idera®
PHARMACEUTICALS

ANNUAL REPORT 2010

Advancing Clinical Programs through Translational Research

idera® PHARMACEUTICALS

Pipeline of Drug Candidates

Oncology

IMO-2055* (TLR9 AGONIST)	DISCOVERY	PRECLINICAL	PHASE 1	PHASE 2	PHASE 3
Head and Neck, Second Line					
Non-small Cell Lung Cancer, Colorectal Cancer, Head and Neck, First Line					

Stimulating innate and adaptive immune responses to induce antitumor activity

PARTNERED WITH Merck KGaA Darmstadt · Germany

Hepatitis C

IMO-2125 (TLR9 AGONIST)	DISCOVERY	PRECLINICAL	PHASE 1	PHASE 2	PHASE 3
Null-responder Patients					
Treatment-naïve Patients					

Harnessing the natural immune responses to suppress viral infection

Autoimmune and Inflammatory Diseases

IMO-3100 (TLR7/9 ANTAGONIST)	DISCOVERY	PRECLINICAL	PHASE 1	PHASE 2	PHASE 3
In Healthy Subjects					
Lupus, Psoriasis, Rheumatoid Arthritis					
Hyperlipidemia					

Inhibiting the induction of multiple cytokines to control autoimmune disease

Respiratory Diseases

IMO-2134 (TLR9 AGONIST)	DISCOVERY	PRECLINICAL	PHASE 1	PHASE 2	PHASE 3
In Healthy Subjects					

Hematological Malignancies

IMO-4200 (TLR7/8 AGONIST)	DISCOVERY	PRECLINICAL	PHASE 1	PHASE 2	PHASE 3
Lymphoma Models					

Vaccine Adjuvants

TLR7/8/9 AGONISTS	DISCOVERY	PRECLINICAL	PHASE 1	PHASE 2	PHASE 3
Infectious Diseases, Cancer, Alzheimer's Disease					
TLR3 AGONISTS					
Infectious Diseases, Other					

PARTNERED WITH MERCK

* EMD 1201081

Scientific Rationale | Discovery | Lead Compound | Phase 1 | **Translational Research** | Phase 2 & Beyond

- For Idera, 2010 marked a year of immense progress in the clinical development of multiple Toll-like Receptor, or TLR, targeted drug candidates in diverse disease indications.

Dear Shareholders,

For Idera, 2010 marked a year of immense progress in the clinical development of multiple Toll-like Receptor, or TLR, targeted drug candidates in diverse disease indications. In 2010, we completed Phase 1 clinical trials of IMO-2125, a TLR9 agonist, for the treatment of chronic hepatitis C virus (HCV) infection and of IMO-3100, a dual TLR7/9 antagonist, for the treatment of autoimmune and inflammatory diseases. One of our collaborators commenced a Phase 2 clinical trial of IMO-2055, a TLR9 agonist, in head and neck cancer.

In addition to advancing the clinical development programs, our scientists have been very productive in the discovery of additional TLR-targeted drug candidates with the goal of expanding our pipeline. Towards this goal, we have selected IMO-4200 as our lead dual TLR7/TLR8 agonist drug candidate for the treatment of hematological malignancies, and identified a novel class of RNA-based compounds that act as TLR3 agonists.

Hepatitis C Virus

We are developing IMO-2125 as a novel immune modulator for the treatment of HCV infection. IMO-2125 is designed to induce immune responses mediated through TLR9.

In 2010, Idera completed four-week Phase 1 clinical trials of IMO-2125 in HCV patients - both in null-responder patients as well as in treatment-naïve patients. We are very encouraged by the results with IMO-2125 in these studies, as we observed evidence of a differentiation from Pegasys® in certain safety parameters. In addition, we observed antiviral activity in these patient populations that correlated with the proposed mechanism of action and confirmed our scientific hypothesis. Based on the Phase 1 data, our next objective is to evaluate IMO-2125 in a 12-week Phase 2 clinical trial.

Our objective with the IMO-2125 program is to develop a novel immune modulator as an alternative to recombinant interferons, such as Pegasys®, as a component of HCV treatment and in combination with direct-acting antiviral agents.

Autoimmune Diseases

Targeted therapies for autoimmune diseases involve blocking specific immune responses in order to reduce disease symptoms. For example, blocking individual cytokines, such as TNF-α or IL-6, with monoclonal antibodies has proven to be an effective treatment of certain autoimmune diseases. We have designed IMO-3100 to suppress the induction of multiple cytokines by inhibiting the TLR7- and TLR9-mediated immune responses, which have been implicated in many autoimmune diseases.

- Our business strategy includes developing our TLR-targeted compounds in selected disease indications through collaborations with pharmaceutical companies. This business strategy has generated revenue and, equally important, has brought external expertise and financial resources to the development of our partnered programs.

In 2010, Idera completed Phase 1 clinical trials of IMO-3100 evaluating the safety and mechanism of action in healthy subjects. Data from these studies demonstrated that IMO-3100 was well tolerated at all dose levels. The intended mechanism of action was evident as we observed inhibited induction of multiple cytokines, including TNF-α and IL-6. The next step in clinical development of IMO-3100 is to conduct a Phase 2 clinical trial in a selected autoimmune disease indication.

Partnered Programs

Our business strategy includes developing our TLR-targeted compounds in selected disease indications through collaborations with pharmaceutical companies. This business strategy has generated revenue and, equally important, has brought external expertise and financial resources to the development of our partnered programs.

Cancer Treatment

We are collaborating with Merck KGaA for use of TLR9 agonists as an immunotherapy for the treatment of cancer. In 2010 we announced that Merck KGaA had initiated a Phase 2 clinical trial in second-line patients with recurrent or metastatic squamous cell carcinoma of the head and neck (SCCHN). Merck KGaA also initiated in 2010 a Phase 1b clinical trial in first-line patients with recurrent or metastatic SCCHN.

Vaccine Adjuvants

The work under our collaboration with Merck & Co. on TLR7, 8, and 9 agonists for use as vaccine adjuvants for cancer, infectious diseases and Alzheimer's disease is progressing. In 2010, Merck & Co. scientists reported preclinical data from this program at various scientific meetings and in peer-reviewed scientific publications.

Growing Pipeline

We continue to expand our pipeline of novel drug candidates. During 2010, we selected IMO-4200 as a lead candidate for the treatment of hematologic malignancies. Our pipeline also includes IMO-2134 for respiratory diseases. We are assessing the development strategy for these lead candidates.

Novel Discoveries

Our research team remains productive in breaking new ground. In 2010, we introduced a novel class of compounds that target TLR3. Idera now has compounds targeting all TLRs that recognize nucleic acids, providing us with multiple avenues for modulating immune responses for therapeutic applications.

Recently, we reported the design of a novel class of compounds referred to as "gene silencing oligonucleotides" (GSO). The concept of GSO design combines the insights of our pioneering work in antisense and more recently with TLR-targeted compounds. We believe GSOs are optimal gene-targeted agents, providing us with a new platform for potentially developing therapeutic agents.

The Idera family is thankful to our stockholders for their continued support. We are indebted to members of our Board of Directors and members of our scientific and clinical advisory boards for their dedication and guidance.

We look forwarding to providing continued updates on our progress.

Sincerely,

Sudhir Agrawal, D.Phil., FRSC
Chairman, Chief Executive Officer, and President

Corporate Information

BOARD OF DIRECTORS

Sudhir Agrawal, D.Phil., FRSC
Chairman, Chief Executive Officer, and President

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Former Assistant Secretary for Health for U.S. Department of Health and Human Services

James B. Wyngaarden, M.D.
Former Director, National Institutes of Health

MANAGEMENT

Sudhir Agrawal, D.Phil., FRSC
Chairman, Chief Executive Officer, and President

Louis J. Arcudi, III, MBA
Chief Financial Officer, Treasurer, and Secretary

Timothy M. Sullivan, Ph.D.
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Ekambar R. Kandimalla, Ph.D.
Vice President, Discovery

Steven J. Ritter, Ph.D., J.D.
Vice President, Intellectual Property and Contracts

Nicola La Monica, Ph.D.
Vice President, Biology

STOCKHOLDERS' MEETING

The 2011 Annual Meeting of Stockholders will be held at Le Meridien Cambridge - MIT, 20 Sidney Street, Cambridge, MA on June 14, 2011 at 10:00 a.m. EDT. A notice of the meeting, proxy statement, and proxy voting card have been mailed to stockholders with this Annual Report.

INVESTOR RELATIONS

Additional copies of this Annual Report, which includes the Company's Annual Report on Form 10-K for the year ended December 31, 2010 as filed with the Securities and Exchange Commission, are available upon request to:

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- Foreign Stockholders: 1-201-680-6578
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INDEPENDENT AUDITORS

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COMMON STOCK SYMBOL

NASDAQ: IDRA

FORWARD-LOOKING STATEMENT

Any statement that we may make in this Annual Report about future expectations, plans and prospects for the Company constitutes forward-looking statements for purposes of the safe harbor provisions under The Private Securities Litigation Reform Act of 1995. Actual results may differ materially from those indicated by these forward-looking statements as a result of various important factors, including the risks set forth under the caption "Risk Factors" on page 20 in Idera's Annual Report on Form 10-K for the year ended December 31, 2010 included in this Annual Report. Idera disclaims any intention or obligation to update any forward-looking statements.

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