POLYPID

OPTIMIZED THERAPEUTICS

CORPORATE PRESENTATION
FEBRUARY 2024

Cautionary Note Regarding Forward Looking Statements

This presentation of PolyPid Ltd. (the "Company") contains "forward-looking statements" within the meaning of the Private Securities Litigation Reform Act and other securities laws. Words such as "expects," "anticipates," "intends," "plans," "believes," "seeks," "estimates" and similar expressions or variations of such words are intended to identify forward-looking statements. For example, the Company is using forward-looking statements when it discusses statements relating to our objectives, plans, and strategies, the expected timing of trials, the research, development, and use of our platform technologies, technologies, products and product candidates, potential benefits and advantages of our products and product candidates, and all statements (other than statements of historical facts) that address activities, events, or developments that the Company intends, expects, projects, believes, or anticipates will or may occur in the future, expected timing of completion of patient recruitment and top-line results of the SHIELD II study and the timing of the unblinded interim analysis thereof, US addressable market. Forward-looking statements are not historical facts, and are based upon management's current expectations, beliefs and projections, many of which, by their nature, are inherently uncertain. Such expectations, beliefs and projections are expressed in good faith. However, there can be no assurance that management's expectations, beliefs and projections will be achieved and actual results may differ materially from what is expressed in or indicated by the forward-looking statements. Forward-looking statements are subject to risks and uncertainties that could cause actual performance or results to differ materially from those expressed in the forward-looking statements. For a more detailed description of the risks and uncertainties affecting the Company, reference is made to the Company's reports filed from time to time with the Securities and Exchange Commission ("SEC"), including, but not limited to, the risks detailed in the Company's Annual Report on Form 20-F, filed with the SEC on March 31, 2023. Forward-looking statements speak only as of the date the statements are made. The Company assumes no obligation to update forward-looking statements to reflect actual results, subsequent events or circumstances, changes in assumptions or changes in other factors affecting forward-looking information except to the extent required by applicable securities laws. If the Company does update one or more forward-looking statements, no inference should be drawn that the Company will make additional updates with respect thereto or with respect to other forward-looking statements.

PolyPid Overview

PolyPid Ltd. is a late clinical stage biopharma company

aiming to improve and advance surgical outcomes through locally administered, controlled, prolonged-release therapeutics. PolyPid's proprietary PLEX (Polymer-Lipid Encapsulation matriX) technology pairs with active pharmaceutical ingredients, enabling precise delivery of drugs at optimal release rates over durations ranging from several days to months

Polymer-Lipid Encapsulation matriX (PLEX) Platform

Our proprietary matrix of several thousand layers of polymers and lipids that physically embed an active drug and enable a customizable, predetermined release rate of up to several months

Lead Product

D-PLEX$_{100}$ has completed its first Phase 3 development for the prevention of abdominal soft tissue wound infection resulting from surgical incision. Topline data from a second Phase 3 trial is expected by the second half of 2024

171

granted and pending patents[1]

65

employees[1]

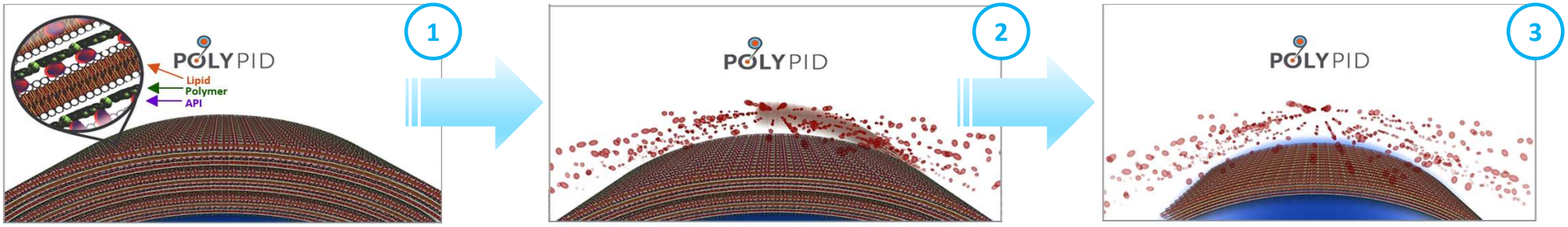
HQs

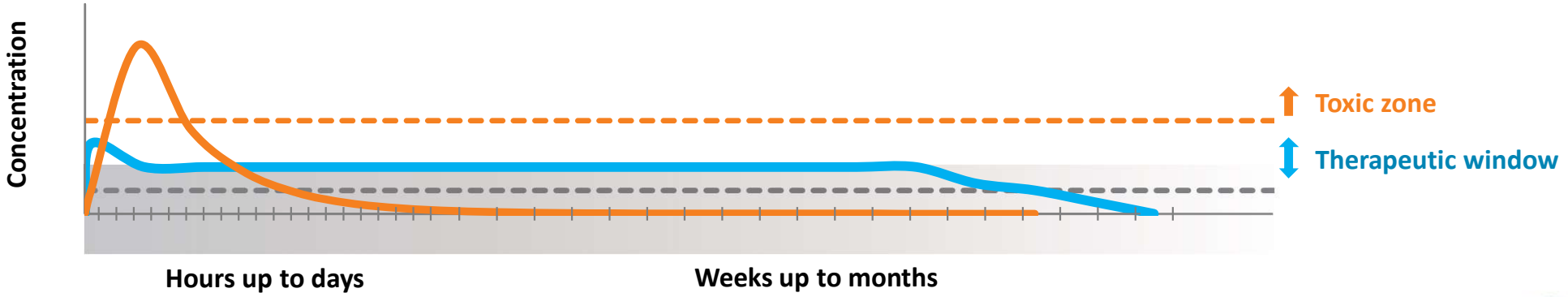
Global: Petach Tikva, Israel
US: New Jersey

NASDAQ: PYPD

[1] *As of August '23*

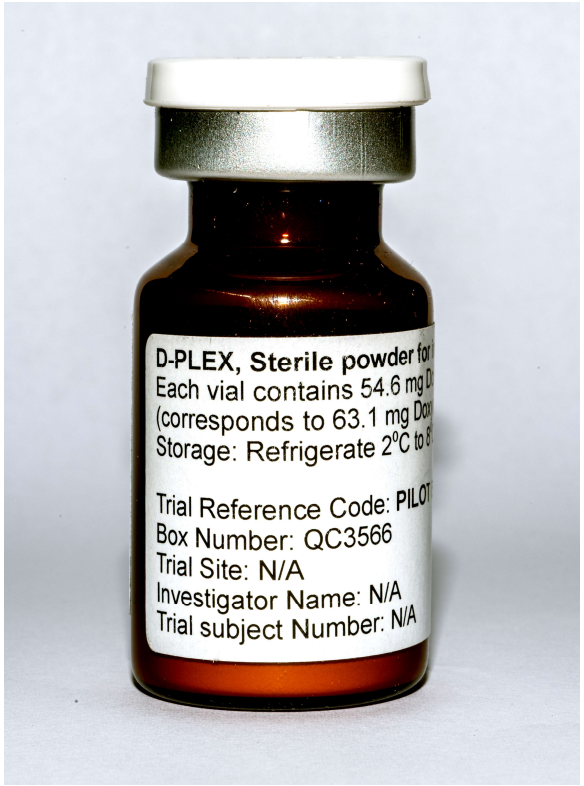
PLEX – Localized Drug Delivery System



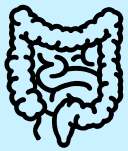


D-PLEX$_{100}$ - Localized Drug Delivery System Optimized for Prevention of Surgical Site Infections (SSIs)

- ✓ **Active Ingredient:** Doxycycline (broad spectrum antibiotic) FDA 505(b)(2) Regulatory Pathway
- ✓ **Release Duration:** Prolonged release of 30 days
- ✓ **Indication:** Prevention of abdominal incisional SSI
- ✓ **Release profile:** Continuous & linear release
- ✓ **Soft tissue dosing** varies by incision size. 1 vial < 10cm ; 10cm < 2vials < 20cm; 3 vials >20cm
- ✓ **Effective release rate:** To overcome resistant bacteria & biofilm



Pipeline Summary

Product candidate and indication	Preclinical	Phase 1	Phase 2	Phase 3	Key milestones
 **D-PLEX$_{100}$** Prevention of SSI **in soft tissue (abdominal)**	**SHIELD I pivotal study in abdominal colorectal surgery**				SHIELD I study – completed
	SHIELD II abdominal colorectal surgeries with large incisions				SHIELD II – • Interim analysis mid-2024 • Topline expected by 2H 2024
 **OncoPLEX** Intra-tumoral therapy (including potentially glioblastoma)					• Pre-clinical stage

Late-stage pipeline with near-term value inflection

The Burden of Surgical Site Infections

Up to 30%

Estimated SSI rate of patients undergoing colorectal surgery[1]

7-11 days

Additional post-operative hospital days for patients with SSIs[2]

20%

SSI rate of all health care-associated infections in US hospitals[2]

2-11x

Increased risk of death for SSI patient (up to 40% mortality after deep sternal infection)[1]

$11k-26k

Cost of treatment per infection directly attributable to SSIs[8]

US $10bn **EU ~€11bn**

Estimated SSI-related incremental annual hospital costs in the US and EU[3, 4,5]

[1] Lawson EH, Hall BL, Ko CY. Risk Factors for Superficial vs Deep/Organ-Space Surgical Site Infections: Implications for Quality Improvement Initiatives. JAMA Surg. 2013;148(9):849–858. doi:10.1001/jamasurg.2013.2925 ; [2] Anderson DJ, Podgorny K, Berrios-Torres SI, et al. Strategies to prevent surgical site infections in acute care hospitals: 2014 update. Infect Control Hosp Epidemiol. 2014;35(6):605-627. doi:10.1086/676022 ; [3] Ban KA, Minei JP, Laronga C, et al. American College of Surgeons and Surgical Infection Society: Surgical site infection guidelines, 2016 update. J Am Coll Surg. 2017;1:59-74 ; [4]Surgical site infection - a European perspective of incidence and economic burden. Leaper DJ et al. Int Wound J. 2004 Dec;1(4):247-73. [5] ~€11bn represents the midpoint of the range discussed in WHO Global guidelines on the prevention of surgical site infection. Nov 2016: 29 ; [6] Centers for Disease Control and Prevention Guideline for the Prevention of Surgical Site Infection, JAMA Surgery , Special Communication, 2017; [7]New WHO recommendations on intraoperative and postoperative measures for surgical site infection prevention: an evidence-based global perspective. Benedetta Allegranzi et al. Lancet Infect Dis. 2016 Dec;16(12):e288-e303. [8] Scott, R. D. (2009). The direct medical costs of healthcare-associated infections in US hospitals and the benefits of prevention.

A Globally Recognized Problem

SSI GUIDELINES: *What's New and What's Not*

CDC — Centers for Disease Control and Prevention

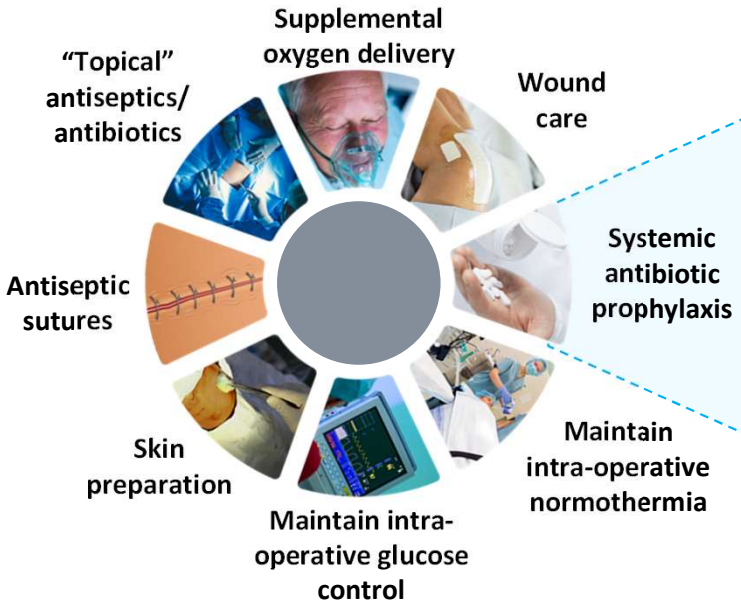
*"**The human and financial costs of treating surgical site infections (SSIs) are increasing**. The number of **surgical procedures performed in the United States continues to rise**, and surgical patients are initially seen with **increasingly complex comorbidities**."* [6]

World Health Organization

*"The **prevention of SSIs is complex and requires** the integration of a **range of preventive measures before, during, and after surgery**. No international guidelines are available…the **prevention of SSIs is a priority for patient safety**."* [7]

Our Initial Focus: Enhancing Post-Operative SSI Prevention

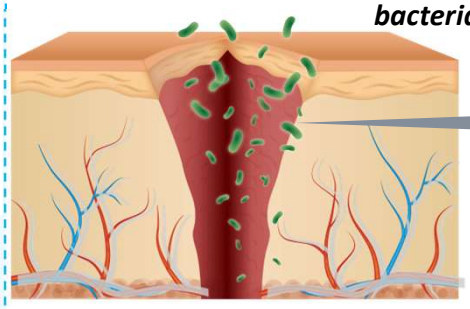
The Current Paradigm



Systemic Antibiotics Are Not Enough

- Systemic antibiotic prophylaxis (IV, Oral) ½ - 1-hour before the surgery is generally used to prevent SSIs
- Antibiotic penetration to the surgical wound is significantly limited due to the blood flow interruption cause by the incision[1,2]*

In SSIs, the surgical incision becomes contaminated by bacteria



Our solution: Direct local antibiotic administration at the site

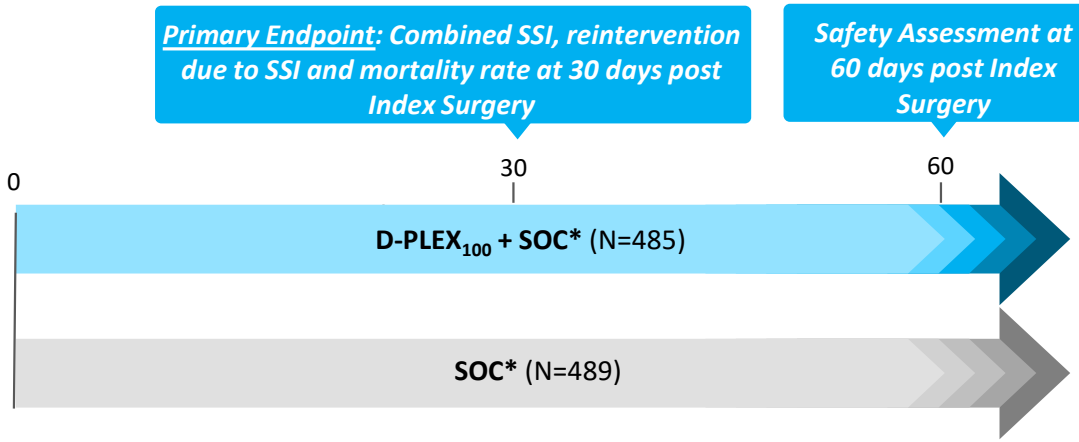
The Goal: effective and safe antibiotic concentrations over prolonged period within the surgical site

*Source: American College of Surgeons and Surgical Infection Society: Surgical Site Infection Guidelines, 2016 Update. Ban et al. J Am CollSurg Vol. 224, No. 1, January 2017 ; New WHO recommendations on intraoperative and postoperative measures for surgical site infection prevention: an evidence-based global perspective - Benedetta Allegranzi et al. The Lancet Infectious Diseases, Vol. 16, No. 12*In CABG, left internal mammary artery (LIMA) harvesting further decrease antibiotic penetration ; Furthermore, Tissue perfusion is impaired in patients with diabetes or atherosclerosis, who are common in CABG / cardiac Surgery. 1 Cefazolin and linezolid penetration into sternal cancellous bone during coronary artery bypass grafting . Martin Andreas et al. European Journal of Cardio-Thoracic Surgery 48 (2015) 758–764 ; 2 Direct sternal administration of Vancomycin and Gentamicin during closure prevents wound infection. Andreas M. et al. Interactive CardioVascular and Thoracic Surgery (2017) 1–5.*

SHIELD I Study was the Largest Phase 3 Study of Infection Prevention in Colorectal Surgery in Over a Decade

Assess efficacy and safety of D-PLEX$_{100}$ for prevention of deep and superficial incisional SSI after elective abdominal colon surgery

(prospective, multicenter, randomized, controlled, two arm, double-blind study)



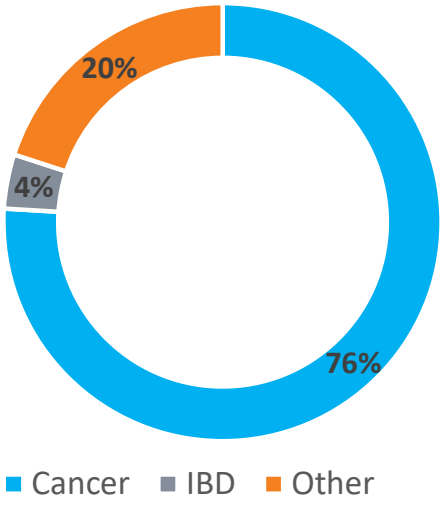
- **Open colorectal resection**
- **60 centers in US, EU and Israel**
- **N=977 1:1 Randomization**

*SOC - Standard of Care

SHIELD I Study Population

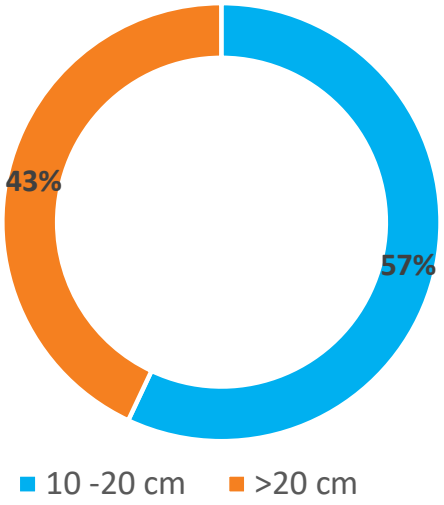
*Over 75% of patients enrolled in the trial were **cancer patients***

Indication for Index Surgery (%)



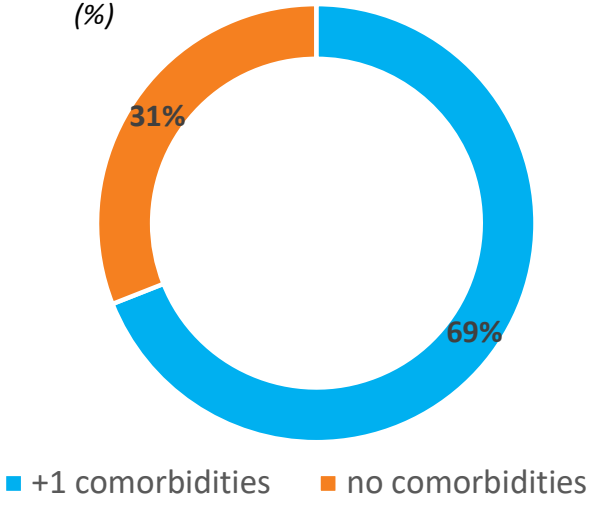
*43% of the patients were in the complex surgeries with **large incisions (>20 cm) pre-specified subgroup***

Planned subgroup analysis by incision length (%)



*Close to 70% of patients had at least 1 **patient-related risk factor****

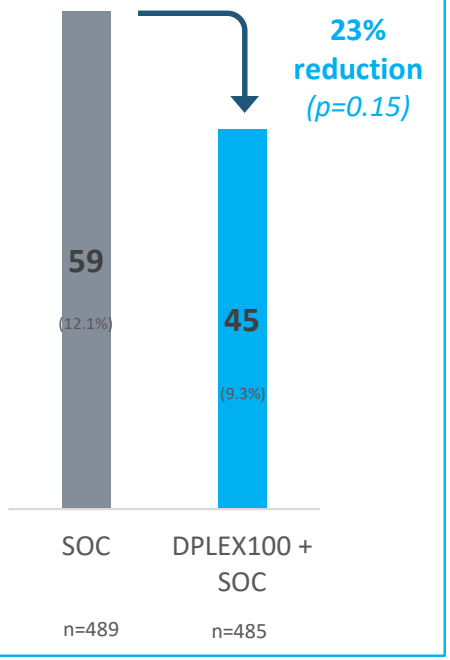
Post-hoc analysis by number of comorbidities (%)



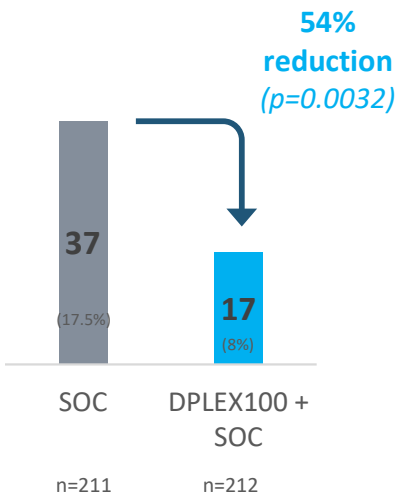
* *Patient related risk factors include BMI >30, smoking/COPD, diabetes, hypertension*

SHIELD I Topline and Subgroup Analysis

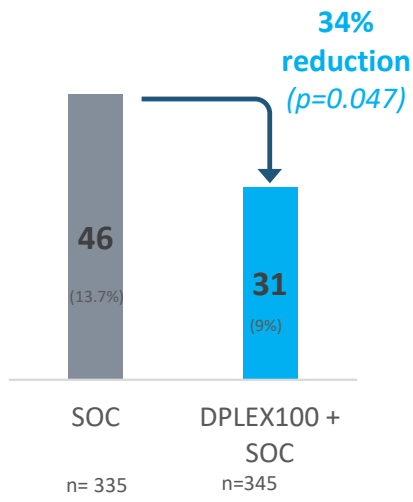
All cohort
(primary endpoint, ITT)



Large incisions complex surgeries subgroup
(primary endpoint, incisions >20cm)



Patient-related risk factors*
(primary endpoint, pts with +1 risk factors)



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** Post-hoc analysis; patient related risk factors include BMI >30, smoking/COPD, diabetes, hypertension*

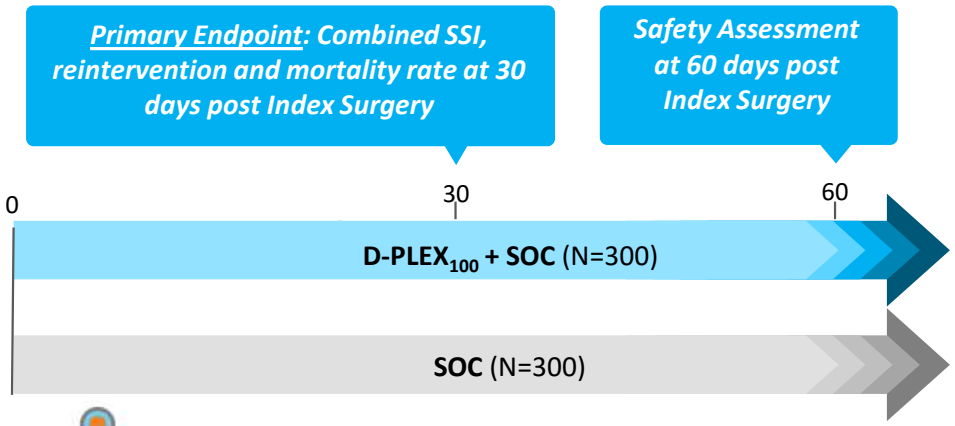
SHIELD I Deep Dive into the Large-Incision Subgroup

Parameter	D-PLEX (N=212)	Control (N=211)	Effect
Primary endpoint	17 (8%)	37 (17.5%)	54%
Key Secondary Efficacy Endpoints			
Infection rate during 30 days post abdominal surgery	9 (4.4%)	19 (9.7%)	55%
Number of subjects with at least 1 score of ASEPSIS >20	2 (1.0%)	5 (2.6%)	62%
Additional Efficacy Endpoints			
Incidence of SSSI rate during 30 days post surgery	9 (4.4%)	17 (8.7%)	49%
Incidence of DSSI rate during 30 days post surgery	0	2 (1.0%)	100%
Mortality rate within 30 days post abdominal surgery	6 (2.8%)	10 (4.7%)	40%
Time to adjudicated SSI during 30 days post index surgery (days)	8.0 (4, 28)	5.0 (1, 13)	NA
Number of subjects treated with IV Antibiotic as treatment for adjudicated SSI	1 (11.1%)	9 (47.4%)	77%
Number of subject with any surgical re-interventions	9 (4.4%)	19 (9.7%)	55%

SHIELD II Study Design and Timeline

SHIELD II

SSI PREVENTION WITH D-PLEX$_{100}$



- Surgeries of large open incision
- Expect total of 600 patients with interim review at 400 patients with an option to “stop for efficacy”
- Over 100 enrolled in the trial
- Approximately 40 centers are currently open
- **Current timing assumptions:**
  - Trial resumed: Q2 2023
  - Unblinded interim analysis: mid-2024
  - Topline results: 2H 2024

We View SHIELD II as a De-Risked Phase 3 Trial for Prevention of Abdominal Colorectal SSI in Large Incisions Surgeries

Actions taken to de-risk SHIELD II:

Focused population: targeting surgical procedures with incisions >20cm, population where $DPLEX_{100}$ showed highly significant reduction in infections in SHIELD I

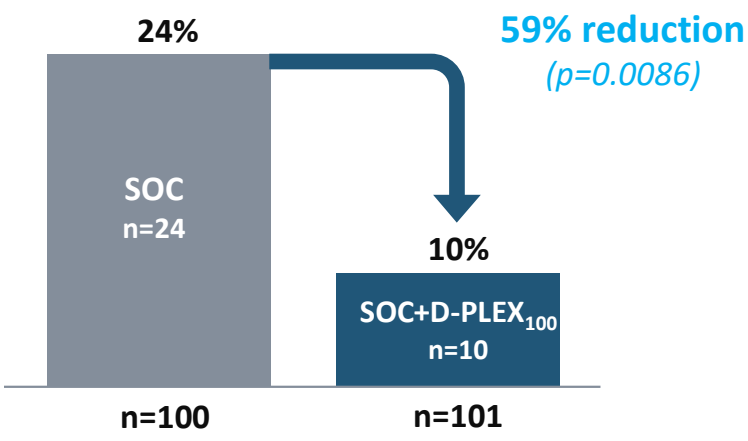
Conservative statistical assumptions on SSI rates match the ones seen in SHIELD I during COVID. Infection rates can potentially be higher now that hospital COVID measures are removed

Implemented lessons-learned: performed detailed debriefing with the site PIs, kept only high-performing sites in terms of patient monitoring and Good Clinical Practices

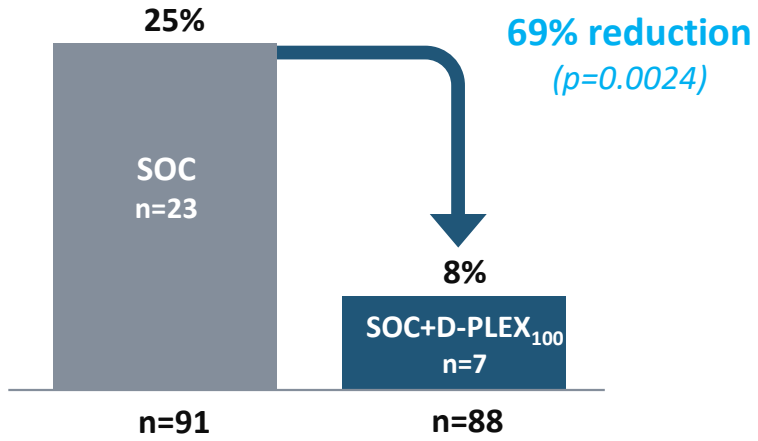
Strengthened clinical ops team

Positive Phase 2 Results in Abdominal Surgery

Primary Endpoint* ITT Analysis



Primary Endpoint - Per Protocol Analysis



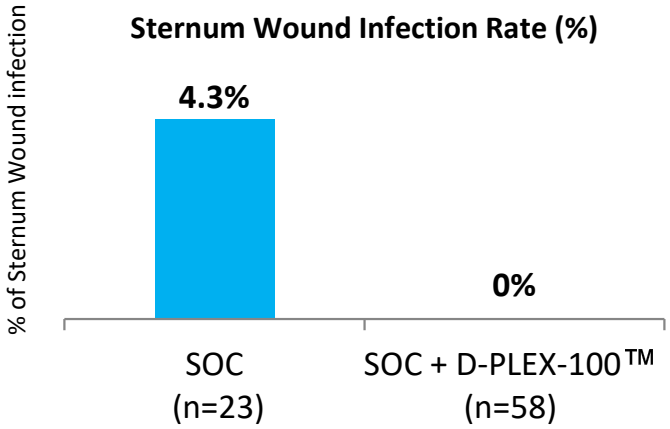
- **5 deaths observed in the SoC treatment arm, as compared to zero observed in the D-PLEX$_{100}$ +SOC treatment arm within the first 60 days post-surgery *(p=0.0290)***
- **Generally well tolerated, with no confirmed drug-related SAEs and no increase in wound healing impairment at the incision site as compared to control**

** PEP is the Combined SSI and mortality rate which is measured by the number and proportion of subjects with either an SSI event (as determined by the abdominal surgery) or mortality or any reason within 30 days post index surgery.*

Note: The current standard of care for preventing SSIs involves the implementation of a range of treatment and prevention measures before, during and after surgery, including prophylactic antibiotic administration, antiseptic measures and wound care.

D-PLEX in Sternal / Bone Surgeries

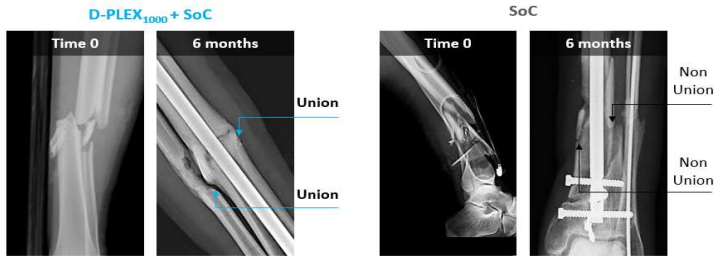
D-PLEX$_{100}$: P1b / 2 Open Heart Surgery Results[1]



No Sternal Wound Infection in 58 Treated patients
(Based on recent literature, we would have expected ~3-5 patients with SWIs in the D-PLEX$_{100}$ treatment group and 1-2 patients in the SoC control group) [6-10]

D-PLEX$_{1000}$: Open-Tibia Fractures[11]

	D-PLEX$_{1000}$ + SoC	SoC
Deep bone infections[2] / non-union[3] rate (%)	**0%** (0/24)	**11.1%** (3/27)



No deep bone infections after 6 months across 24 treated patients, in comparison with reported incidences in the literature ranging between 7% to 19%[4-5]

No treatment related SAEs

1 Modified ITT results, based on 3 months follow-up Clinical Study Report; [2] One event ; [3] Two events where another surgery and implantation of bone graft was needed ; [4] Prodromidis et al. The 6-Hour Rule for Surgical Debridement of Open Tibial Fractures: A Systematic Review and Meta-Analysis of Infection and Nonunion Rates. 2016 ; [5] Poletti FL et al. Current Concepts and Principles in Open Tibial Fractures - Part II Management and Controversies. 2017. [6] Adding vancomycin to perioperative prophylaxis decreases deep sternal wound infections in high-risk cardiac surgery patients. Reneike S. et al. European Journal of Cardio-Thoracic Surgery (2017) 1–7 [7] Direct sternal administration of Vancomycin and Gentamicin during closure prevents wound infection. Andreas M. et al. Interactive CardioVascular and Thoracic Surgery (2017) 1–5 [8] Prevention of surgical site sternal infections in cardiac surgery: a two-centre prospective randomized controlled study. Schimmer C et al. European Journal of Cardio-Thoracic Surgery (2016) 1–6. [9] Based on 3 months follow-up interim report. [10] Surgical Site Infections Volume-Outcome Relationship and Year-to-Year Stability of Performance Rankings. Calderwood MS. et al. Med Care 2017;55: 79–85; [11] Predecessor product candidate to D-PLEX100.

Recognizes the Potential Value of D-PLEX$_{100}$ in SSI

3 Fast Track Designations

- More **frequent meetings** with the FDA to discuss the development plan
- Eligible for accelerated approval and priority review, if relevant criteria are met
- **Rolling Review**

3 Qualified Infectious Disease Product (QIDP) Designations

- All the benefits of Fast Track
- Additional **5-years of market exclusivity**
- **Improved CMS add-on payment**, increase of the NTAP from 50% to 75%

Breakthrough Therapy Designation

- All the benefits of Fast Track
- Intensive **guidance from FDA** on an efficient drug development program
- Organizational **commitment from FDA** involving senior managers

Pan-European Licensing Agreement with Advanz Pharma

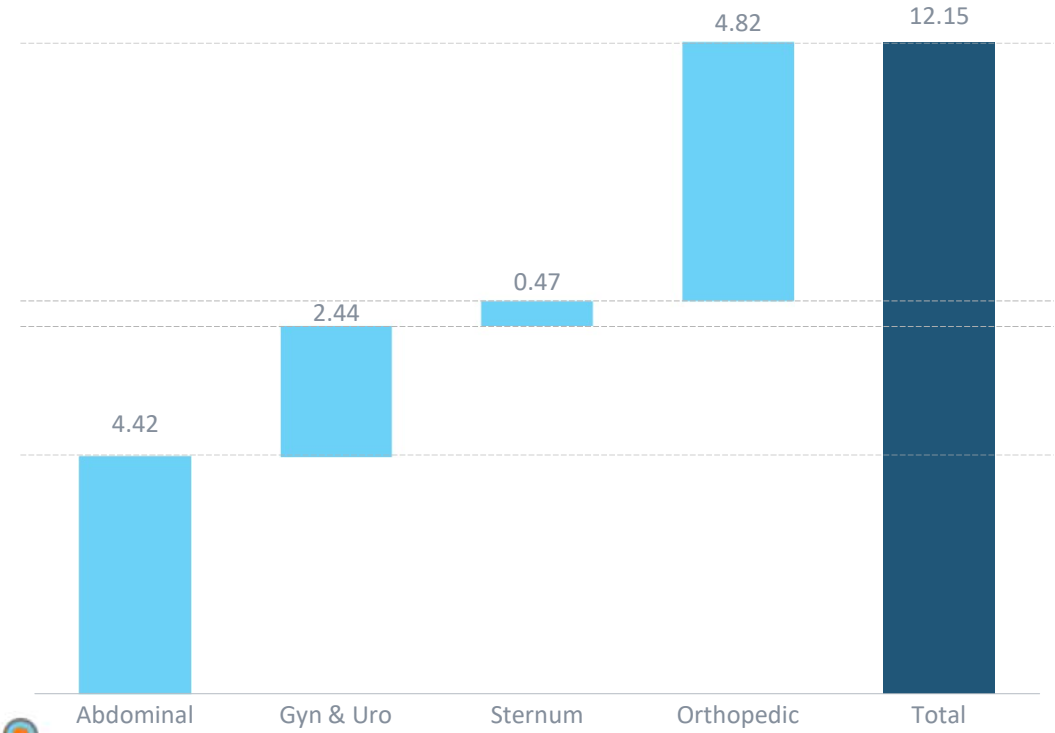
Agreement highlights

- Includes European Economic Area and UK
- Focused on abdominal and cardiac indications
- Potentially receive over $110 million in upfront and milestone payments as well as royalties on net sales
- Development-related milestones for a total of up to $23.5 million
- $2.6M upfront payment paid upon signature of licensing agreement
- Signed licensing agreement includes transfer price, development and sales-related milestone payments and royalties

*Announced August 3rd, 2022

Total US Addressable Market (TAM) for D-PLEX$_{100}$ is Over 12.2M Procedures

Number of surgeries in D-PLEX$_{100}$ target indications (M)



Main drivers of surgery volumes

Abdominal surgeries:

- Herniorrhaphies – 2.1M / year
- Cholecystectomies – 616K / year
- Colorectal resection – 544K / year

Gynecology & Urology surgeries

- Hysterectomies – 660K /year
- Oophorectomies – 1.1M / year

Orthopedic surgeries:

- Joint replacement – 1.8M / year
- Long bone fraction – 2M / year
- Spine procedures – 1M /year

Source: IQVIA PM&I Global FlexView. Internal analysis

Key CMS Programs are Strong Drivers for D-PLEX$_{100}$

HAC reduction
Hospital-Acquired Condition Reduction

- CMS's non-payment for HACs - SSIs
- Total Medicare payments to facilities reduced by 1%
- Payment adjusted on all CMS claims
- Public reporting of quality measures

HRRP
Hospital Readmissions Reduction

- Incentivize hospitals to decrease readmission rates (frequently are caused by HACs)
- Payment reductions are applied (up to 3% of all Medicare base operating DRG payments)

VBP
Value-Based Purchasing

- CMS rewards acute-care hospitals with incentive or penalties for the quality of care they provide (up to 2% of DRG payment)
- Episodes of care for 90 days

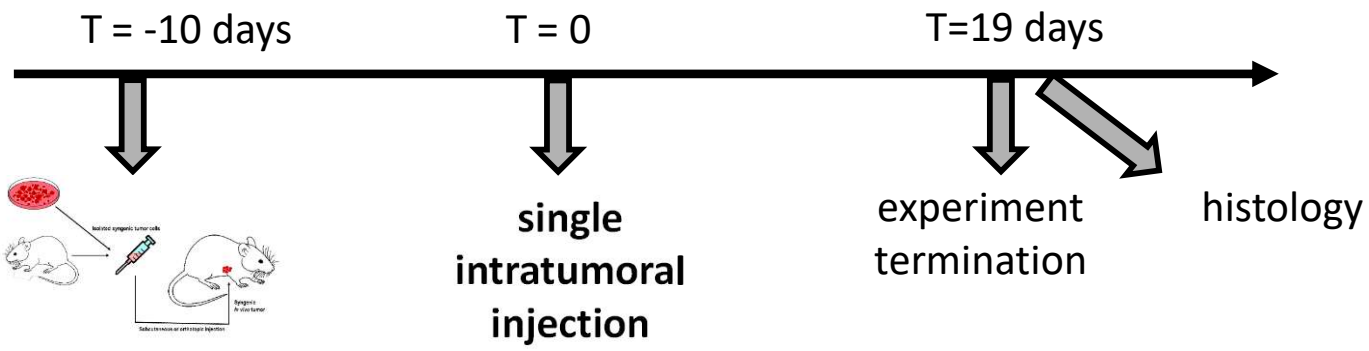
In 2019, Medicare penalized 7 of the 21 hospitals on the U.S. News Best Hospitals Honor Roll[1]

Hospital	HAC penalty [2]	Readmission penalty [2]
UPMC Shadyside in Pittsburgh	$2,720,780	$977,439
Ronald Reagan UCLA Medical Center in L.A.	$2,400,390	$347,034
Keck Hospital of USC	$1,553,190	$92,152
Stanford Health Care's main hospital in Northern California	$3,704,170	$88,052
UCSF Medical Center in San Francisco	$3,388,430	$397,376
NewYork-Presbyterian/Weill Cornell Medical Center in Manhattan	$7,441,260	$1,677,600
Mayo Clinic's hospital in Phoenix	$1,787,440	$233,798

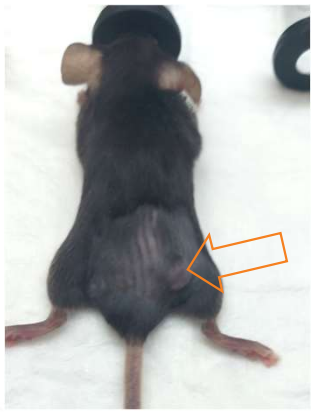
In fiscal year 2022, CMS penalized 764 hospitals for hospital-acquired condition (HAC) including 38 "CMS 5-star" hospitals[3]

Source: 1) Preeminent Hospitals Penalized Over Rates Of Patients' Injuries, Kaiser Health News, https://tinyurl.com/y5863xtl 2) The Advisory Board analysis - https://www.advisory.com/Daily-Briefing/2022/01/31/hac-penaltiess 3) Keiser Health Network - https://tinyurl.com/yw38rkyj

OncoPLEX - B16 melanoma model study plan



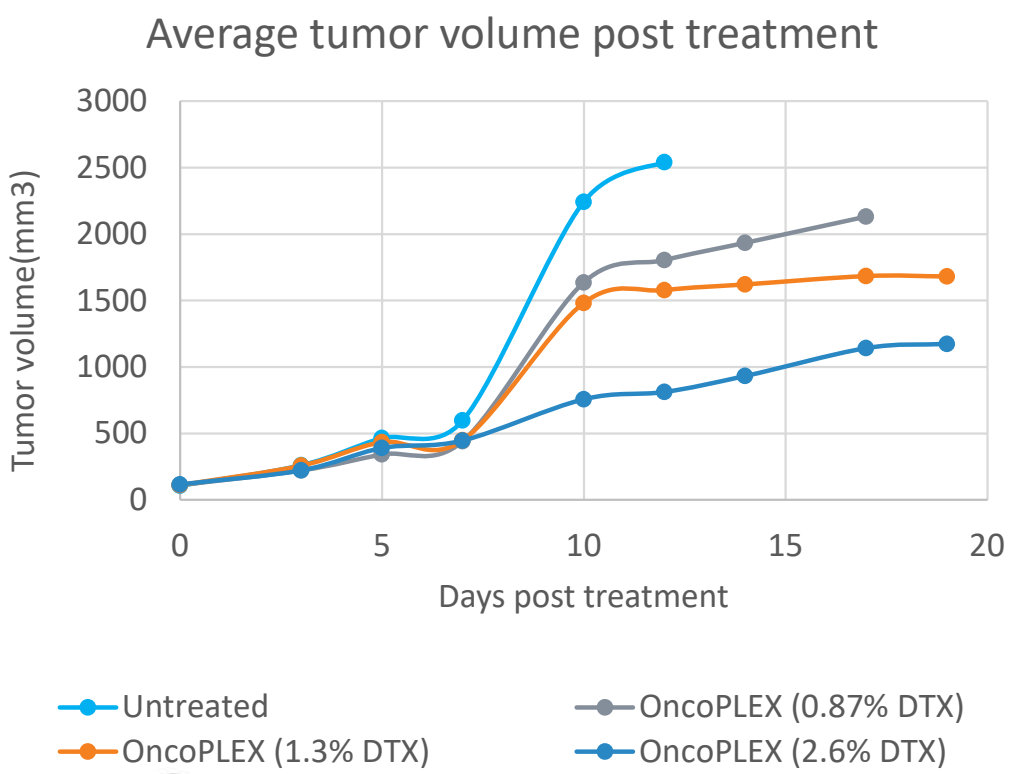
Measured parameters:
Mouse weight, Tumor size,
Side effects, Survival

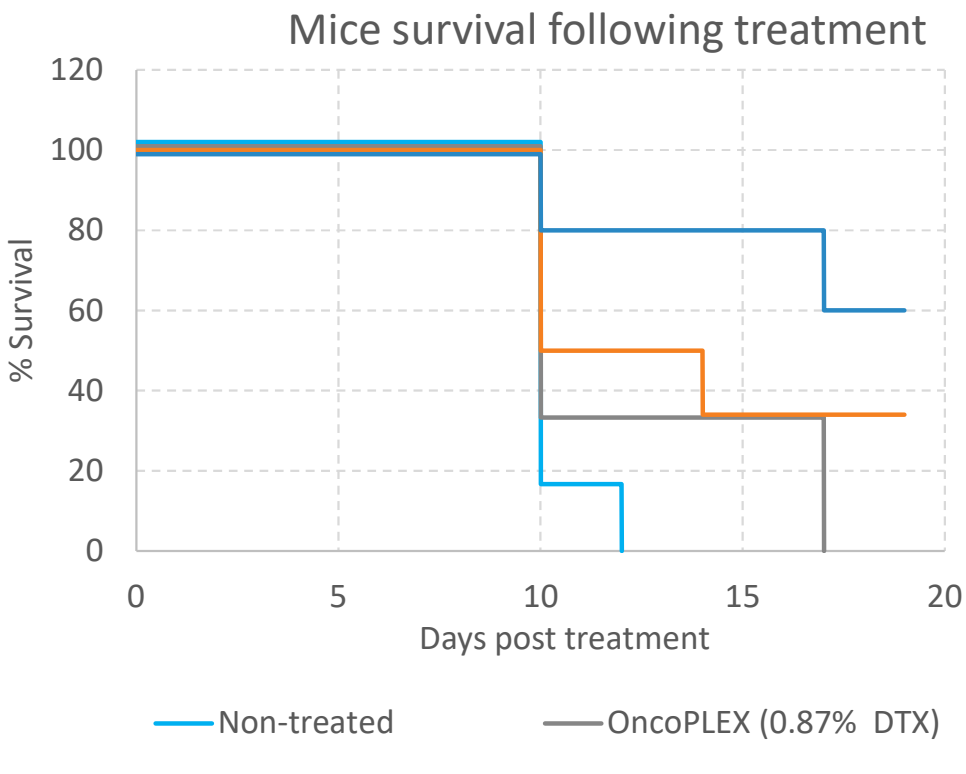


- **Tumor volume** - ~100 µL
- Injection volume- 50 uL

- **Single injection of OncoPLEX** by 21-G needle

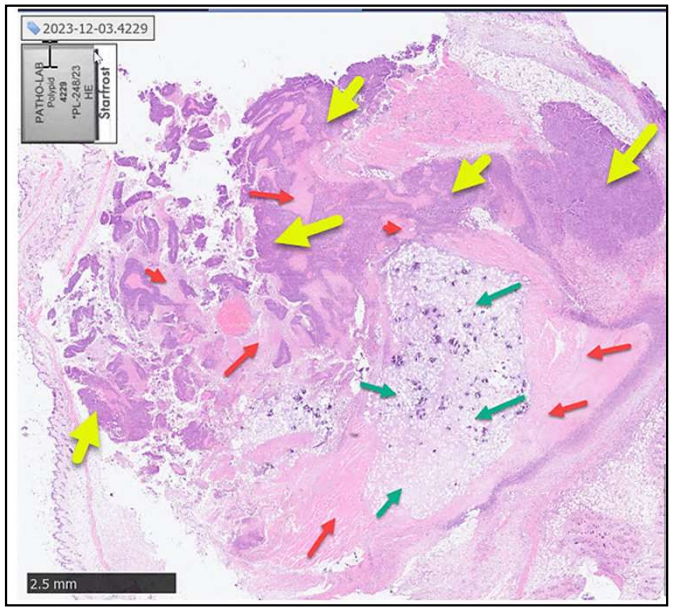
Dose-response reduction in tumor progression and mortality



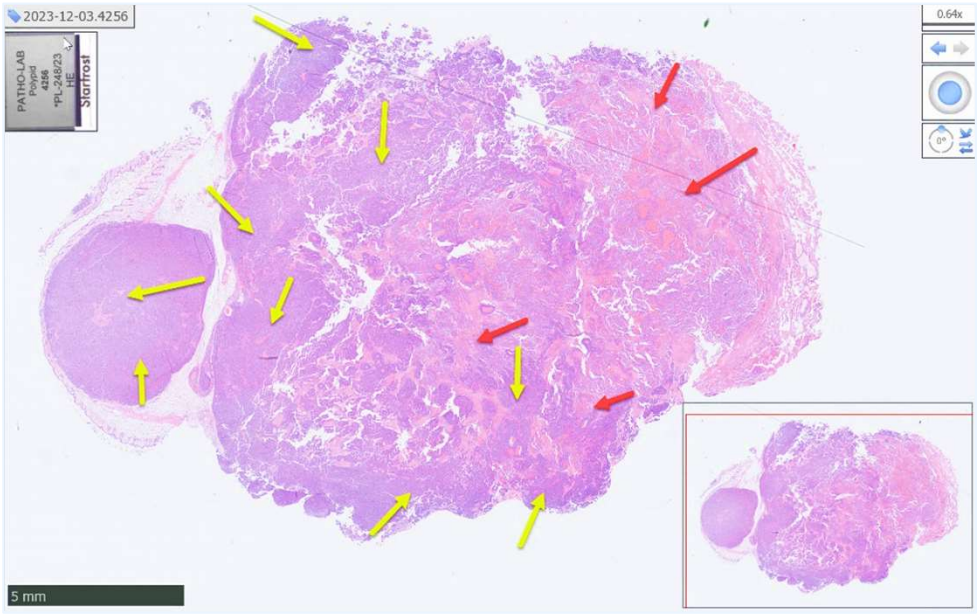


Histopathological evaluation display a decreased tumor tissue volume and increased necrosis in OncoPLEX treated animals

OncoPLEX (0.72mg). Tumor mass - 726mg, day 19



Untreated. Tumor mass – 2,012mg, day 10



- Green arrows indicate the site of test compound depositions
- Red arrows - **tumor necrosis** associated with **acute inflammation**
- Yellow arrow - **tumor** tissue

State-of-the-Art Manufacturing Facility

PolyPid was granted Manufacturer Authorization and Good Manufacturing Practice (GMP) certification by Israel's Ministry of Health (IMOH) and EU qualified person for its state-of-the-art ~18,000 square feet (~1,700 m^2) GMP manufacturing facility

- Investment – machinery, qualifications and validations
- Supply capacity – expected to meet commercial demand for the first 4-5 years from launch

Financials

Nasdaq IPO	June 2020
Last financing	PIPE January 2024
Ticker	PYPD
52-week range[1]	$3.57-$22.20
Average Daily Volume (YTD)	7.8K
Market cap[1]	$27.2 M
Cash[2]	$20.3 M

Top Holders (Participated in last financing)

Aurum Ventures M.K.I.

Rosalind

DAFNA Capital Management, LLC

Consensus Business Group

Analyst coverage

BARCLAYS — Balaji Prasad

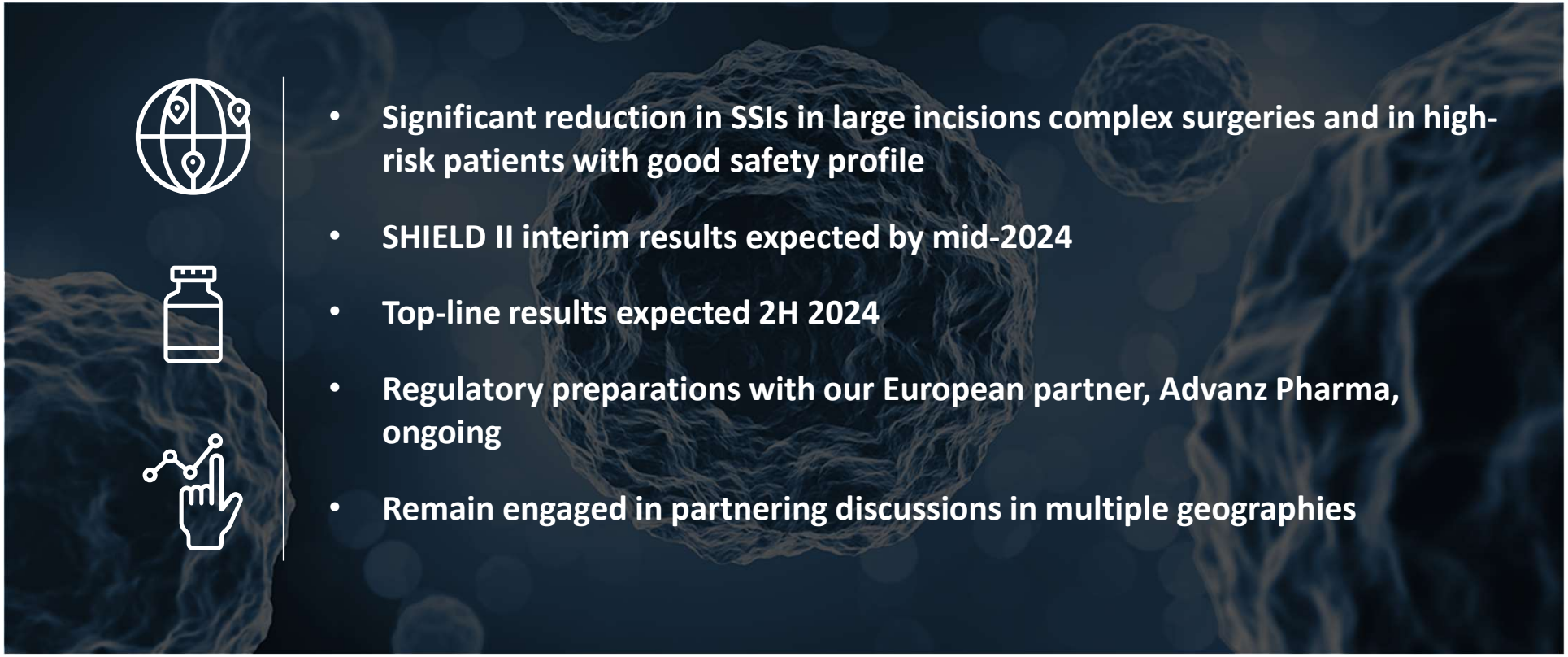
JMP — Roy Buchanan

HCW H.C. Wainwright & Co. — B. Pachaiyappan

PolyPid

1. *As of February 23, 2024*
2. *As of December 31, 2023. including the January 2024 PIPE*

PolyPid is Poised for Potential Near-Term Value Creation



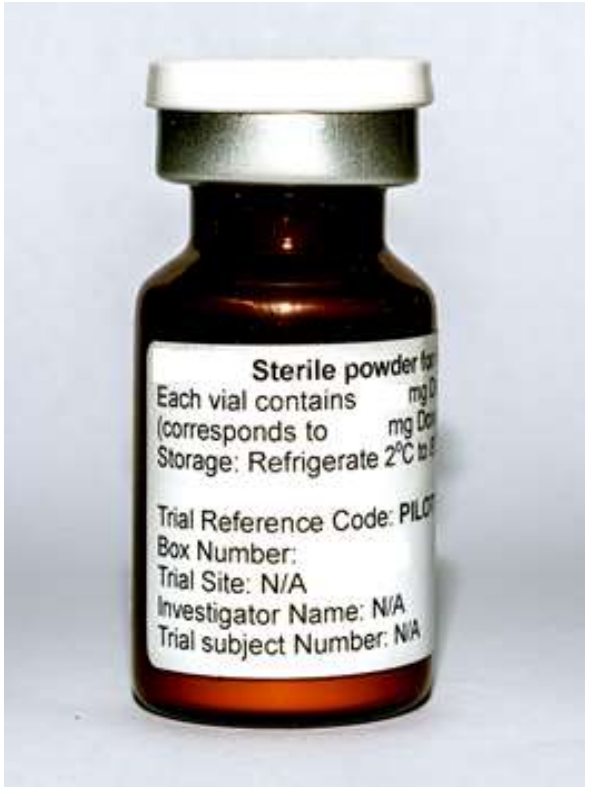
- **Significant reduction in SSIs in large incisions complex surgeries and in high-risk patients with good safety profile**
- **SHIELD II interim results expected by mid-2024**
- **Top-line results expected 2H 2024**
- **Regulatory preparations with our European partner, Advanz Pharma, ongoing**
- **Remain engaged in partnering discussions in multiple geographies**

POLYPID
OPTIMIZED THERAPEUTICS

THANK YOU

OncoPLEX - Localized Drug Delivery System for Solid Tumors

- ✓ **Active Ingredient:** Docetaxel (widely used chemotherapy agent)
- ✓ **Release Duration:** Prolonged effect for approximately 3 weeks
- ✓ **Timeline:** Pre-IND meeting conducted Nov. 2021
- ✓ **Prevalence:** 12,000 cases of Glioblastoma diagnosed in the United States each year [1]
- ✓ Survival rate after **41 days was 60% for OncoPLEX vs 20% for untreated** in a partially resected human glioblastoma subcutaneous mouse model
- ✓ Showed **40% survival rate at day 23 versus 0% survival rate in untreated** GBM brain rat model



1. *Delveinsight, Brain Cancer, Market Insight, Epidemiology, and Market Forecast—2030*