



Investor Presentation

January 2024

Last modified January 16, 2024

Panbela Therapeutics

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This presentation includes information about investigational agents. The efficacy and safety of such investigational agents have not yet been established. Drug development is uncertain and investigative agents may be terminated along the development process.

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Company Presents A Unique Opportunity: Multi-Targeted Approach to Reset Dysregulated Biology

Scientific focus on polyamines, key regulators of normal biology altered in many disease states

- Company focus on polyamine targeted platform spanning multiple indications
- Polyamine targeted therapy established in oncology with recent effornithine approval
- Pipeline spans from pre-clinical to Phase III registration programs
- Approximately a \$5 Billion aggregate market potential across lead indications
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- Multiple near term inflection points
- CPP acquisition completed in 2022 to create complementary, multiproduct, multi-indication portfolio
- Strategic synergies and partnerships (NCI, SWOG, JDRF, JHU SOM, MDACC, Moffitt)

Combined clinical program pipeline to create significant shareholder value

NCI-National Cancer Institute; SWOG-Southwest Oncology Group; COG-Children's Oncology Group; JDRF – Juvenile Diabetes Research Foundation; JHU SOM-Johns Hopkins University School of Medicine; MDACC-MD Anderson Cancer Center; Moffitt- Moffitt Cancer Center

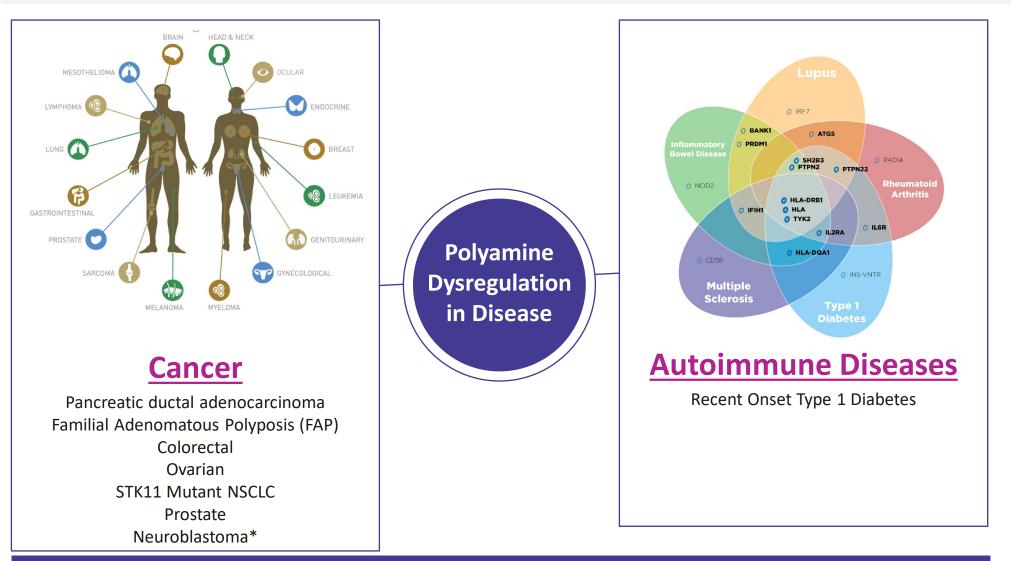
Highly Experienced Management Team with Proven Track Record

Proven orphan and oncology drug discovery, development and commercialization expertise



Team collectively has 10+ FDA approvals and decades of Pharma experience positioning Panbela to execute on the clinical development programs

Dysregulation of the Polyamine Pathway Leads to Disease



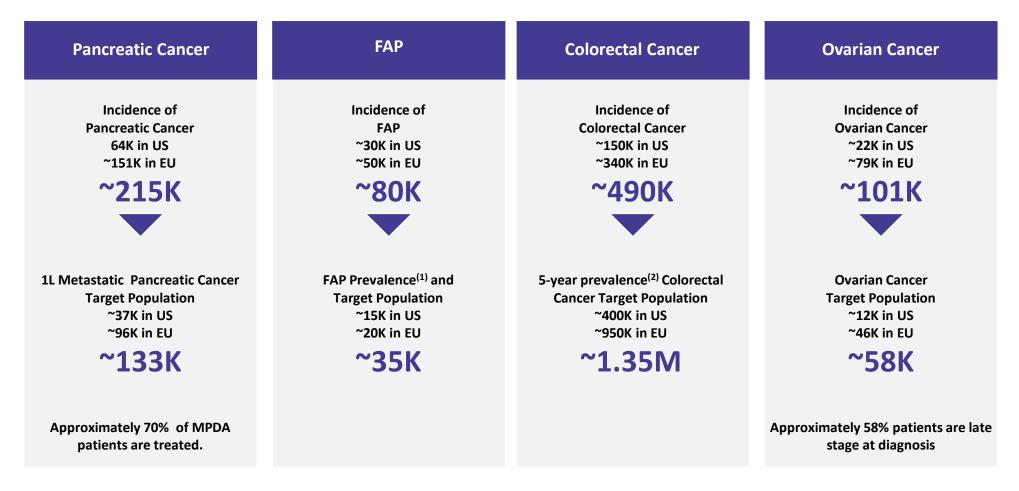
Initial focus on oncology and autoimmune disease - enhancing anti-tumor activity, preventing tumor growth, and modulating the immune system

http://ibeliveit.ca/Personalized-Cancer-Medicine/Funding-byCancer-Typr.aspx https://www.benaroyaresearch.org/blog/post/mystery-multiple-autoimmune-diseases NSCLC- Non Small Cell Lung Cancer *Neuroblastoma.program divested to USWM received EDA approval of NDA 12/2023

Pipeline May Address Multiple Unmet Needs

	Preclinical	IND Ready	Phase I	Phase II	Phase III	Milestones
	PDA (First Line Me	tastatic)				Phase III Enrolling; Interim Analysis Mid 2024
SBP-101 (ivospemin) (Injection)	PDA Neoadjuvant					Phase II Ready – Open 1H 2024
<u>ت (</u> ک	Ovarian		,			Phase I Ready – Open 1H 2024
Flynpovi (eflornithine/ sulindac combination tablet)	Familial Adenoma	tous Polyposis (FAP)				 Global Harmonization of Registration Protocol by 2H 2024
Fly ı (eflori sul combina	Colon Cancer Risk	Reduction (NCI Fund \	via Partnership with S	SWOG)		 Positive Futility Analysis – 1H 2023
CPP-1X-S Immunotherapy Enhancement (eflornithine sachets)	NSCLC (STK11 Mut	t) with Keytruda				 Phase I NSCLC Open FPI – 1H 2024 Phase II NSCLC FPI – 1H 2024
CPF Immur Enhar (eflornith	Immunotherapy-n	onresponsive Cancers				
e ts)	Early Onset Type	1 Diabetes				T1D Phase II Enrolling
CPP-1X-T (eflornithine 250 mg tablets)	Prostate Cancer					Prostate Phase II Enrolling
CPI (eflo 250 m	Neuroblastoma –	Divested to USWM				Divested Neuroblastoma program- FDA approval of NDA 12/2023

Potential \$5B Market Opportunity for Lead Programs



FAP Source: Burt et al 2010; Varesco et al 2004; multiple KOL sources.

Pancreatic Cancer Source: American Cancer Society. Cancer Facts & Figures 2023. Atlanta, GA: American Cancer Society; 2023 and Overview of Pancreatic Cancer Epidemiology in Europe and Recommendations for Screening in High-Risk Populations, Partyka, et al July 2023.

Colorectal Cancer Source: NCI Seer statistics 2018 and https://ecis.jrc.ec.europa.eu.,

https://seer.cancer.gov/csr/1975_2018/browse_csr.php?sectionSEL=1&pageSEL=sect_01_table.21 and GLOBOCAN 2020.

Ovarian Cancer Source: American Cancer Society. Cancer Facts & Figures 2021. Atlanta, GA: American Cancer Society; 2021 and European Cancer Information Systems data 2020 (https://ecis.jrc.ec.europa.eu/).

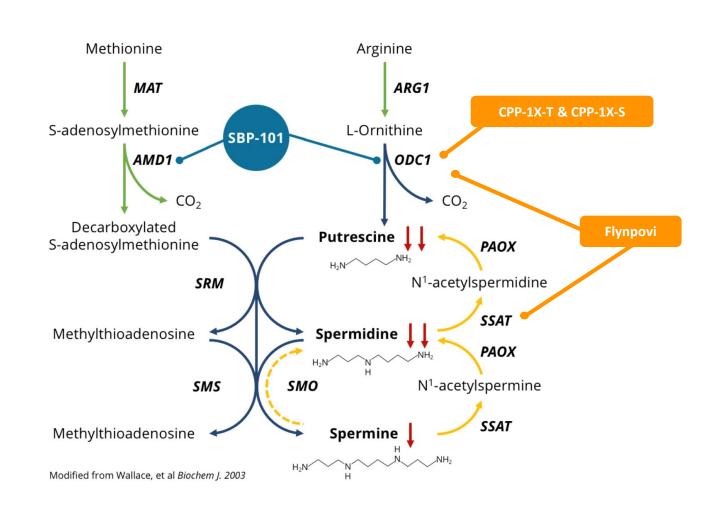
Based on 1/10,000 prevalence, excludes 5% with no APC mut. Includes ages 15-74 and only patients with intact colon or retained rectum (~70% of FAP patients).
 Prevalence is for "1st invasive tumor ever".

Complementary Pharmacotherapies Targeting Dysregulation

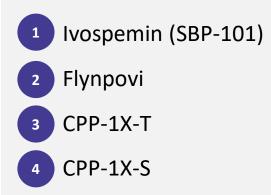
Pipeline Objective

The objective of Panbela's pipeline is the utilization of pharmacotherapies to reduce/normalize increased diseaseassociated polyamines using complementary pharmacotherapies

Combined pipeline pharmacotherapies hit different targets in the polyamine pathway



Current Pipeline



AMD1 = Adenosylmethionine decarboxylase 1; ARG1 = Arginase 1; MAT = Methionine adenosyltransferase; ODC1 = Ornithine decarboxylase 1; PAOX = Polyamine oxidase; SMO = Spermine oxidase; SMS = Spermine synthase; SRM = Spermidine synthase; SSAT = Spermidine/spermine N¹-acetyltransferase.



Ivospemin (SBP-101)

Preliminary Efficacy of ivospemin (SBP-101) + Gemcitabine/Nab-paclitaxel in First-Line Metastatic Pancreatic Ductal Adenocarcinoma

		BEST OVERALL RESPONSE				Disease
	CR	PR	SD	PD	Response	Control
ivospemin (0.40 mg/kg) + G/A* (Ph Ia COHORT 4 + Ph 1b) n=29	1 (3%)	13 (45%)	10 (34%)	5 (17%)	14/29 (48%)	24/29 (83%)
Gemcitabine + Nab-paclitaxel (G/A*)** n=431	<1%	23%	27%	20%	23%	48%

	PFS		OS	
ivospemin (0.40 mg/kg) + G/A Cohort	Ph la 4+Ph lb	G+A*	Ph la 4+Ph lb	G+A*
Median (mo)	6.5	5.5	14.6***	8.5
6 mo (%)	54	44	86	67
12 mo (%)	18	16	55	35

*G/A = gemcitabine + Nab-paclitaxel

**Historical control data, MPACT study G+A arm, N=431 - Source: Von Hoff NEJM 2013

*** Final Data-3/18/22

PhIa = Phase Ia

PhIb = Phase Ib

CR-Complete Response; PR-Partial Response; SD-Stable Disease

Disease Control Rate = CR+PR+SD for > 16 weeks

Efficacy Comparison of ivospemin (SBP-101) + Gemcitabine/Nab-paclitaxel vs. Standard of Care

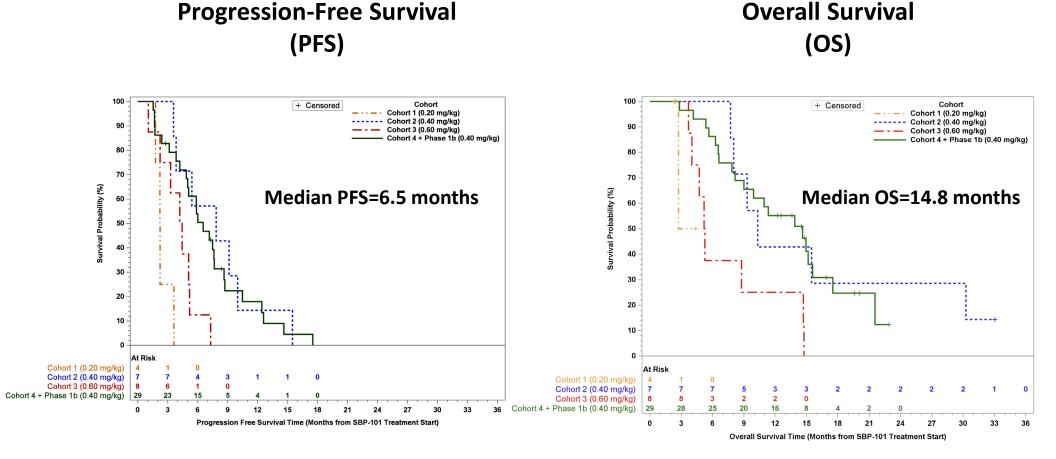
Treatment	OS	PFS	ORR	DCR	PD
CL-SBP-101-03 ¹	14.6 months	6.5 months	48.3%	82.8%	4.8%
FOLFIRINOX ²	11.1 months	6.4 months	31.6%	70.2%	15.2%
Modified FOLFIRINOX ³	10.2 months	6.1 months	35.1%	86.5%	13.5%
NALIRIFOX - Phase I/II (NAPOLI 3) ⁴	12.6 months	9.2 months	34.4%	71.9 %	9.4%
NALIRIFOX - Phase III (NAPOLI 3) ⁵	11.1 months	7.4 months	41.8%	67.6%	22.5%
Gemcitabine + Abraxane – Phase I/II ⁶	12.2 months	7.9 months	48%	68%	16%
Gemcitabine + Abraxane (MPACT) ⁷	8.5 months	5.5 months	23%	48%	20%
Gemcitabine + Abraxane- Phase III (NAPOLI 3) ⁴	9.2 months	5.6 months	36.2%	62.3%	23.3%

1. CL-SBP-101-03 CSR (modified Efficacy Evaluable data n=29);

- 2. Conroy et al, 2011;
- 3. Stein et al, 2016 (MPC data);
- 4. Wainberg et al, 2021;
- 5. O'Reilly et al, 2023;
- 6. Von Hoff et al, 2011;
- 7. Von Hoff et al, 2013

OS-Overall Survival PFS-Progression Free Survival ORR – Overall Response Rate DCR-Disease Control Rate PD – Progressive Disease

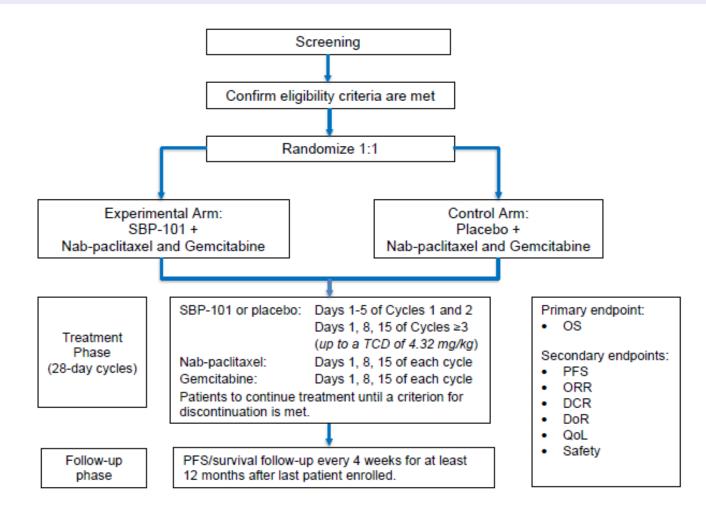
Phase I Trial Efficacy of SBP-101 +Gemcitabine/Nab-paclitaxel



- Cumulative survival rates at 6 and 12 months were 86.2% and 55.2%. with 3 subjects (10.3%) alive at 19.6, 20.1, and 22.9 months.
- The cumulative PFS rates were 54.0% and 17.9% at 6 and 12 months.
- Nine (31%) subjects treated at the RD were alive at the time of data analysis and were censored for OS. These subjects were alive for an average of 16.4 months (range 12.2 22.9 months)

Phase III Pancreatic Cancer Trial in Subjects Previously Untreated for Metastatic Pancreatic Ductal Adenocarcinoma

A Randomized, Double-Blind, Placebo Controlled Study of Nab-Paclitaxel and Gemcitabine with or Without ivospemin (SBP-101)



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Clinical Research Stu

Ivospemin (SBP-101) + Gemcitabine/Nab-paclitaxel Demonstrated a Similar Safety Profile to Gemcitabine/Nab-paclitaxel in First-Line Metastatic Pancreatic Ductal Adenocarcinoma

Grade ≥3 AEs of Special Interest	N	SBP- 101%		G+A %**		
Hematologic Events	Hematologic Events					
Neutropenia	20	40%		38%		
Leukopenia	0	-		31%		
Anemia	9	18%		13%		
Thrombocytopenia	1	2%		17%		
Febrile Neutropenia	1	2%		3%		
Non-hematologic Events						
Diarrhea	7	14%		6%		
Fatigue	6	12%		17%		
Peripheral Neuropathy	3	6%		17%		

Safety Results

Grade \geq 3 adverse events attributable to any study medication, N=50.						
Event	SBP-101	G+A**	All 3	Total N (%)		
Neutropenia	0	19 (1G <i>,</i> 18 G+A)	1	20 (40%)		
Elevated LFTs	5	0	9	14 (28%)		
Anemia	0	7 (G+A)	0	9 (18%)		
Diarrhea	0	6 (4A, 2G+A)	1	7 (14%)		
Fatigue	0	4 (G+A)	2	6 (12%)		
Vision events	4	1 (G)	2	7(14%)		
Dehydration	2	2 (1A, 1 G+A)	0	4 (8%)		
Peripheral neuropathy	0	3 (A)	0	3 (6%)		
		- \ 7	-	- (0)		

FLYNPOVI: A Combination of CPP-1X and Sulindac

Flynpovi – A Combination of CPP-1X and Sulindac for the Treatment of Familial Adenomatous Polyposis (FAP)

Familial Adenomatous Polyposis (FAP)

- A genetic disease caused by APC mutations where colon polyps develop early in life
- Nearly 100% of patients will develop colon cancer if the polyps are left untreated

Key Information:

- No approved FAP drugs on the market
- Target Physicians: Gastroenterologists
- US-only potential revenue at market share of 35%-60% (approximately 11,300-18,400 potential patients)

Pricing:

Annual Price	US only Potential Annual Revenue
\$20,000	\$227M - \$368M
\$25,000	\$284M - \$460M
\$30,000	\$341M - \$552M
\$35,000	\$397M - \$644M

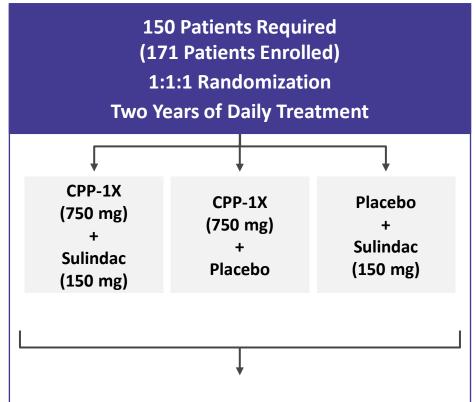


Market:

- FAP affects all ethnicities
- In addition to the US Significant market opportunity in Europe, China and Japan

FAP-310 Trial: "Time to Delay FAP-related Event" Endpoint

CPP FAP 310 global study



Endpoint "Time to FAP-related Event" (e.g., Colectomy, Duodenectomy, Spigelman score*, etc.) over at least 24 months at any Disease Site per Patient

Time to delay FAP-related events

Composite Endpoint including surgeries, polyp removal, and upper GI scoring system ("Spigelman")*; based on FDA/EMA recommendation-first ever "event" trial in FAP

Surgical endpoints most meaningful

p value with all elements of composite endpoint = 0.28 (i.e., with unvalidated non-surgery scoring system* included)

p = <0.02 in delaying surgical and interventional events in "lower GI"

* Determined to not be a "clinically meaningful" metric resulting in a change in the clinical management or treatment for the patient Burke et al 2020 NEJM Balaguer et al 2022 DCR

No Lower GI Surgeries for Flynpovi Combination

Event Rate Distribution of FAP-Related Surgery Events in Lower GI

Surgery Events	ES Combo	Eflornithine	Sulindac	Overall		
	(N=56)	(N=57)	(N=58)	(N=171)		
Need colectomy	0	3	4	7		
Need proctectomy	0	1	1	2		
Need pouch resection	0	4	1	5		
Total Surgical Events	0	8	6	14		
Event Rate	0/56 (0%)	8/57 (14%)	6/58 (10%)	14/171 (8%)		
No surgeries in Lower GI in ES Combo arm						

Adverse Events of Special Interest

Adverse Events of Special Interest	Flynpovi (Eflornithine + Sulindac Combination) N=56 Subjects (%)	Sulindac N=57 Subjects (%)	Eflornithine N=56 Subjects (%)
Anemia	1 (1.8)	5 (8.8)	2 (3.6)
Myelosuppression	0	1 (1.8)	0
Thrombocytopenia	0	3 (5.3)	1 (1.8)
Cardiovascular/Thrombotic events	1 (1.8)	1 (1.8)	1 (1.8)
Hearing impairment/Tinnitus	5 (8.9)	8 (14.0)	2 (3.6)
Non-bleeding GI event	33 (58.9)	25 (43.9)	28 (50.0)
Bleeding GI event	17 (30.4)	17 (29.8)	10 (17.9)
Headache/Migraine/Tension Headache	8 (14.3)	13 (22.8)	7 (12.5)
Dizziness/Vertigo	4 (7.1)	4 (7.0)	7 (12.5)

• **Comparable safety** amongst all treatment arms

Summary of Approach to Approval

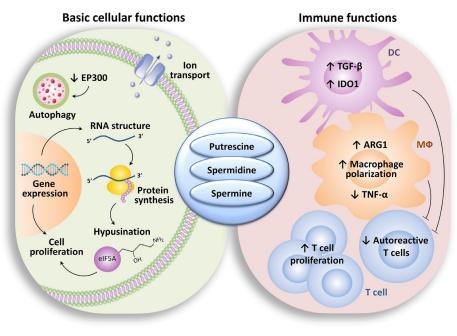
Strong Results in the Lower GI

- Focus on Lower GI: statistically significant p-values and hazard ratios for clinically meaningful surgical endpoints—emphasized by regulators—in Phase III pivotal trial
- Expected safety profile over 2-4 years of daily dosing in Phase III pivotal trial
- Totality of the evidence includes mechanistic, preclinical, and clinical supportive data
- ✓ Seek approval of global registration trial design from FDA and EMA

No Other Approved Therapy for this Orphan Disease

Role of Polyamines in Immune Dysregulation

- Immune systems require multiple soluble and cellular components, including polyamines, for a normal immune function
- High levels of polyamines are present in tumor cells and in autoreactive B- and T-cells in autoimmune diseases
- Dysregulation of polyamines can result in:
 - Tumor immune evasion
 - Elevated cell stress
 - Increased autoimmunity
- Panbela's pipeline focuses on resetting the polyamine pathway to restore normal immune function

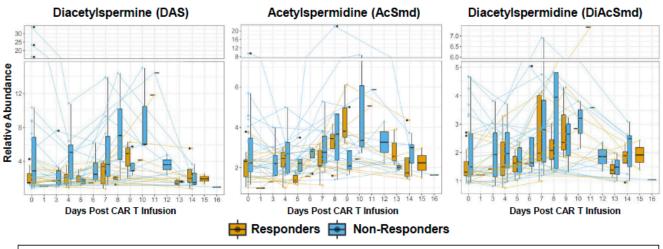


Proietti E et al 2020 Trends in Immunol

Polyamines & Immune Dysregulation

Potential Role of Polyamines in Diffuse Large B Cell Lymphoma (DLBCL) CAR-T Therapy

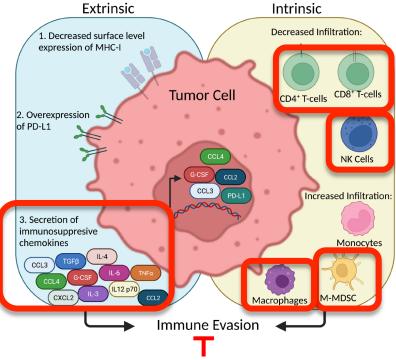
- Polyamine metabolism upregulation through oncogenic MYC is a common metabolic irregularity in aggressive cancers, including lymphomas.
- MYC overexpression in relapsed/refractory DLBCL prior to CAR-T cell therapy negatively associated with durable response to CAR-T cell therapy.
- Circulating acetylated polyamine levels may function as a predictor of therapeutic outcome to CAR-T cell therapy.
- This suggests a possible strategy to target polyamine metabolism to augment the efficacy of CAR-T cell therapy.



Intra-patient slopes considering random variables for intercept and slope					
Metabolite	Responders	Non-Responders	Pval		
DAS	-0.077 (-0.107 to -0.065)	0.086 (0.062 to 0.115)	<0.0001		
AcSpmd	0.028 (0.013 to 0.048)	0.074 (0.057 to 0.087)	<0.0001		
DiAcSpmd	0.034 (0.020 to 0.034)	0.069 (0.057 to 0.078)	<0.0001		

Rationale for Eflornithine/anti-PD-1 Combination

- Targeting Ornithine decarboxylase (ODC) using effornithine unmasks antitumor T cell immune response by weakening of tumor-induced immune suppression that is mediated by Myeloid-Derived Tumor Suppressor Cells (MDSCs).
- The addition of anti-PD-1 prevents the functional exhaustion of these surviving T cells leading to enhanced antitumor effects.
- The combination of effornithine/anti-PD1 prevents immune evasion
- Targeting the polyamine pathway, treatment may reinvigorate the T cell-directed activity of an anti-PD-1 therapy and promote immune-mediated elimination of tumor cells.





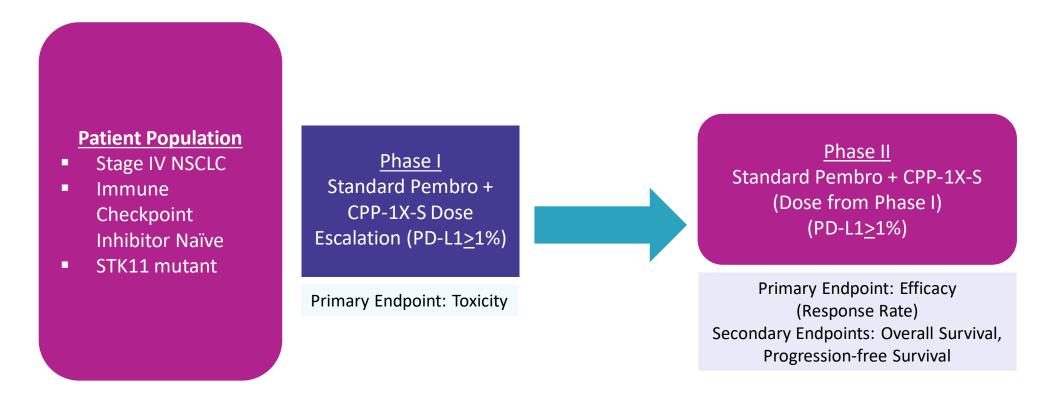
CPP-1X-S

Rationale for CPP-1X-S (Eflornithine Sachets) in STK11 Mutant NSCLC

- In preclinical tumor models, effornithine treatment improves anti-PD-1 efficacy by:
 - Increasing tumor-specific cytotoxic T-cell populations
 - Increasing expression of PD-1 on tumor-associated CD8+ T cells
- ~10% of NSCLC cancers have STK11 mutations
- STK11 mutant NSCLC tumors have:
 - Reduced cytotoxic T-cells infiltrates
 - > Upregulation of the arginine pathway which utilizes ODC to increase levels of the polyamine putrescine
 - Respond poorly to immune checkpoint inhibitor therapy

STK11 Mutant NSCLC Investigator-Initiated Trial

Collaborating with investigators at Moffitt Cancer Center on Phase I/II trial: **"Targeting Ornithine** Decarboxylase as an Immunotherapeutic Target in STK11 (LKB1) Pathway-Deficient Non-Small Cell Lung Cancer"



First Clinical Proof of Concept for Polyamine Modulation of the Immune System



USWorld Medicines Neuroblastoma Program

Anticipated Milestones from USWM Neuroblastoma Program

FDA granted approval to effornithine (IWILFIN) as a treatment for adult and pediatric patients with high-risk neuroblastoma (HRNB) who have achieved a partial response or better to a previous, multiagent, multimodal treatment including an anti-GD2 immunotherapy

• First polyamine targeted therapy approved in oncology

Milestones:

> Up to \$9.1M in milestone payments related to clinical development, regulatory approval and commercial sales.



Business Overview

Barriers to Entry – Flynpovi/CPP-1X

Orphan status (7 years exclusivity US; 10 years exclusivity EU) for CPP-1X

- Granted in US and EU for FAP
- Granted in US for Gastric cancer and Pancreatic cancer

Pharmaceutical Composition Patent

- Fixed dose combination effornithine + sulindac
- Broadly nationalized with potential protection through 2037

Method of Use Patents/Patent Applications

- Fixed dose combination of effornithine + sulindac and effornithine single agent
- "Theranostic" patents will afford protection to 2034 ("theranostic" = drug + diagnostic to guide therapy)
- Use for Treating FAP with potential protection through 2040
- Use in Treating Recent Onset Type 1 Diabetes with potential protection through 2041
- New patents under consideration

Barriers to Entry – ivospemin (SBP-101)

- Orphan status (7 for years exclusivity US; 10 years exclusivity EU) for SPB-101
 - Granted in US and EU for pancreatic cancer

METHODS FOR PRODUCING (6S,15S)-3,8,13,18-TETRAAZAICOSANE-6,15-DIOL

- PCT application filed January 29, 2019
- Granted in United States, United States (CON), India, Japan, Australia, Europe, China
- Pending in Canada
- 20-year expiration date is January 29, 2039

DOSING REGIMENS AND METHODS FOR TREATING CANCER

- PCT application filed January 20, 2021
- Pending in United States, Australia, Canada, Japan, Europe, and Hong Kong
- 20-year expiration date is January 20, 2041

COMBINATION TREATMENT FOR OVARIAN CANCER

• PCT application filed June 21, 2023

Summary of Milestones

1H 2024

- Open- Neoadjuvant Pancreatic Cancer Trial
- FPI NSCLC Phase 1 Trial
- Open Phase 1 Ovarian Trial
- Gastric Cancer Prevention Phase II Results
- Publication of Final Phase 1 Metastatic Pancreatic Trial Data
- Overall Survival Interim Analysis Phase III ASPIRE Trial

2H 2024

- Overall Survival Interim Analysis Phase III ASPIRE Trial
- Obtain feedback from FDA and EMA for Global Registration Program in FAP
- Open NSCLC Phase II Trial

FPI-First Patient In FAP-Familial Adenomatous Polyposis NSCLC – Non Small Cell Lung Cancer

Financial Position - Cash and Debt (unaudited)

Cash and Debt	
Cash at 9/30/2023	907
Net cash from warrant inducement on 11/2/2023 & 12/21/2023	3,687
Net cash from voluntary warrant exercise	1,223
Proforma net cash as of 9/30/2023 ¹	5,817
Debt at 9/30/2023	
Current (due 1/31/2024)	1,000,000
Non-current	<u>4,194,000</u>
Total	5,194,000

(1) Proforma Cash consists of 9/30/23 balance plus disclosed equity transactions subsequent to 9/30/23. Does not reflect any undisclosed Cash used in Operations.

Capital Stock (unaudited)

Panbela	
Common Stock issued and outstanding at 9/30/2023	2,996,334
Shares issued in for exercise of warrants after 9/30/2023	6,609,406
Other activity after 9/30/2023	2,345
Total Proforma Common stock outstanding	9,608,085
Shares reserved for Options (WAE = \$1,071.08) at 9/30/2023	13,455
Shares reserved for Warrants (WAE = \$10.28) at 9/30/2023	4,068,826
Warrants exercised after 9/30/2023	(6,620,728)
Warrants issued after 9/30/2023	9,372,000
Total Proforma Outstanding and Reserved	16,441,638

Summary:

Unique Scientific Approach: Resetting dysregulation via polyamine pathway



Broad, late-stage de-risked pipeline opportunities



Multiple partnerships supporting development programs



Significant market potential



Multiple data readouts expected



Experienced management team