Salarius PHARMACEUTICALS

Company Overview

2Q 2022

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 timing of clinical trials for SP-3164; the advantages of protein degraders including the value of SP-3164 as a cancer treatment; expected therapeutic options for SP-3164 and related effects and projected efficacy; whether the company will develop additional undisclosed cancer-fighting assets in the targeted protein degradation space; collaborations between the company and its DeuteRx colleagues to complete SP-3164 development activities and development of future products; 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.

Corporate Overview

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

Protein Inhibition

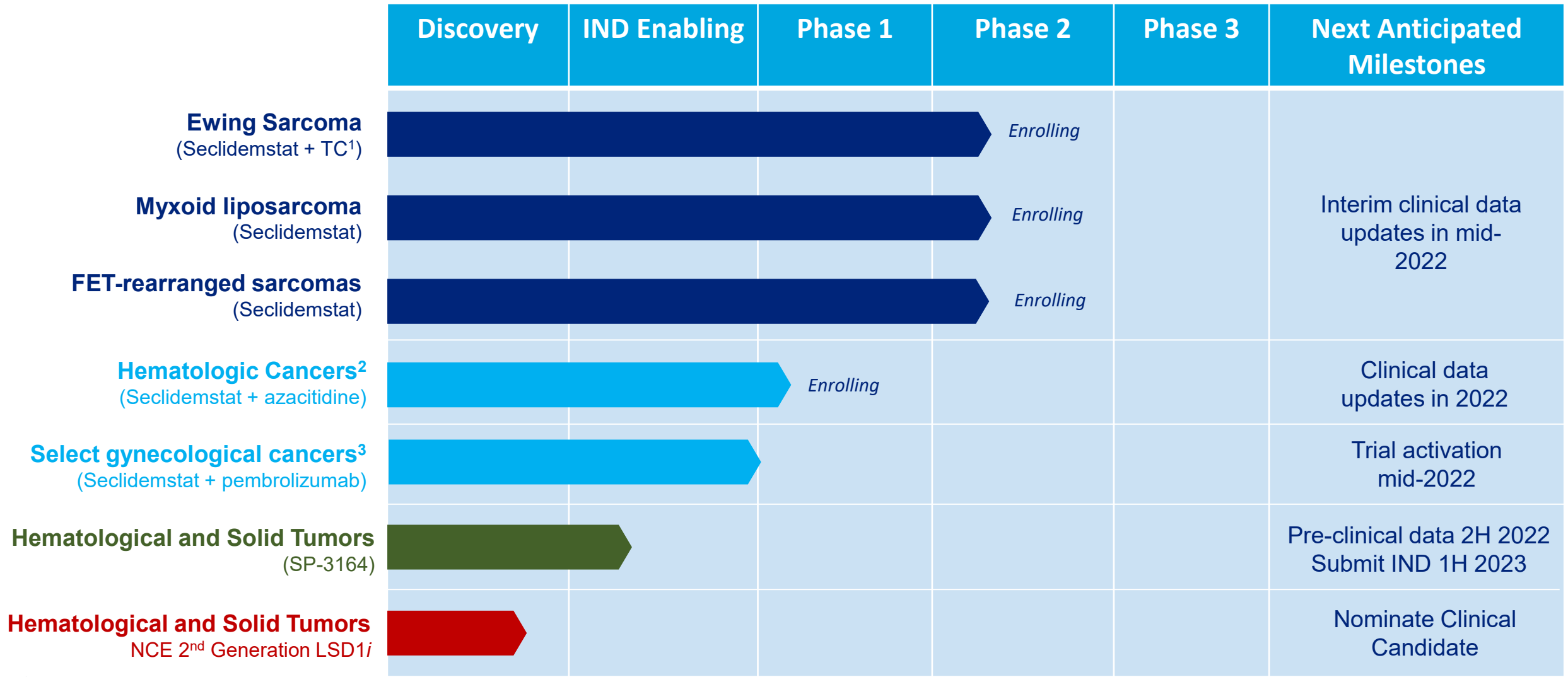
- **Seclidemstat (SP-2577)** is a novel, oral, reversible LSD1 inhibitor in Phase 1/2 clinical trials for sarcomas and hematological cancers
- FDA designations for Ewing sarcoma include
  - Rare Pediatric Disease
  - Orphan Drug
  - Fast Track Approval
- Speed to Market in rare sarcomas with high unmet need e.g., Ewing sarcoma
- Market Expansion into larger market indications with validated combination strategies e.g., Hematologic cancers

Protein Degradation

- **SP-3164** is a next generation cereblon-binding targeted protein degrader
- Stabilized (*S*)-avadomide (CC-122) developed to have improved efficacy and safety
- Avadomide studied in over 400 patients across 10 clinical trials
  - Demonstrated activity in hematological malignancies and solid tumors
- Pre-clinical data package in 2H 2022
- IND activation planned 1H 2023
- Significant recent collaboration and acquisition activity in the protein degradation space

Strong cash position of $29.2M as of December 31, 2021, with low monthly burn rate supporting two promising programs with near term value inflection points

Development Pipeline and 2022 Milestones



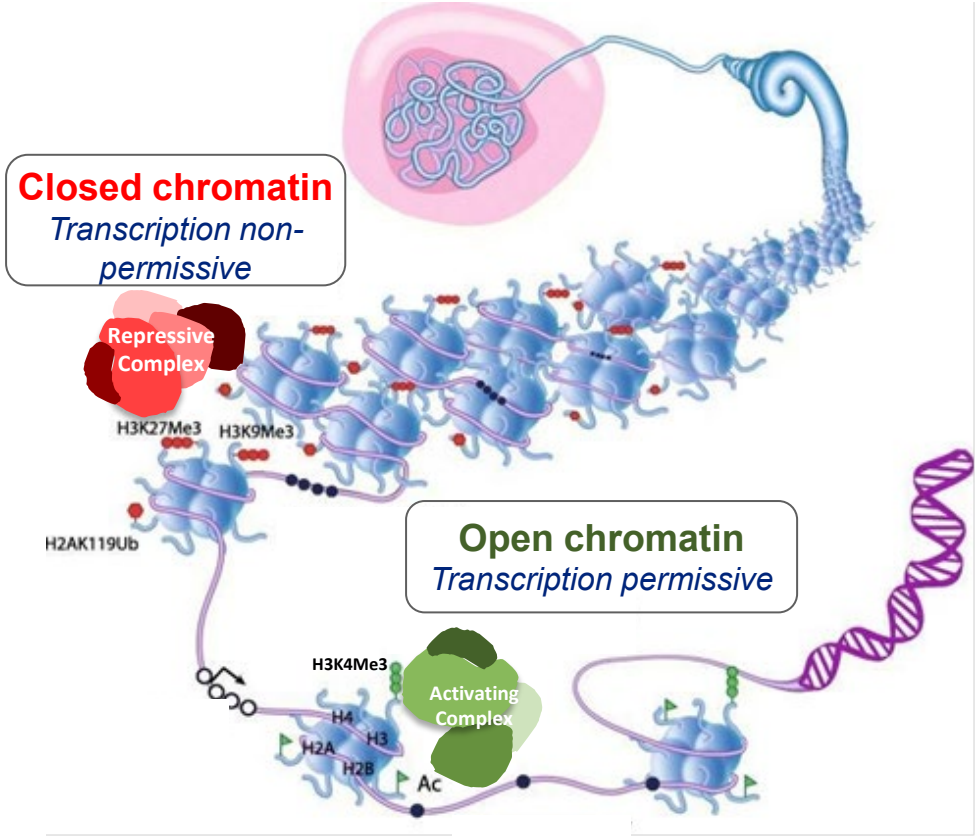
[1] Topotecan and cyclophosphamide [2] Investigator initiated trial active at MD Anderson Cancer Center treating patients with Myelodysplastic Syndromes and Chronic Myelomonocytic Leukemia [3] Investigator initiated trial – Clinical trial agreement not yet finalized.

Seclidemstat (SP-2577)

A targeted LSD1 Inhibitor

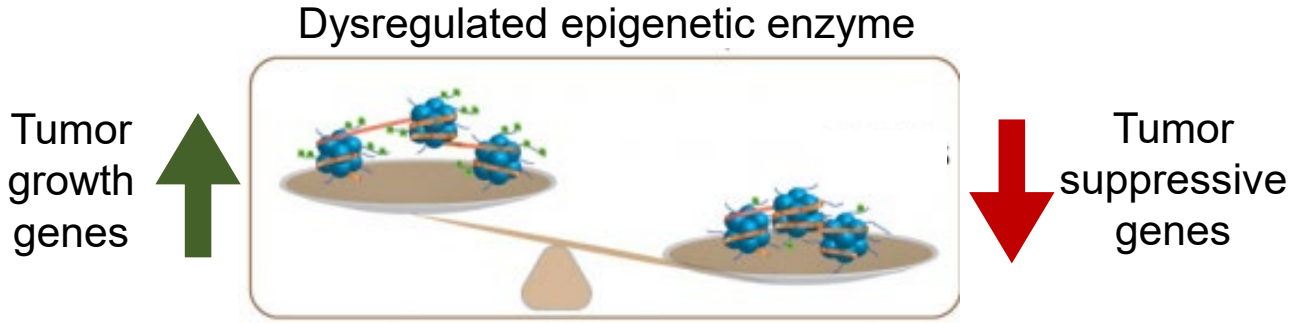
Epigenetic Enzymes are Attractive Targets for Cancer Therapy

Epigenetic modifying enzymes affect gene expression by manipulating the chromatin structure

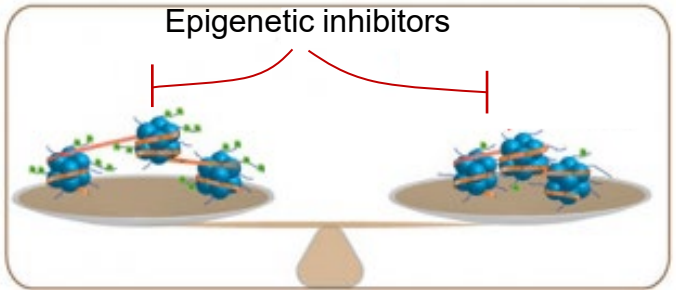


Adapted from Holliday, H. Breast Cancer Research *2018*

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.*

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 clinical LSD1 inhibitors:

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Celgene

Bristol-Myers Squibb

ORYZON

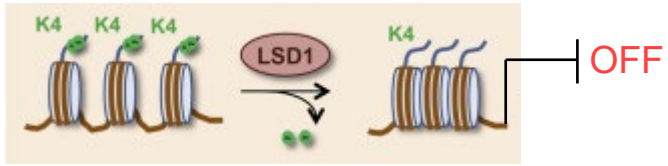
IMAGO

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

More Comprehensive Inhibition of LSD1 Positively Impacts Therapeutic Activity

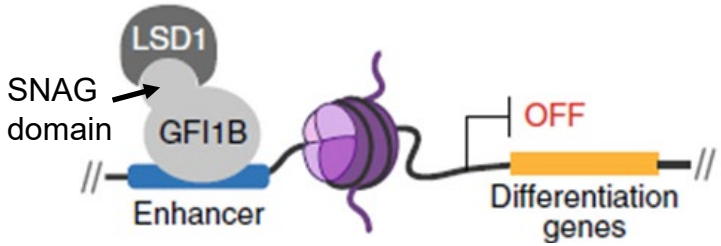
Degree of LSD1 inhibition

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

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

*scaffolding properties – protein to protein interactions

SP-2577 Sarcoma Program

1) *Ewing sarcoma*
2) *FET-rearranged sarcomas*

Ewing Sarcoma - Unmet Need Represents a Meaningful Product Opportunity

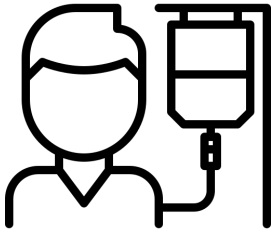
Diagnosis

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

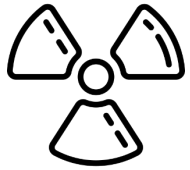
- 75% localized[1]
- 25% with metastasis[1]

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.

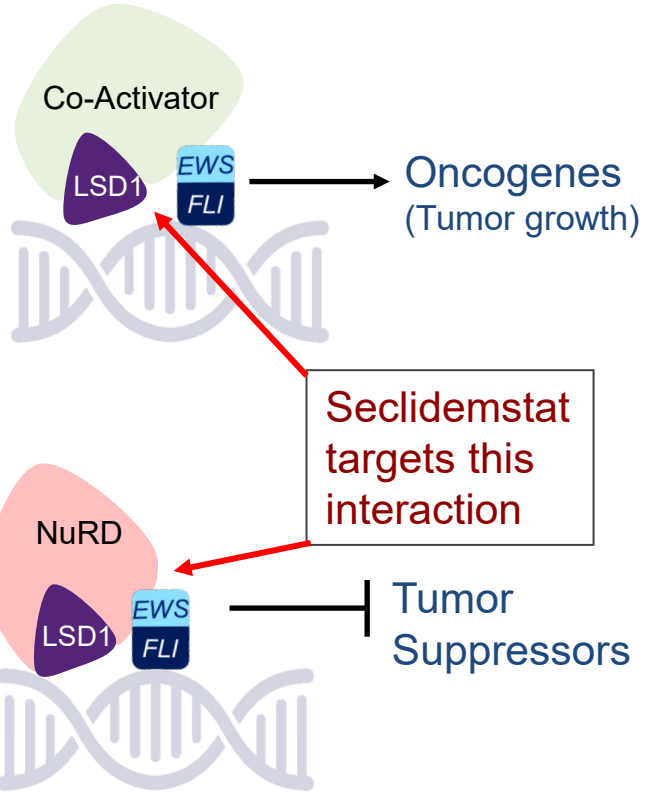
[1] Pishas, K. et al. (2016)

[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

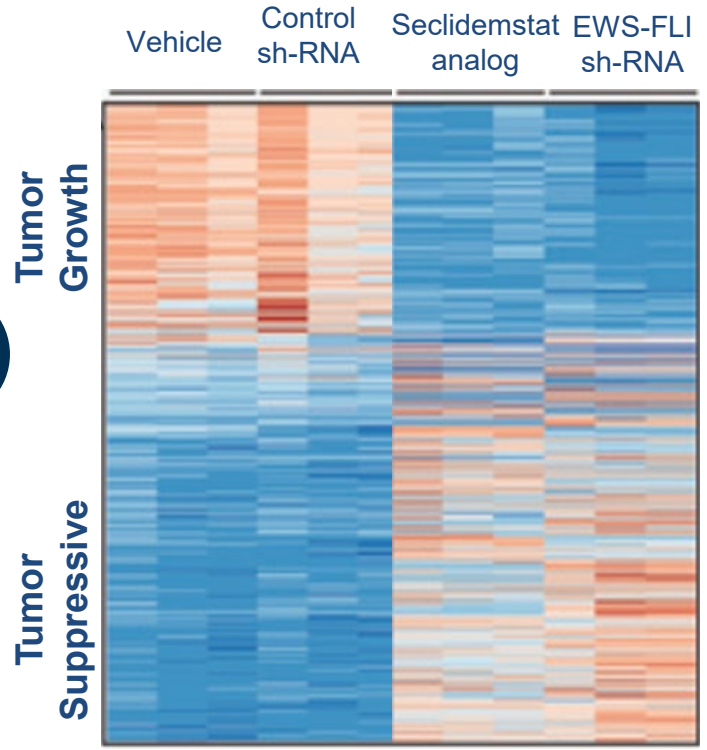
Incorrect transcription factor leads to gene dysregulation



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

Seclidemstat corrects gene expression

Ewing's cells (A673)



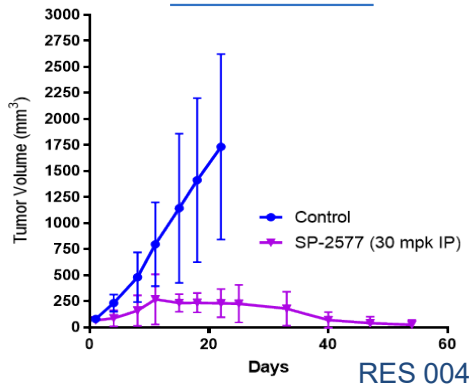
Red = turned ON

Blue = turned OFF

Genes correctly turned on/off

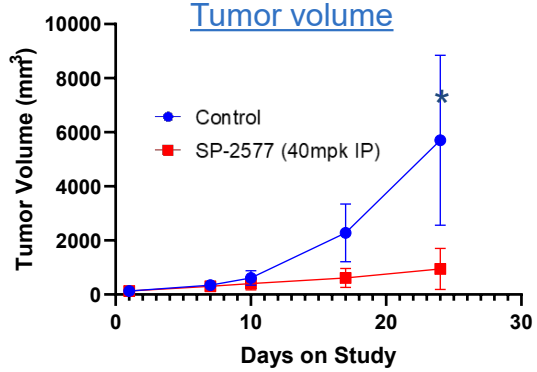
Potent anti-tumor activity in SKNMC (Ewing sarcoma cells) *in vivo* studies

Tumor volume



RES 004 Salarius

Tumor volume



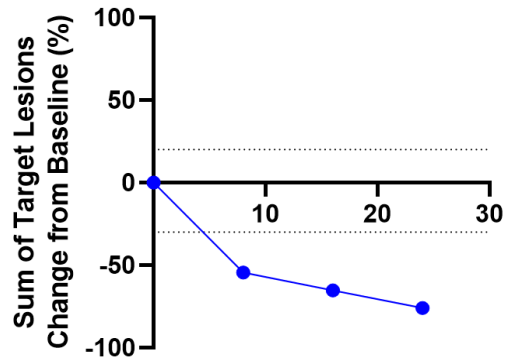
*p<0.0003

RES 006 Salarius

Preliminary SP-2577 Activity in Target Lesions of a Ewing Sarcoma Patient

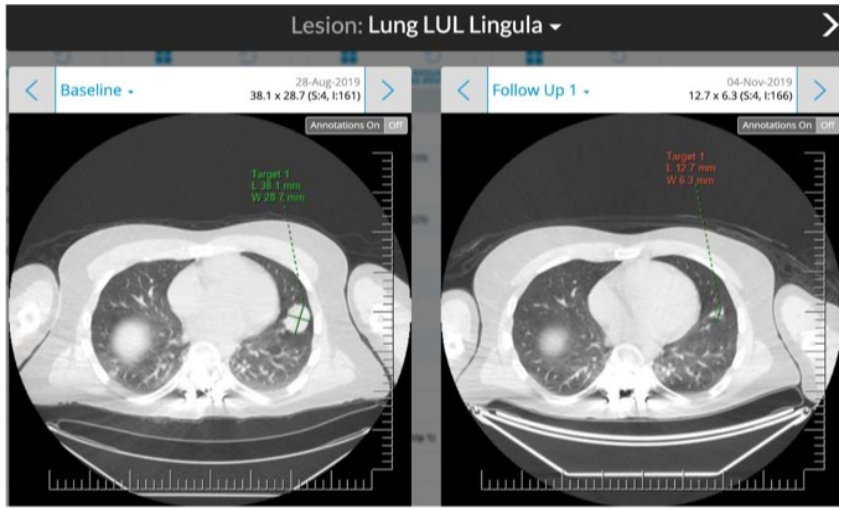
One patient at 600 mg PO BID had a partial response in the sum of three target lesions (98.7 mm at baseline), -76% decrease at 6 months, despite increasing size of non-target lesion resulting in overall assessment of progressive disease (PD)

Decrease in Target Lesion Size



* PD in non-target lesion at 8 weeks, patient continued therapy per protocol as patient was deriving clinical benefit

Example Target Lesion at baseline and after 2 month of seclidemstat (600 mg PO BID)



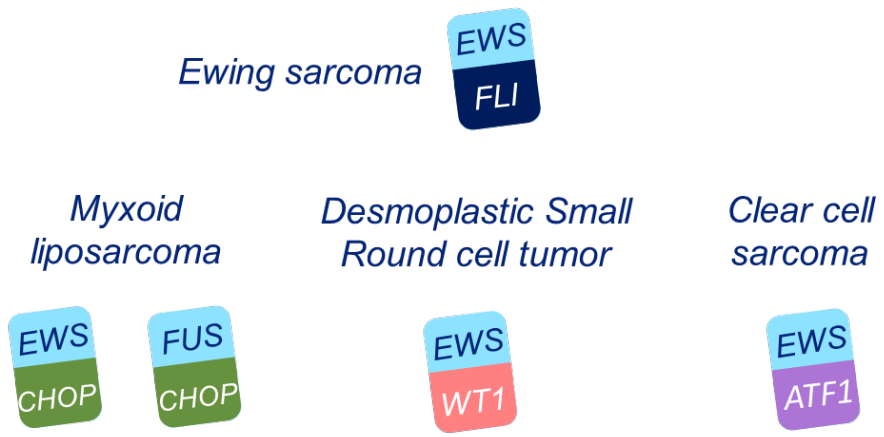
- All three target lesions reduced in size over 6 months of treatment
- One non-target lesion at baseline (lung) was assessed as progressive at 2 months

Given the heavily pretreated and advanced patient population enrolled, SP-2577 shows promising signs of single agent activity warranting further investigation in Ewing sarcoma patients

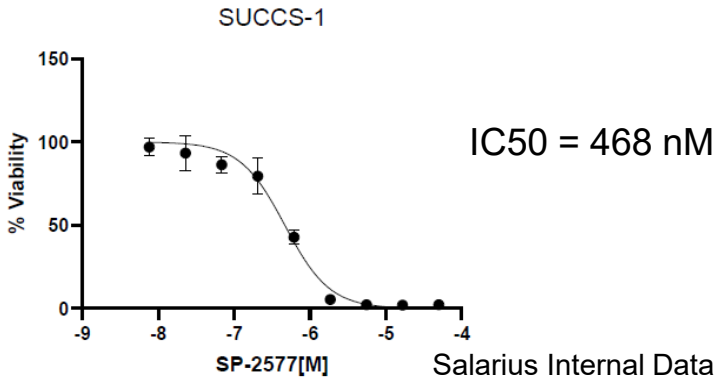
Seclidemstat's Mechanism of Action Results in Anti-proliferative Activity in Ewing-related (FET-rearranged) Sarcomas

- Salarius' ongoing Ewing sarcoma trial amended to include FET-rearranged sarcomas at the RP2D supported by preclinical and clinical data
  - Clinical data: FET-rearranged 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

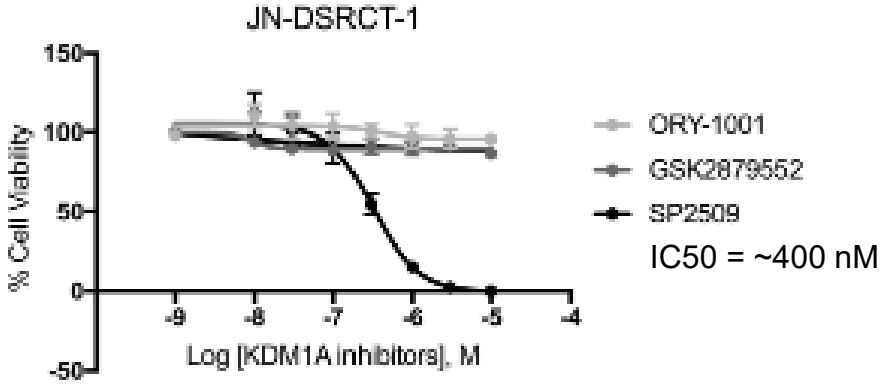
Ewing-related sarcomas :



Clear cell sarcoma



Desmoplastic Small Round Cell Tumor



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

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

Preliminary SP-2577 Monotherapy Efficacy in Other FET-rearranged Sarcomas

- As of June 25, 2021, 23 patients have received a median of 2 cycles (range: <1 to 12) in Salarius' AST Phase 1 trial1
- Of 4 FET-rearranged sarcoma patients enrolled in the study, 3 (75%) showed a time to progression that suggests single-agent activity based on a benchmark used to assess the activity of novel agents for advanced soft tissue sarcomas (Van Glabbeke, 2004)
  - Among FET-translocated sarcomas, two (50%) showed prolonged SD of > 6 months
  - This represents encouraging preliminary data as showing improvement in progression free survival (PFS) or disease control is a clinically relevant end point in advanced sarcomas.

Subset of FET-rearranged patients enrolled in the AST trial (as of June 25, 2021)

FET-rearranged sarcoma type	FET-rearrangement	Prior # of Systemic Treatments	Best Response to Prior Therapies	TTP (months)[1]
Extra skeletal myxoid chondrosarcoma	*TAF15-CHN*	1	SD	12.1+
Myxoid liposarcoma	*FUS-DDIT3*	5	SD	7.2
DSRCT	*EWSR1-WT1*	5	SD	4.3
Extra skeletal myxoid chondrosarcoma	*NA*	NA	NA	2.0+

Ewing Sarcoma and FET-rearranged Sarcomas Phase 1/2 Trial

Open-label dose expansion trial design amended to reach more sarcoma patients

- **Arm 1**: Up to 30 Ewing sarcoma patients treated in combination with Topotecan/Cyclophosphamide
- **Arm 2**: Up to 30 FET-rearranged sarcoma patients (including 15 myxoid liposarcoma) treated with single agent seclidemstat

Primary objective: Safety, Tolerability

Secondary objectives: Anti-tumor assessment

Exploratory: cfDNA, CTCs, Hemoglobin F, target engagement

CURRENTLY ENROLLING AT 13 CLINICAL SITES

- Manageable safety profile; pharmacokinetics support BID dose schedule
- Signs of anti-tumor activity in patients at or below the RP2D in Ewing and FET-sarcomas

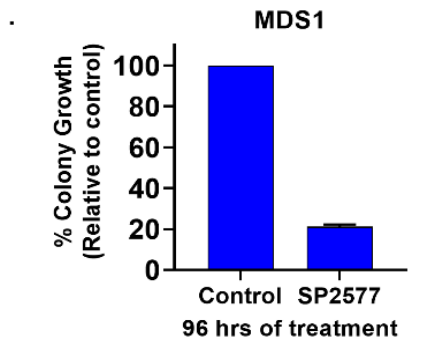
SP-2577 Market Expansion

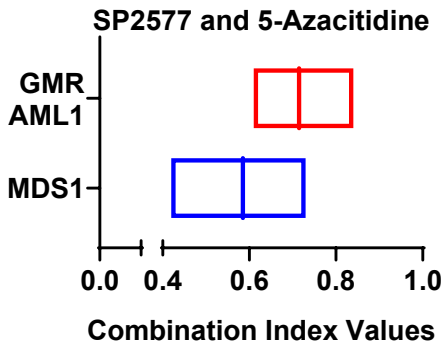
Seclidemstat in Hematologic Malignancies, Immunotherapy, and Advanced Solid Tumors

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

Hematologic Cancers[1]

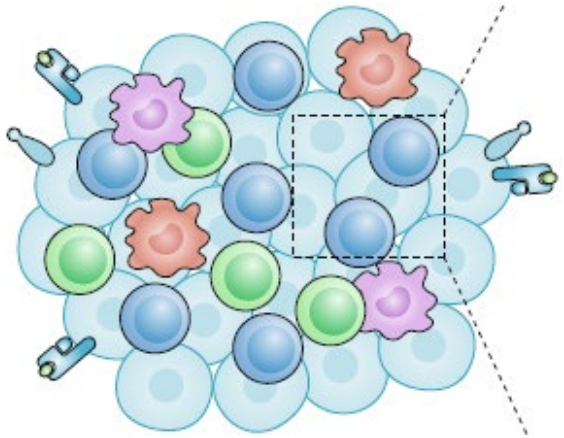
Seclidemstat (SP-2577) inhibits Myelodysplastic Syndrome (MDS) cell growth and shows synergy with azacitidine.





Increase Response to Checkpoint Inhibitors

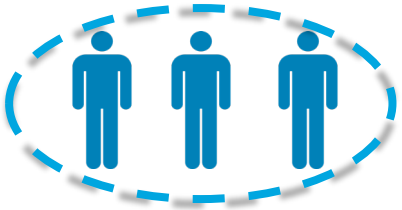
LSD1 inhibition can turn **cold** tumors to **hot** tumors



May help increase patient response to IO therapies

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

Select Solid Tumors



Preclinical studies identifying solid tumors with increased chance of responding to SP2577

Represents patient subgroups with proof of concept of LSD1 inhibition activity

1. SP-2577 + azactidine trial is open for enrollment

Phase I/II Study of SP-2577 (Seclidemstat) in Combination with Azacitidine for patients with Myelodysplastic syndromes and Chronic Myelomonocytic Leukemia

THE UNIVERSITY OF TEXAS MD Anderson Cancer Center

Primary Objectives:

- To determine the safety, tolerability and Maximum Tolerable Dose (MTD) of seclidemstat in combination with azacitidine
- To assess overall response rate (ORR) to seclidemstat in combination with azacitidine

Secondary Objectives:

- To assess overall survival (OS), duration of response (DOR), relapse-free survival (RFS), and Leukemia-free survival (LFS) and safety profile.
- Correlative studies including correlation of response with disease subtypes, genomic profile and in vitro studies.

This trial is activated and enrolling patients at MD Anderson
Clinicaltrials.gov Identifier: NCT04734990

Clinical Data updates anticipated in mid-2022

Combination of Possibilities Presents Significant Market Opportunity for SP-2577

SPEED TO MARKET

Sarcomas (Ewing and FET rearranged)
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**

PROOF OF CONCEPT IN **HEMATOLOGIC CANCERS**

Trial in MDS/CMML initiated with MD Anderson Cancer Center

$1B+ Market Potential[2]

POTENTIAL TO ENTER INTO **IMMUNOTHERAPY**

Sensitizing resistant cancers to checkpoint Inhibitors

$1B+ Market Potential[3]

IDENTIFYING **SELECT SOLID TUMOR PATIENTS**

Ongoing preclinical work to identify tumor subtypes with increased chance of response to LSD1 inhibition

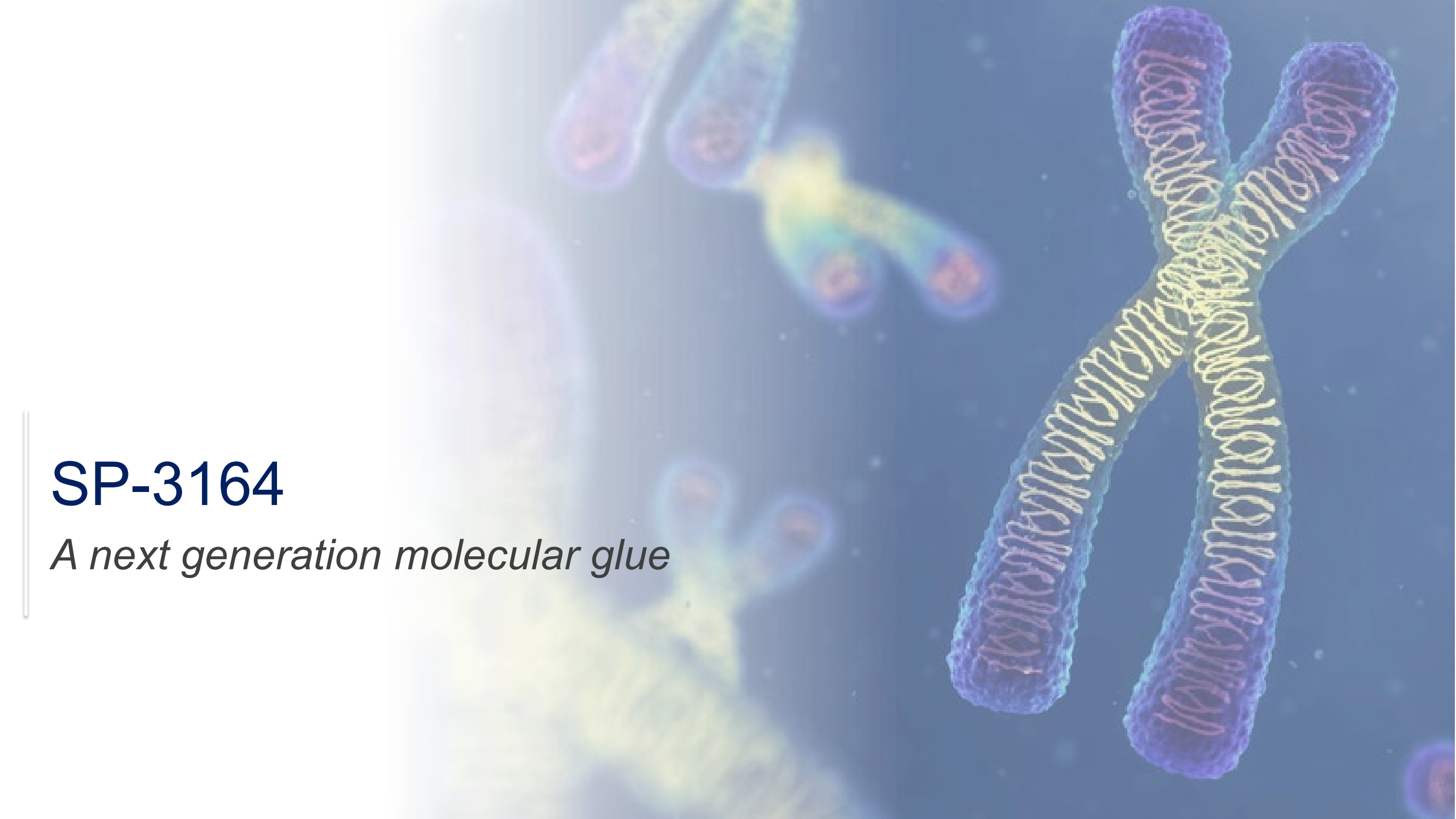
Market Potential in Solid Tumors [4,5,6,7,8]

$1B+

Citations in Appendix A

SP-3164

A next generation molecular glue



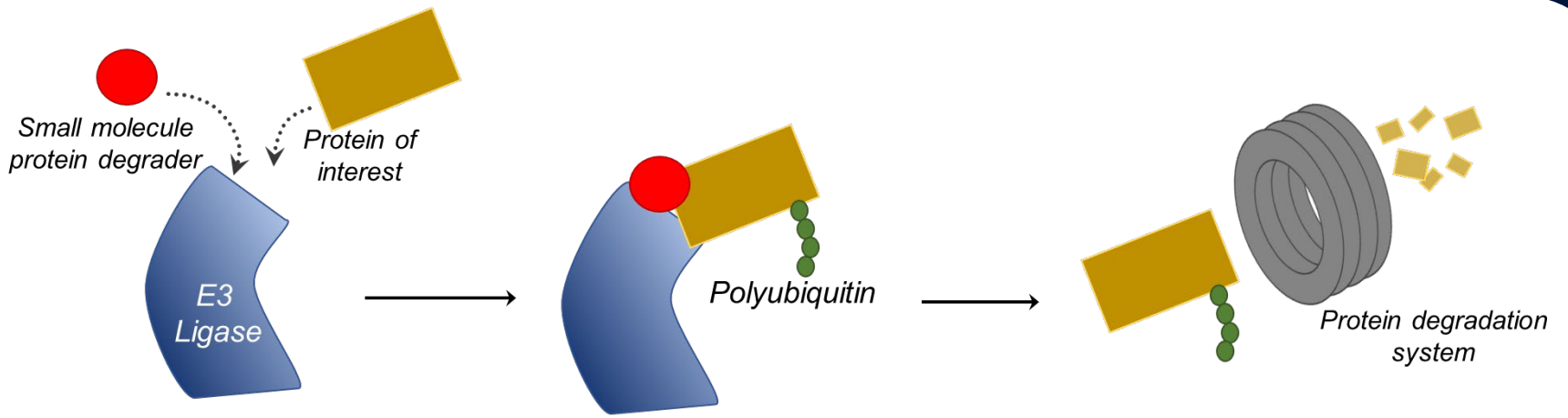
Targeted Protein Degradation Can Help Address Current Challenges Of Cancer Treatment

Targeted Protein Degradation (TPD) utilizes the body's own degradation system to selectively eliminate cancer-promoting proteins

And

Provides the ability to go after historically undruggable cancer-promoting targets

Example of a ***molecular glue*** *inducing selective protein degradation*



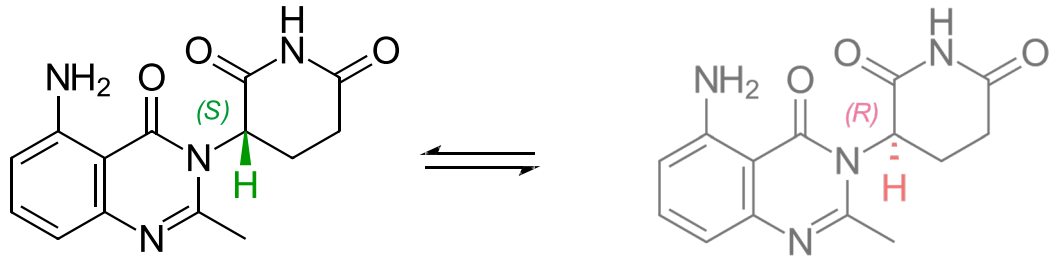
A small molecule protein degrader will bind to an E3 Ligase and attract the protein of interest.

The protein of interest becomes flagged for degradation by polyubiquitin.

The flagged protein will be recognized by the body's degradation system and degraded.

Development of SP-3164, a Cereblon-Binding Molecular Glue

- SP-3164 was developed as a next generation, improved version of one of the most widely studied molecular glues, avadomide (CC-122).
  - Avadomide has an unstable chiral center and therefore exists as a racemic mixture -- a 1 to 1 mixture of enantiomers (mirror images of one another), but only the S-enantiomer is the active, anti-cancer species



S-avadomide

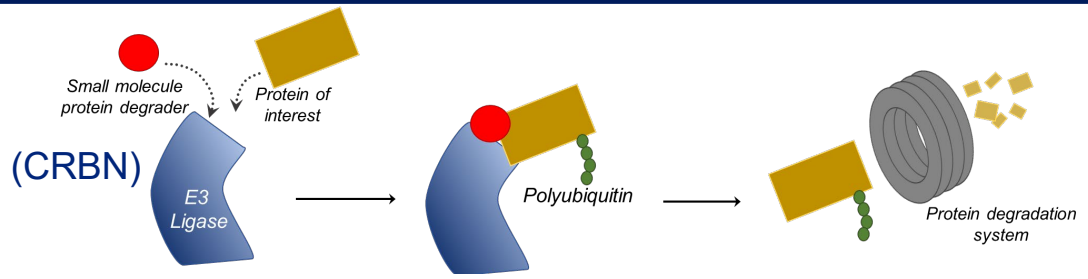
- ✓ Cereblon binder
- ✓ Anti-cancer activity
- ✓ Anti-inflammatory activity

R-avadomide

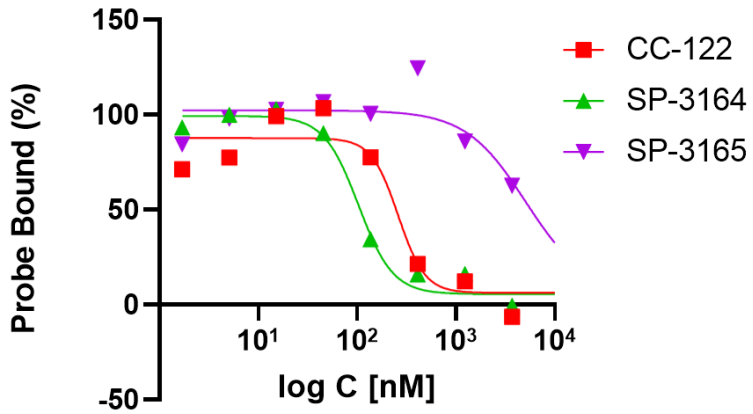
- Does not bind cereblon
- Potential tumor growth

SP-3164 is a deuterium-stabilized active species (d-*S*-enantiomer) of avadomide. SP-3164 has the potential for **improved efficacy and safety.**

Improved Characteristics of SP-3164 Translates Into Increased Anti-cancer Activity In Preclinical Animal Models

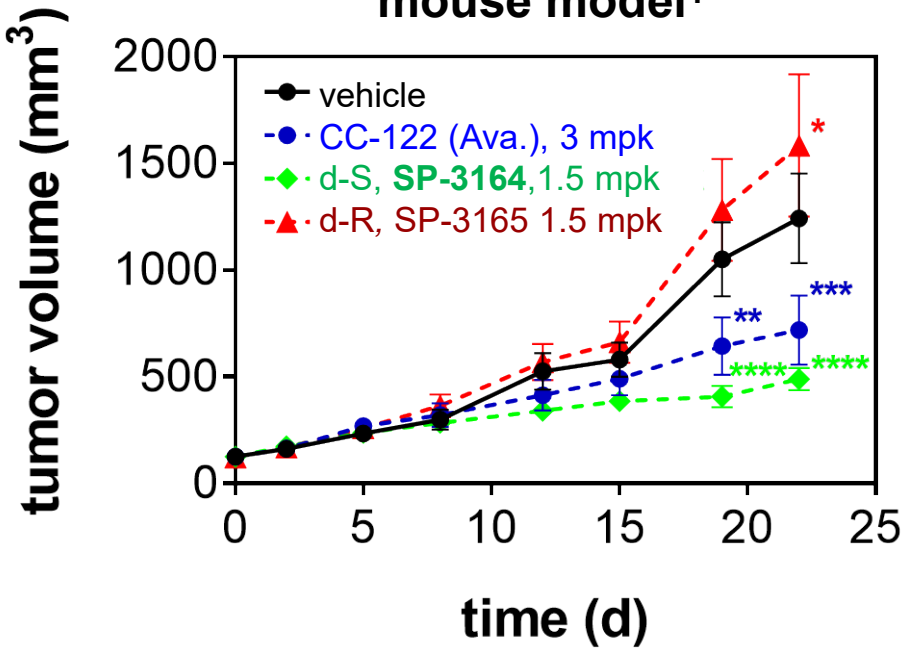


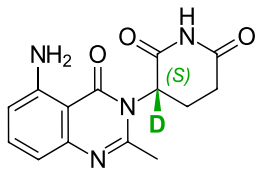
Cereblon Binding[1]



SP-3164 has improved efficacy in animal cancer models

H929 Multiple Myeloma mouse model[1]





SP-3164

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

The improved properties of SP-3164 translate into SP-3164 having increased efficacy compared to the R-enantiomer OR to avadomide (racemic mixture).

1. Data on file 2.Jacques, et al., Proc Natl Acad Sci. 2015, 112(12), E1471-9.

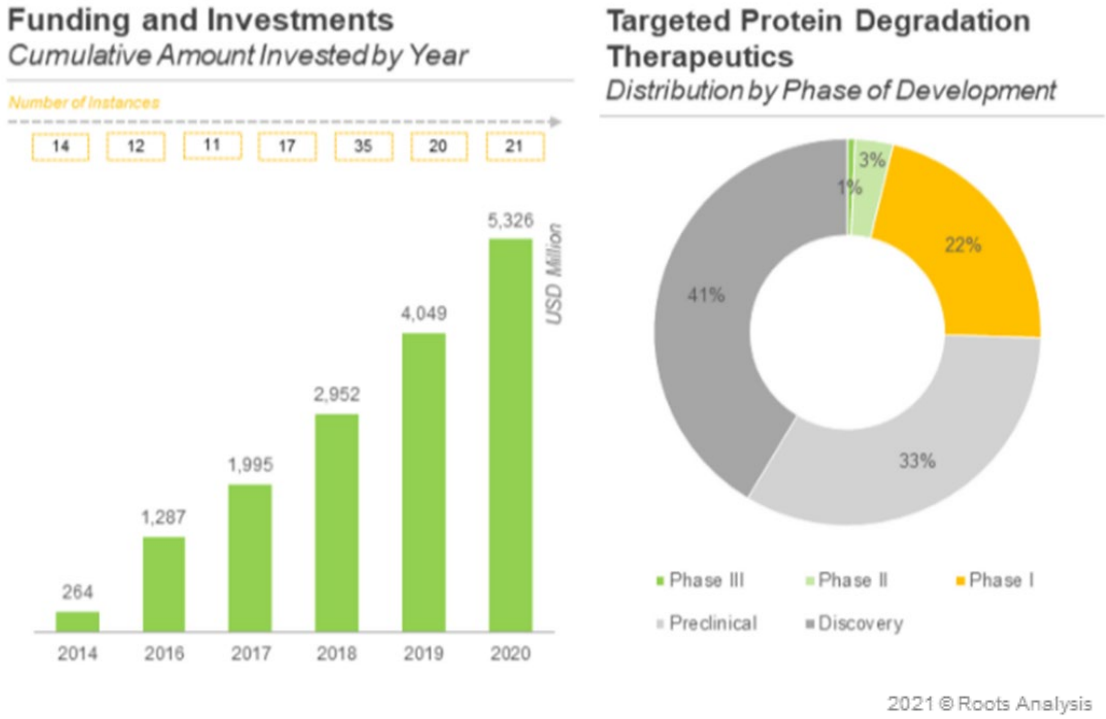
Investment In Protein Degradation Has Been And Is Active – No Surprise Given 2021 Molecular Glue Market Was $16.1B

Salarius should have a robust pre-clinical data package completed in Q4 2022 which aligns with recent strategic pharmaceutical and institutional investment

1st generation Molecular Glues (MG) Revlimid and Pomalyst combined for $16.1B in 2021 global sales

Company	Partner	Year	Deal Type	Stage
Plexium	Amgen	2022	R&D Partnership	Preclinical
Arvinas	Pfizer	2021	Development & Commercialization	Clinical (Phase 1/2)
Dunad	Novartis	2021	R&D Partnership	Preclinical
Vividion	Bayer	2021	Acquisition	Preclinical
Oncopia	Roivant	2020	Acquisition	Preclinical
Nurix	Sanofi	2020	R&D Partnership	Preclinical
Kymera	Sanofi	2020	R&D Partnership	Clinical/preclinical
Foghorn	Merck	2020	R&D Partnership	Preclinical

Significant investment in programs in early stages of drug development

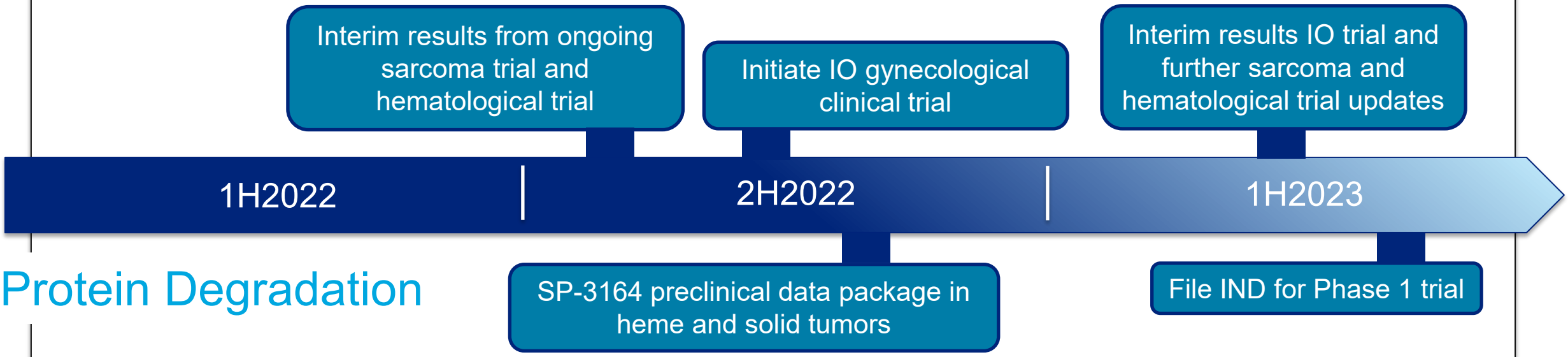


Salarius Overview: Multiprong Development Pipeline with Anticipated Milestones Throughout 2022

Protein Inhibition

Seclidemstat (SP-2577) in Phase 1/2 clinical trials for sarcomas and hematological cancers

- Speed to Market in rare sarcomas ($400M opportunity) + Market Expansion into larger markets ($1B+ opportunities)



Protein Degradation

SP-3164 is a next-generation molecular glue based off a drug studied in over 400 subjects that showed compelling efficacy and safety

- Next-generation MGs are building on an established $16.1B 1st generation market

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

[3] 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

[4] 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.

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

[6] GlobalData and Epidemiology Market Size Database, TNBC

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

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