Phio Pharmaceuticals

INTASYL® siRNA Patented Technology

Making Immune Cells More Effective in Killing Tumor Cells

Striving For A Cancer Free Future

Forward Looking Statements

This presentation contains forward-looking statements within the meaning of the Private Securities Litigation Reform Act of 1995. Words such as "believes," "anticipates," "plans," "expects," "indicates," "will," "intends," "potential," "suggests" and similar expressions are intended to identify forward-looking statements. These statements are based on Phio Pharmaceuticals Corp.'s (the "Company") current beliefs and expectations. Such statements include, but are not limited to, statements about the impact to our business and inflationary pressures, rising interest rates, recession fears, the future development of the Company's products (including timing of clinical trials and related matters associated therewith), the expected timing of certain developmental milestones, expectations and assumptions regarding the results of our preclinical studies, potential partnership opportunities, the Company's competition and market opportunity and pro forma estimates. The inclusion of forward-looking statements should not be regarded as a representation by the Company that any of its plans will be achieved. Actual results may differ from those set forth in this presentation due to risks and uncertainties in the Company's business, including those identified under "Risk Factors" in the Company's most recently filed Annual Report on Form 10-K and in other filings the Company periodically makes with the U.S. Securities and Exchange Commission. The Company does not undertake to update any of these forward-looking statements to reflect a change in its views or events or circumstances that occur after the date of this presentation.

A Story of Innovation
Yesterday and Today

Co-Founder Craig Mello: Nobel Laureate

Discovery of RNAi

INTASYL® siRNA

Patented Short Interference RNA technology
Ability to silence any gene in the human genome

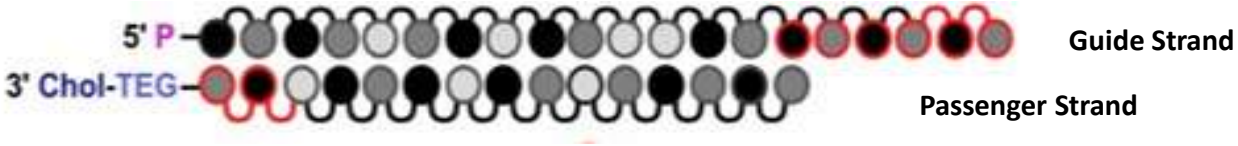
INTASYL's Patented Chemistry Structure
Self-Delivering Technology

3 Essential Components

Cholesterol: Enables intact drug delivery to any cell type or tissue without alteration

Phosphorothioates: Protects stability of molecule against de-stabilizing nucleases

Precise Sequence Design: Empowers exceptional gene target specificity



Double-Strand Selectively Sequenced Oligonucleotides

INTASYL's Self-Delivering Mode of Action

INTASYL rapidly self-internalizes into cells through endocytosis via its cholesterol moiety

↓

Safely suppressing excess protein production by a gene

↓

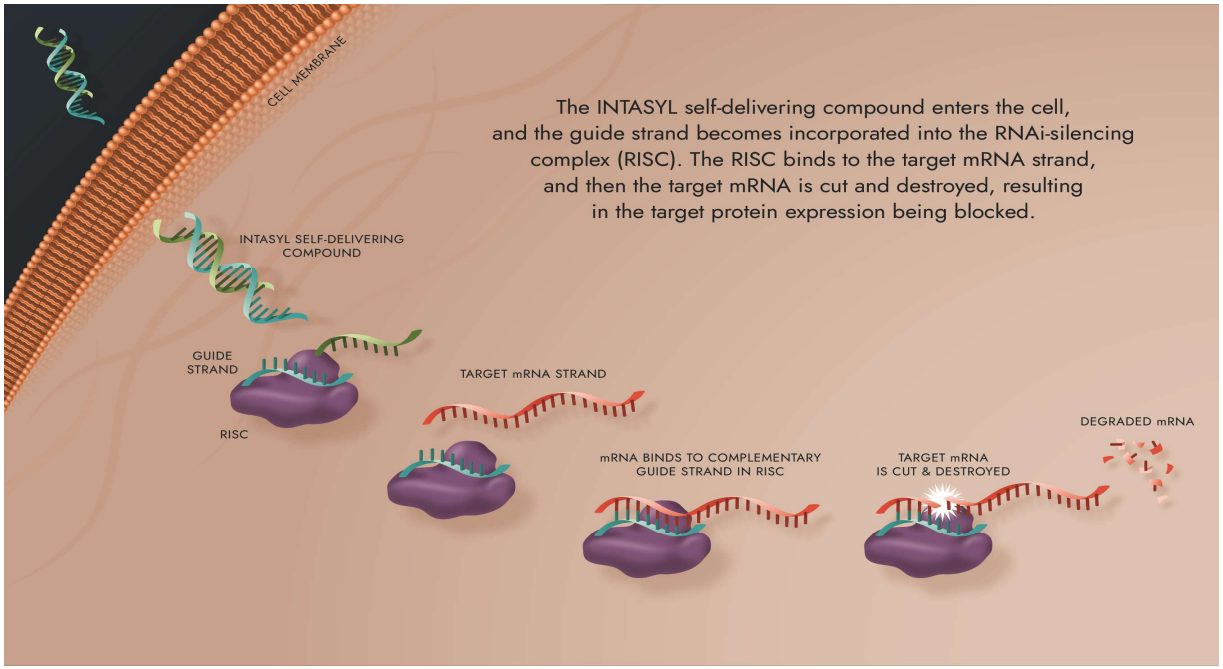
Re-activating the body's natural immunity

↓

Making immune cells more effective in killing tumors

INTASYL's Pathway to Gene Silencing

- Cholesterol facilitates drug transport through cell membrane into RNAi Silencing Complex (RISC)
- Guide strand facilitates delivery of compound to silence a specific mRNA, cutting and destroying it
- Protein formation is blocked and silenced within the T cell



Uniqueness of INTASYL's Self-Delivering Technology

Versatility

- **Targets any Gene with Specificity**
- **Can Target Multiple Genes Simultaneously**
- **Delivers to Any Cell Type without Formulation Alteration**
- **Can be used in combination with Other Therapies**
- **Multiple modes of administration**

Convenience

- **Formulation**
  - -Buffered Saline
  - -No Enhancements
  - -No Manipulations
  - -Low Cost of Goods Sold
- **Ease of Intratumoral Administration**
- **Administered in MD Office**

Safety

- **Risk Mitigation Against**
  - -Off-Target Adverse Events (AE's)
  - -Auto Immune Serious AE's
  - -Permanent Alterations
- **Safely Administered to 190 Patient:**
  - -Intratumorally
  - -IV
  - -Topically

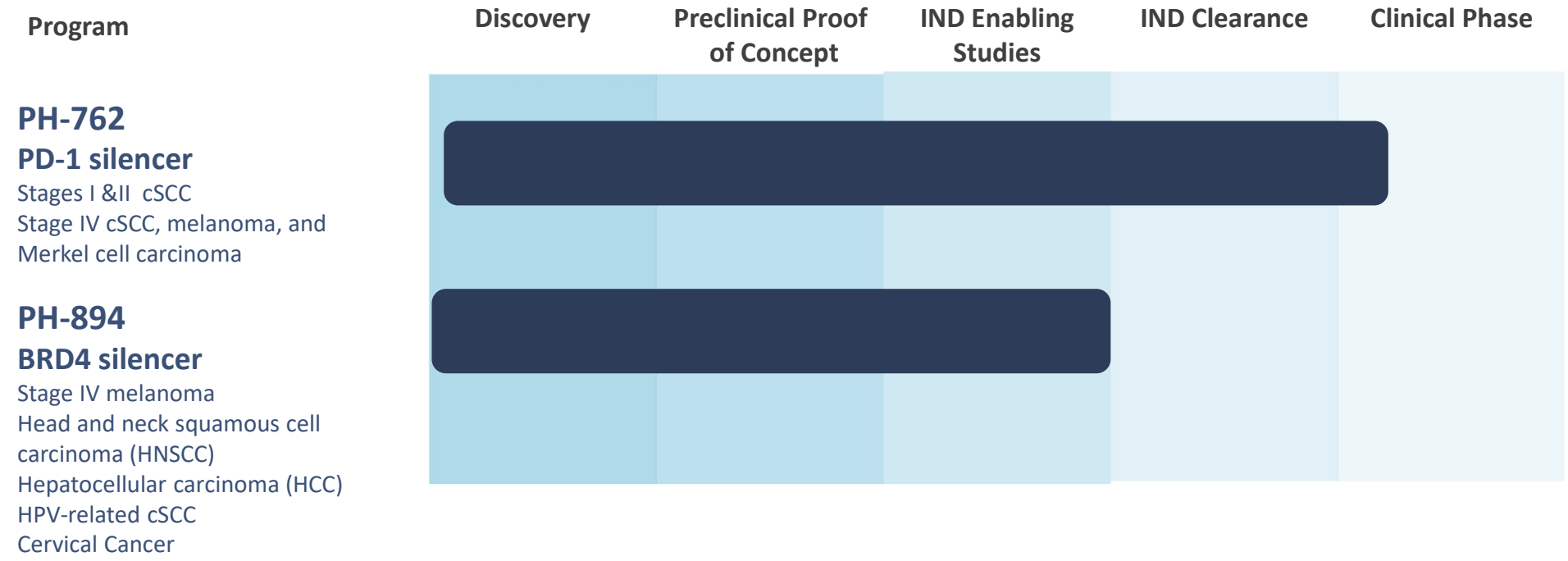
INTASYL's Value Proposition

- **Unique self-delivering technology**
- **Designed for multiple modes of delivery**
- **Can target many diseases/conditions**
- **Extensive patent portfolio**

INTASYL's Gene Silencing Portfolio

Application	Gene Silencing Compounds
Immuno-oncology	
Solid Tumors Adoptive Cell Therapy	PD-1, BRD4, CTLA4, TIGIT, LAG3, TIM3, CBLB, SHP-1, STAT-3, MDM2, ADORA2, MMP-1, CD96, CISH, CSK, DGKα, DGKζ, DMNT3A, HK2, IL-6, KLRC1, PD-L1, PRDM, PTEN, TBX21, TET2
Dermatology	
Hypertrophic Scarring	CTGF, COX2, TGFB1, TGFB2, SPP1
Hyperpigmentation	TYR, COX2
Wrinkles	MMP1, COX2
Viral Disease	
HPV HSV	BRD4

Novel Program Pipeline
Active Self-Directed Clinical Development

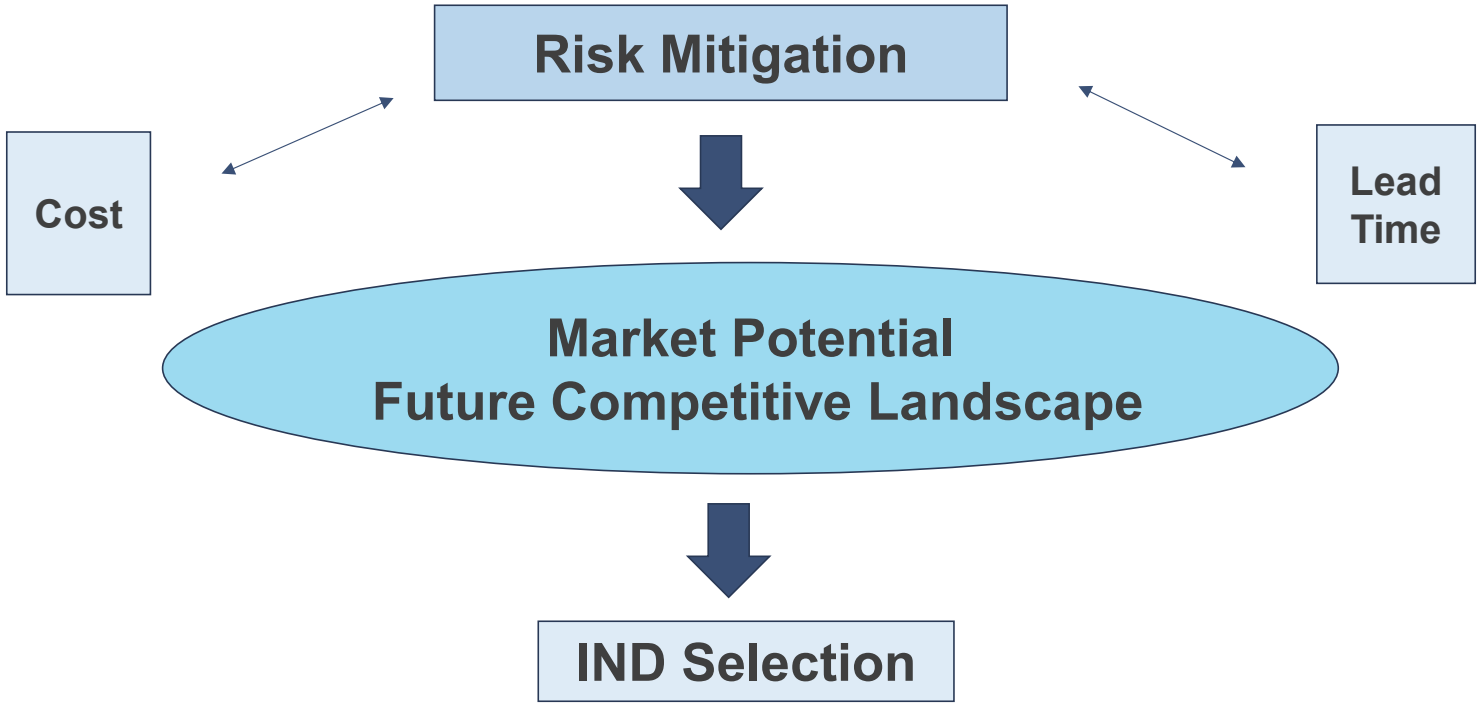


Clinical Lead Program

PH-762 Intratumoral Therapy

Silencing PD-1 Gene Implicated in Skin Cancers

Rationale for Clinical Program Selection



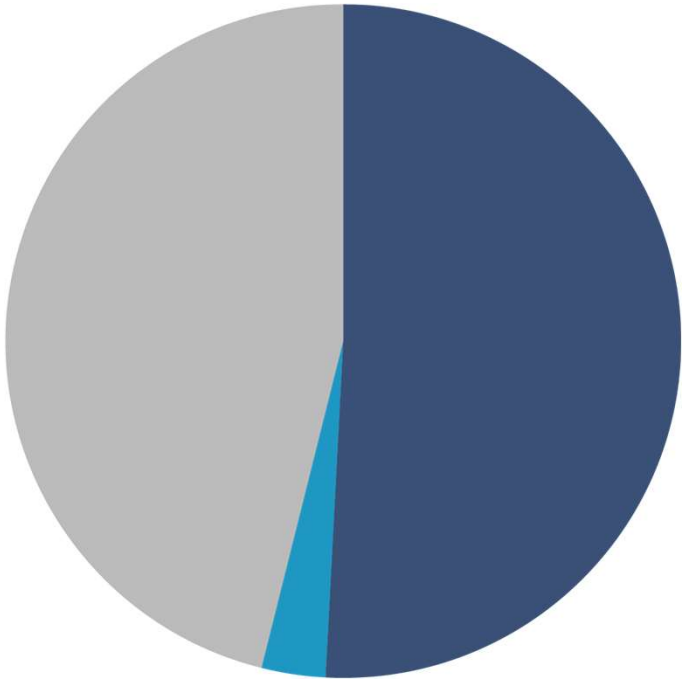
PD-1 Gene Target Selection Rationale

Risk Mitigation	**PD-1 implication in skin cancer previously validated in Monoclonal Antibody (mAB) trials**
	INTASYL demonstrated turn-off of PD-1 gene at its source in T-cell
Cost/Lead Time	**Quantifiable based on preclinical models**
	Patient enrollments guided by mAB clinical trial precedents
Market Potential	**Disease incidence driven by cutaneous squamous cell carcinoma (cSCC)**
Competitive Landscape	**Review of # and sponsors of clinical trials in target indication**

U.S. Market Opportunity in cSCC
Significant Incidence to All Solid Tumors[1]

All other solid tumors
(1.6M incidence[1])
46%

Melanoma
3%
(108K incidence[1])



cSCC
51%
(1.8M incidence[2])

[1] Annual incidence in the U.S. excluding basal cell carcinoma (BCC), cancer.org, 2022
[2] skincancer.org, 2021

IND Clearance by FDA Q2 2023

- **FDA clearance to study Stage IV Melanoma, Merkel Cell Carcinoma and Cutaneous Squamous Cell Carcinoma (cSCC)**

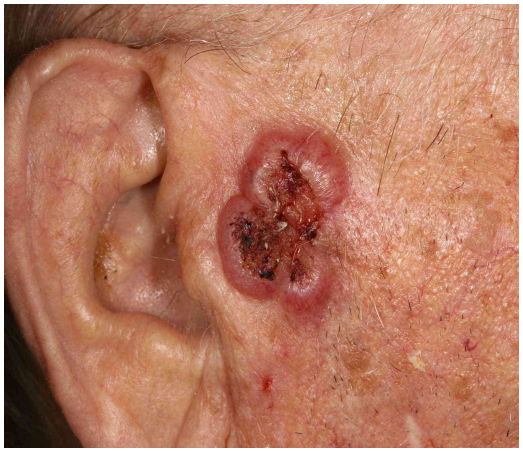
- **FDA recommendation to study Stages I and II cSCC**
  -Drives targeted treatment rationale and economic ROI

Cutaneous Squamous Cell Carcinoma Market Situation

- 1.4 million incidences in cSCC Stages I and II (≤ 3cm in length)
- Currently no FDA approved drug therapy for Stages I and II cSCC
- Invasive surgical intervention is current standard of care
- cSCC Stages I and II addressable market > $20 billion

  -Our target share ~5%

Facial Manifestation of cSCC
Surgical Impact



Tumor size, location and patient's immunity may drive a non-surgical option

Features and Benefits
PH-762 Intratumoral Therapy for cSCC

- **Shrinks or eliminates tumor involvement**
  - Reduces extent of surgical excision and reconstructive surgery
  - Preserves integrity of skin, reduces pain, faster healing
- **Convenient and well tolerated**
  - Direct injection administered in a physician's office
  - No systemic infusion; no infusion center appointments
  - Essentially eliminates auto-immune serious adverse events
- **Potential to suppress tumor recurrence through T-cell recognition**
- **Patient office visits support physician practice economics**

PH-762 Ongoing Phase 1b Study
Clinical Trial Design*

- **Dose-Escalation Trial:** up to 30 patients
- **PH-762 Intratumoral Injection:** 4 injections over 3 weeks with resection of residual lesion at week 5
- **Endpoints:** Safety, Tumor size, PK Analysis, Biomarker Analysis
- **Current Investigation Sites:** Banner MD Anderson, University Pittsburgh Medical Center, Centricity Research, Integrity Research, Paradigm Clinical Research Centers
- **Expected Enrollment Phase Completion:** Q3 2025

*Clinicaltrials.gov **NCT06014086**

Intellectual Property

Intellectual Property
57 Patents Issued

Portfolio encompasses issued and pending patents in key countries:

- INTASYL chemistry
- Specific drug compounds
- Specific gene targets
- Therapeutic indications

Multi-layered Patent Protection to:

2044

Business Development

Maximizing Return on INTASYL Technology

Target Collaboration Initiatives
Potential Areas for Synergies

- **Cell Therapy Companies –Application in Adoptive Cell Therapy (ACT)**
  - — Clinical trial proof of concept established with PH-762 in enhancing TILs therapy
  - — Preclinical proof of concept via TIGIT and CBLB to increase potency and yield in Natural Killer Cells
- **Monoclonal Antibody (mAB) Therapy**
  - —Combined with mABs, INTASYL preclinically demonstrates synergistic tumor suppression
  - — INTASYL silences PD-1 inside the T-cell; mAB's act on PD-1 on cell surface
- **Cosmetic Dermatology**
  - — INTASYL TYR , COX2 and MMP1 silence proteins contributing to hyperpigmentation and photo-aging skin

Metrics and Leadership

2024 Metrics

Projected Quarterly Cash Burn	~$1.8 M
Cash at 12-27-24	~ $5.3 M
Headcount	5
Committed Technical Contractors	4
Common Shares Outstanding	~ 1.7 M
Common Stock Warrants	~ 2.0 M
Debt	$0

Phio's Executive Leadership Team

Key members of this Phio team have previously worked together for >20 years in other companies directly overseeing 6 NDA/PMA approvals and 8 commercial dermatology launches in the U.S.

Mr. Robert Bitterman, Chairman, President and Chief Executive Officer

Mr. Bitterman has been a member of the board since 2012. He was appointed President and CEO in Feb 2023. He brings over 25 years of executive leadership in the pharmaceutical and biologic life science industry. Mr. Bitterman was previously President and CEO of Cutanea Life Sciences and Isologen Inc. as well as President of Dermik Laboratories, division of Aventis Pharma. He also held senior roles in financial and investor relations.

Linda Mahoney, Senior VP of Development

Ms. Mahoney is a pharmaceutical development executive with over 25 years of experience. She was previously Vice-President of Scientific Operations and Business Development at Cutanea Life Sciences Inc. She has held senior positions in project management, product development and commercial supply chain at Sanofi-Aventis and Dermik Laboratories.

Mary Spellman, M.D., F.A.A.D.

Dr. Spellman is acting medical director at Phio. She is a board-certified and licensed dermatologist. Dr. Spellman's experience includes Chief Medical Officer at Castle Creek Biosciences and Menlo Therapeutics, Inc. She held senior positions in medical research and development at Revance Therapeutics Inc., Biogen, Connetics Corporation, and Novartis. She serves as a consultant in the areas of medical research and development, drug safety and pharmacovigilance.

Phio's Executive Leadership Team

Jennifer Phillips, Pharm.D., VP Regulatory & Corporate Affairs

Ms. Phillips is a seasoned pharmaceutical executive with over 25 years of experience in Regulatory Affairs. Previous work experience includes VP of Regulatory and Quality Assurance at Cutanea Life Sciences, Director of Regulatory at Dermik Laboratories, Solvay Pharmaceuticals and Wyeth Laboratories.

Robert M. Infarinato, Esq., CPA, VP & Chief Financial Officer

Mr. Infarinato has extensive experience in large global pharmaceutical enterprises and biotech. These include Pfizer Inc, Revlon, Inc., Rhone-Poulenc Rorer, Inc, & ARES Serono, SA. He was Chairman of the Board and of the Finance Committee of Abington Health System (PA), which combined itself with Jefferson Health (and now Lehigh Valley Health Network).

Melissa Maxwell, M.S., Director of Research and Program Management

Ms. Maxwell is an accomplished professional with over two decades of experience in the pharmaceutical and biotechnology industries. She is a doctoral candidate in immunology at Ludwig Maximilian University in Munich, Germany. Previously, Melissa was the Principal Scientist at Phio Pharmaceuticals. She also held various R&D roles at biotech and pharmaceutical companies, including Forma Therapeutics, Genzyme Genetics, and Abbott Bioresearch.

Phio Pharmaceuticals

Striving For A Cancer Free Future

Unique Precision Drug Delivery
Multiple Therapeutic Applications
Extensive Intellectual Property
Leadership Validated by Track Record
Skin Cancer Addressable Market >$20 Billion