



# Corporate Presentation

September 2020

# Disclaimer

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# Executive Summary

Innovative Biotech funded and launched as a standalone US-based entity in 2019 by parent- a global life sciences company

- Risk diversified pipeline of multiple novel precision therapeutics programs in oncology and auto-immune space that have been built over 3 years in stealth mode
- Discovery engine that combines patient-derived database, structure-based design and computational models
- Dedicated team of drug hunters – biologists and chemists with decades of integrated drug discovery expertise
- Advancing other undisclosed early stage programs for intractable targets in oncology (oncogenes, transcription factors)

On value inflection path from preclinical stage to clinical stage – two lead programs expected to transition to clinic in 12-18 months:

**LSD1/HDAC6:** First-in-class dual epigenetic inhibitor for genetically-defined cancer (AML, TNBC) – Sustained target engagement, consistent efficacy in xenograft models and minimized systemic tox – Phase 1 2H 2021

**PAD4:** Differentiated mechanism of citrullination and neutrophil extracellular traps (NETosis) with potential in multiple auto-immune disorders (RA, Fibrosis) – Marked in vivo efficacy with druggable therapeutic margin and no signs of immune suppression – IND filing 2H 2021

**PRMT5:** Oral brain penetrant inhibitor (Glioblastoma) – Lead optimization

**PDL1:** Small molecule inhibitor for oral maintenance checkpoint therapy – Lead optimization



- Preclinical stage biotech
- 4 un-partnered lead programs
- Additional new programs in early discovery



- 2 Phase I completed
- 1 new IND filed
- Partnered programs



# Leveraging innovation to deliver precision medicines

## Innovation is our core

Addressing unmet patient needs (from specific genetic mutations, drug resistance, or compensatory mechanisms) by leveraging our advanced discovery and development engine to deliver precision therapeutics focused on both first-in-class and validated but intractable drug targets.

## About Jubilant Therapeutics



**Patient-centric biopharmaceutical company** advancing potent and selective small molecule medicines to address genetically defined patient populations in **oncology and autoimmune diseases**



**Entrepreneurial-minded leadership and scientific teams** with global pharma experience in discovering innovative drug candidates and rapidly advancing them to **clinical proof-of-concept**

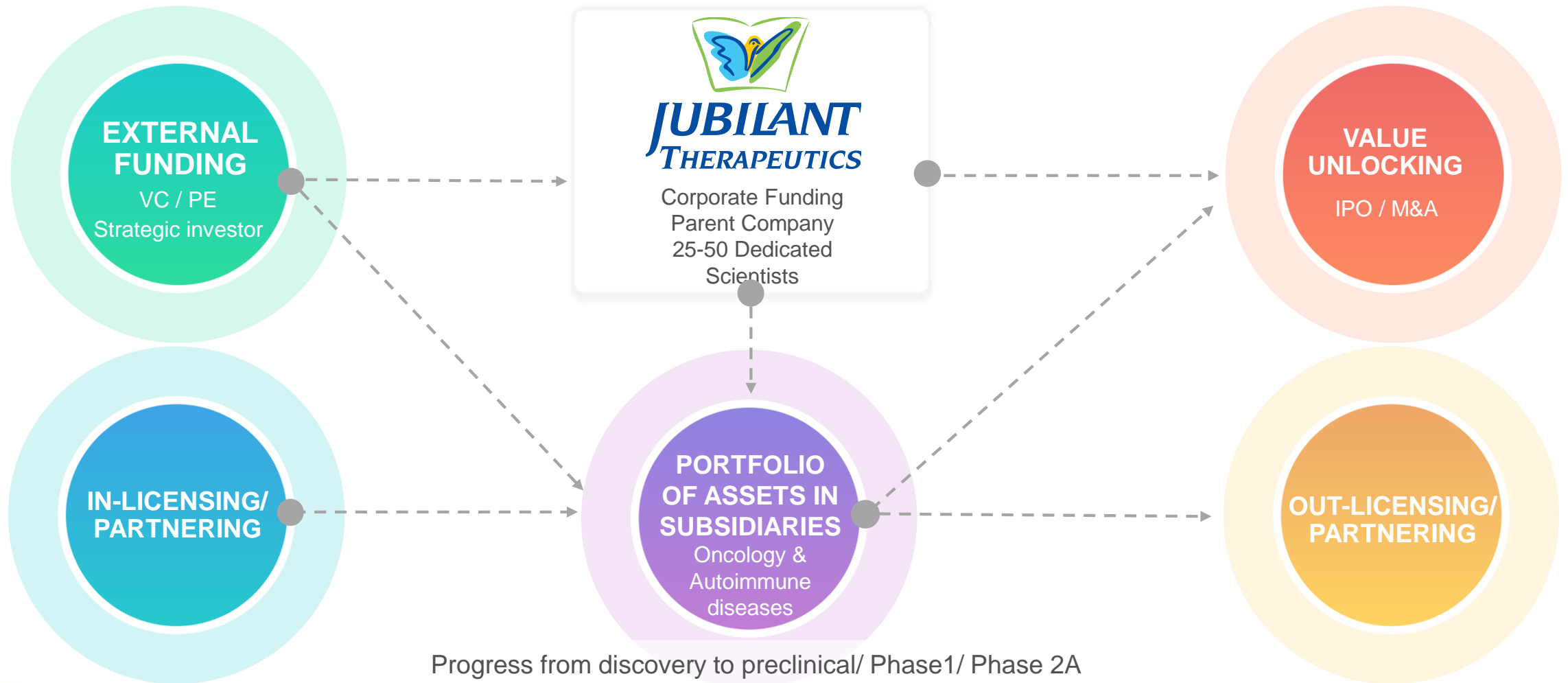


**U.S. headquarters (Corporate Office in Bedminster, NJ; Lab in Bangalore and Noida, India)** with an independent board and management team, guided by **globally renowned KOLs and SAB**



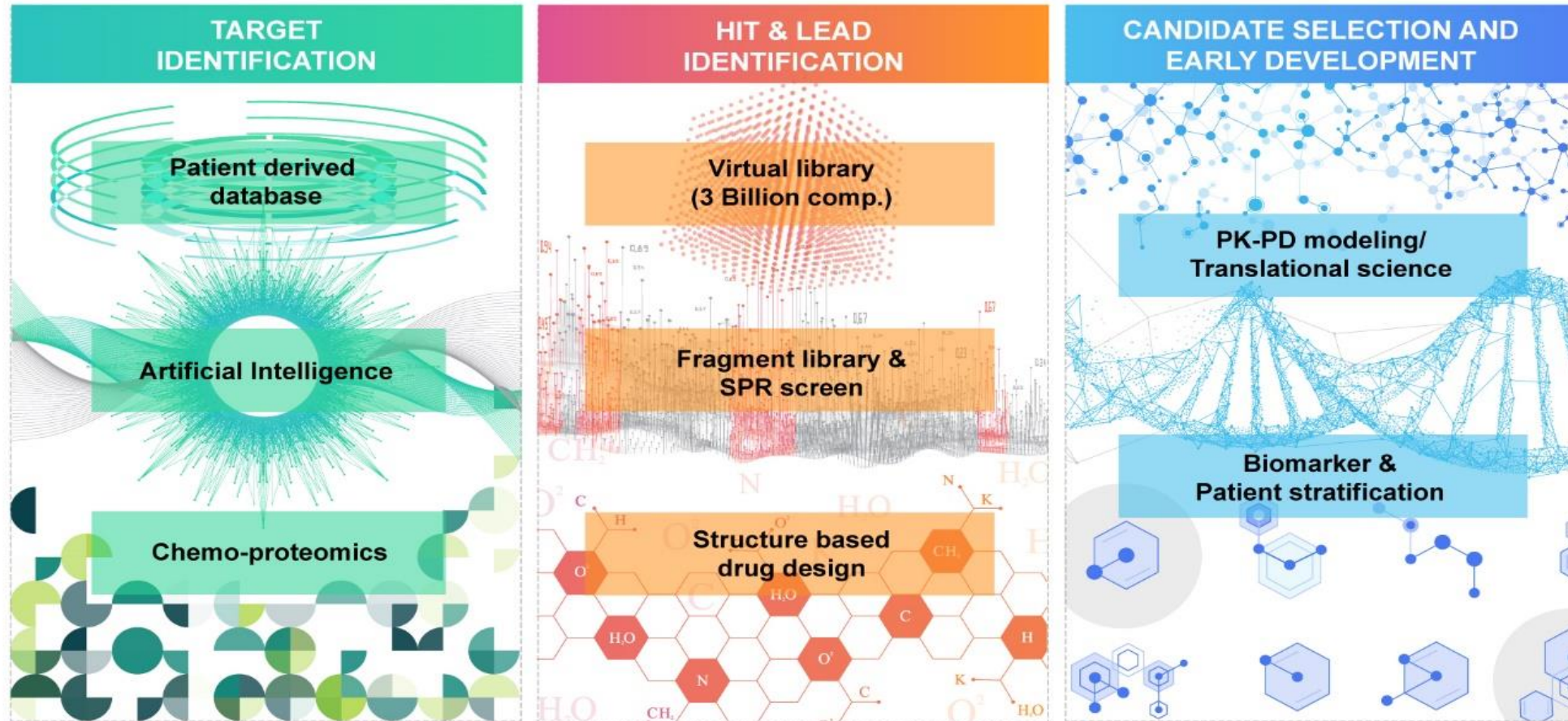
Incubated, Funded and Supported by **Jubilant Life Sciences**, a global pharma and life sciences company with about \$1.3B revenue

# Agile and flexible business model to accelerate value creation

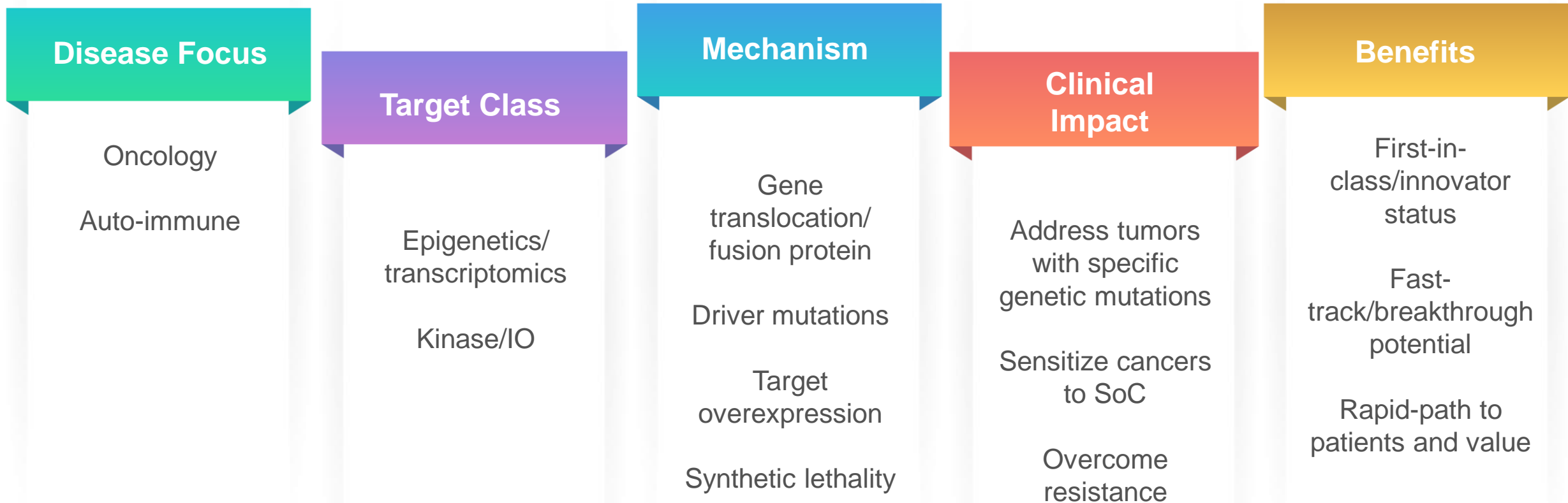


Progress from discovery to preclinical/ Phase1/ Phase 2A leveraging proven and synergistic capabilities of Jubilant Life Sciences' world-class research with **in-house** discovery & development expertise

# Applying an advanced, powerful discovery engine for novel target discovery and candidate selection



# Unlocking the value of first-in-class and technically challenging drug targets





# Platform synergies with Jubilant's Discovery Services

- Jubilant's discovery services with >550 scientists has **delivered >75 integrated discovery programs** for global top 10 pharma companies, biotech and healthcare VCs



- 25-50 Dedicated scientific FTEs** carved out for Jubilant Therapeutics
- Discovery Engine capable of generating **multiple assets/year** organically from hit stage and advancing to clinical candidate
- Advantageous business economics** of having cutting edge ideas and experiments designed by Jubilant Therapeutics U.S, executed by high quality R&D team from world class labs in India (Bangalore and Noida)





# Differentiated portfolio advancing toward Phase 1

LEAD PROGRAMS	INDICATIONS	TARGET TO LEAD	LEAD OPTIMIZATION	PRE-CLINICAL (IND)	NEXT MILESTONE
<b>LSD1/HDAC6</b> Epigenetics	MDS/AML TNBC	[Progress bar spanning Target to Lead, Lead Optimization, and Pre-clinical (IND)]			Phase I 2H 2021
<b>PD-L1-Small Molecule</b> Immuno-oncology	Multiple Cancer; HBV	[Progress bar spanning Target to Lead and Lead Optimization]			IND-Track 2H 2020
<b>PRMT5</b> Epigenetics	Glioblastoma Lymphoma	[Progress bar spanning Target to Lead]			Candidate Selection Q4 2020
<b>PAD4 inhibitors</b> Epigenetics	Rheumatoid arthritis; Lung Fibrosis, Thrombosis	[Progress bar spanning Target to Lead, Lead Optimization, and Pre-clinical (IND)]			Phase I 2H 2021
<b>Undisclosed Target</b> Kinase	Oncology	Partnered with Frazier Healthcare Partners			
<b>BRD4</b> Epigenetics	AML	Partnered with Checkpoint Therapeutics			

*Multiple early stage programs are being pursued*



**Selective Dual  
LSD1 / HDAC6 Inhibitor  
for AML/MDS**



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# Strong scientific and clinical rationale for LSD1/HDAC6 inhibition in acute myeloid leukemia (AML)



## Scientific Rationale

- LSD1 is essential for cancer stem cell survival and maintains tumors non-responsive to immune modulation (“cold” tumor)
- HDAC6 leads to immune suppression and other substrate dependent cancer cell processes to promote cancer cell survival
- Both targets are over-expressed in AML.



## Clinical Rationale

- Synthetic lethality approach: targeted killing of malignant cells
- Current SoC has a low response rate, limited single agent activity and dose-limiting toxicities
- LSD1 inhibitor alone has shown limited single agent activity
- Selective inhibition of HDAC6 may reduce the toxicity associated with pan-HDAC inhibitors.

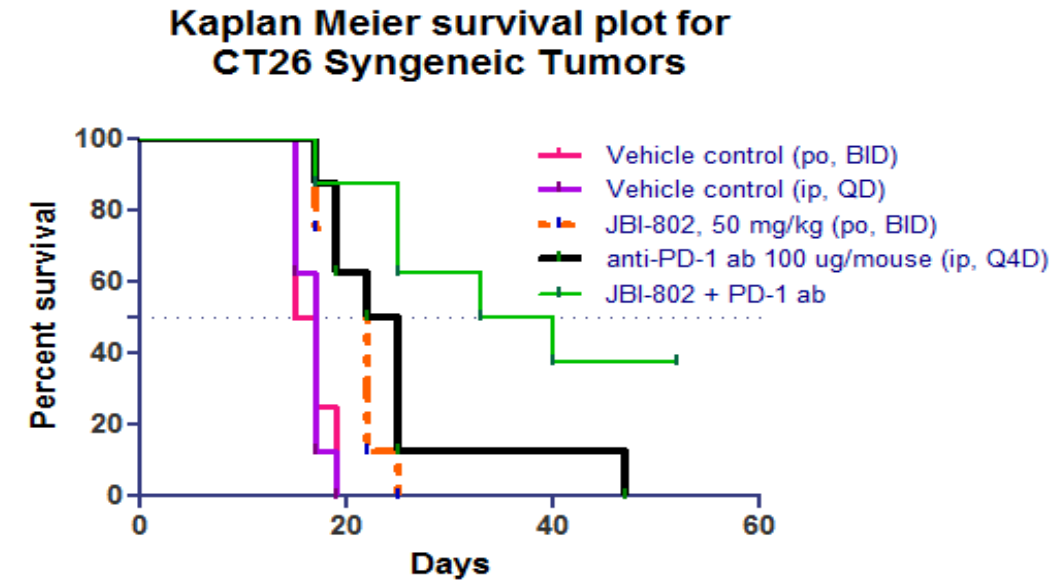
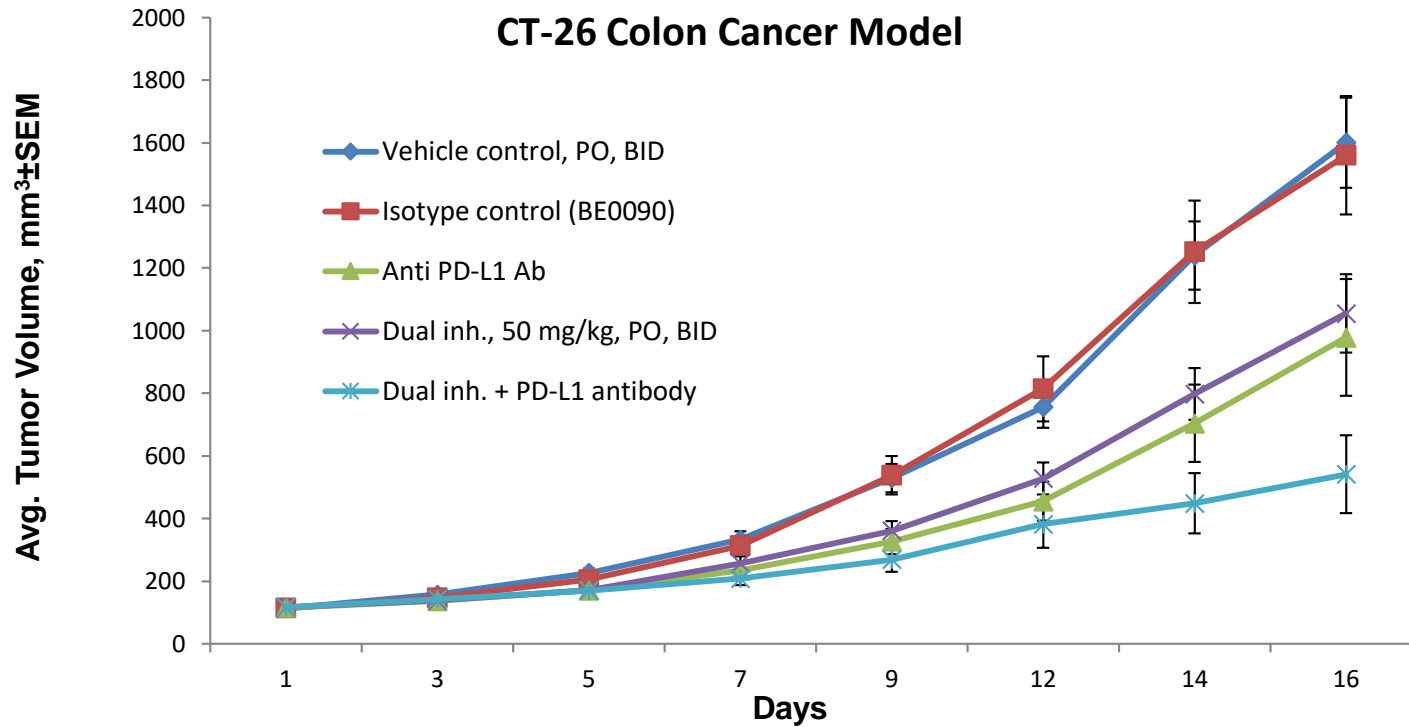


## Opportunity

- Faster clearance, sustained target engagement in malignant cells; minimized systemic tox
- Patient stratification based on MLL rearranged tumors, MDS and erythroleukemia
- Synergy or overcome resistance when combined with chemo/SoC
- Combine with checkpoint inhibitor for solid tumors (sarcomas and lymphomas)



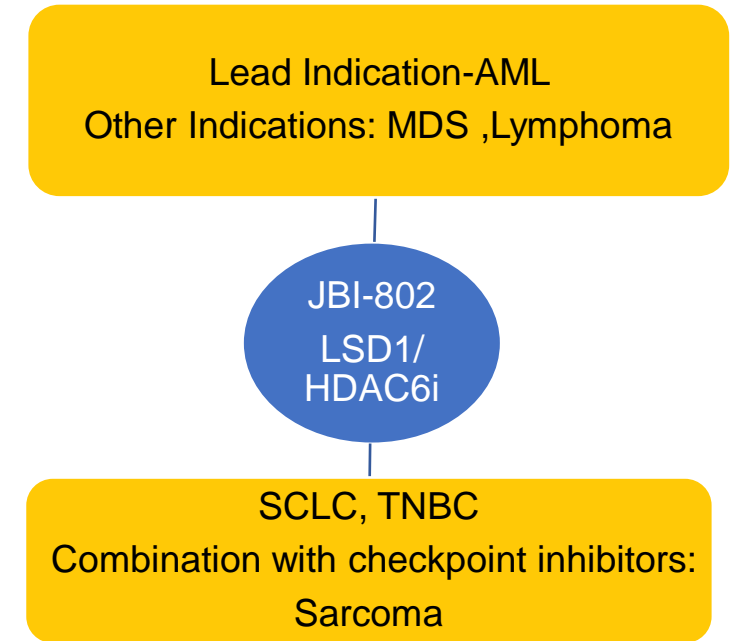
# JBI-802: Dual inhibitor demonstrated superior activity with anti-PD-L1 mAb



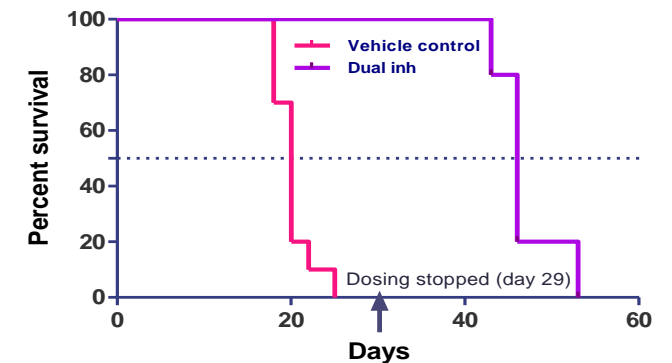
Combination of Dual inhibitor and anti-PD-1 mAb enhances survival

# JBI-802 - Novel mechanism of dual LSD1/HDAC6 inhibition to enter Phase 1 in 2021

- ✓ JBI-802 is orally available with novel dual mechanism of action of Isoform selective HDAC6 inhibition and potent LSD1 inhibition
- ✓ Robust biomarker modulation of LSD1 (CD11b and CD86) and HDAC6 (tubulin acetylation) observed both *in vitro* and *in vivo*
- ✓ Superior *in vivo* efficacy as compared to LSD1 and HDAC6 inhibitors that are in clinic
- ✓ Efficacy demonstrated in multiple xenograft model
- ✓ Stronger efficacy in combination with immune checkpoint inhibitors
- ✓ No major adverse effects observed in the 14-day non-GLP repeat dose toxicity in mice
- ✓ GMP material synthesized and IND track in progress
- ✓ PCT patent filed in major territories and expires in 2036



Kaplan Meier survival plot for HEL 92.1.7 Xenografts



# Selective PAD4 Inhibitors for Auto-immune Diseases



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# Strong scientific and clinical rationale for PAD4 inhibitors in rheumatoid arthritis (RA)



## Scientific Rationale

- Next generation target in autoimmune/inflammation beyond JAKs and TNFs
- High anti-CCP (anti-cyclic citrullinated peptide) levels are detected in RA patients
- Targeting auto-antibody production through PAD inhibition in RA
- Strong rationale for PAD4 through KO and genetic studies



## Clinical Rationale

- Antibodies produced against citrullinated proteins (including anti-CCP), are diagnostic, prognostic and stratification markers of RA
- Differentiated mechanism to treat RA and other autoimmune diseases
- Targeting PAD4 does not lead to immune suppression nor risk of thrombocytopenia and may offer better therapeutic margin and safety

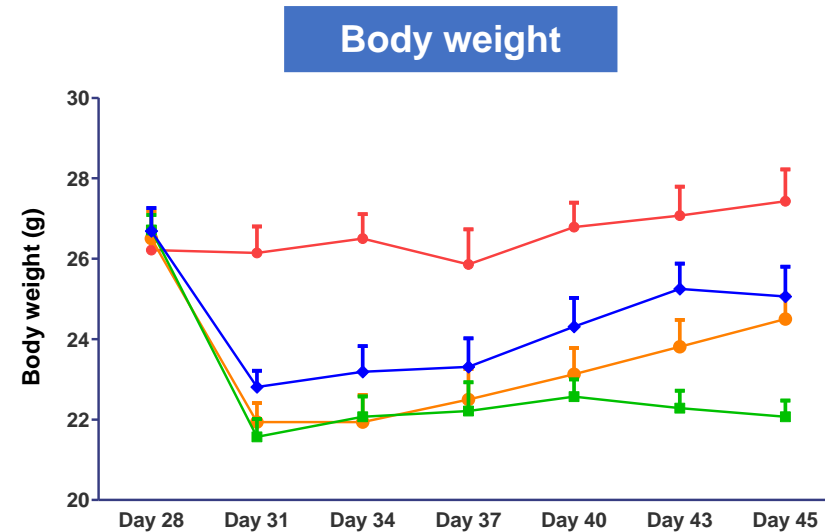
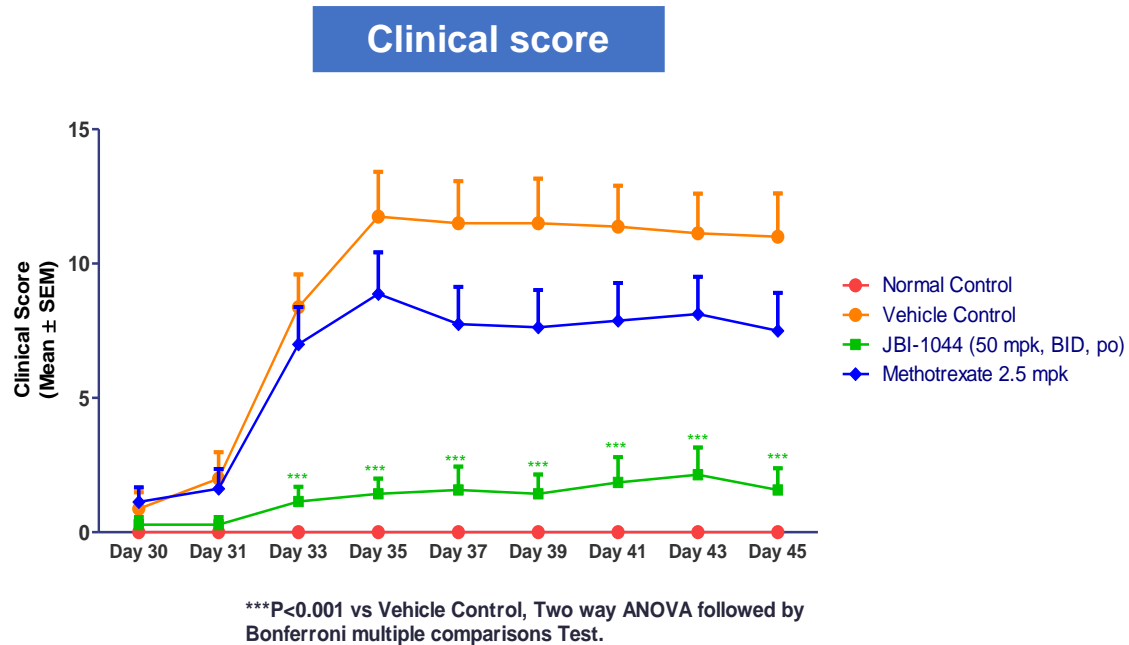


## Opportunity

- First-in-class epigenetic mechanism in RA
- Small molecule option for anti-TNF- $\alpha$  non-responders
- Potentially better side effect profile than JAK inhibitors
- Potential utility in various auto-immune disorders such as **RA, lung fibrosis (including Covid-19 ARDS), psoriasis, SLE, etc.**

Potential therapeutic applications in multiple autoimmune disorders including RA, lung fibrosis and Covid-19 related inflammatory pathologies

# PAD4 inhibitor JBI1044 protects from disease progression in CIA-induced arthritis

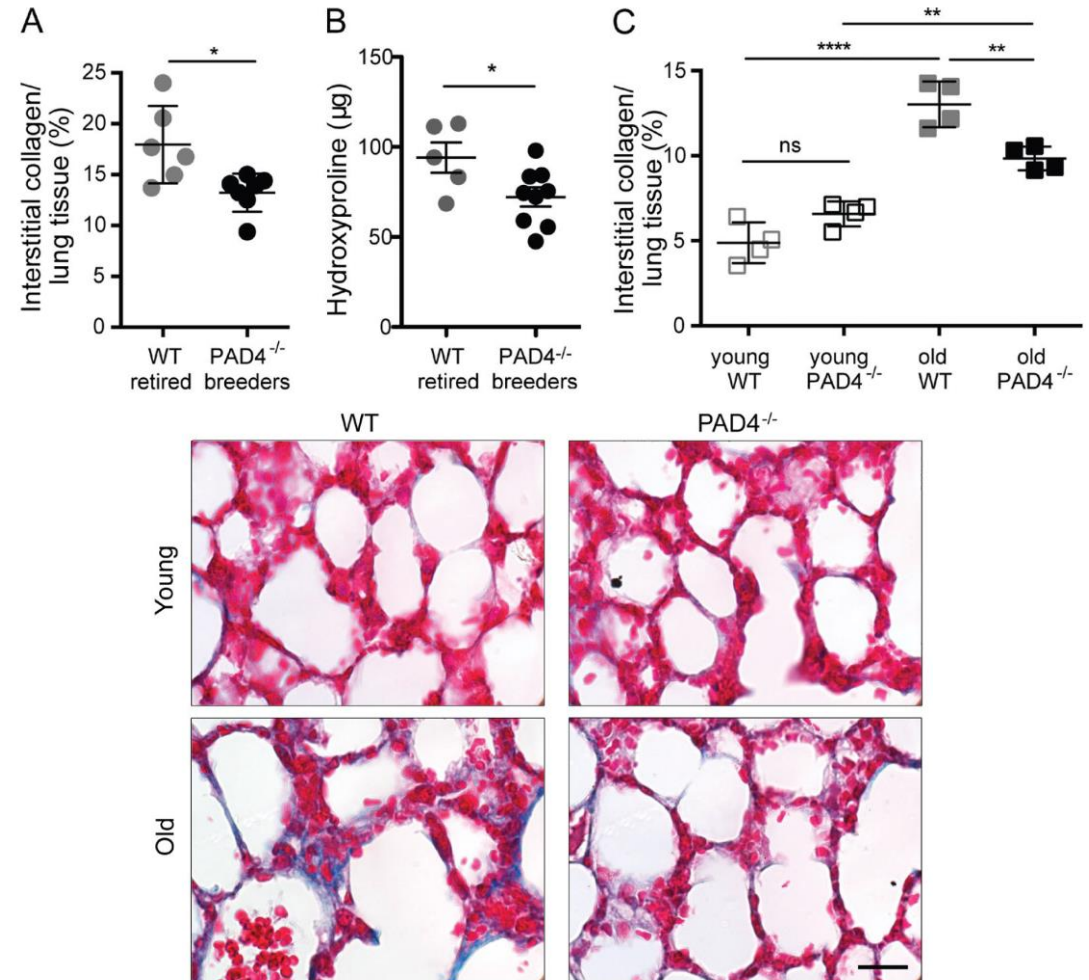


- Significant reduction in CitH3, IL-10 and IL-17 in arthritic paw samples
- Well tolerated with no significant change in spleen weight, thymus weight and body weight observed
- Efficacy signals in animal models of diabetic wound healing, imiquimod-induced psoriasis and TPA-induced dermatitis

# Role of Peptidylarginine deiminase-4 (PAD4) in IPF

- The peptidylarginine deiminase 4 (PAD4) enzyme is required for NET formation and associated DNA release in neutrophils
- NETs appear to contribute to developing pulmonary fibrosis induced by BLM instillation as observed by PAD4-knockout Pad<sup>-/-</sup> mice
- PAD4 is overexpressed in IPF lungs and associated fibroblasts. PAD4 loss of function inhibition critical profibrotic functions in IPF ex vivo and fibrotic functions in experimental fibrosis
- Peptidylarginine deiminase 4 contributes to the profibrotic phenotype of fibroblasts from patients with idiopathic pulmonary fibrosis and promotes experimental pulmonary fibrosis

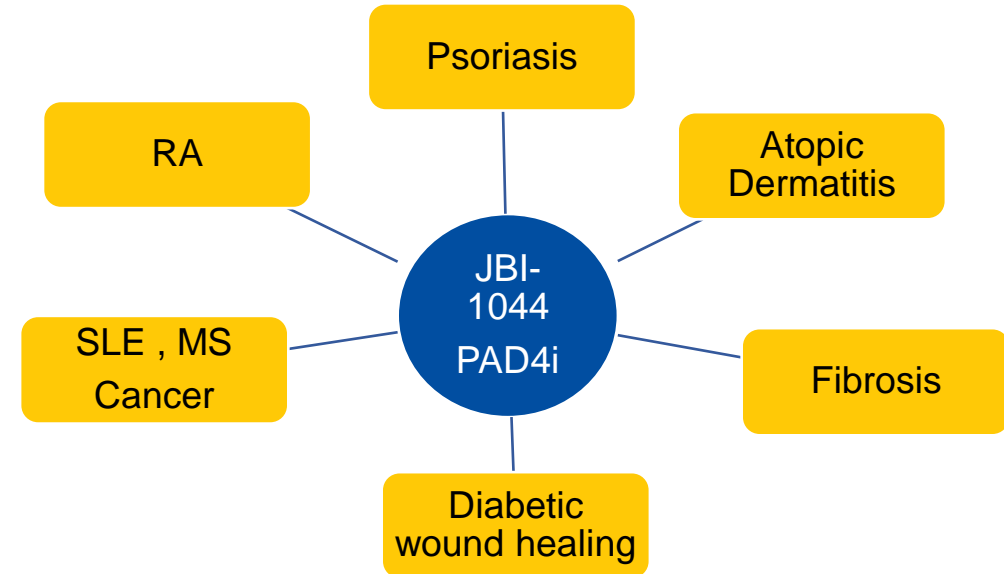
**PAD4<sup>-/-</sup> mice have significantly less collagen staining in their lungs than old WT mice.**



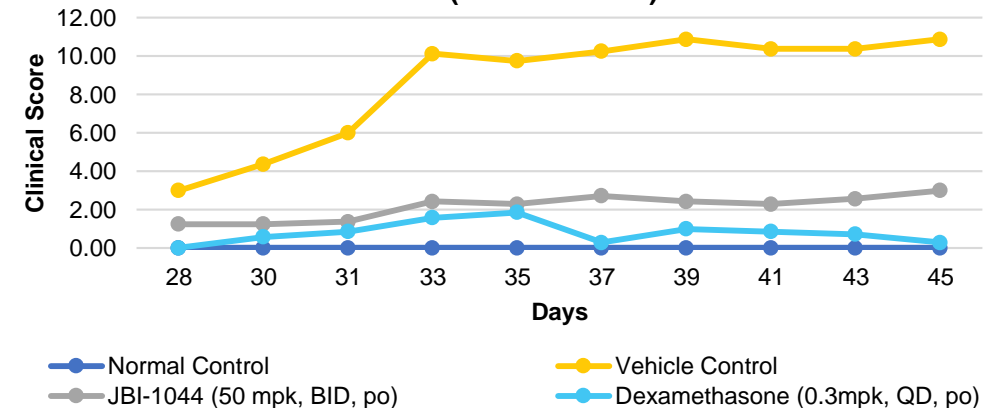


# JBI-1044 – PAD4 inhibitor targeting auto-immune disorder to complete IND filing in 2H 2021

- ✓ Orally available novel, small molecule inhibitor complies with the rule of five
- ✓ Unique Mechanism of action: modulation of citrullination and NETosis
- ✓ Selective against PAD4 and does not inhibit other isoforms
- ✓ Excellent efficacy demonstrated in collagen induced arthritis model by oral route of administration
- ✓ Efficacy demonstrated in lung fibrotic model and is comparable to Nintedanib
- ✓ Efficacy has also been demonstrated in psoriasis, diabetic wound healing and atopic dermatitis models
- ✓ Good therapeutic margin based on 14 day tox study in rodent and non-rodent - No signs of immune suppression
- ✓ Clean in CEREP safety panel, cardiac profiler and AMES negative
- ✓ Two PCT patents filed in major territory and expires in 2038



Effect of JBI-1044 in Mouse model of Collagen induced arthritis (Clinical Score)



# Lead optimization assets

Small molecule PDL1 inhibitor,  
Brain penetrant PRMT5 inhibitor



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# Strong scientific and clinical rationale for novel small molecule PD-L1 inhibitor



## Scientific Rationale

- PD1/PD-L1 pathway is a critical component of T-cell immune checkpoint
- In the tumor microenvironment, PD-1 and PD-L1 perform a vital role in tumor progression and survival by escaping tumor immune surveillance
- Targeting PD-1 and PD-L1 simultaneously could reactivate cytotoxic T cells to work against cancer cells



## Clinical Rationale

- Anti-PD1/PD-L1 mAbs increase overall survival compared to standard of care in different tumors
- Since mAbs can activate a broad range of immune cells, they can trigger severe auto-immune reactions
- Potential to overcome immune related adverse effects with a small molecule
- Low patient compliance and high cost of mAb therapies are potential issues with SoC



## Opportunity

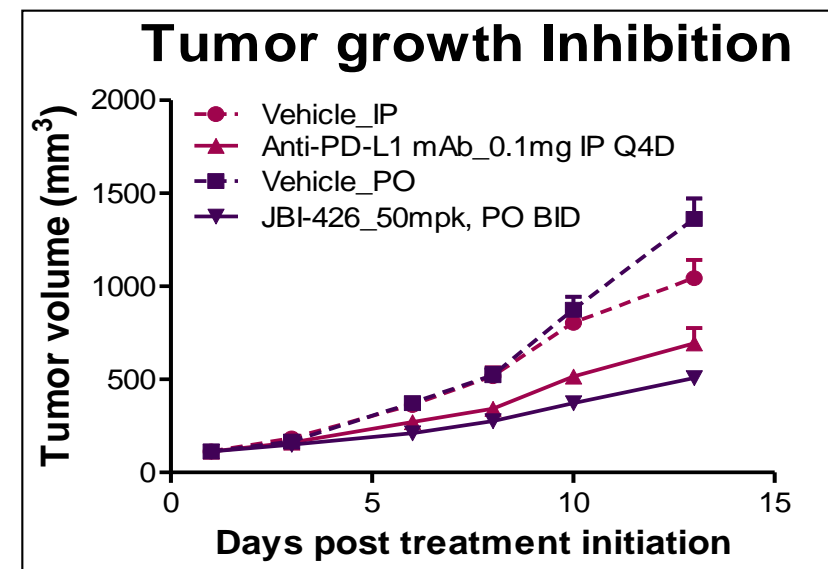
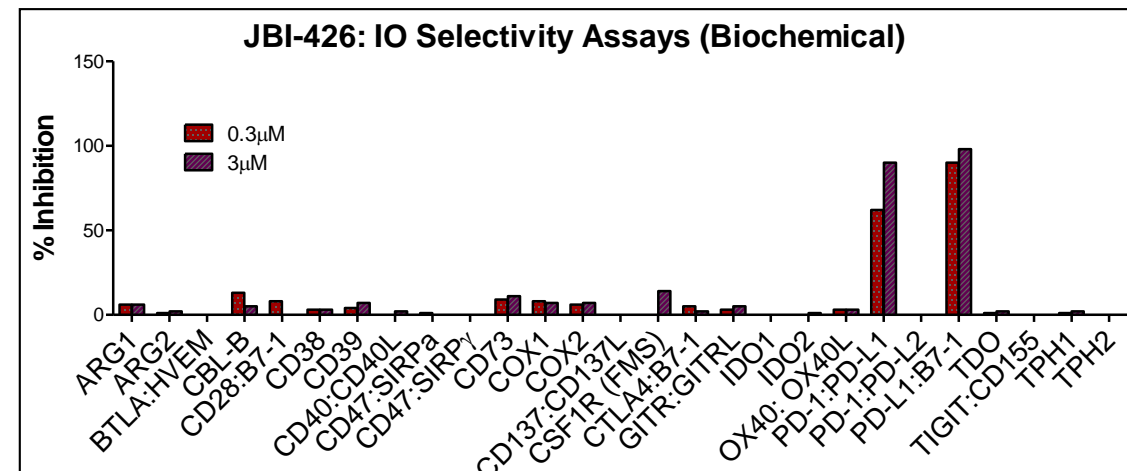
- Potential use after initial mAb treatment as a lower-cost maintenance therapy
- I/O combination in non-oncology indications where small molecule PD-1 oral modality is preferred over IV mAbs

Addressable population for checkpoint inhibition –Alternative to mAbs for increased compliance and long-term use in maintenance settings



# Highly selective small molecule PD-L1 inhibitor for Oncology, HepB with no identified off-target effects

- ✓ Orally available novel, small molecule inhibitor
- ✓ Binds to PD-L1 protein and prevents interaction with PD-1
- ✓ Comparable tumor reduction to mAb in the humanized murine model
- ✓ Selectivity and Off target: Highly selective for PD-L1; Clean in Cerep 44 toxicity Panel; Negative in AMES test and no hERG or CYP liability
- ✓ MTD is >500 mg/kg in mice
- ✓ Well tolerated in the 14 day repeat dose toxicity study in mice at the highest dose
- ✓ Two patent PCT application filed



# Strong scientific and clinical rationale for novel small molecule PRMT5 inhibitor



## Scientific Rationale

- Glioblastoma (GBM) is selectively sensitive to inhibition of PRMT5 and has been identified as a predictive biomarker
- PRMT5 inhibition disrupts the removal of detained introns leading to modulation of proliferation
- Represses expression of several tumor suppressor genes, leading to cancer progression



## Clinical Rationale

- Limited or no agents to treat GBM
- Poor response rate with SoC
- Potential for high CINS1A/RIOK1 ratio to identify sensitive patients
- Brain penetrant?



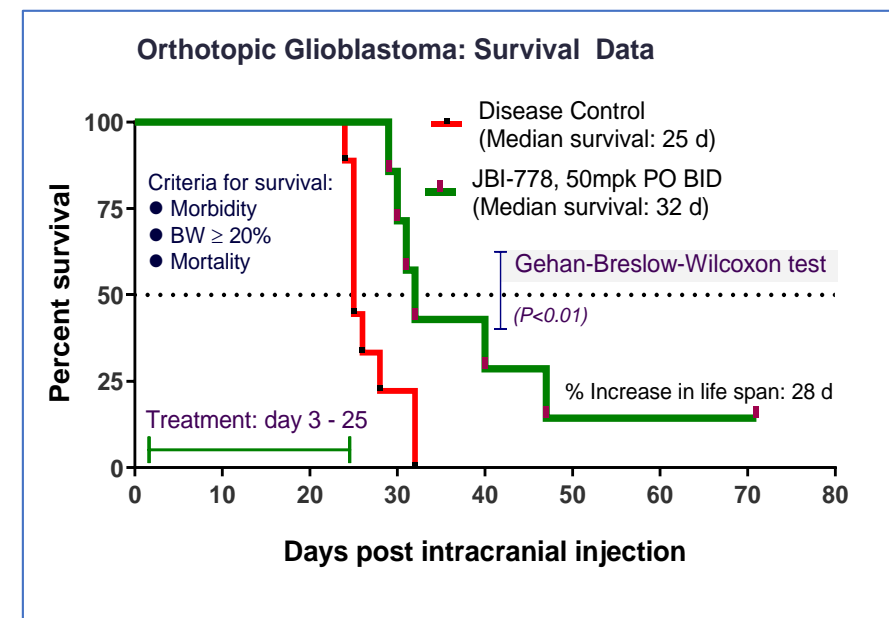
## Opportunity

- Mechanism is validated with a few PRMT5 inhibitors in early clinical trials
- First brain-penetrant PRMT5 inhibitor to address the unmet medical need in treating GBM
- Potential use in other cancers where PRMT5 is over expressed (uterine, liver, pancreas, skin, breast, cervix, prostate, kidney, ovary, bladder, and lung)

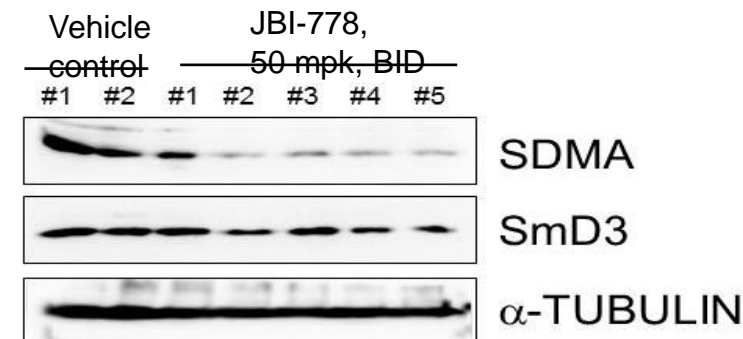
Estimated glioblastoma patient population: 11,000 U.S. and 225,000 global

# Brain-penetrant PRMT5 inhibitor to address the unmet medical need in treating GBM

- ✓ Orally available novel small molecule inhibitor complies with the rule of five
- ✓ Inhibits the symmetrical dimethylation of Arginine
- ✓ Selective to PRMT5 in the arginine methyl transferase panel
- ✓ Compounds show reasonable brain exposure and target engagement in brain
- ✓ Superior efficacy has been demonstrated in xenograft model by oral route compared to the reference compound
- ✓ Efficacy has been demonstrated in the orthotopic GBM model by oral route
- ✓ Patent expires in 2038 and filed in all the major countries
- ✓ Further characterization of leads is in progress



## Target engagement in brain



# Board, Management & Advisors



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# Board of Directors - Seasoned Entrepreneurs and Industry Leaders

## Hari Bhartia – Founder, Jubilant Bhartia Group



- Founder of Jubilant Bhartia Group, valued at around US \$ 5 Billion with 39,000 employees globally with leadership position in diverse sectors including Pharmaceuticals, Life Science Ingredients and Drug Discovery Services
- Member of World Economic Forum’s International Business Council; Community of Chairpersons; Global Health and Healthcare Governors Community; Family Business Community. He was the Co-Chair of the Davos Annual Meeting of the World Economic Forum in 2015.

## Dr. Syed Kazmi – CEO, Jubilant Therapeutics



- 25+ years in M&A, licensing, strategic collaborations, and R&D in both specialty biotech and large pharma companies



## Pramod Yadav – CEO, Jubilant Pharma



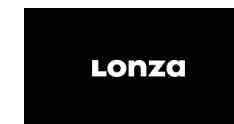
- 30+ years experience; 20+ years in Jubilant
- Held various senior leadership roles and presently CEO of Jubilant Pharma in U.S



## Mitchell Guss – Head Legal, Jubilant Pharma



- 30+ years experience
- Leads legal and related functions for Jubilant Pharma U.S.



# Management team with international experience and scientific excellence

Name & Title	Brief Bio
<b>Rajiv Tyagi</b> VP– Business Development	<ul style="list-style-type: none"> <li>• 15+ years of experience in drug discovery in both scientific and commercial domains.</li> <li>• Brook Haven National Laboratory; Queensland Institute of Medical research</li> </ul>
<b>Shyam Pattabiraman</b> CFO	<ul style="list-style-type: none"> <li>• 15+ Years global consulting and industry experience</li> <li>• Former member of Strategy Officer community at the World Economic Forum</li> <li>• PricewaterhouseCoopers</li> </ul>
<b>Sridharan Rajagopal</b> VP - Med. Chemistry	<ul style="list-style-type: none"> <li>• Nearly 15 years of drug discovery experience including taking 3 drugs into the clinic</li> <li>• 25 peer-reviewed articles, 33 poster/oral presentations, 17 patents published (multiple countries)</li> <li>• Aurigene; Orchid Chemicals</li> </ul>
<b>Dhanalaksmi Sivanandhan</b> AVP - Biology	<ul style="list-style-type: none"> <li>• 17+ years of experience in cancer Biology and has delivered 3 candidates currently in clinic</li> <li>• 29 peer reviewed articles, 29 posters/oral presentations, 7 patents</li> <li>• National Cancer Center, Japan</li> </ul>
<b>Rajeev Mohan</b> Director – Project Management	<ul style="list-style-type: none"> <li>• 18+ years of diverse pharmaceutical experience encompassing business strategy, portfolio selection, commercial operations, manufacturing and R&amp;D</li> <li>• Vensun Pharmaceuticals; URL Pharma</li> </ul>
<b>Agunan Krishnan</b> Assoc. Director - BD	<ul style="list-style-type: none"> <li>• 14 years of multi-disciplinary experience involving Strategy, Market Research, Business Development, Licensing, Drug Discovery, Structural Biology, Veterinary medicine</li> <li>• Jubilant Biosys</li> </ul>



# Supported by Functional Advisors with extensive industry experience

## Dr. Ron Christopher – Preclinical Development



- Nonclinical/early clinical development activities in oncology, inflammation, cardiovascular, CNS and metabolic disease therapeutic areas covering drug safety, pharmacokinetic and clinical pharmacology applications; Regulatory filing experience: >25 INDs, 4 NDAs, 3 MAAs



## Dr. Guy Gammon – Translational Research



- Development of Protocols, IND submissions & Clinical Development Strategy (Phase 1 through Phase 3)
- Interfacing with Regulatory Agencies, preparation of submissions and approval of clinical studies



## Dr. Mary Scott – Regulatory Affairs



- 30 years in the pharmaceutical/biotech industry working to develop novel small molecules and biotherapeutics.



## Dr. William Lambert – Chemistry, Manufacturing and Controls (CMC)



- 30+ years of Pharmaceutical and biotech experience.
- Subject matter expert in sterile product formulation development and manufacture, analytical development, lyophilization, aseptic processing, tech transfer, drug delivery, combination product devices, cGMPs, and life cycle management



# Leveraging innovation to deliver precision medicines in oncology and auto-immune diseases







# Thank You

## Partnering:

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Head – Business Development

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