr) revealed increased sensitivity to SP-3164 (IC $_{50}$ 0.217 μ M), but not lenalidomide.



SP-3164 Demonstrates Single-Agent Activity in DLBCL

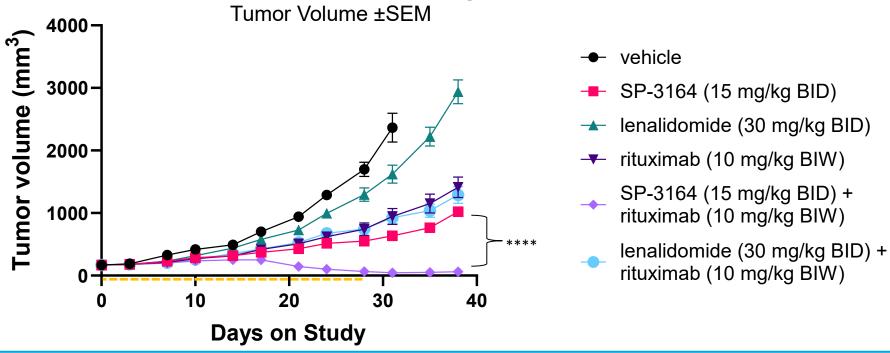


- SP-3164 demonstrated pronounced antitumor activity as single agent outperforming lenalidomide and comparable to avadomide while SP-3165 lacked significant antitumor activity (**** p≤ 0.0001).
- Due to SP-3164's shorter $t_{1/2}$ vs. avadomide, SP-3164 was studied BID resulting in the largest inhibitory effect.
- Treatment with SP-3164 caused degradation of Aiolos and Ikaros in tumors (representative IHC images at t=6hr).



SP-3164 Shows Synergistic Activity with Rituximab in DLBCL

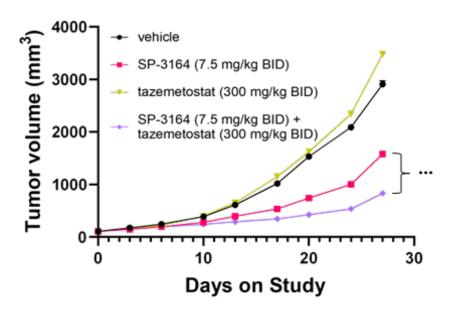




- SP-3164's activity in combination with rituximab was compared to lenalidomide and rituximab in the WSU-DLCL2 DLBCL model (GCB subtype).
- Mice were treated for 28 days, and tumor volume was measured twice weekly.
- The combination of SP-3164 and rituximab resulted in regressions in 50% of treated mice, significantly better than approved regimen of lenalidomide and rituximab for NHLs.

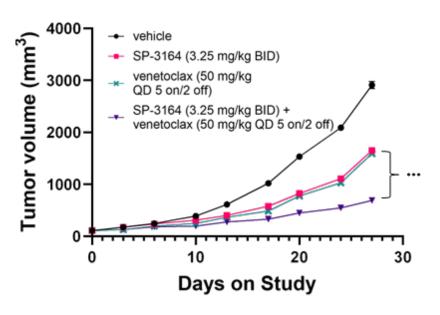
SP-3164 Shows Monotherapy and Combination Efficacy in FL Xenograft Model (DOHH-2)

FL Xenograft Model Combo with Tazemetostat Tumor Volume ±SEM



SP-3164 performed better than the approved agent, tazemetostat (TAZ), which had no effect in the EZH2 wild-type model. SP-3164 appeared to sensitize to TAZ (***p≤0.001).

FL Xenograft Model Combo with Venetoclax Tumor Volume ±SEM



In combination with venetoclax, SP-3164 showed improved tumor growth inhibition (TGI) compared to either agent alone. (***p≤0.001)



SP-3164 Current Status and Upcoming Milestones Rapidly advancing SP-3164 with upcoming IND submission

Completed SP-3164 Studies Establish Preclinical Efficacy and Safety

In vitro: Cereblon binding, in vitro immunomodulation on T cells, transcription factor proteomics, global proteomics, Western blots (I/A) in lymphoma cells, EC₅₀ in 93 cell lines MoA/ **Efficacy** In vivo: Monotherapy and combination efficacy studies in DLBCL (2 studies) and follicular lymphoma (FL) (2 studies), efficacy in multiple myeloma models (3 studies) Bioavailability (mouse and rat), single dose PK (mouse, rat, PK/TK primate), pharmacodynamic study in primates, Dose Range Finding (DRF) primate TK, 28-day rat and primate TK Bioavailability (mouse and rat), single dose PK (mouse, rat, primate), metabolism and met ID, CYP inhibition and **ADME** induction, Caco-2 permeability, plasma protein binding, red blood cell partitioning Safety/ Safety screen, Ames, hERG, Micronucleus test, DRF study (rate and primate), GLP 28-day studies (rat and primate) **Toxicology**

Completed and Upcoming Milestones





SP-3164 Addresses a High Unmet Need in DLBCL and Has a Clear Development Path To A Launch Indication

Rationale for SP-3164 Potential Success

- Improves upon successful 1st generation protein degraders LEN and POM
- SP-3164 shows superior preclinical activity to LEN and POM, successful drugs with:
 - Validated activity in hematological cancers
 - Combined 2021 global sales of \$16B

- Clear clinical development plan driven by insights from its predecessor compound, AVA
- SP-3164 is the preferred half of AVA, with improved potency and pharmacokinetic properties, preclinically. Shorter half-life may allow for dosing schedules that result in improved efficacy
- AVA clinical data supports label expansion into 1st line DLBCL and into other NHLs and MM
- Builds off AVA's Precision Medicine Approach²:
- Ability to select for high responders differentiates SP-3164 from other degraders used in DLBCL
- Potential to show superior ORR (44% in gene signature positive patients)³ → if SP-3164 replicates AVA data, SP-3164 could be the most active monotherapy I/A degrader in select R/R DLBCL patients
- Physician/Patient> Right drug for the right patient Payors> First \$ spent is the best \$ spent



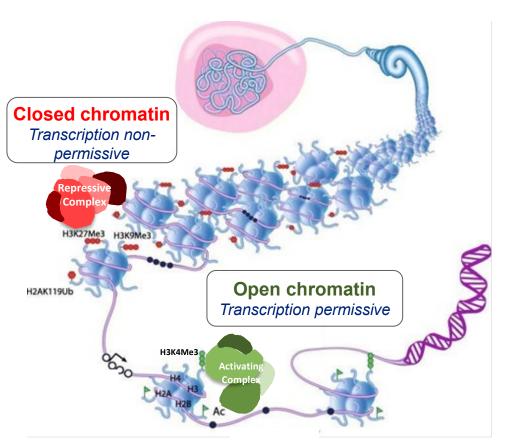
Abbreviations: R/R - relapsed/refractory, DLBCL - Diffuse Large B-cell Lymphoma, MM - Multiple Myeloma SOC - Standard of Care, LEN - lenalidomide, POM pomalidomide, AVA - avadomide, ORR - Overall Response Rate



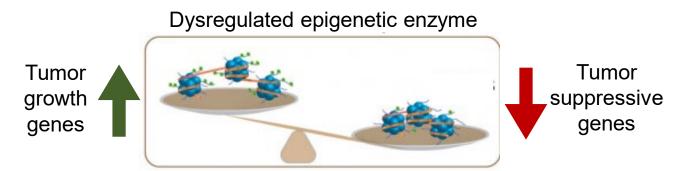
Seclidemstat Overview

Epigenetic Enzymes Are Attractive Targets For Cancer Therapy

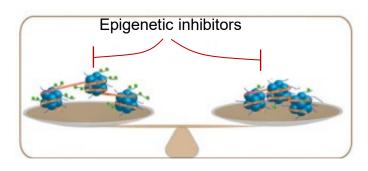
Epigenetic modifying enzymes affect gene expression by manipulating the chromatin structure



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





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

Companies with LSD1 inhibitors in clinic:





Seclidemstat











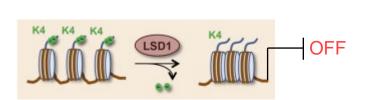
More Comprehensive Inhibition of LSD1 Positively Impacts **Therapeutic Activity**

Degree of LSD1 inhibition



Enzymatic activity – **Demethylation**

Impact: Moderately alter gene expression



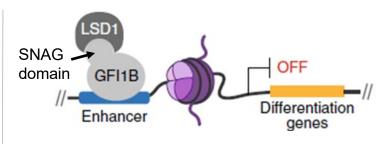






Partial scaffolding* inhibition of LSD1 – protein interaction

Impact: Alter gene expression in cancers (AML, SCLC) driven by SNAG domain proteins (e.g. GFI1B)





Seclidemstat

*scaffolding properties – protein to protein interactions









Impact: Potential efficacy in broader range of cancer types, destabilize LSD1 and complexes





Differential activity



Reduces LSD1 expression



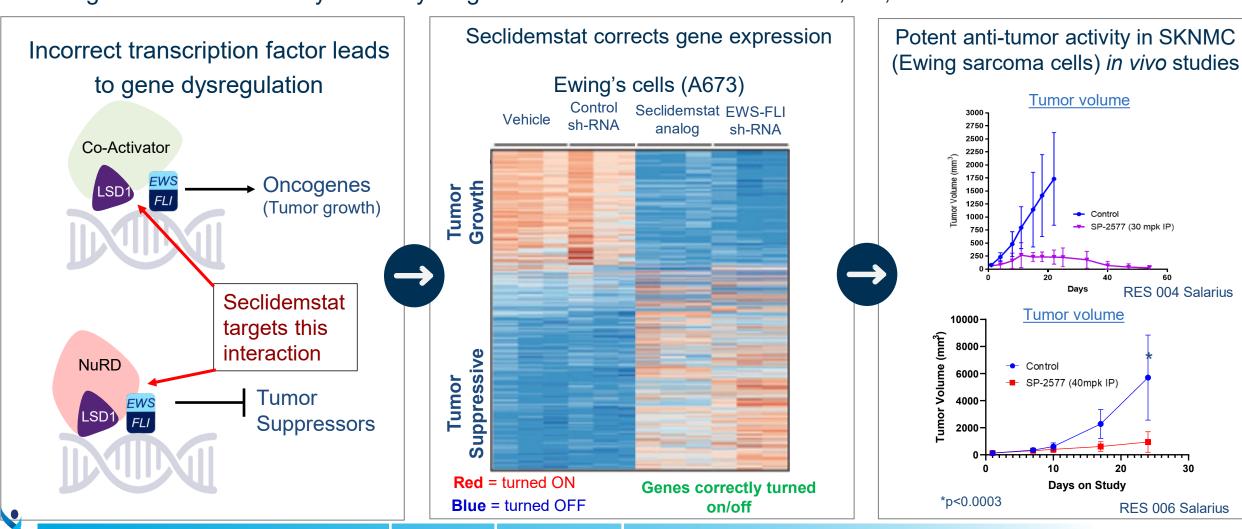
Favorable Toxicology Profile





Targeting The Root Cause Of Ewing Sarcoma Via LSD1 Inhibition

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



Ewing's Sarcoma: Unmet Need, Meaningful Opportunity

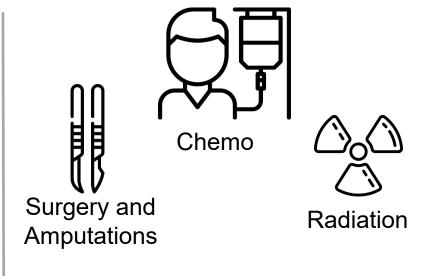
Diagnosis



~500 US patients diagnosed each year with a median age of 15 at the time of diagnosis

- 75% localized¹
- 25% with metastasis¹

Standard-of-Care



- ~40% of patients are refractory or relapse²
- 70-90% 5-year mortality rate²
- No standardized second-line treatment

Salarius' Vision

An effective, non-toxic, oral treatment

- Accelerated U.S. approval
- Rapid market uptake
- \$200M+ global sales³ (est.)
- Possible PRV worth \$80M-\$150M



Fast track designation



Orphan drug designation



Rare pediatric drug designation

² Van Mater, et al. Oncotargets (2019)



1st Relapse Patients Doubled rEECur Progression Comparator And Patients with Disease Control Had No Observed Disease Progression

Results of Salarius Sponsored Phase 1/2 Salarius Trial for Treatment Ewing Sarcoma (10/31/2022)

Sarcoma clinical trial currently on partial clinical hold

	CRc ¹	PRc ¹	ORR	SDc ¹	DCRc	PD	mTTP Months	Range Months
1st Relapse Pts (5)	1	1	2 (40%)	1	3 (60%)	2	7.4	1.4 to 13.8
2 nd Relapse Pts (8)		1	1 (13%)	1	2 (25%)	6	1.5	0.7 to 5.1
1 st and 2 nd Relapse Pts (13)	1	2	3 (23%)	2	5 (38%)	8	1.6	0.7 to 13.8
1 st and 2 nd Relapse Pts w/ DCRc (5)					5 (38%)		7.4	3.1 to 13.8 No Observed PD ²
rEECur (primarily a 1 st relapse Ewing sarcoma data set ³) Salarius (1 st Relapse Patients)						3.5 mPFS 7.4 mTTP	95% CI 2.5 to 5.1	

¹ Patient status confirmed (c) by both C2 and C4 scans. ² Among 5 patients with DCRc while on study: 1 pt WD at 3.1 months with 32% PRc due to partial clinical hold; 1 pt WD at 5.1 months with 11% reduction SDc due to a nondrug unrelated SAE; 1 patient WD at 7.4 months with CRc; 1 patient WD at 12.8 months with 80% PRc (elected RT consolidation treatment); 1 patient at 13.8 months continues treatment with SDc. ³ ~80% Primary Refractory or 1st Relapse Patients and ~20% 2nd Relapse Patients.

2023 Salarius Pharmaceuticals, Inc. Overview

SP-316

Seclidemstat

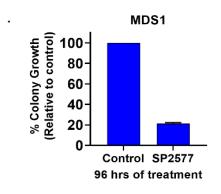
Financials and Team

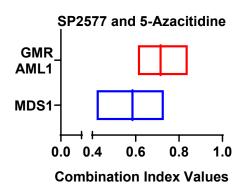


Seclidemstat + Azacitidine Shows Activity In Hematologic Or Blood **Cancers Cell Lines**

Hematologic Cancers¹

Seclidemstat inhibits MDS cell growth and shows synergy with azacitidine





1. Seclidemstat + azacitidine trial is open for enrollment

Phase 1/2 investigator-initiated study enrolling patients at MD **Anderson Cancer Center in myelodysplastic syndromes &** chronic myelomonocytic leukemia

Clinicaltrials.gov Identifier: NCT04734990

Clinical data update provided at ASH 2022

Clinical trial currently on partial clinical hold

Primary Objectives

- Safety, tolerability and maximum tolerated dose
- Overall response rate

Secondary Objectives

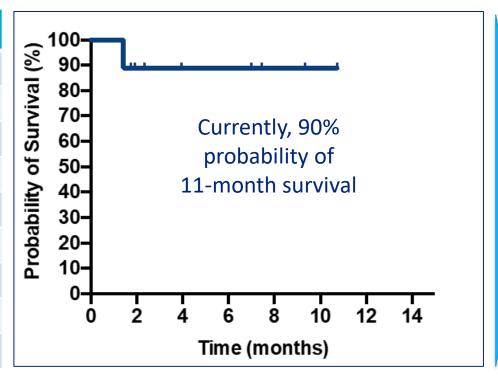
- Overall survival, duration of response, relapse-free survival, leukemia-free survival and safety
- Correlative studies including correlation of response with disease subtypes, genomic profile and in vitro studies



The Combination of Seclidemstat with Azacitidine Shows Initial Signs of Potential Activity Treatment of MDS and CMML

ASH Poster Presentation Results from the Investigator Sponsored MD Anderson Trial for Treatment of MDS and CMML¹ with prior HMA² treatment

Dose	Outcome
150 mg BID	PD
150 mg BID	No Response
150 mg BID	mCR with SCT
300 mg BID	mCR
300 mg BID	mCR + HI + PI
300 mg BID	NR
450 mg BID	mCR + HI
450 mg BID	SD
450 mg BID	Too early for response



- 50% ORR (4/8) including curative transplant
- Patient Disposition:
 - 3 patients on study
 - 1 to undergo allo-SCT
 - 3 off due to no response
 - 2 patients off study due to progression
- Note: Overall Survival in HMA failure patients is 4-6 months

¹ Patients previously failed azacitidine or decitabine. SCT: stem cell transplant, CMML: chronic myelomonocytic leukemia, MDS: myelodysplastic syndrome, T-MDS: therapy related MDS, mCR: marrow complete response, pCyR: partial cytogenetic response, SD: stable disease, PD: progressive disease, BM: bone marrow; HI: Hematologic Improvement; PI: Platelet improvement ² HMA Hypomethylating Agent (azacytidine, decitabine)



A Phase I/II Study of Seclidemstat, an LSD1 Inhibitor, and Azacitidine for Patients with Myelodysplastic Syndromes and Chronic Myelomonocytic Leukemia, American Society of Hematology Annual Meeting December 11-14, 2022



Financial Overview



- Cash position of \$9.3M as of March 31, 2023
- \$6M financing completed in May 2023
- Sufficient cash expected to fund operations through near-term milestones through Q1 2024



No debt or structured obligations on the balance sheet



- Low head-count and associated overhead costs
- R&D costs maintained at healthy levels relative to company cash position



- Ticker: NasdaqCM:SLRX
- Common Shares Outstanding: 3.4M



Seasoned Leadership Team



David J. Arthur Chief Executive Officer

Lilly







Stephen Horrigan, PhD
Consulting Chief Scientific Officer

Iter on





Mark Rosenblum
Chief Financial Officer
ADVAXIS
Deloitte.







Daniela Y.
Santiesteban, PhD
Director Protein Degradation
Development





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	AGT Corporation	Institute		'	Sepracor	
	·		Merck Serono	Precision		Eli Lilly
	Histogenics			BioSciences	Novartis	



