

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

NasdaqCM:SLRX

April 2023

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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. 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Investment Highlights

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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

Salarius PHARMACEUTICALS

SP-3164 IND submission planned for 1H 2023 with Phase 1/2 trial beginning 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 Q4 2022, cash of \$12.1M and no debt

Pipeline Overview Protein Degradation and Protein Inhibition



1 Topotecan and cyclophosphamide ² Investigator initiated trial active at MD Anderson Cancer Center treating patients with Myelodysplastic Syndromes and Chronic Myelomonocytic Leukemia ³ Investigator initiated trial – Clinical trial agreement not yet finalized.

Targeted Protein Degradation Space Has Witnessed Tremendous Growth

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

> (\$B) Number of Investments

Large Biopharma Companies Have Moved Aggressively to Gain Exposure³

Selected targeted protein partnerships and strategic collaborations since 2015



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

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



SP-3164

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<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



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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

SP-3164: The Deuterium-Stabilized S-Enantiomer of Avadomide

Stabilization of avadomide enantiomers with deuterium blocks interconversion



• A new chemical entity with its own, issued composition of matter patent

Potential for improved efficacy and safety compared to avadomide

Clinical Development Of SP-3164, A Targeted Protein Degrader With Potential In Hematological Indications Of High Unmet Need

The Problem	Salarius's Solution				
 Initial target indication: 3rd line (3L+) R/R DLBCL¹ Difficult to cure with relapse often occurring and most patients having overall survival of <6 months. 	Salarius is developing SP-3164, a targeted protein degrader (molecular glue) to improve lymphoma patient outcomes. • Potential \$1B+ market SP-3164				
Launch indications:					
 First indication: ~3,200 R/R DLBCL (3L+) patients ineligible for stem cell transplant or CAR T therapy with survival outcomes as low as 6 mos. 	 SP-3164 is differentiated from other degraders Only degrader w/ stabilized active species resulting in: 1. Improved activity in preclinical models 2. Potential for an improved therapeutic window 3. Precision medicine for improved responses 				
 Second indications: Select² 1st line DLBCL and 1st line FL pts, and ~1,000 R/R FL (3L+) patients seeking novel, chemotherapy-free treatment 					
options.					
¹ Due to accelerated registration path and more aggressive disease, 3L+ DLBCL will precede 3L+ FL. ² Utilizi Abbreviations: NHL - Non-Hodgkin's lymphomas, R/R - relapsed/refractory, DLBCL - Diffuse Large B-cell Lym	ng prospectively defined gene signatures, develop precision targeting for high responder patients				
© 2023 Salarius Pharmaceuticals, Inc. Overview SP-3164 Seclidemstat	Financials and Team 10				

SP-3164 Preclinical Data

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.

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 – Multiple Myeloma (MM)

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

Abbreviations: Multiple Myeloma (MM) © 2023 Salarius Pharmaceuticals. Inc.

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



NCI-H929 Xenograft Study

- 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

1. Revlimid[®] (lenalidomide) and Pomalyst[®] (pomalidomide)

Abbreviations: Tumor Growth Inhibition (TGI), Multiple Myeloma (MM)

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SP-3164 – Non-Hodgkin's Lymphoma (NHL)

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



DLBCL (WSU-DLCL2) Cell Viability (IC₅₀)

% Survival after 96 hr and 168 hrs



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).

In WSU-DLCL2 cells, increased duration of treatment (168 hr vs 96 hr) revealed increased sensitivity to SP-3164 (IC₅₀ 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 combination with rituximab was compared an approved regimen, lenalidomide and rituximab, in the WSU-DLCL2 DLBCL model.
- Combination of SP-3164 and rituximab resulted in sustained regressions with 50% of mice being tumor-free, significantly better than the lenalidomide and rituximab regimen (****p ≤0.001).

SP-3164 Shows Improved Activity Over Other I/A Degraders And Significant Synergy With SOC Agents in Follicular Lymphoma (FL)



- SP-3164 shows single agent TGI in a FL mouse model that is significantly better than the approved agent¹ at significantly lower doses
- SP-3164 helps sensitize to the approved SOC² agent

Abbreviations: SOC Standard of Care 1. Drug details available under CDA

SP-3164

Mouse FL (DOHH2) Xenograft Model SP-3164 Mono and Combo Treatment Tumor Volume ±SEM 4000ñ mm) vehicle SP-3164 (7.5 mg/kg BID) 3000-SOC #2 -#-volume SP-3164 (7.5 mg/kg BID) + 2000-SOC #2 Tumor 1000-20 30 10 Days on Study

- SP-3164 shows single agent TGI in a FL mouse model that is equivalent to an approved agent²
- In combination with the approved drug¹, SP-3164+SOC results in improved TGI

^{2.} Standard of care details available under CDA

SP-3164 Current Status and Upcoming Milestones

Complete

- FDA Pre-IND meeting process
- GMP API batch on stability
- Preclinical in vitro and in vivo studies MoA and efficacy
- Dose ranging and in life GLP toxicology
- Multiple Myeloma and Lymphoma Advisory boards

Ongoing and Upcoming

- Drug product formulation development
- Extensive in vivo single agent, combination therapy and comparator studies
- IND submission and activation
- Phase 1/2 First Patient Enrolled



SP-3164 Is The Preferred Enantiomer Of Avadomide And Is The Next-generation Cereblon-binding Targeted Protein Degrader

SP-3164 Highlights

- ✓ An NCE with its own, issued composition of matter patent (exp. 2039 w/ extensions)
- ✓ Differentiated cereblon-binding molecular glue
 - Only glue with stabilized active enantiomer
 - Improved activity in preclinical models
 - Potential for an improved therapeutic window (PK and safety advantages)
 - Precision medicine for improved responses
- Clear, de-risked clinical strategy builds upon established avadomide data
 - Target indications with high likelihood of PoC monotherapy activity and quickly move up in treatment line with appropriate combinations



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 No		
Normal Cells	LSD1 is necessary for stem cell maintenance and cell development processes (e.g., blood cells)	
		S
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:



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)



Broader scaffolding inhibition of LSD1 – protein interaction

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



Salarius and competitors HARMACEUTICALS



*scaffolding properties – protein to protein interactions



SPEED TO MARKET Seclidemstat in Ewing Sarcoma

Targeting The Root Cause Of Ewing Sarcoma Via LSD1 Inhibition

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



Sankar et al. Clinical cancer research 20.17 (2014)

Ewing's Sarcoma: Unmet Need, Meaningful Opportunity





~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

² Van Mater, et al. Oncotargets (2019)

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



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
1 st 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% Cl 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.



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Seclidemstat

Financials and

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Abbreviations CR complete response; PR partial response; SD stable disease; DCR disease controlRate (CR, PR, SD); TTT Time to Tumor Progression; PFS Progression Free Survival

MARKET EXPANSION

Hematologic Cancers

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 <u>MD</u> <u>Anderson Cancer Center</u> 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



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 and Management

Financial Overview

Sufficient Cash Position	 Cash position of \$12.1M as of end of Q4 2022 Sufficient cash to fund operations through near term milestones through Q3, 2023 	
Capitalization Structure	 No debt or structured obligations on the balance sheet 	
Low Fixed Costs	 Low head-count and associated overhead costs R&D costs maintained at healthy levels relative to company cash position 	
Corporate Snapshot	 Ticker: NasdaqCM:SLRX Common Shares Outstanding: 2.5M 	
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Seasoned Leadership Team



Board of Directors

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Thank You

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