INOVIO
POWERING DNA MEDICINES™

H.C. Wainwright Global Investment Conference

September 12, 2023

Nasdaq:INO

Forward-Looking Statements

This presentation includes statements that are, or may be deemed, “forward-looking statements,”” within the meaning of Section 27A of the Securities Act of 1933, as amended. All statements, other than statements of historical facts, included in this presentation regarding our strategy, future operations, future financial position, future revenue, projected costs, prospects, plans and objectives of management are forward-looking statements. In some cases, you can identify forward-looking statements by terms such as “may,” “might,” “will,” “objective,” “intend,” “should,” “could,” “can,” “would,” “expect,” “believe,” “anticipate,” “project,” “target,” “design,” “estimate,” “predict,” “opportunity,” “proposition,” “strategy,” “potential,” “plan” or the negative of these terms and similar expressions intended to identify forward-looking statements.

You should not place undue reliance on these forward-looking statements. Forward-looking statements include, but are not limited to, statements about: the timing and success of preclinical studies and clinical trials; the ability to obtain and maintain regulatory approval of our product candidates; the scope, progress, expansion and costs of developing and commercializing our product candidates; our expectations regarding the amount and timing of our expenses and revenue; the sufficiency of our cash resources, plans for the use of our cash resources and needs for additional financing; our ability to adequately manufacture our product candidates; our ability to obtain and maintain intellectual property protection for our product candidates; our expectations regarding competition; the size and growth of the potential markets for our product candidates and the ability to serve those markets; the rate and degree of market acceptance of any of our product candidates; our anticipated growth strategies; the anticipated trends and challenges in our business and the market in which we operate; our ability to establish and maintain development partnerships; our ability to attract or retain key personnel; our expectations regarding federal, state and foreign regulatory requirements; regulatory developments in the United States and foreign countries and other factors that are described in the “Risk Factors” and “Management's Discussion and Analysis of Financial Condition and Results of Operations” sections of our Annual Report on Form 10-K for the year ended December 31, 2022 and our Form 10-Q for the quarter ended June 30, 2023, which has been filed with the Securities and Exchange Commission (SEC) and are available on the SEC's website at www.sec.gov.

In addition, the forward-looking statements included in this presentation represent INOVIO's views as of the date hereof. INOVIO anticipates that subsequent events and developments may cause its views to change. However, while INOVIO may elect to update these forward-looking statements at some point in the future, the company specifically disclaims any obligation to do so, except as may be required by law. These forward-looking statements should not be relied upon as representing INOVIO's views as of any date subsequent to the date of this presentation.

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Corporate Overview

Top: PA headquarters;
Bottom: San Diego R&D and manufacturing site

- Biotech company focused on developing and commercializing DNA medicines to help treat and protect people from HPV-related diseases, cancer and infectious diseases
- Platform aims to optimize design & delivery to create therapies and vaccines that teach the body to manufacture its own disease-fighting tools
- $194.9M in cash/cash equivalents & short-term investments as of 06/30/23; expected cash runway into 3Q25
- Building world-class team with experience bringing products to market to benefit patients
  - New leaders in regulatory, medical, R&D

Nasdaq: INO

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2023 Highlights

- **Prioritized our pipeline and right-sized the organization to focus on candidates with the greatest clinical promise, achievable pathways to market and strong commercial potential**
- **Announced positive data from clinical trials for INO-3107 and INO-4201**
  - **INO-3107:** potential treatment for RRP
    - Designated Breakthrough Therapy by FDA
    - Targeting initiation of pivotal trial in 1Q24
  - **INO-4201:** working with collaborators/regulators to gain alignment on next steps as preventative Ebola booster vaccine
- **Advancing immuno-oncology programs**
  - **INO-3112** for HPV-related head and neck cancer
  - **INO-5401** for newly-diagnosed glioblastoma

Value Creation: A 3-Step Process

Potential to unlock the promise of DNA Medicines

Lead Program	Diversified Clinical Pipeline	NextGen DNA Medicines
INO-3107 • Potential treatment for RRP • Breakthrough Therapy designation from FDA • Targeting pivotal study start by 1Q24 • Leveraging extensive experience in HPV-related diseases	• 8 additional clinical-stage candidates • Targeting areas of unmet needs across HPV-related diseases, oncology and infectious diseases	• dMAbs: targeting infectious disease • dLNPs: next-gen vaccines targeting COVID-19 and other diseases including HIV • Cancer Vaccines
NEAR TERM	**MID TERM**	**LONG TERM**

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INOVIO's DNA Medicines

DNA Medicines Platform

PRECISELY DESIGNED PLASMIDS (SynCon®)

+

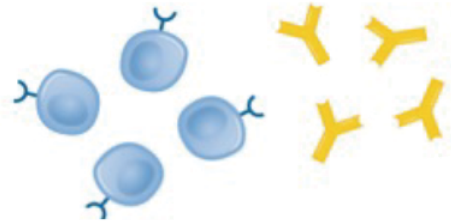
PROPRIETARY DELIVERY DEVICE (CELLECTRA®)

CELLECTRA® 5PSP
Intramuscular Device

CELLECTRA® 3PSP
Intradermal Device

=

***IN VIVO* TARGET PROTEIN PRODUCTION**



Protective killer T cells and antibodies produced by immune system

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Key Features of our DNA Medicines Platform

Induces antigen/protein-specific immune response offering therapeutic and prophylactic protection

Ability to drive antibody and CD8+ T cell responses against multiple indications

Well-tolerated in more than 15,000 administrations (~5k participants)

No anti-vector response; ability to readminister and boost

No frozen storage or shipping required

Allows **rapid plasmid construct design** and manufacture

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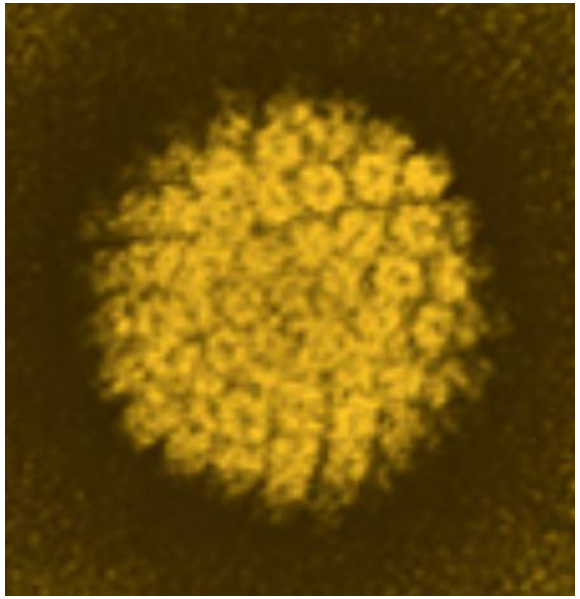
Focus on HPV-Related Diseases

Human Papillomavirus (HPV): A Global Concern

- **HPV is a group of viruses with approximately 200 types**
- **Nearly everyone will become infected with some HPV type in their lifetime**
  - The good news: ~90% of all infections clear naturally and don't result in disease
  - The bad news: persistent infection can lead to cancer and other debilitating, life-threatening diseases affecting quality of life
- **HPV types fall into 2 groups:**
  - Low-risk HPV (e.g., HPV-6 and HPV-11) can lead to benign growths (warts or papillomas) that can develop into conditions such as RRP
  - High-risk HPV (e.g., HPV-16 and HPV-18) can lead to cell changes and lesions (precancerous dysplasia) that can become malignant, such as cervical HSIL, which can lead to cervical cancer
- **Preventative HPV vaccines have reduced the prevalence of HPV infections, but have not eliminated them – nor can they clear or treat established infections**



Electron microscope photograph of HPV

Image courtesy CDC/NCI
(https://www.cdc.gov/hpv/hcp/photos.html)

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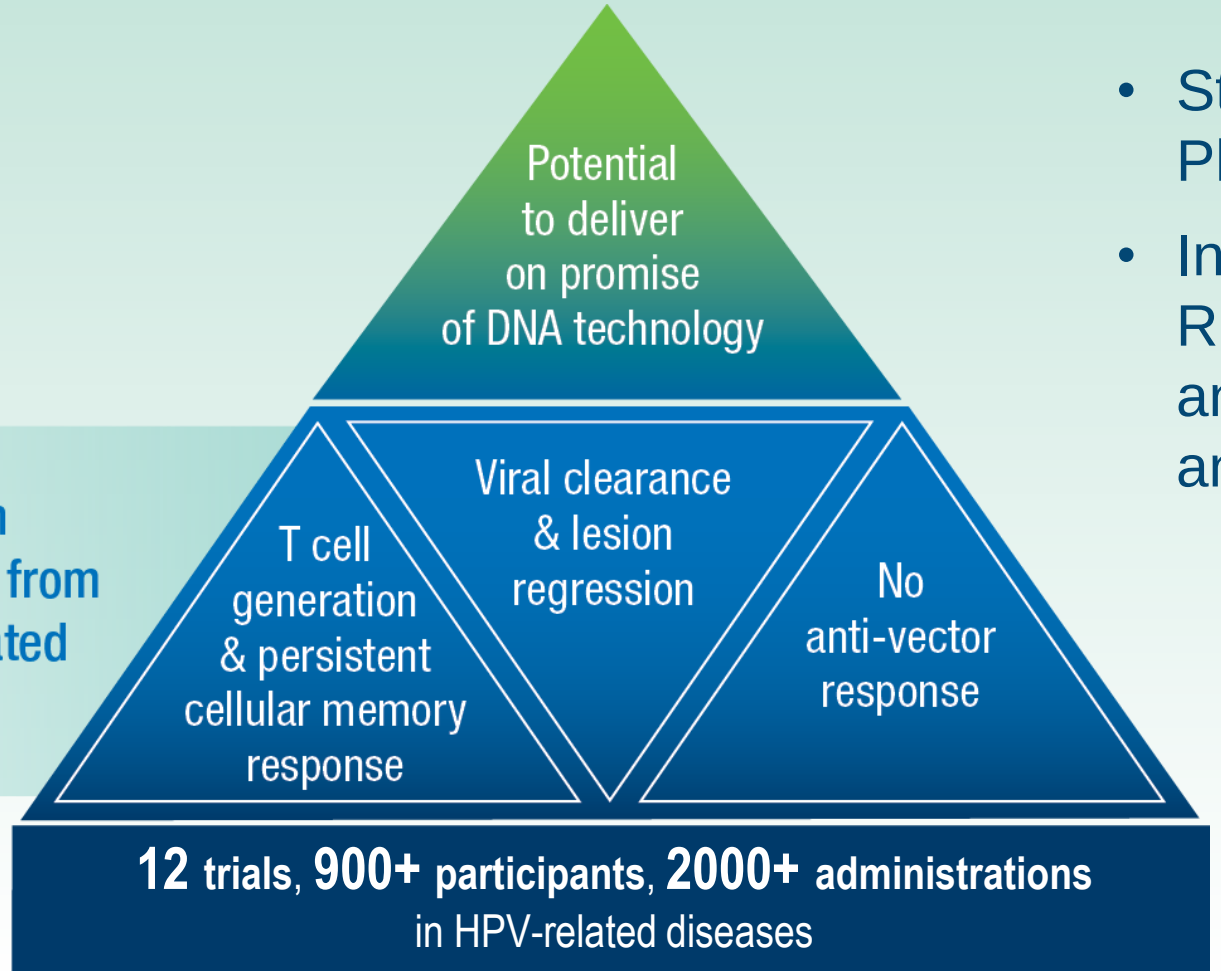
INOVIO's Development Experience Across HPV Spectrum



- Studies ranging from Phase 1 to Phase 3
- Involving patients with RRP, HSIL (cervical, anal & vulvar), head and neck cancers

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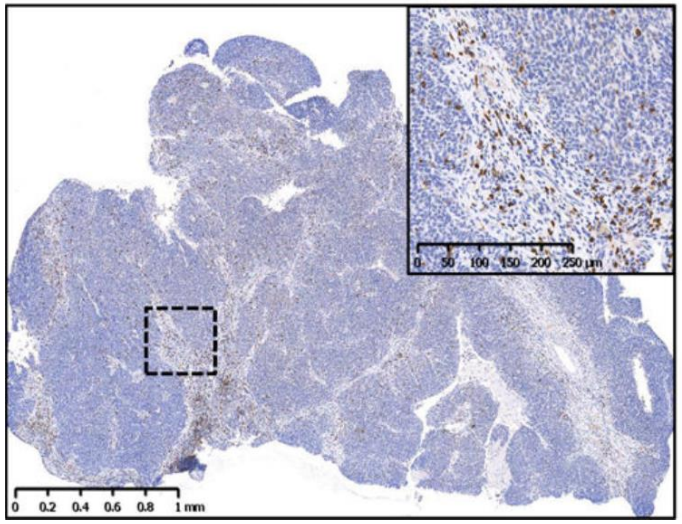
Example of DNA Medicine in HPV-Related Disease

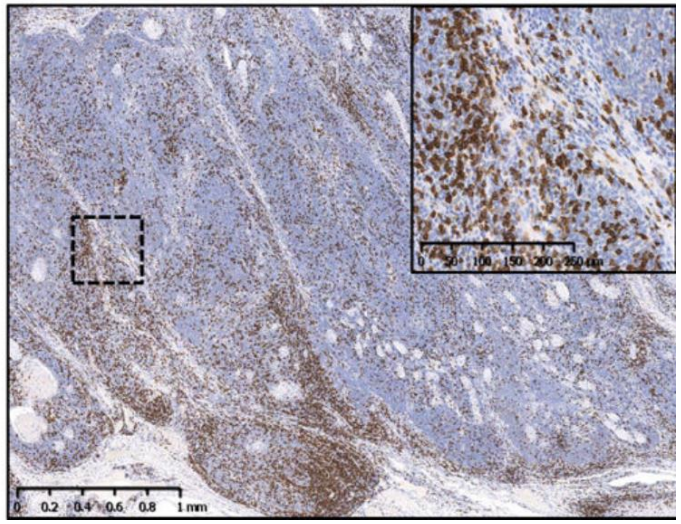
Data from Phase 1/2a trial in HPV+ HNSCC

Treatment with INO-3112 resulted in infiltration of $CD8^+$ immune cells into the head and neck tumors (measured by staining of cells before **(below left)** and after **(below right)** treatment)

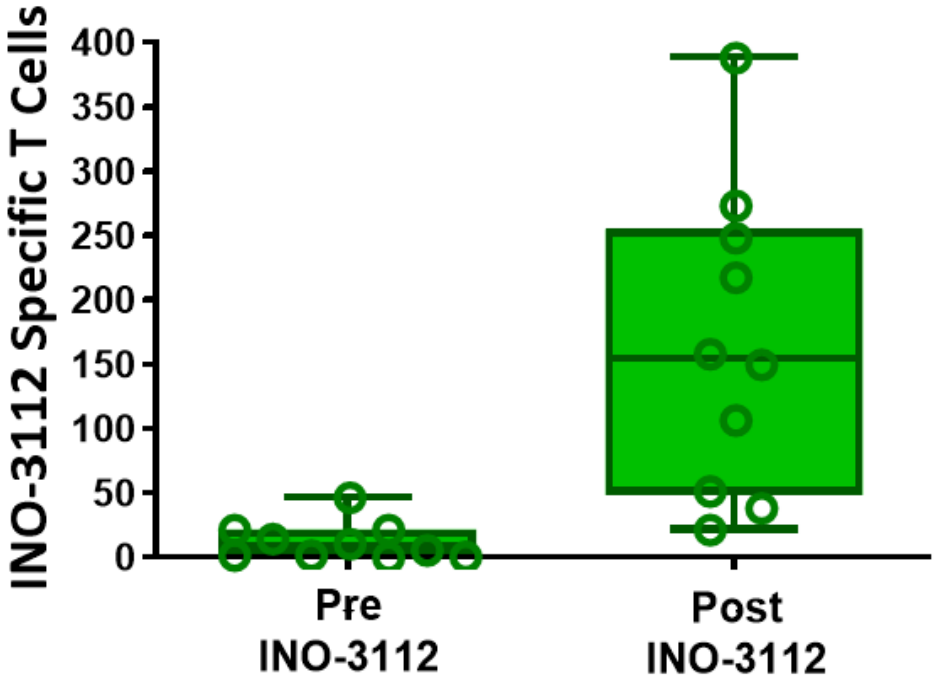
CD8 staining prior to dosing



CD8 staining after dosing



Robust antigen-specific T cell responses observed in peripheral blood (as measured by expression secretion of IFNγ) **(below)**



Aggarwal C, Cohen RB, Morrow MP, et al. Immunotherapy Targeting HPV16/18 Generates Potent Immune Responses in HPV-Associated Head and Neck Cancer. Clin Cancer Res. 2019;25(1):110-124

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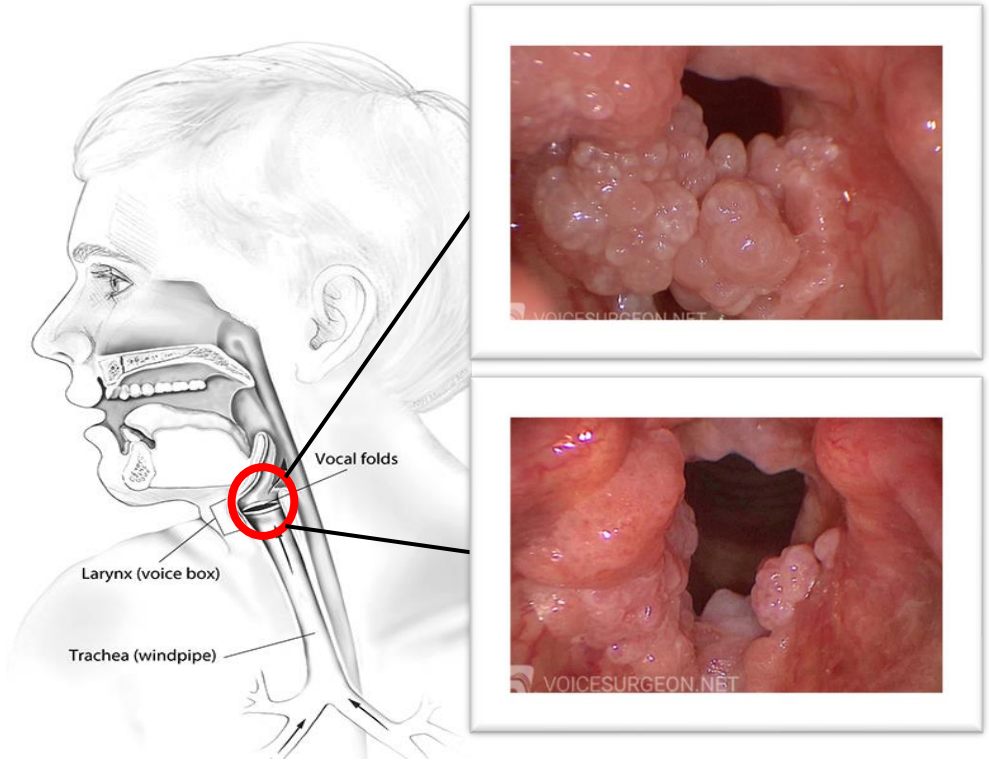
Lead Candidate

INO-3107 for RRP

Recurrent Respiratory Papillomatosis (RRP)



- Rare disease caused by HPV-6/11, impacting both children and adults
- Symptoms result from benign tumors – papillomas – in throat and on voice box
- Surgery is current standard of care
- Annual U.S. Incidence:
  - **~14K** active cases
  - **~1.8 per 100,000** new cases in adults

> “RRP patients will tell you that even one reduction in the number of disruptive, invasive surgeries they face would be life-changing. The potential impact of this treatment gives me great hope for the future and I'm happy to see that RRP is finally getting the attention it deserves.” – Kim McClellan, President of RRPF

Image Source: National Institute on Deafness and Other Communication Disorders; Available at www.nidcd.nih.gov/health/recurrent-respiratory-papillomatosis; accessed July 27, 2022;
Photographs courtesy Aaron Friedman MD, University of Cincinnati College of Medicine (https://voicesurgeon.net/voice-disorders/recurrent-respiratory-papillomatosis-rrp/). Used with permission.

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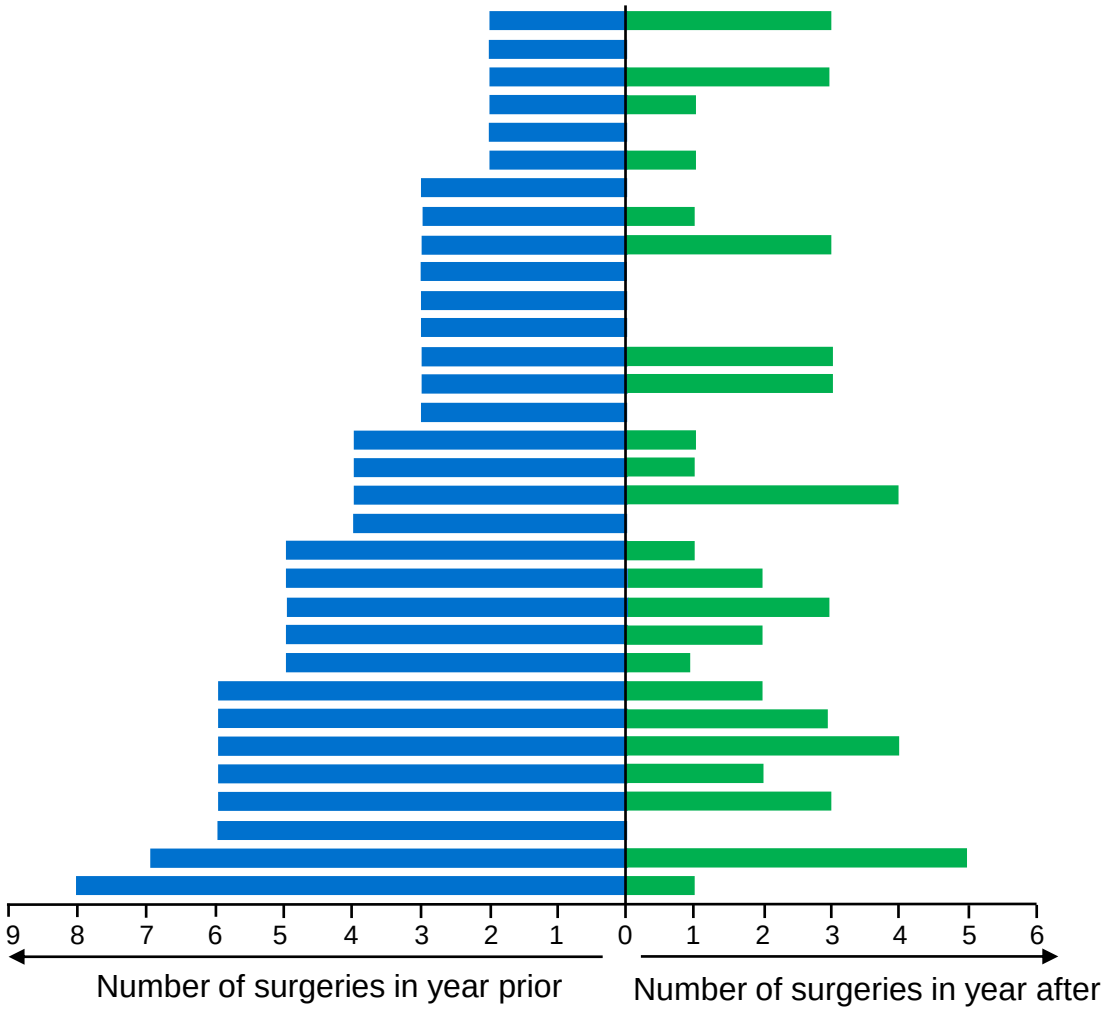
INO-3107 - DNA Medicine Targeting RRP

- **DNA Medicine product candidate composed of plasmids encoding for E6 and E7 antigens from HPV-6, HPV-11, and human interleukin-12**
- **Potential benefits:**
  - Reduced number of surgical interventions
  - Generation of T cells, clearance of underlying HPV infection and regression of papillomas
  - Ability for redosing/boosting
- **Designated a Breakthrough Therapy in U.S. and granted Orphan Drug Designation in U.S. & EU**
- **Development plans: initiate pivotal global trial in adults in 1Q24**
- **Completed Phase 1/2 clinical trial**
  - Presented at ABEA/COSM Conference in May 2023
  - Published in The Laryngoscope in June 2023

INO-3107 Phase 1/2 Trial: Decrease in Number of Surgeries



- Overall, 26 patients (81.3%) had a decrease in surgical interventions in the year after INO-3107 administration versus the prior year
- Decrease in surgeries: counted from start of treatment regimen (Day 0)
  - Even surgeries done during dosing cycle were counted in efficacy evaluation
- 9 patients (28.1%) required no surgical intervention
- Median change in the number of surgeries from the year prior to baseline to the year following was -3 (95% CI: -3 to -2)

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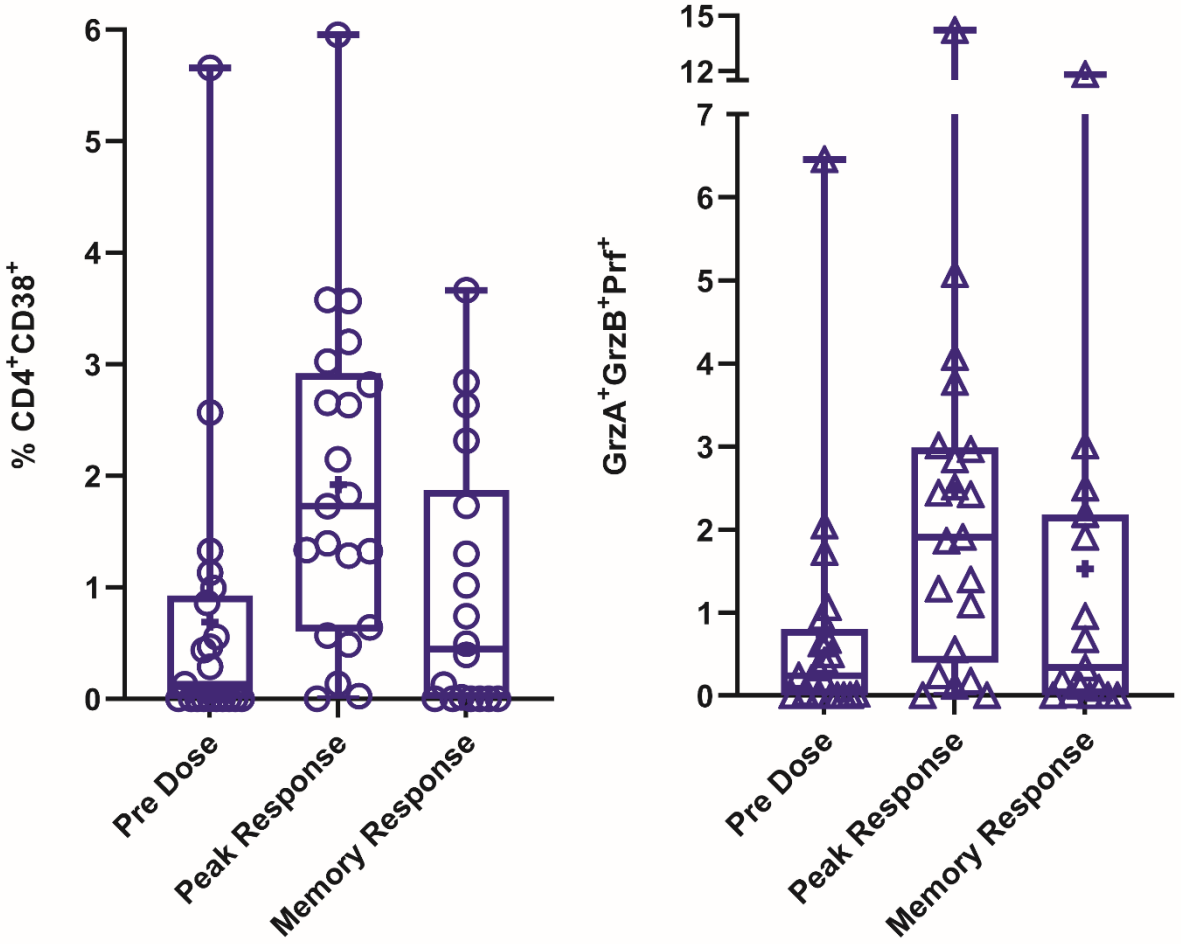
INO-3107: Phase 1/2 Trial Results - Cellular Response



- Treatment induced activated CD4 and CD8 T cells against E6/E7 antigens
- Cytotoxic CD8 T cells thought to be important for clearance of virally infected cells
- T-cell responses observed at Week 52 indicating persistent cellular memory response
- Additional analyses ongoing to determine possible relationship between CD4 and CD8 phenotypes and clinical outcomes

GrzA, granzyme A; GrzB, granzyme B; HPV, human papillomavirus; Prf, perforin.

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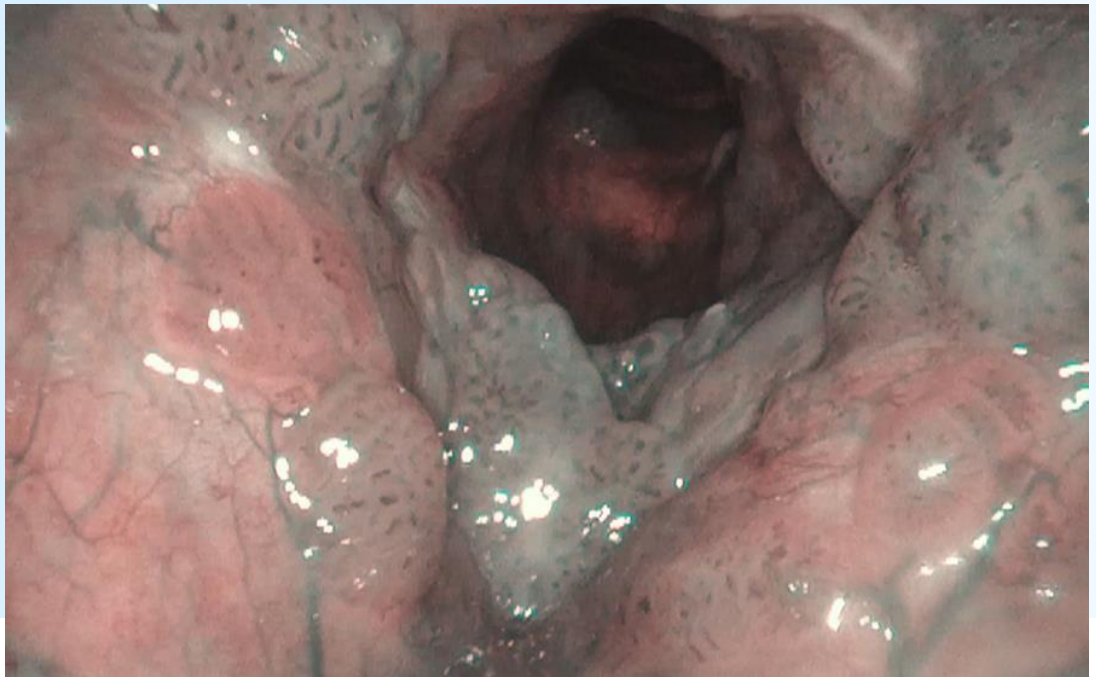
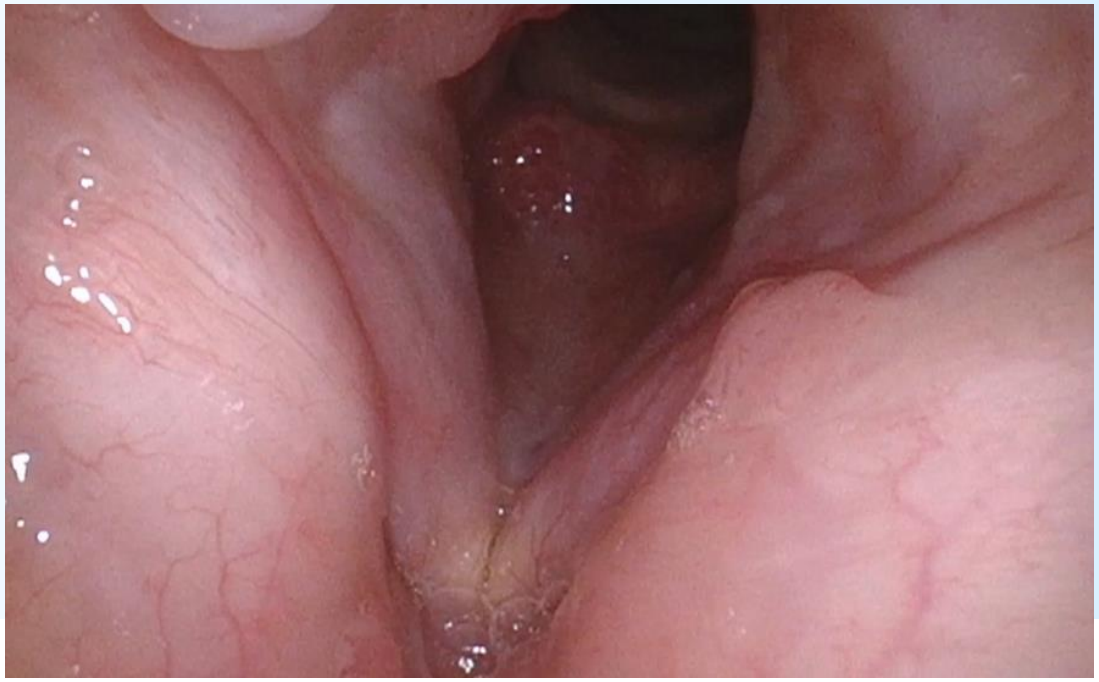
INO-3107: Phase 1/2 Trial Results



Prior to INO-3107

Trial Participant: required frequent surgeries in the prior year



One Year Following INO-3107

Trial Participant: required no surgeries after Day 0

Vocal cord images

RRP is a highly individualized disease and results of treatment with INO-3107 may vary

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INOVIO Pipeline & Clinical Trials

Advancing DNA Medicines for Patients

Pipeline Overview

PRECLINICAL	PHASE 1	PHASE 2	PHASE 3
dMAb Influenza	INO-5401 BRCA1/2 Mutation	INO-3107 RRP	
dLNPs Various targets	INO-4201 Ebola Booster	VGX-3100 Anal Dysplasia	
	INO-6172 HIV	INO-3112 Head & Neck Cancer	
	INO-6160 HIV	INO-5401 Glioblastoma	
	dMAbs COVID-19		

OUT-LICENSED*

PRECLINICAL	PHASE 1	PHASE 2	PHASE 3
			VGX-3100 Cervical Dysplasia (HSIL)
			INO-4800 COVID-19

HPV-RELATED DISEASES IMMUNO-ONCOLOGY INFECTIOUS DISEASES

* VGX-3100 to ApolloBio for China; INO-4800 to Advaccine for China

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Active Clinical Studies with INOVIO DNA Medicines

PRODUCT	PRECLINICAL	PHASE 1	PHASE 2	PHASE 3	SPONSOR	FUNDER/COLLABORATOR
INO-3107	RRP - Targeting Ph3 Initiation in 1Q24				INOVIO	
VGX-3100	Cervical Dysplasia (HSIL) - China				INOVIO	ApolloBio
	Anal Dysplasia (HSIL) - HIV+				AMC AIDS Malignancy Consortium	NIH National Cancer Institute; AMC AIDS Malignancy Consortium
INO-5401	Glioblastoma				INOVIO	REGENERON
	BRCA1/2 Mutation				Penn	Penn
INO-4800	COVID-19 (Solidarity)				World Health Organization	World Health Organization
INO-6172	HIV				NIH National Institute of Allergy and Infectious Diseases	HIV Vaccine Trials Network; The Wistar Institute
INO-6160	HIV				NIH National Institute of Allergy and Infectious Diseases	HIV Vaccine Trials Network; The Wistar Institute
dMAbs	COVID-19				Penn	DARPA; AstraZeneca; The Wistar Institute

INOVIO: Drivers for Success

Diversified Pipeline	Unique Technology	Experienced Leadership	Power of Partnerships
Advancing candidates with scientific and clinical promise, achievable pathways to market and strong commercial potential	Growing body of research and late-stage clinical data clarifying competitive advantages of platform: generation of T-Cells, clearing virus and lesions, ability for repeat dosing/boosting	Extensive experience bringing products to market to benefit patients; focused on operational excellence and financial discipline	History of collaboration in industry, academia and government to help drive innovation and advance promising candidates

$194.9M in cash, cash equivalents & short-term investments as of 6/30/23
Expected cash runway into 3Q25