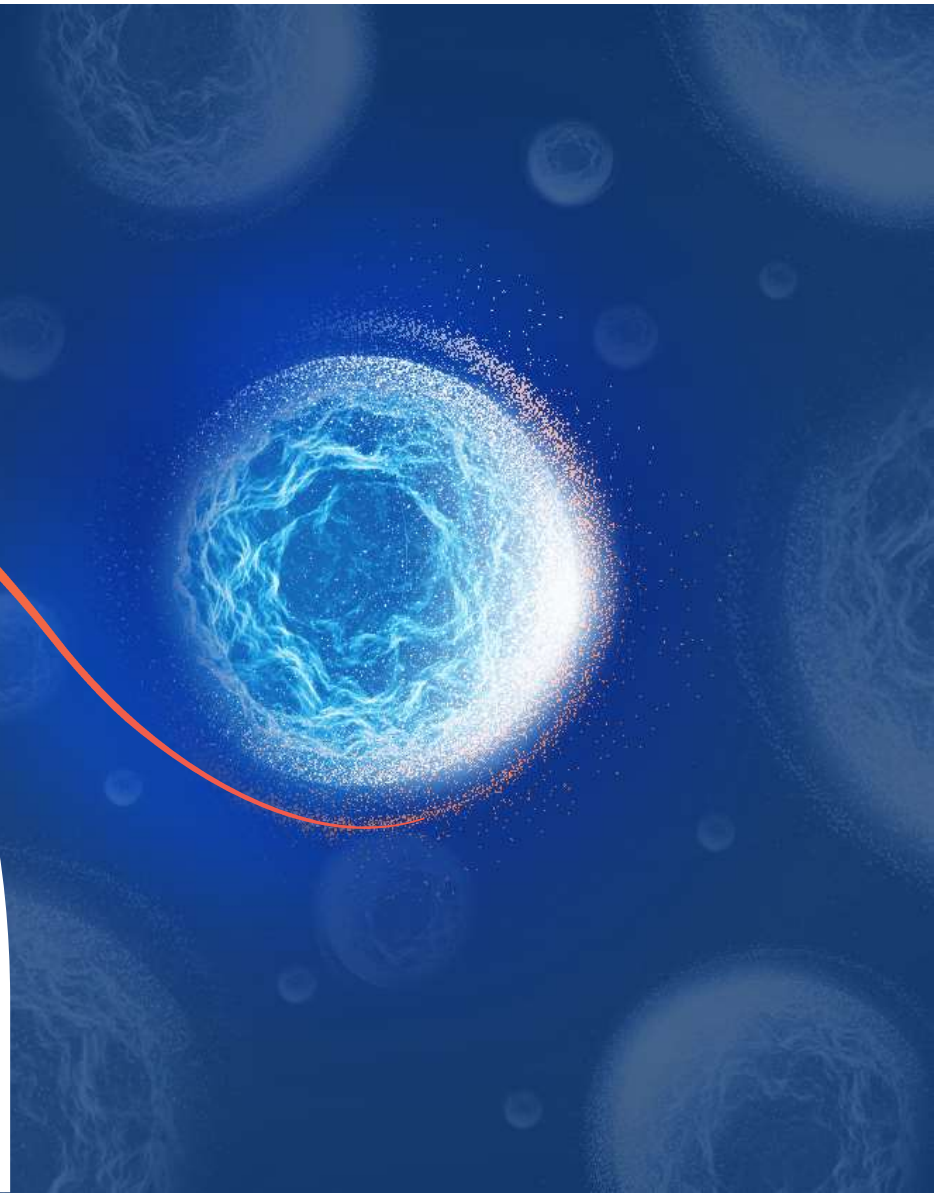


POLYPID

NASDAQ: PYPD

Corporate Presentation

May 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, strategies, the expected timing of trials, research, development, 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, expected indication for D-PLEX$_{100}$, US and Europe addressable markets, the expectation to meet commercial demand for the first 4-5 years from launch, the planned NDA submission for D-PLEX$_{100}$ and the potential to receive additional funds if warrants are exercised. 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 6, 2024. 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

Late clinical stage biopharma company

Unique LOCAL Prolonged Delivery of APIs

Polymer-Lipid Encapsulation matriX (PLEX) Platform

Lead Product D-PLEX$_{100}$ in Phase 3 trial

OncoPLEX Next Big Opportunity for Solid Tumors

171

granted and pending patents[1]

65

employees[1]

HQs

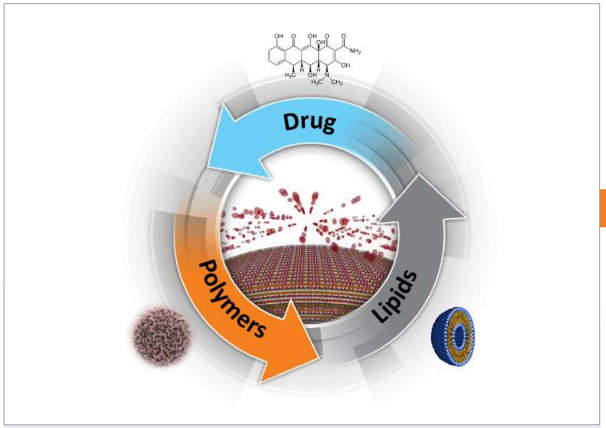
Global: Petach Tikva, Israel
US: New Jersey

NASDAQ: PYPD

1 As of August '23

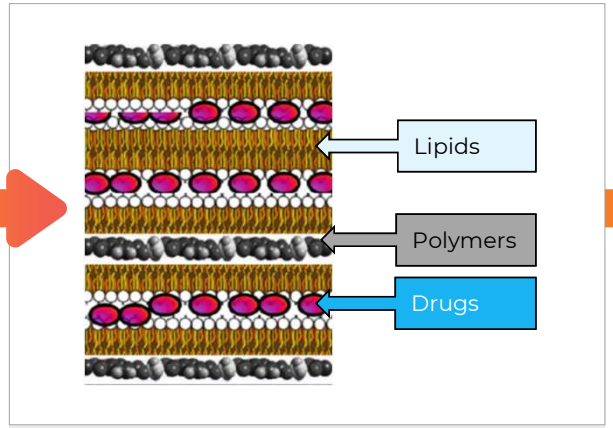
Optimizing local drug delivery:
Overview of the PLEX technology platform

Selected **Composition**
Raw materials



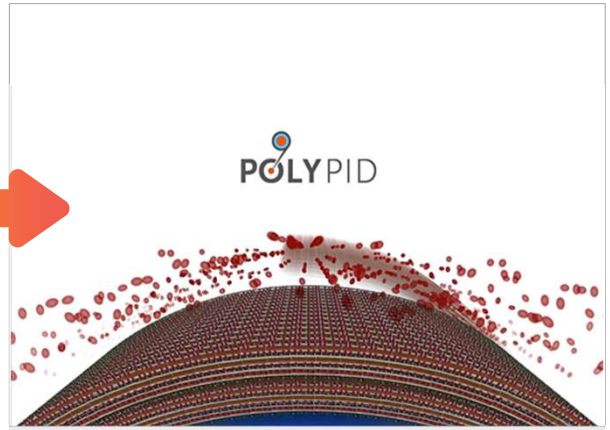
Out of a vast number of potential combinations, only a few will optimally fit a specific medical need

From the non-ordered - Liquid stage
To **highly ordered matrix** - Solid stage



Production –
Generating ordered matrix by **self-assembly**, based on weak forces

Organized disassembly
Solid state > Liquid stage



In vivo
Controlled & prolong drug release

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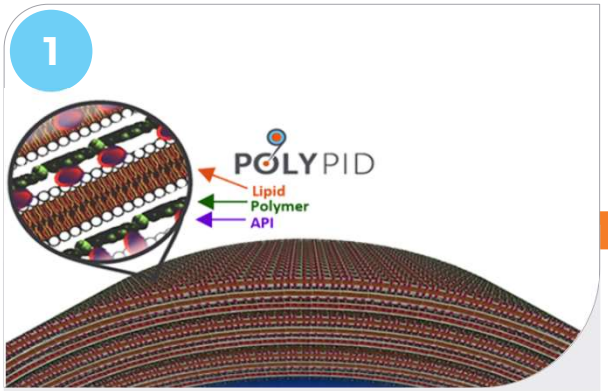
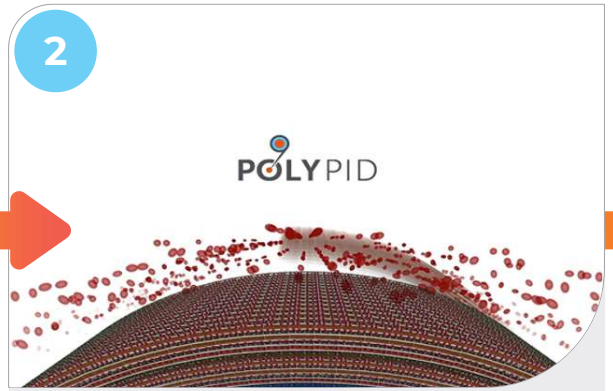
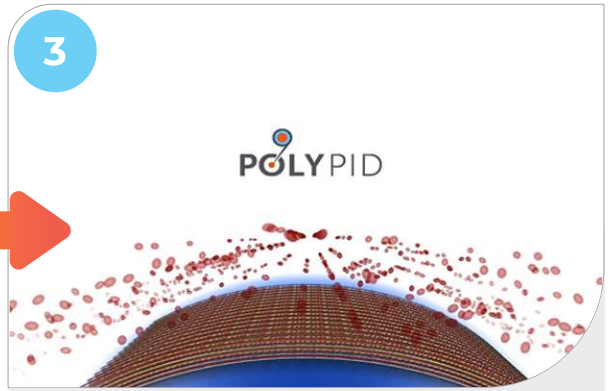
PLEX™ Technology – Organized disassembly of the outer layer - from Solid stage > Liquid stage



Protected drug reservoir
over weeks;
Water can't penetrate into the inner layers

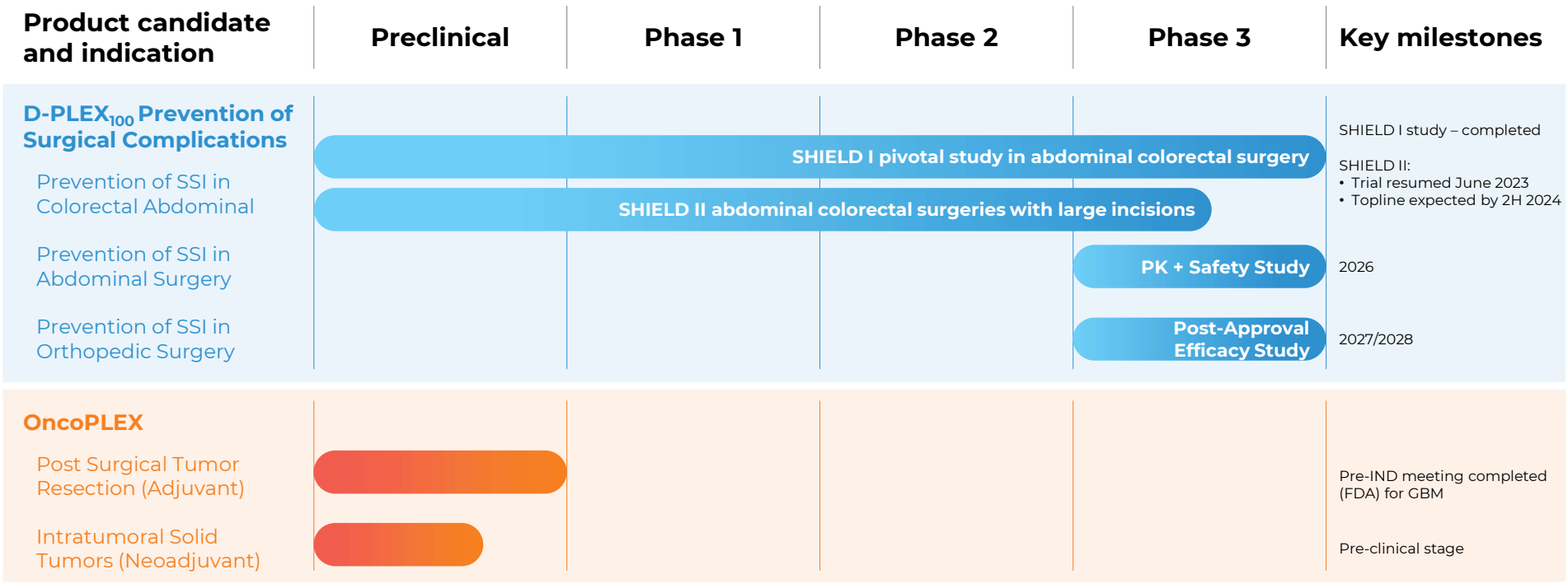


Disassembly of the outer layer from the outer layer to the inner layers



Control over the release;
duration and rate

Robust Pipeline with Multiple Near- and Longer-Term Inflection Points



D-PLEX$_{100}$ is a Potential First-in-class for the prevention of SSIs

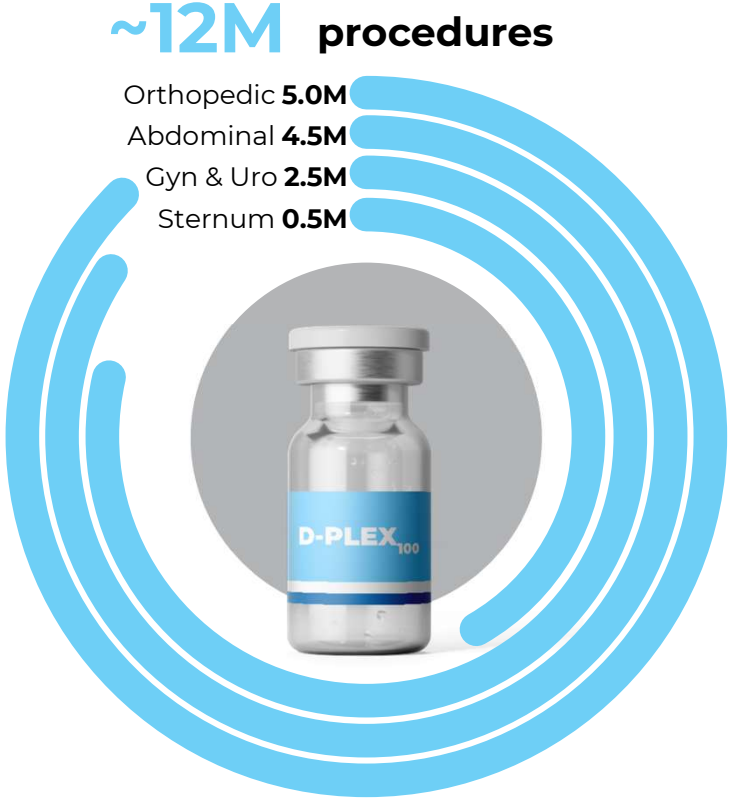
Indication:
Prevention of abdominal incisional SSI

Doxycycline (broad spectrum antibiotic)

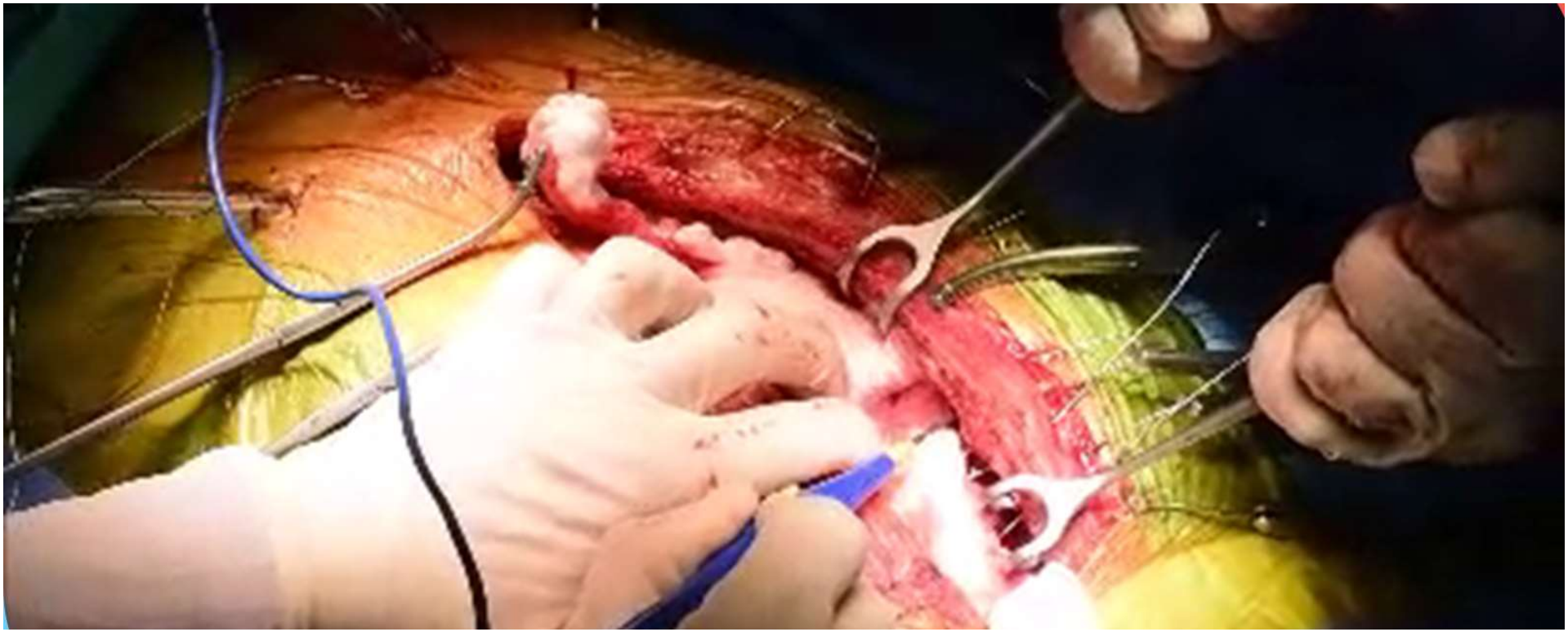
FDA 505(b)(2) regulatory pathway

Administered directly into the surgical site for prolonged 30 days release

~12M Surgeries addressable market in US



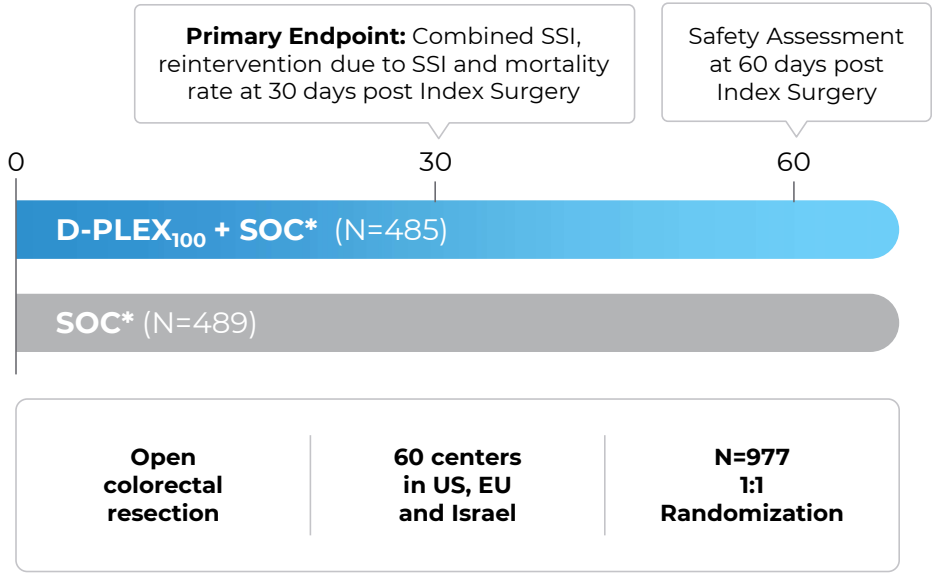
Short Movie



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

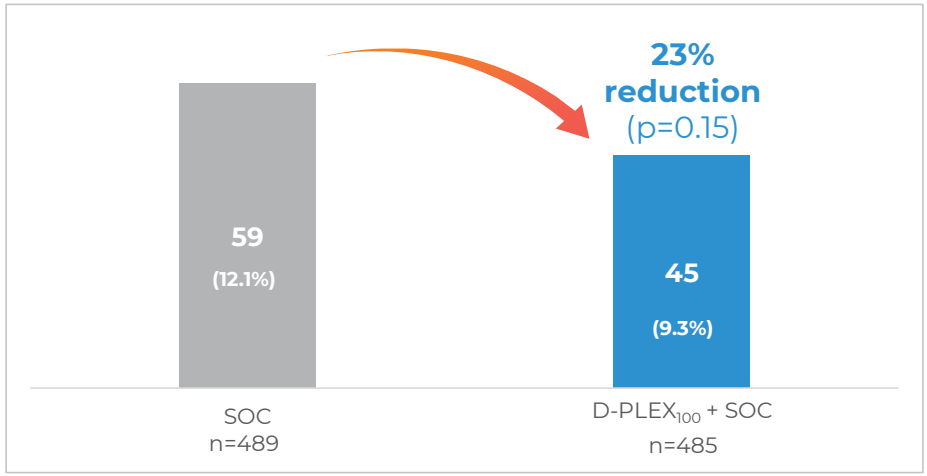
(prospective, multicenter, randomized, controlled, two arm, double-blind study)



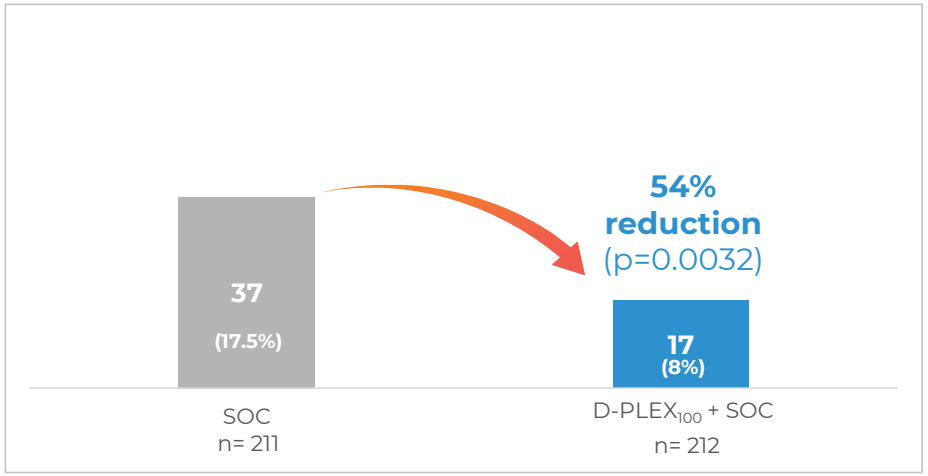
*SOC - Standard of Care

SHIELD I Topline Results

All cohort
(primary endpoint*, ITT)



Large incisions complex surgeries – pre-specified subgroup analysis
(primary endpoint, incisions >20cm)

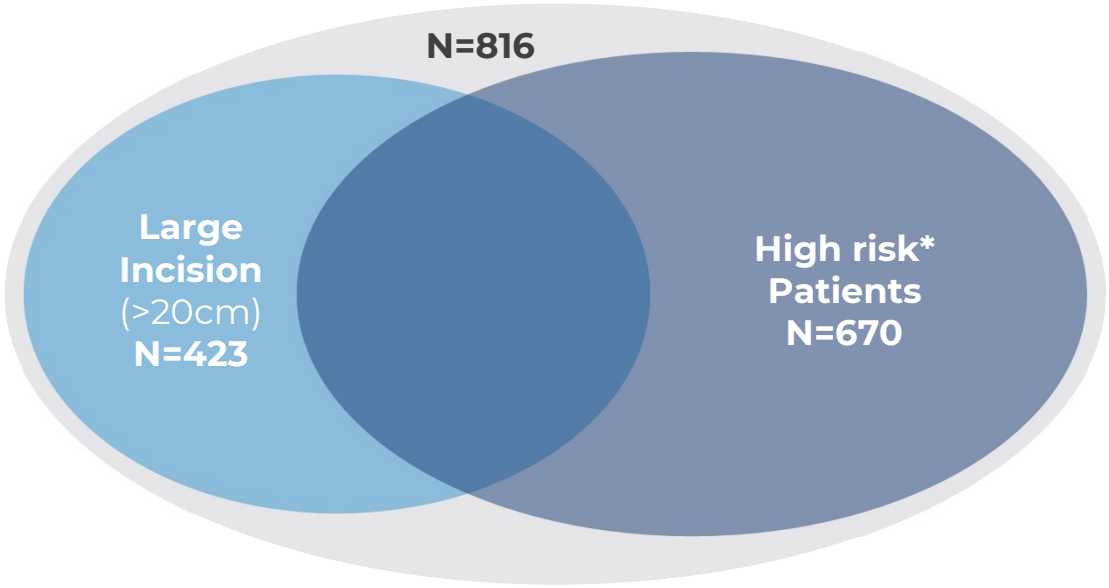


*Primary Endpoint: Combined SSI, reintervention due to SSI and mortality

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%

D-PLEX$_{100}$ Effect on in Patients with SSI Risk Factors*



816 Patients
had a large incision and/or high-risk factors (comorbidities)

37% Reduction
of the primary endpoint (p=0.0162)

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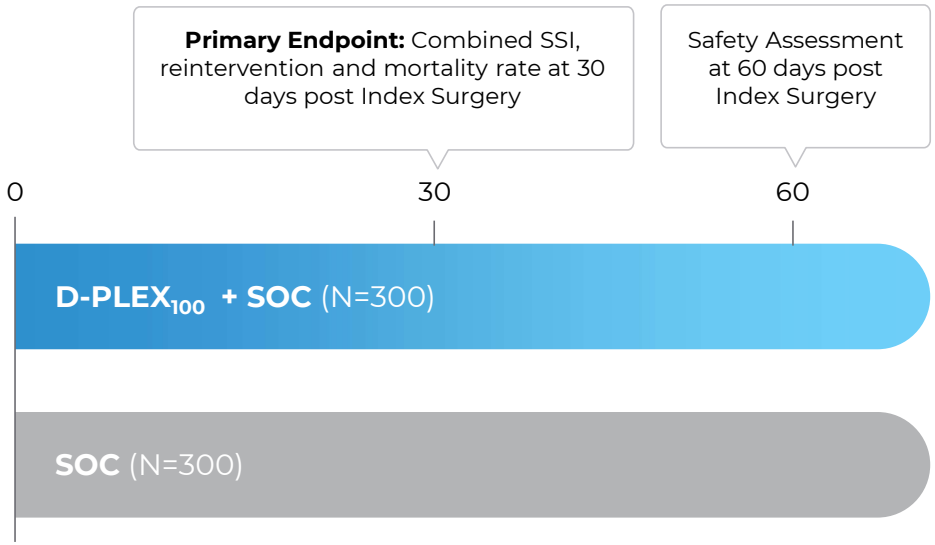
** Post-hoc analysis; patient related risk factors include BMI >30, smoking/COPD, diabetes, hypertension*

Study Design and Timeline

SHIELD II

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



Surgeries with large surgical incision

Expect total of 600 patients with interim review at 400 patients with an option to "stop for efficacy"

Current timing assumptions

- Unblinded interim analysis: mid-2024
- Topline results: 2H 2024

Actions taken to de-risk SHIELD II

- Focused on population where SHIELD I was successful
- Not conducted within tight COVID-19 related restrictions
- Conservative statistical assumptions on SSI rates
- Implemented lessons-learned: performed detailed debriefing with the site PIs, kept only high-performing sites*
- Strengthened clinical ops team

*High- performing sites as it relates to recruitment, patient monitoring and good clinical practice

Target Market at Launch is >7M Surgeries in US & Europe*

12M

US total addressable market in-patient surgical procedures

8M

Europe total addressable market in-patient surgical procedure

4.4M

Abdominal Surgeries

3M

Abdominal Surgeries

7,400K**

Core Target Surg. Procedures

* Assuming additional safety and PK Study for US ; Expected Abdominal Indication in Europe based on SHIELD II phase 3 trial
**Source IQVIA PM&I Global FlexView. Internal analysis

Demonstrated Economic Benefits will be Essential for Market Access and Sales Uptake

Direct cost
SSI costs ~$25K/patient[1] on average
- Prolonged length of stay and higher readmission rates
- Re-operation in some cases (to debride and remove infected / necrotic tissues)

Indirect cost
CMS 1-3% penalty on all the yearly Hospital Medicare reimbursement

Reputational cost
Hospital SSI rates are public information and have direct influence on hospital ranking by CMS and U.S. News best hospitals ranking

1. Stone PW. Economic burden of healthcare-associated infections: an American perspective. Expert Rev Pharmacoecon Outcomes Res. 2009 Oct;9(5):417-22.

Global Go-to-market Strategy

Partnerships with leading pharma companies with established hospital-focused commercial capabilities and resources

Agreement highlights

ADVANZ PHARMA

Includes European Economic Area and UK

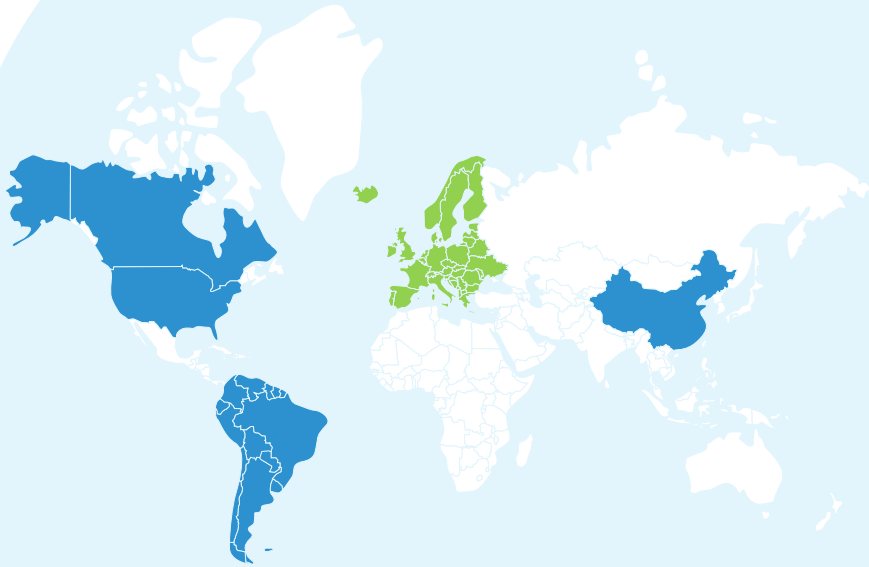
Potentially receive over $115 million in upfront and milestone payments as well as royalties on net sales

$2.7 million upfront payment paid upon signature of licensing agreement

Focused on abdominal and cardiac indications

Signed licensing agreement includes transfer price, development and sales-related milestone payments and royalties

Development-related milestones for a total of up to $25 million



Next-in-line
US, Canada, China and South America

Partnered territories with Advanz Pharma

Next-in-line

POLYPID *Announced August 3rd, 2022

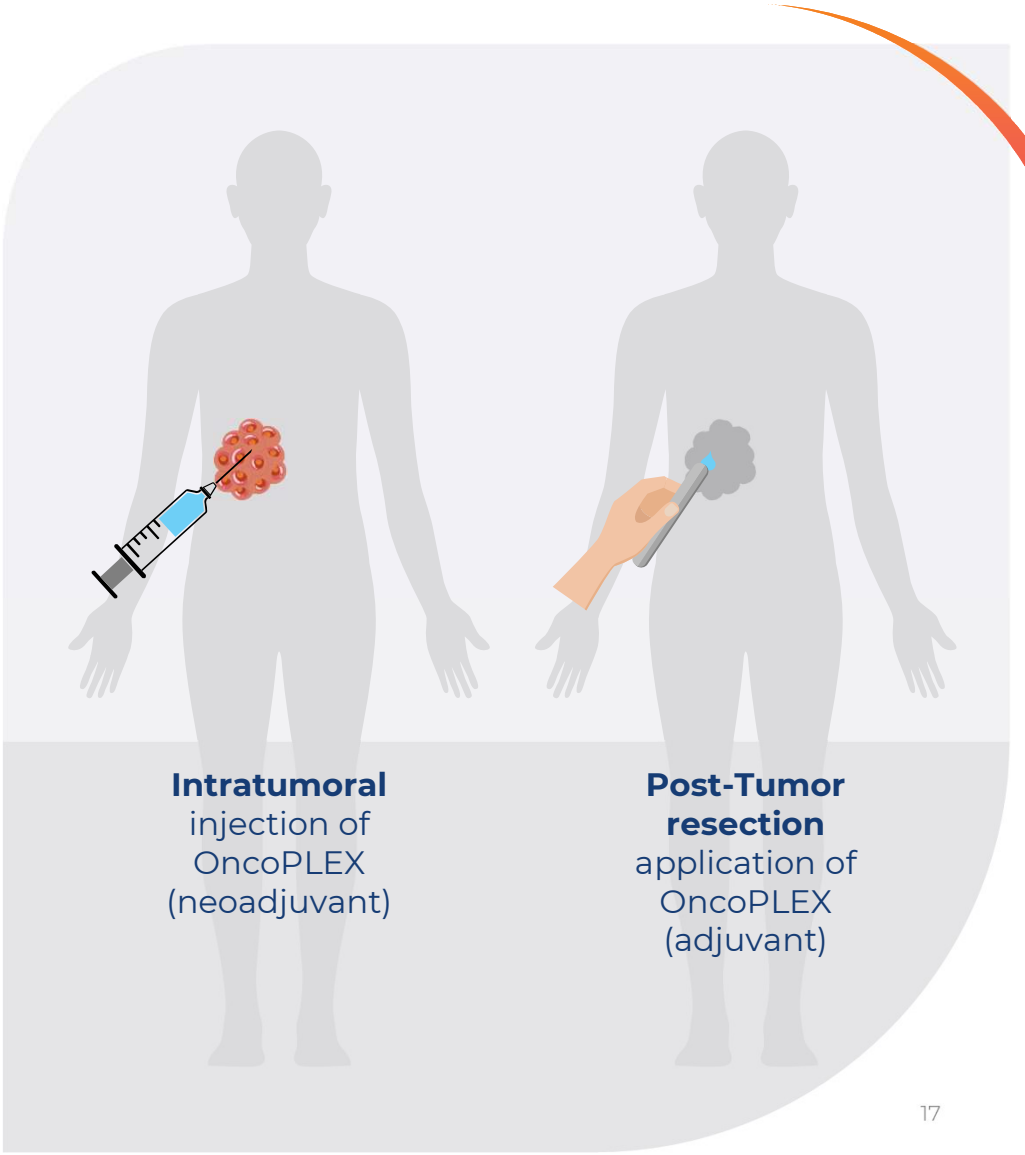
OncoPLEX - The Next Big Opportunity @ PolyPid

New approach for solid tumors - every year, 1.6 million new cases of solid tumors in the U.S. alone

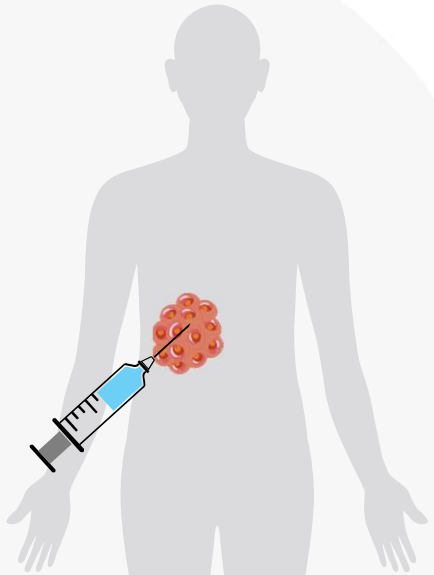
Prolonged 3wks release of docetaxel: intratumoral (neoadjuvant) and post surgical resection of the tumor (adjuvant)

Evaluated successfully in various animal models

Pre-IND meeting (FDA) completed for GBM

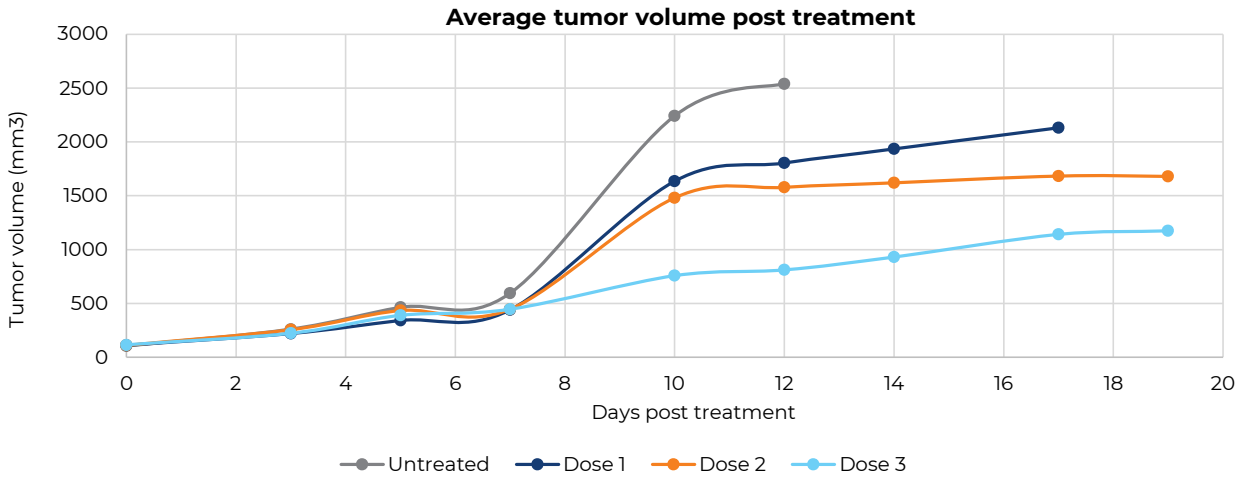


Single Intratumoral Injection of OncoPLEX reduced tumor growth



B16 murine melanoma:

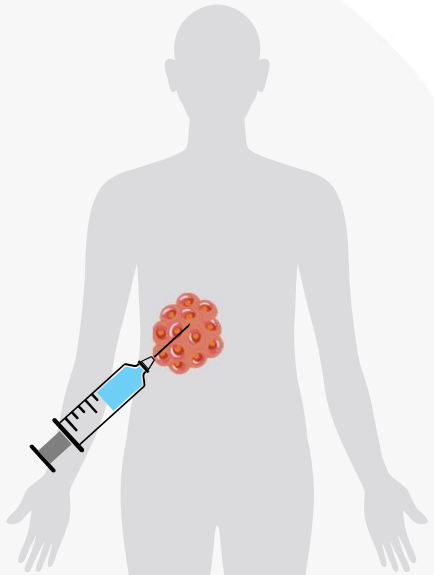
Dose response



Key Takeaways

- OncoPLEX spheres remain anchored to the injection site over the entire period
- The prolonged and constant release mechanism allows the released drug to generate an effective microenvironment far from the injection site

60% Survival at Day 19 for the Most Effective Dose



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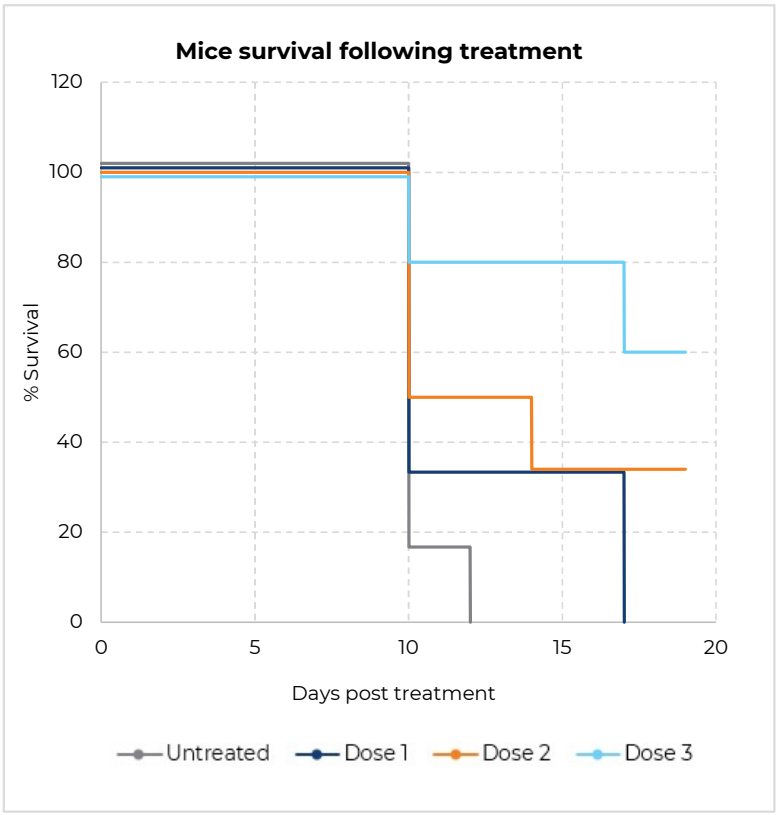
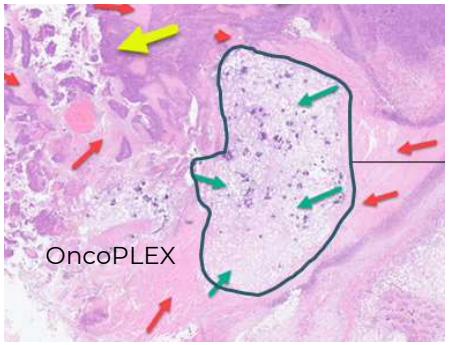
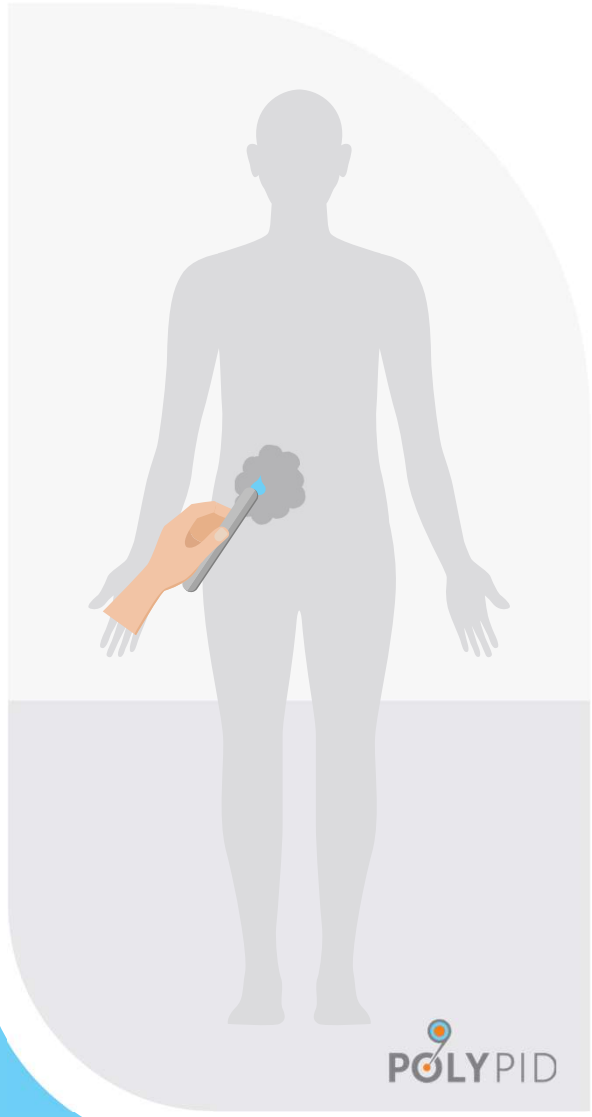


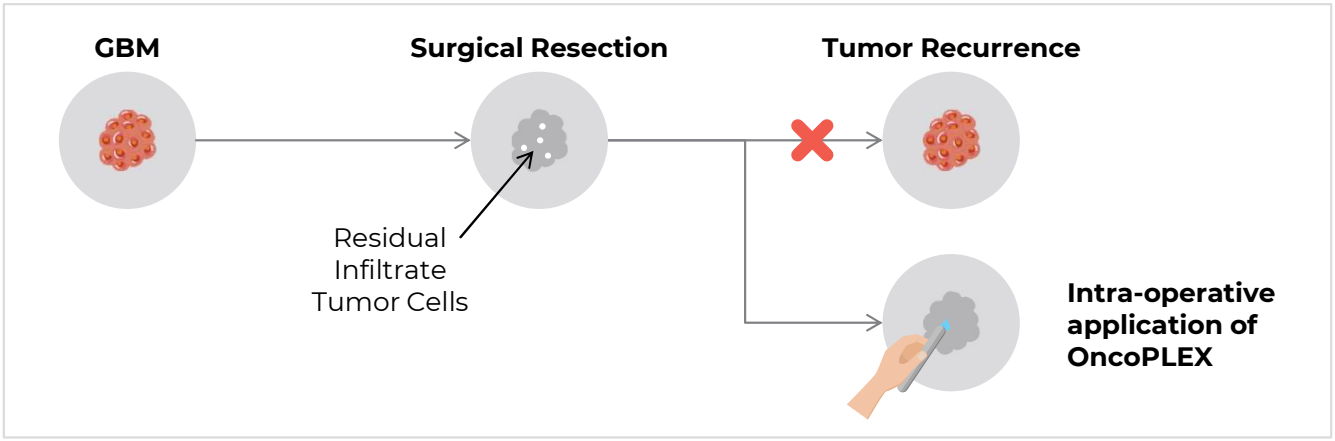


OncoPLEX Focal Deposits are mostly Surrounded by **Necrotic Tumor Tissues and Inflammation**



Post-Surgical Resection in GBM & Other Solid Tumors

- Prolonged 3wks. local release of Docetaxel directly in the tumor resection pocket
- Evaluated successfully in various animal models
- 98% tumor growth inhibition (day 41) in resected GBM tumor mouse model compared to the untreated control ($p<0.001$)
- 60% survival (day 41) in resected GBM tumor mouse model vs 20% for the systemic treated mice ($p=0.0165$)
- 75% overall tumor free survival in resected colon carcinoma tumor mouse model compared to 25% for the systemic docetaxel arm
- Pre-IND meeting in GBM completed (FDA)



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

State-of-the-Art Manufacturing Facility

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

Investment
machinery, qualifications and validations

Supply capacity
expected to meet commercial demand for the first 4-5 years from launch

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Financials

Nasdaq IPO	June 2020
Last financing	PIPE January 2024
Ticker	PYPD
52-week range[1]	$3.57-$13.23
Average Daily Volume (3M)[1]	3.31K
Market cap[1]	$23.7 M
Cash[2]	$14.5 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.
Raghuram Selvaraju

1. As of May 6, 2024
2. As of March 31, 2024

Key Accomplishments

- Raised over $27 million from existing and new life science-focused investors*
- Advanced the development of OncoPLEX including pre-IND studies
- Signed a commercialization agreement for Europe With Advanz Pharma
- Initiated a second Phase 3 for prevention of SSI in abdominal colorectal resection with large incisions – top line expected by 2H-2024
- Completed the largest Phase 3 trial in prevention of SSI in colorectal resection in over a decade
- Completed process validation for D-PLEX$_{100}$ and passed cGMP inspection – manufacturing facility ready for EU launch

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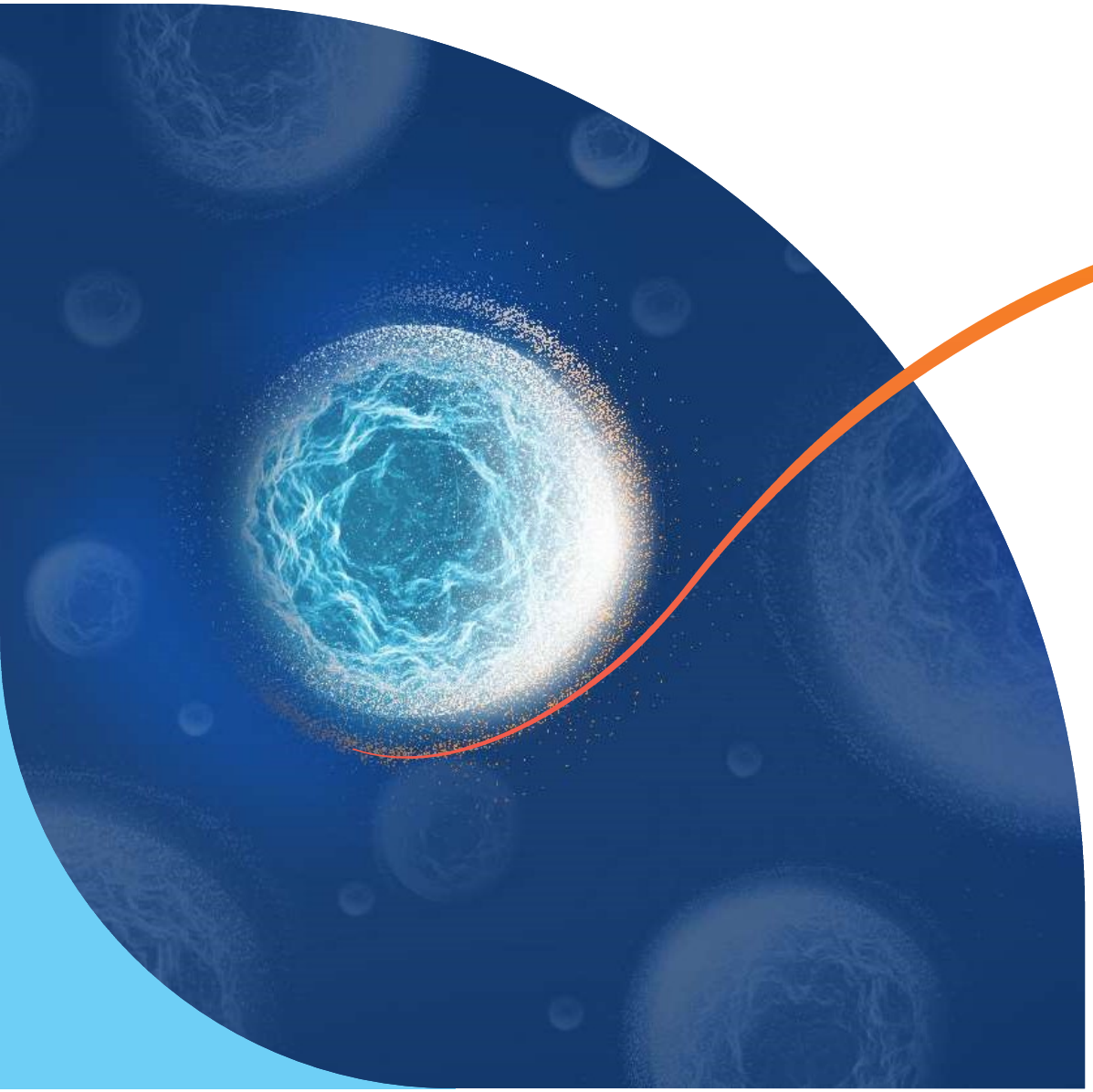
*Pricing of $6.2 Million Underwritten Public Offering of Ordinary Shares and Concurrent $4.4 Million Private Placement in March 2023 and Private Placement for $16 Million in Jan 2024



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THANK YOU

Polypid.com

PLEX based product typical presentation

Solid spheres
Micron range in diameter

Dry format (powder) and sterile
Ready to use

Each particle contains
the PLEX formulation & the Pre-Encapsulated API/APIs

The PLEX formulation
is predesigned to achieve the needed release characteristics

The dry powder can be
prepared for administration by either:

Hydration into a paste, to be applied locally into the wound/tumor bed during the surgery

Injected (≥21G) as a paste, or as a dry powder – Once or multiple applications

FDA 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

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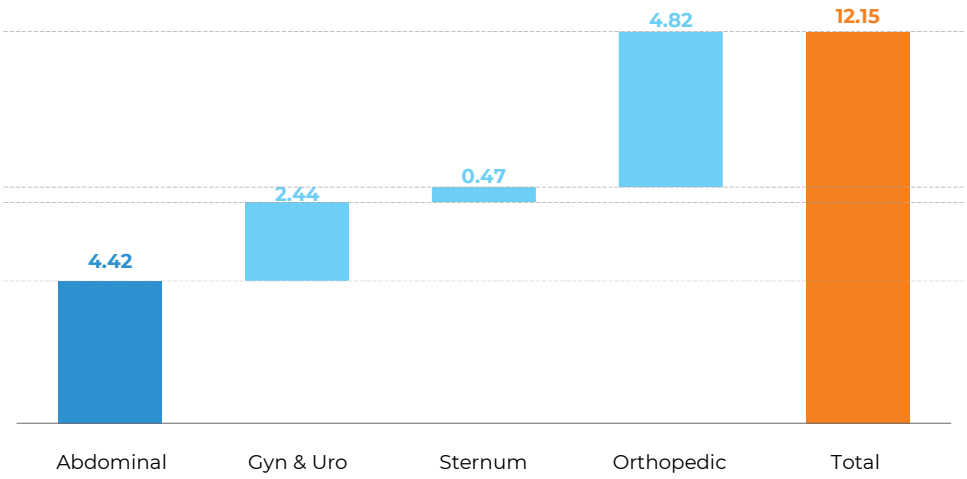
Total US Addressable Market

US TAM for D-PLEX$_{100}$ is Over

12.2M Procedures

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



Source: IQVIA PM&I Global FlexView. Internal analysis

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