



**Committed to
Improving Lives
through our
Discoveries**

IDERA PHARMACEUTICALS

ANNUAL REPORT 2011

Pipeline of Drug Candidates

Our strategy is to advance applications of Toll-like receptor-targeted compounds through both internal development programs and through collaborative alliances. Our internal development programs are focused on drug candidates for the treatment of cancer and autoimmune diseases.

Oncology

IMO-2055: TLR9 AGONIST	RESEARCH	LEAD CANDIDATE	PHASE 1	PHASE 2	PHASE 3
SCCNH (+Erbix®)					
NSCLC (+Tarceva® +Avastin®)					
Colon (+Erbix® +FOLFIRI)					

Autoimmune Diseases

IMO-3100: TLR7 AND 9 ANTAGONIST	RESEARCH	LEAD CANDIDATE	PHASE 1	PHASE 2	PHASE 3
Psoriasis					
IMO-8400: TLR7, 8, AND 9 ANTAGONIST					
Lupus					

Vaccine Adjuvants

TLR7, 8, AND 9 AGONISTS	RESEARCH	LEAD CANDIDATE	PHASE 1	PHASE 2	PHASE 3
Cancer, Infectious Diseases, Alzheimer's Disease					
					COLLABORATION WITH MERCK

GSO Technology

	RESEARCH	LEAD CANDIDATE	PHASE 1	PHASE 2	PHASE 3
MULTIPLE GENE TARGETS					



Developing novel immunotherapies for diverse disease indications

Since inception, Idera has applied its scientific expertise in nucleic acid chemistry to generate novel drug candidates for diseases with unmet needs. Idera uses this knowledge to modulate Toll-like Receptors, key mediators of the human immune system.

Idera is developing drug candidates for applications in oncology and autoimmune diseases. We believe these programs represent our most advanced opportunities to create value in the near-term for patients, our company and our stockholders.

Dear Stockholders,

Idera is poised to make the transformation from a drug discovery and early-stage development company to one with Toll-like Receptor (TLR) drug candidates in Phase 2 clinical trials. Our progress reflects the achievements we made following a strategic prioritization during 2011 that we undertook in response to challenges we faced.

Our Strategy

Our success, and the promise of our drug candidates, is based on the strength and applicability of Idera's chemistry-based TLR drug discovery platform. Since inception, Idera has focused on applying its expertise in nucleic acid chemistry to generate novel drug candidates for diseases with unmet need. TLRs are the master regulators of the body's immune system and compelling targets for the development of disease-modifying drugs. Based on our 2011 strategic prioritization, we are allocating our resources to support our development efforts in oncology and autoimmune diseases, which we believe represent opportunities to create value in the near-term for patients, our company, and our stockholders.

Oncology

Over the last four years, we have had a productive collaboration with Merck KGaA on the development of IMO-2055, a TLR9 agonist, in oncology. While we were disappointed to have our partnership with Merck KGaA come to an end, we are very pleased with the progress they made toward advancing the clinical development

of IMO-2055 in multiple cancers, including lung cancer, head and neck cancer, and colorectal cancer. In 2011, we regained the rights to develop TLR9 agonists in oncology. We are particularly pleased to have announced favorable top-line data from a Phase 1b trial in advanced non-small cell lung cancer in combination with Tarceva® and Avastin®. We anticipate data from a Phase 2 study of IMO-2055 in combination with Erbitux® in patients with squamous cell carcinoma of the head and neck during the second quarter of 2012. Data from these studies will inform our decisions on the further development of IMO-2055 in the treatment of cancer.

Autoimmune Diseases

Idera's second therapeutic focus is in autoimmune and inflammatory diseases. IMO-3100, an antagonist of TLR7 and 9, is in clinical development for autoimmune diseases. IMO-3100 was well tolerated and showed the intended mechanism of target engagement in Phase 1 studies in healthy subjects. We have selected psoriasis as the initial disease indication for a Phase 2 clinical trial of IMO-3100, which we recently initiated. We anticipate data from this Phase 2 trial early next year. In addition to IMO-



In February 2012, Dr. James B. Wyngaarden retired from the Board of Directors of Idera Pharmaceuticals. The Idera family, including members of the Board are indebted to Dr. Wyngaarden for his two decades of service, his leadership and guidance as a founding Board Member and former Chairman of Idera.

3100, our discovery effort has led to creating a first-in-class antagonist compound that targets TLR8 in addition to TLR7 and TLR9 called IMO-8400. This new compound has shown potent disease-modifying activity in preclinical models of lupus and other autoimmune diseases. Based on these promising results, we have added IMO-8400 as a second compound in our autoimmune disease development program. We expect to submit an Investigational New Drug application for IMO-8400 by year's end and have selected lupus as the first disease indication for this compound.

Vaccine Adjuvants

In our vaccine adjuvant program, we recently announced a milestone in our collaboration with Merck and Co. Under this agreement, Idera discovered TLR 7, 8, and 9 agonists for potential use as vaccine adjuvants for cancer, infectious diseases and Alzheimer's disease. Earlier this year, Merck selected multiple of our TLR agonists for use as vaccine adjuvants under the collaboration.

Early-stage Programs

Our chemistry-based approach allows us to create immunotherapy drug candidates for diverse disease indications. In addition to our candidates in clinical development, we have a deep pipeline of early stage programs, including IMO-4200, a candidate for hematological malignancies, IMO-2134, a candidate for respiratory diseases, programs in infectious diseases and in the use of TLR3 agonists as vaccine adjuvants. We seek to advance these programs through collaborative alliances.

During 2011, we made important progress in advancing studies with our Gene-Silencing Oligonucleotides (GSO) technology. GSO technology provides us with a drug discovery platform to target RNA and create drug candidates for a broad range of diseases. We look forward to further validating this technology.

In 2011 we also raised the funds to support the development of this portfolio into 2013.

In summary, Idera's reliance on its science and prudent business practice has positioned us for a very strong and potentially transformative 2012. My colleagues join me in thanking our stockholders for their continued support. We are also thankful to the members of the Board of Directors for their dedication and guidance. I look forward to reporting our progress throughout the year.

Sincerely,

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



TO LEARN MORE ABOUT IDERA,
VISIT OUR WEBSITE AT
WWW.IDERAPHARMA.COM

Corporate Information

BOARD OF DIRECTORS

Sudhir Agrawal, D. Phil., FRSC

Chairman, Chief Executive Officer, and President

William S. Reardon, CPA

Lead Independent Director, Retired Audit Partner,
PricewaterhouseCoopers, LLP

Youssef El Zein

Managing Partner, Pillar Investment Company

C. Keith Hartley

President, Hartley Capital Advisors

Robert W. Karr, M.D.

Former Senior Vice President, Pfizer, Inc.

Malcolm MacCoss, Ph.D., FRSC

Former Group Vice President, Schering-Plough

Eve E. Slater, M.D., F.A.C.C.

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

MANAGEMENT

Sudhir Agrawal, D.Phil., FRSC

Chairman, Chief Executive Officer, and President

Louis J. Arcudi, III, MBA

Senior Vice President of Operations, Chief Financial Officer,
Treasurer, and Secretary

Timothy M. Sullivan, Ph.D.

Vice President, Development Programs and Alliance Management

Robert D. Arbeit, M.D.

Vice President, Clinical Development

Ekambar R. Kandimalla, Ph.D.

Vice President, Discovery

Nicola La Monica, Ph.D.

Vice President, Biology

Steven J. Ritter, Ph.D., J.D.

Vice President of Intellectual Property and Business Affairs

STOCKHOLDERS' MEETING

The 2012 Annual Meeting of Stockholders will be held at the Company's office at 167 Sidney Street, Cambridge, MA on June 12, 2012 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, 2011 as filed with the Securities and Exchange Commission, are available upon request to:

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- TDD Hearing Impaired: 1-800-231-5469
- Foreign Stockholders: 1-201-680-6578
- TDD Foreign Stockholders: 1-201-680-6610

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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 25 in Idera's Annual Report on Form 10-K for the year ended December 31, 2011 included in this Annual Report. Idera disclaims any intention or obligation to update any forward-looking statements.



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