Phio Pharmaceuticals

Satisfying Unmet Needs in Skin Cancer Therapy

Making Our Immune Cells more Effective in Killing Tumor Cells

Phio PHARMACEUTICALS

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.

Phio: History of Innovation

Co-Founder Awarded Nobel Prize for RNAi Discovery

Leveraged to Create INTASYL siRNA Technology

INTASYL® siRNA

Patented Short Interfering RNA technology

Ability to precisely silence genes in the human genome

Making our Immune Cells More Effective in Killing Tumor Cells

INTASYL siRNA Mode of Action

Safely silencing excess protein production by a gene

Re-activates the body's natural immunity

Making immune cells more effective in killing tumors

Through precision self-delivering technology

INTASYL's Value Proposition

- **Designed for safety, efficacy, convenience and economics**
- **Designed for versatility of precision self-delivery**
- **Protected by extensive patent portfolio**

INTASYL Value Drivers
Safety / Tolerability

- **To date, no dose limiting toxicities or serious adverse events (SAEs) through 4 completed dose escalating cohorts in on-going Phase 1b clinical study**
- **Absence of formulation enhancers eliminates risk of toxicities**
- **Direct injection into tumor (intratumoral) essentially eliminates off-target SAEs associated with systemic infusion of monoclonal antibodies**
- **No permanent genetic alteration**

INTASYL Value Drivers
Efficacy

Pathologic Results through 4th cohort in Phase 1b Study (15 Pts)

Cutaneous Squamous Cell Carcinoma

100% tumor clearance: 5 patients

> 90% clearance: 1 patient

>50% clearance: 1 patient

No disease progression <50% Clearance: 6 patients

Metastatic Melanoma

No disease progression <50% Clearance: 1 patient

Metastatic Merkel Cell Carcinoma

> 50% clearance: 1 patient

Now Enrolling 5th cohort in Phase 1 b study

INTASYL Value Drivers
Patient / Physician Convenience

-Administered in physician's office

-Avoids logistics of systemic infusion centers

-Minimizes aftercare associated with surgery

-Flexible dosing to accommodate lesion size

INTASYL Value Drivers Economics

-Office visits drive MD practice economics

-Basic chemical synthesis yields relatively lower cost of goods

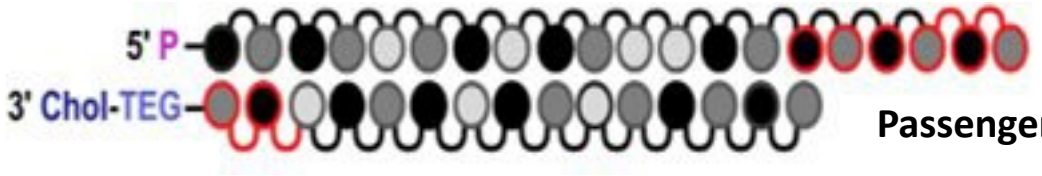
-Low cost of good facilitates formulary pricing flexibility

INTASYL
Versatility of Self-Delivering Technology

- **Designed to deliver to a selected gene with specificity**
- **INTASYL compounds in combination can be designed to target multiple genes simultaneously**
- **May be used in combination with other therapies**
- **Can be designed for multiple modes of administration**

INTASYL's Patented Chemistry Structure Self-Delivering Technology

Asymmetric siRNA Duplex with Selectively Designed Oligonucleotides



3 Essential Components

Cholesterol: Enables intact drug delivery to any cell type or tissue through endocytosis

Phosphorothioates: Protects stability of molecule and enhances its binding to T cell surface

Precise Sequence Design: Permits exceptional gene target specificity

Intellectual Property
77 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

Focused Strategy

Selective Clinical Development
Out-License of Non-Strategic Compounds

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Selection Rationale for Clinical Programs

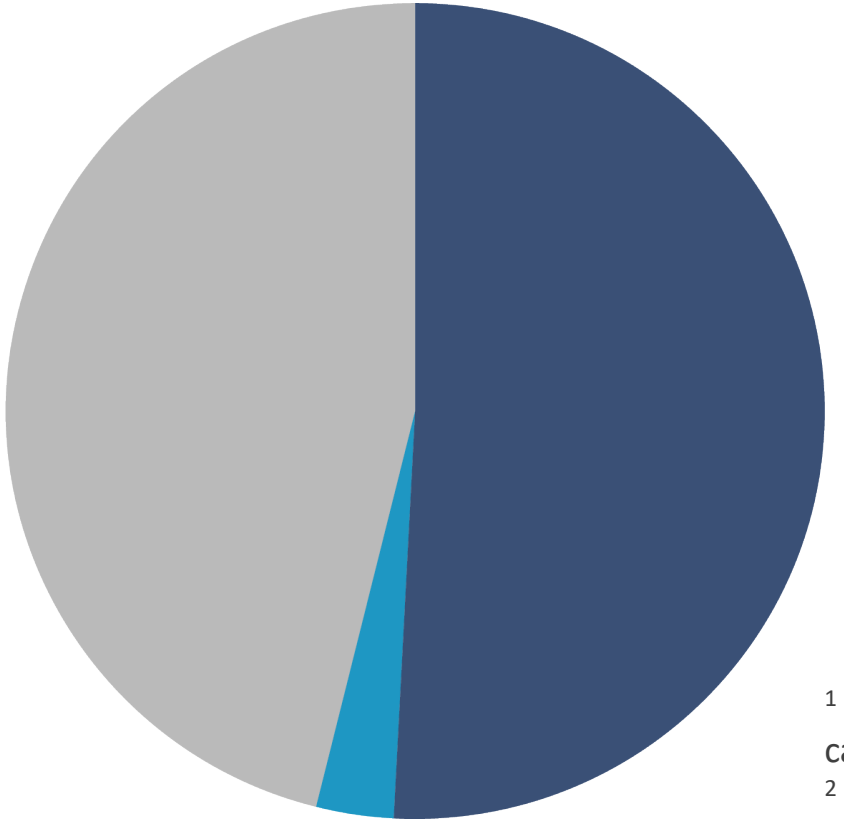
Lead Program Selection
Intratumoral PH-762 for PD-1 Gene Silencing

Risk Mitigation	**PD-1 implicated in skin cancer and validated in monoclonal antibody (mAB) trials**
	INTASYL demonstrated silencing of PD-1 gene at its source in T-cell
Market Potential	**Significant market size and growing in cutaneous carcinomas** **Cutaneous squamous cell carcinoma is second largest tumor incidence**
Competitive Landscape	**Limited number of clinical trials being conducted**

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

Secondary Program Selection
Intratumoral PH-894: BRD4 Gene Silencer

- **PH-894 has a Dual Mechanism of Action**
  -Direct tumor killing
  -Activation of immune cells

- **PH-894 is Precisely Selective for BRD4 Gene**
  -Designed to eliminate toxicity previously seen in non-selective development compounds
  -PH-894 has clean toxicology profile in non-human primate

- **BRD4 Implicated in Numerous Cancers**
  -Melanoma, Prostate, Breast, Cervical, Lung, Liver, Head/Neck SCC

- **PH-894 has completed the required IND enabling studies**

Focused Self-Directed Clinical Development

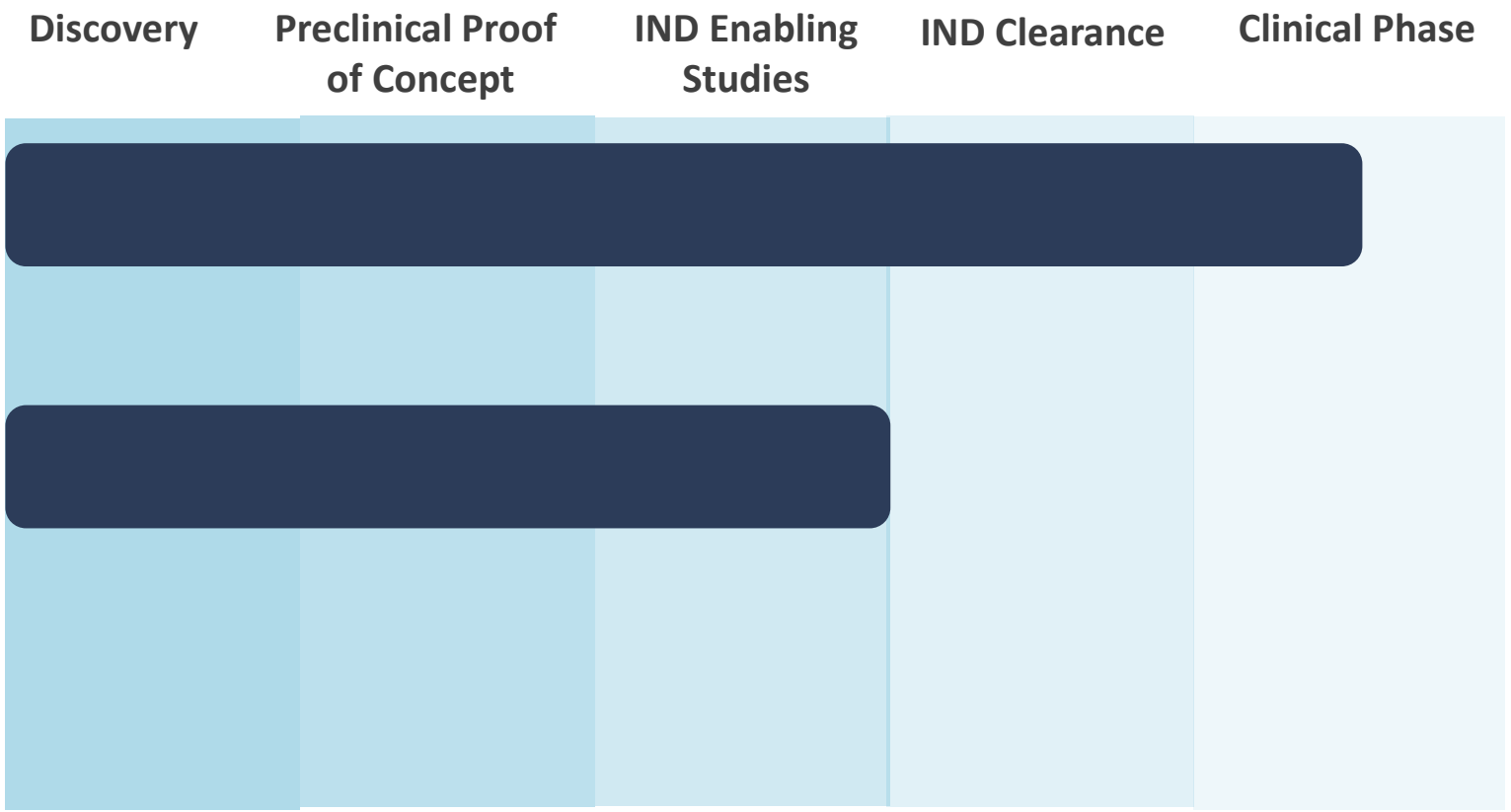
Program

PH-762 PD-1 silencer

Phase 1b Study
Stages I & II cSCC
Stage IV cSCC, melanoma, and Merkel cell carcinoma

PH-894 BRD4 silencer

Potential Indications
Stage IV melanoma
Head and neck squamous cell carcinoma (HNSCC)
Hepatocellular carcinoma (HCC)
HPV-related SCC
Prostate Cancer



PH-762
IND Clearance by FDA Q2 2023

- **Stage IV melanoma, Merkel cell carcinoma and cutaneous squamous cell carcinoma (cSCC)**

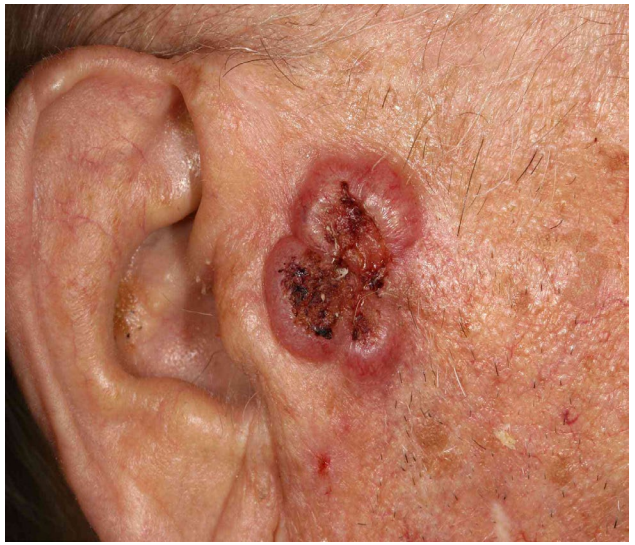
- **Stages I and II cSCC**
  - Potential first approved drug treatment alternative for patients
  - Prevalence > 70% of total cSCC incidence

cSCC - Stages I and II 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**

Facial Manifestation
Surgical Impact

Tumor size, location and patient's health presents a need for non-surgical option



PH-762 Intratumoral Therapy for cSCC Positioning

- **Tissue Sparing: shrinking or eliminating the tumor**
  -Minimizes surgical excision and reconstructive surgery
  -Preserves skin integrity, promotes faster healing and reduces pain

- **Convenience: intra-tumoral injection vs systemic infusion**

- **Well-tolerated**
  -Auto-immune AEs essentially eliminated

- **T-cell recognition may be enhanced preventing tumor recurrence**

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

- **Clinical Trial Objective:**
  - Determine dose for next trial for safety, tolerability, and tumor pathology
- **Design:** Up to 30 patients in escalating dose concentrations
  - 4 intratumoral injections over 3 weeks with resection of residual lesion at week 5
  - Endpoints: Safety, Pathology Tumor Results, PK, Biomarker Analysis
- **Investigation Sites:** Banner MD Anderson, Centricity Research, Integrity Research, Paradigm Clinical Research Centers, Skin Cancer and Dermatology Institute
- **Expected Enrollment Phase Completion:** Q3 2025

*Clinicaltrials.gov **NCT06014086**

Maximizing Return on INTASYL Technology

Business Development

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Potential Areas for Collaboration

- **INTASYL compounds' potential for additional indications**
- **Adoptive Cell Therapy (ACT)**
  - — Clinical proof of concept using PH-762 enhances TILs therapy
  - — Preclinical proof of concept to increase potency and yield in Natural Killer (NK) Cells
- **Combination with Monoclonal Antibody (mAB) Therapy**
  - —Combined with monoclonal antibody, 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

INTASYL's Confirmed Gene Silencing Portfolio

Application	Confirmed Compounds	Potential Targets
Solid Tumors	PD-1, PD-L1 BRD4	Skin Cancers Stage IV melanoma, Head and Neck squamous cell carcinoma (HNSCC), Prostate, Hepatocellular carcinoma (HCC), HPV-related cSCC
Adoptive Cell Therapy	CTLA4, TIGIT, LAG3, CBLB	Enhanced NK Cells
Dermatology	CTGF, COX2, TGFB1, TGFB2, SPP1, MMP1, TYR	Hyperpigmentation, Hypertrophic Scarring, Wrinkles, Photoaging skin
Viral Disease	BRD4	HPV, HSV

Metrics and Leadership Team

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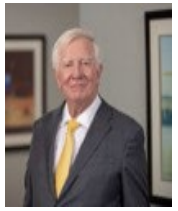
Recent Metrics

Historical Quarterly Cash Burn	~$2.0M
Headcount	6
Subject Matter Experts (contracted)	4
Common Shares Outstanding	~5.7M
Common Stock Warrants	~7.6M
Debt	$0

Phio Leadership Team

Phio personnel have prior work association extending >20 years
Team has directed 6 NDA/PMA approvals and 8 commercial dermatology U.S. launches



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

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

Lisa Carson, VP of Finance and Administration

Ms. Carson brings over 20 years of financial leadership in the life science industry, driving strategic growth and operational excellence. Previously as VP, Head of Finance & Controller at Prelude Therapeutics, she led the financial transformation that supported the company's IPO and expansion. Ms. Carson also held key leadership roles at TELA Bio and PhaseBio Pharmaceuticals.

Linda Mahoney, Senior VP of Development

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

Phio Leadership Team (cont'd)

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

Dr. Spellman, a board-certified and licensed dermatologist, is acting medical director at Phio. 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.

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.

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

Ms. Maxwell has over two decades of experience in the biopharmaceutical industry. She is a doctoral candidate in immunology at Ludwig Maximilian University in Munich, Germany. Having been with Phio Pharmaceuticals since 2014, she is currently the Principal Scientist. She also has held various R&D roles at Forma Therapeutics, Genzyme Genetics, and Abbott Bioresearch.

Phio Pharmaceuticals

Skin Cancer Addressable Market >$20 Billion
Unique Precision Self-Delivering INTASYL Technology
Extensive Intellectual Property
Leadership Validated by Track Record

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