Our commentary and responses to your questions may contain forward-looking statements, including comments concerning clinical trials and product development programs, evaluation of potential opportunities, the level of corporate expenditures, the assessment of Inovio’s technology by potential corporate partners, capital market conditions, timing of events, cash consumption, and other information concerning factors that could cause actual results to differ materially from those set forth in our Annual Report on Form 10-K for the year ended December 31, 2017, our Quarterly Report on Form 10-Q for the quarter ended September 30, 2018, and other regulatory filings from time to time.
Inovio’s technology platform is designed to work *in vivo* to activate an individual’s immune system, generating robust T cell (CD8) and antibody responses to fight cancer and infectious disease.

**SynCon®**: Synthetic consensus full-length DNA plasmid

- **Select** appropriate tumor or viral associated antigens as disease targets
- **Create** a synthetic consensus DNA sequence for the disease target using sequences from multiple species for cancer or primary isolates of the pathogen
- **Modify** the sequence to increase antigen production
- **Insert** the proprietary sequence into a platform-validated DNA plasmid

**CELECTRA®**: Delivery device that enhances immune responses

- SynCon immunotherapy delivered into muscle or skin cells
- Uses an advanced transfection technology to dramatically increase immunotherapy cellular uptake and generate up to a 1000-fold increase in antigen expression
Advantages of Inovio’s Platform

- Robust Immune Responses (T cell and B cell)
- SynCon® Rapid Design
- Refrigerated (2-8°C) Storage >3 years
- Room Temp (25°C) Storage >1 year; 37°C > 2 months
- Rapid & Scalable Manufacture
- No Anti-Vector Response (effective boosting)
- Multi-antigen Immunotherapy in Single Vial
- Non-replicating, Non-integrating

SynCon®

CELLECTRA®

Host DNA

Plasmids
<table>
<thead>
<tr>
<th>Product</th>
<th>Indication</th>
<th>Preclinical</th>
<th>Phase 1</th>
<th>Phase 2</th>
<th>Phase 3</th>
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<tbody>
<tr>
<td>VGX-3100</td>
<td>Cervical Dysplasia</td>
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<td>Vulvar/Anal Dysplasia</td>
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<td>INO-5401</td>
<td>Bladder Cancer</td>
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<tr>
<td></td>
<td>Glioblastoma</td>
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<tr>
<td>INO-5150</td>
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<td>INO-1400</td>
<td>hTERT antigen</td>
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<tr>
<td>MEDI0457</td>
<td>Head &amp; Neck Cancer</td>
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<tr>
<td></td>
<td>HPV-16/18 Cervical Cancer &amp; Rare Tumors</td>
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</table>
Phase 3 Program: VGX-3100
Phase 3 Program: HPV-Related Cervical HSIL

VGX-3100 has the potential to be:
1) the first treatment for HPV infection of the cervix and;
2) the first non-surgical treatment for precancerous cervical lesions

- VGX-3100: Targets HPV 16/18 subtypes; E6/E7 oncogenes
- Treats high-grade squamous intraepithelial lesions (HSIL)
- Consists of two studies in parallel:
  - REVEAL I (primary) n=198
  - REVEAL II (confirmatory) n=198
- Randomized (2:1), double-blind, placebo-controlled
- Dosing: month 0, 1, 3 (as in P2b)
- Primary endpoint: month 9 (as in P2b)
- REVEAL 1: Study follow-up through week 88 (as in P2b)
- REVEAL 2: Study follow-up through week 40
- Target BLA submission 2021
Previously Published Phase 2b
Achieved All Primary and Secondary Endpoints

Ph3 Primary Endpoint:
Cervical HSIL regression
to low or normal
AND HPV clearance

- VGX-3100: 40.2%
- Control: 14.3%
- Difference: 25.9%
- P-value\(^1\): p=0.001

- Efficacy correlates to immune responses
- PP and mITT p-values equal
- 167 subjects
- Paper published in *The Lancet* September 2015

\(^1\)Strata-adjusted
Immuno-Oncology Programs
**MEDI0457**  
*(licensed out to MedImmune)*

- Metastatic HPV-related squamous cell carcinoma of the head & neck (SCCHN) with persistent or recurrent disease after chemotherapy treatment
- Combination with durvalumab (IMFINZI™) PD-L1 checkpoint inhibitor
- Phase 1/2 open label study: safety, immunological impact, objective response rate, progression-free survival and overall survival
- ~50 subjects. Enrolling.

**INO-5401**  
*(combination of 3 tumor-associated antigens: hTERT, PSMA, WT1)*

- Advanced unresectable or metastatic urothelial carcinoma (bladder cancer)
- Combination with atezolizumab (TECENTRIQ®) PD-L1 checkpoint inhibitor
- Phase 1b/2 open-label trial: safety, immune response and clinical efficacy
- ~80 subjects; ~60 will be PD-1/PD-L1 refractory patients
- 1st patient dosed Aug. 2018

**INO-5401**  
*(combination of 3 tumor-associated antigens: hTERT, PSMA, WT1)*

- Newly diagnosed glioblastoma multiforme (GBM)
- Combination with REGN2810 PD-1 checkpoint inhibitor
- Phase 1b/2a open label trial: safety, tolerability, immunological impact, progression-free survival and overall survival.
- ~50 subjects
- 1st patient dosed June 2018
Before treatment with MEDI0457

After treatment with MEDI0457

**Phase 1 study of MEDI0457 in 22 HPV+ H&N Cancer Patients**

- Increase in CD8+ killer T cell observed in 20 of 22 patients
- One patient developed progressive disease at 11 months into the study and exited the study
- Subsequently received four doses of PD-1 inhibitor nivolumab and sustained complete response
- Continues on therapy with no evidence of disease 24 months (and counting) after initiation of a PD-1 inhibitor
- Immune analyses suggest that MEDI0457 had activated HPV16-specific CD8+ T cells in the patient and the subsequent treatment with a checkpoint inhibitor helped to unleash the expansion of these killer T cells
- MEDI conducting phase 2 studies combining MEDI0457 and durvalumab (PD-L1 inhibitor)

Published in Clinical Cancer Research (CCR) 2018
• Patient with HNSCC, treated with MEDI0457 (INO-3112) with progressive disease with dermal and lymph node metastases; treatment with nivolumab resulted in radiographic complete response over time.

• At 6 weeks post-nivolumab, there was interval reduction in this solid enhancing tissue component. PET images showed complete resolution of a hypermetabolic left supraclavicular lymph node (green arrow) seen on the prior exam.

(A) CT neck with IV contrast demonstrating partial response pre- and 6 weeks post-nivolumab.

(B) PET scan images pre- and 6 weeks post-nivolumab.

Published in Clinical Cancer Research (CCR) 2018
Platform Development Programs
### Positive Clinical Data & Partnering Opportunities

<table>
<thead>
<tr>
<th>Product</th>
<th>Indication</th>
<th>Data Reported (to date)</th>
<th>Partner/s</th>
<th>Next Milestone</th>
</tr>
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</table>
| PENNVAX-GP   | HIV        | • Phase 1: **93% (71 of 76)** evaluable vaccinated participants showed a CD4+ or CD8+ cellular immune response to at least one of the vaccine antigens  
• **94% (62 of 66)** demonstrated an env specific antibody response                                                                 | NIH (NIAID/HVTN)                              | Expect results from P1/2 HIV trial study 2H19 (UCSF; Deeks)                                      |
| INO-4201     | Ebola      | • Phase 1: High levels of binding antibodies measured (ELISA) in **95% (170 of 179)** of evaluated subjects                                                                                                                                  | DARPA                                         | Publish Phase 1 data                                                                      |
| GLS-5300 (INO-4301) | MERS                        | • Phase 1: High levels of binding antibodies measured (ELISA) in **92% (57 of 62)** of evaluated subjects  
• **98% (61 of 62)** generated an antibody and/or T cell response against MERS                                                                 | GeneOne New vaccines for a safer world        | Initiate CEPI funded P2 trial in 2019                                                         |
| GLS-5700     | Zika       | • Phase 1: High levels of binding antibodies measured (ELISA) in **100% (39 of 39)** of evaluated subjects  
• Publication in NEJM “Safety and Immunogenicity of Anti-Zika Virus DNA Vaccine”; Oct. 4, 2017                                                                                                                                  | GeneOne New vaccines for a safer world        | Report on Puerto Rico study 1Q19                                                             |
Inovio’s Key Differentiators

Potent, in vivo generation of antigen-specific CD8+ killer T cells

- **First and only entity** to demonstrate clinical efficacy of an enhanced delivery DNA vaccine
- Favorable safety profile – 6,000+ administrations across 1,600+ patients
- Zero anti-vector response – allows for effective boosting

Combining T Cell-Generating Technology with Checkpoint Inhibitors

- Checkpoint inhibitors are only effective in ~20% of treated patients in most cancer indications
- Combining CD8+ killer T cells could potentially unlock the full capabilities of checkpoint inhibitors

Speed and versatility of platform

- From concept to human testing in 7 months, fastest in vaccine history (e.g. Inovio Zika vaccine)
- Thermal stability and distribution (room temp storage >1 yr.)
- Rapid and scalable manufacturing
Financials and Management
## Financial Information

<table>
<thead>
<tr>
<th>Description</th>
<th>Value</th>
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<tbody>
<tr>
<td>Recent share price</td>
<td>$4.60</td>
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<tr>
<td>Shares outstanding</td>
<td>94.5 M</td>
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<tr>
<td>Market cap</td>
<td>$434.7 M</td>
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<tr>
<td>Cash &amp; short-term investments</td>
<td>$85.5 M</td>
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<tr>
<td>Debt</td>
<td>0 M</td>
</tr>
</tbody>
</table>

1 January 4, 2019  
2 September 30, 2018
Senior Management

J. Joseph Kim, PhD  
President & CEO

- Decades of biotechnology/pharma management
- Merck: hepatitis A and B vaccines manufacturing; HIV vaccine (Ad5) R&D

Peter Kies  
CFO

- Ernst & Young
- Experience with growth companies

Niranjan Y. Sardesai, PhD  
COO

- Extensive biotech management and product development experience
- Led diagnostics development for mesothelioma, bladder cancer, and ovarian cancer for Fujirebio Diagnostics

Mark L. Bagarazzi, MD  
CMO

- Clinical research experience incl. Merck
- Led clinical/regulatory for shingles and rotavirus vaccines; DNA vaccine expert

Laurent Humeau, PhD  
CSO

- Extensive R&D leadership experience in vaccine, cell and gene therapy developments in private biotech and mid-cap companies
- Led Translational Research, Human Therapeutics Division for Intrexon
Board of Directors

Simon X. Benito
Chairman, BOD
• Former Senior Vice President, Merck Vaccine Division

Angel Cabrera, PhD
• President, George Mason University

Morton Collins, PhD
• General Partner, DSV Ventures, Battelle Ventures and Innovations Val. Partners

J. Joseph Kim, PhD
• President & CEO, Inovio

David B. Weiner, PhD
• Executive VP, The Wistar Institute; Director, Vaccine Center

Wendy Yarno
• Former Chief Marketing Officer, Merck & Co.

Lota Zoth, CPA
• Former MedImmune CFO
Scientific Advisory Board

David B. Weiner, PhD
Chairman
- “Father of DNA vaccines”
- Executive VP, The Wistar Institute; Director, Vaccine Center

Anthony W. Ford-Hutchinson, PhD
- Former SVP, Vaccines R&D, Merck
- Oversaw development: Singulair®, Januvia®, Gardasil®, Zostavax®, Proquad® and Rotateq®

Stanley A. Plotkin, MD
- Developed rubella and rabies vaccines
- Oversaw Sanofi flu vaccine
- Emeritus Professor, Wistar Institute & University of Pennsylvania

Rafi Ahmed, PhD
- Professor, Department of Microbiology and Immunology
Emory University School of Medicine
Upcoming Milestones
2019 Upcoming Milestones

- 1/9/19: First clinical trial involving DNA-Encoded Monoclonal Antibody (dMAb™)
- 1Q19: Complete Zika vaccine Puerto Rico study/publish data
- 1Q19: Finish REVEAL 1 enrollment, VGX-3100 Phase 3 study; begin enrollment for REVEAL 2
- 2019: Phase 1/2 interim data from Bladder INO-5401 study
- 2019: Phase 1/2 interim data from GBM INO-5401 study
- 2019: Phase 2 interim data on MEDI0457 H&N study (MedImmune sponsored study)
- 2019: Design of a novel, cancer combination trial through the Parker Institute agreement
- 2019: Report on Phase 1/2 MERS study in Korea/
  Initiate Phase 2 trial for MERS in Middle East
Investment Thesis

Bringing IMMUNO-INGENUITY to life

- Powerful T cell-activating immunotherapy platform, with multiple cancer and infectious disease targets
- Checkpoint inhibitor combination programs leading with big pharma
- Transforming treatment of HPV-associated Diseases
- Validation: Partnerships, Publishing, Grants, and Global Expansion

INO: NASDAQ