THE FUTURE IS BRIGHT

2014
ANNUAL REPORT

idera
PHARMACEUTICALS

SCIENTIFIC ACUMEN MEETS COMMERCIAL POTENTIAL

Fellow Idera Shareholders,

It has been an exciting first several months for me since I joined Idera in December 2014. During these months we have executed several important steps designed to bolster our company's potential for success in the months and years ahead.

In the early part of 2015, we continued to build our team at Idera, bringing in talented individuals to make critical contributions toward balancing Idera's existing scientific acumen with proven business operators. We are building a company that can advance our novel scientific pipeline into marketed therapeutic solutions for patients affected by life-threatening diseases.

Secondly, as you may have noticed from our recent investor communications, we have prioritized our pipeline development programs in a manner that best suits the type of company we want to be, a company focused on developing targeted therapies for oncology and rare diseases. I'll discuss each of these in a moment.

Finally, we recently conducted a successful follow-on offering of our common stock, which generated the capital resources that we believe will enable us to execute on our development initiatives through the first quarter of 2017.

B-CELL LYMPHOMAS

Idera made significant progress in 2014 laying the groundwork for the development of IMO-8400 in certain B-cell lymphomas where the MYD88-L265P oncogenic mutation is present. The progress that was made in designing, implementing and executing these critical studies should result in complete data from our ongoing clinical trial in Waldenström's macroglobulinemia (WM) in the fourth quarter of this year and data from our clinical trial in diffuse large B-cell lymphoma (DLBCL) in 2016. We expect that the results of these trials will enable us to understand the potential of our proprietary Toll-like receptor (TLR) technology to improve outcomes for patients with these genetically defined cancers.

IMMUNO-ONCOLOGY

At the very end of last year, the company presented preclinical data at the American Association for Cancer Research (AACR) conference which demonstrated that combination immunotherapy with our intratumoral TLR9 agonist and a check-point inhibitor had a profound impact on arresting tumor growth. We believe these data are exciting and hold the promise of improving the durability and duration of responses seen with single-agent immunotherapy regimens. With that data in hand, our team raised the priority of advancing this opportunity as quickly as possible. We are currently making plans to collaborate with a world-leading cancer research center to commence a clinical development program with this combination and are hoping that we'll have data from at least one trial by the end of 2016.

RARE DISEASES

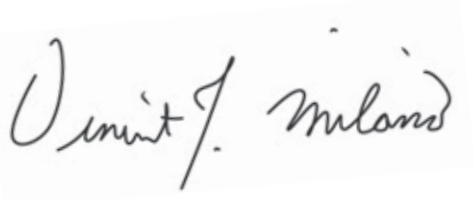
In our rare disease programs, the team is working on putting the finishing touches on the clinical trial designs for our development programs in dermatomyositis (DM) and Duchenne muscular dystrophy (DMD), with the trials expected to begin in late 2015, early 2016 respectively. These are two serious rare diseases which clearly represent unmet needs and we believe that the data we generated from the previous trial with IMO-8400 in psoriasis support the potential to have an impact on these conditions. In our clinical trial in psoriasis, IMO-8400 impacted an immune-mediated inflammatory disease in which TLRs are implicated. We believe TLRs similarly play key roles in the disease pathogenesis in DM and DMD.

GENE SILENCING OLIGONUCLEOTIDES

Finally, our Gene Silencing Oligonucleotide (GSO) program continues to advance toward the clinic. Sudir Agrawal, our president of research and his team are conducting the necessary pre-clinical studies and IND-enabling work to position us to be able to commence clinical development. We believe our GSO platform has the potential to overcome the limitations seen in prior generations of antisense and could allow us to develop oligonucleotide therapies in target organs and diseases not previously considered attainable. Of course our direction with our GSO platform will remain aligned with our company focus on oncology and rare diseases.

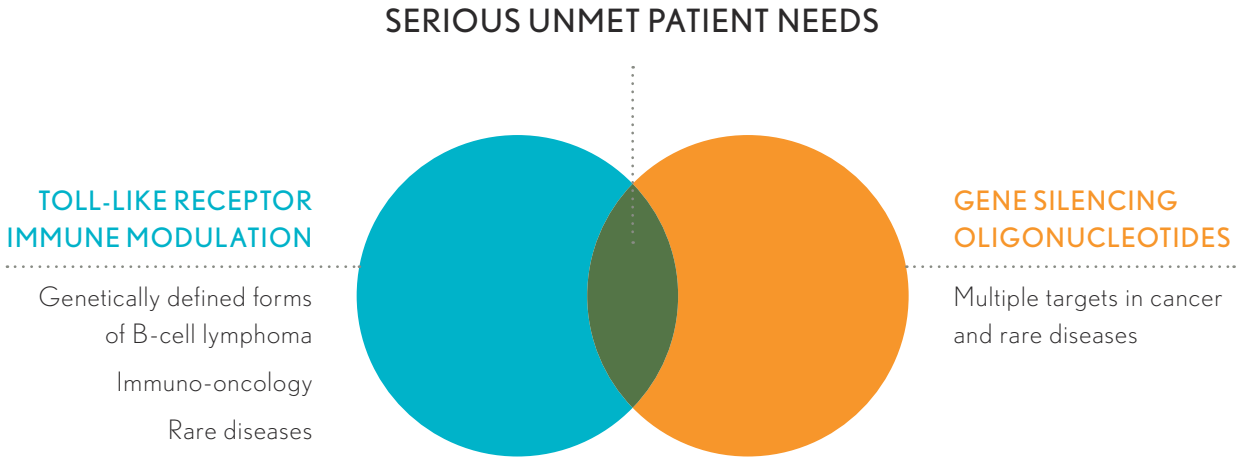
As you can see, we have a great deal of work and execution in front of us, but also a number of important milestones over the next two years, which we believe will bring moments of both hope for patients and significant value creation for our shareholders. Idera has a very bright future, which was what ultimately drew me to the company. I am confident that we have all of the ingredients in place for success and our team is passionate about driving us there.

Regards,



Vin Milano
Chief Executive Officer, Idera Pharmaceuticals

SCIENTIFIC PLATFORMS SUPPORT BROAD PIPELINE OPPORTUNITIES



DEVELOPMENT PROGRAM	PRECLINICAL	PHASE 1	PHASE 2	PHASE 3
B-CELL LYMPHOMA – IMO-8400				
Waldenström's macroglobulemia	▶	▶	▶	
Diffuse large B-cell lymphoma (MYD88 L265P+)	▶	▶	▶	
IMMUNO-ONCOLOGY – IMO-2125 / IMO-2055				
Intratumoral combination with Check-point Inhibitor	PLANNING UNDERWAY	▶	▶	
RARE DISEASES – IMO-8400				
Dermatomyositis	PLANNING UNDERWAY	▶	▶	
Duchenne muscular dystrophy	PLANNING UNDERWAY	▶	▶	
GENE SILENCING OLIGONUCLEOTIDES				
Undisclosed targets	▶			
AUTOIMMUNE DISEASES – IMO-9200				
Undisclosed disease targets	▶	▶	▶	

CRITICAL MILESTONES FOR 2015 AND 2016

B-CELL LYMPHOMA – IMO-8400

Complete and analyze results from ongoing clinical trial in Waldenström's macroglobulemia

Complete and analyze results from ongoing clinical trial in diffuse large B-cell lymphoma

IMMUNO-ONCOLOGY – IMO-2125 / IMO-2055

Initiate two clinical combination trials with IMO-2125/IMO-2055 with check-point inhibitor (CTLA4/PD1) and complete at least one

RARE DISEASES – IMO-8400

Initiate Phase 2 clinical trial with IMO-8400 in patients with dermatomyositis and Phase 1/2 trial in patients with Duchenne muscular dystrophy

GENE SILENCING OLIGONUCLEOTIDES

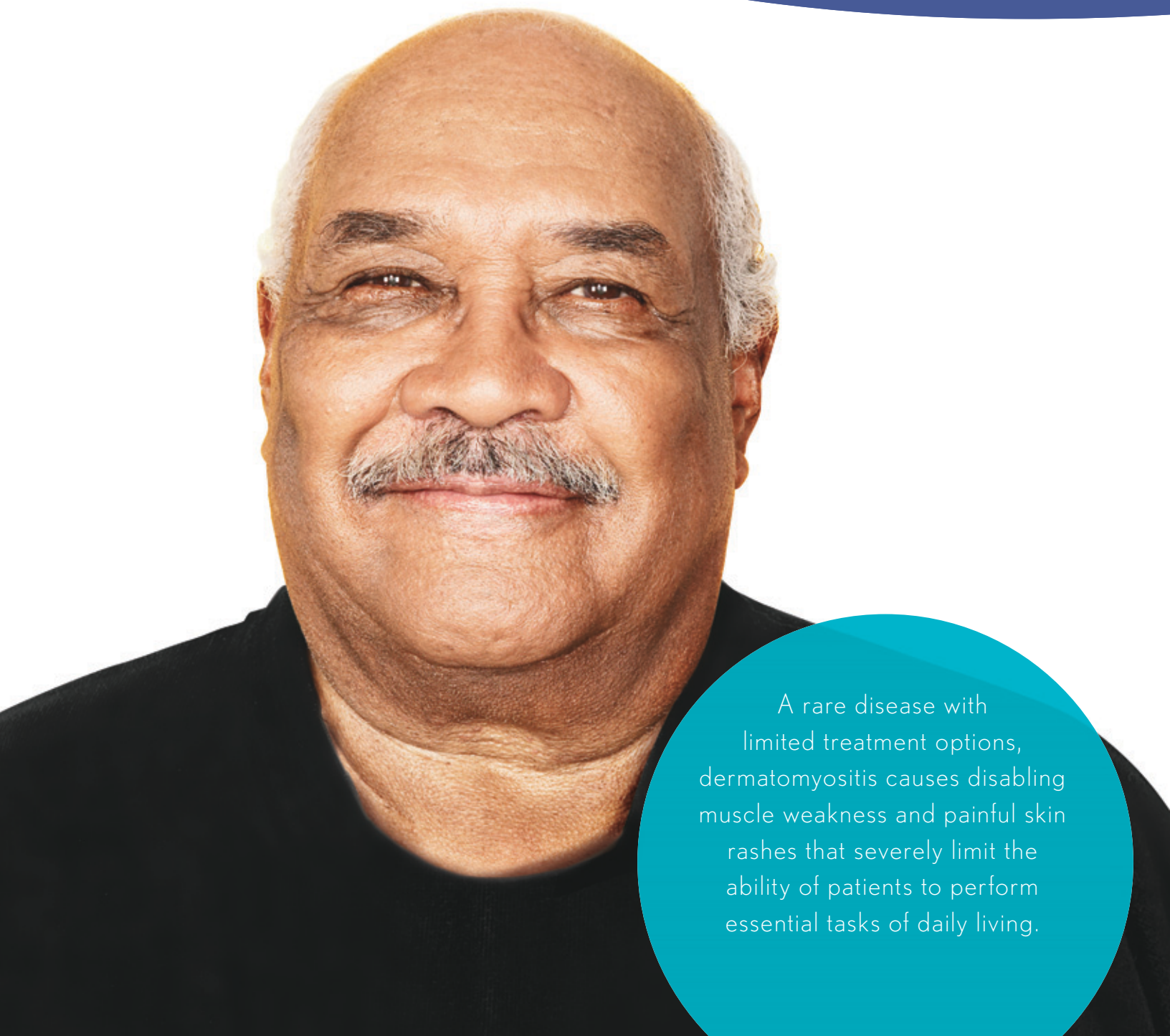
Complete disease model studies and begin IND-enabling development for two disease indications with GSO platform

AUTOIMMUNE DISEASES – IMO-9200

Complete ongoing Phase 1 clinical trial of IMO-9200 in healthy subjects

A toll-like receptor antagonist has the potential to reduce muscle inflammation in all patients with Duchenne muscular dystrophy regardless of their genotype, and could potentially be combined with other therapeutic approaches in development.

Idera Pharmaceuticals is a clinical stage biopharmaceutical company developing novel, targeted therapeutic approaches for the treatment of certain cancers and rare diseases. Idera's proprietary technology involves using a TLR-targeting technology to design synthetic oligonucleotide-based drug candidates to act by modulating the activity of specific TLRs. In addition to its TLR programs, Idera is developing gene silencing oligonucleotides (GSOs) that it has created using its proprietary technology to inhibit the production of disease-associated proteins by targeting RNA.



A rare disease with limited treatment options, dermatomyositis causes disabling muscle weakness and painful skin rashes that severely limit the ability of patients to perform essential tasks of daily living.

BOARD OF DIRECTORS

Sudhir Agrawal, D. Phil., FRSC
President of Research

Julian C. Baker
Managing Partner, Baker Brothers Investments

Youssef El Zein
Managing Partner, Pillar Investment Limited

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Executive Vice President, Global Medical and Regulatory Strategy, Synageva BioPharma

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Former Senior Vice President, Pfizer, Inc.

Malcolm MacCoss, Ph.D., FRSC
Former Group Vice President, Schering-Plough

Vincent Milano
Chief Executive Officer

Kelvin M. Neu, M.D.
Managing Director, Baker Brothers Investments

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Retired Audit Partner, Pricewaterhouse Coopers, LLP

Eve E. Slater, M.D., F.A.C.C.
Former Senior Vice President for Worldwide Policy, Pfizer, Inc., Former Assistant Director, Department of Health and Human Services

LEADERSHIP TEAM

Sudhir Agrawal, D. Phil., FRSC
President of Research

Louis J. Arcudi, III, MBA
Senior Vice President of Operations, Chief Financial Officer

Jill Conwell
Vice President, Human Resources

Robert Doody Jr.
Vice President, Investor Relations and Corporate Communications

Elizabeth Eberhardt
Vice President, Oncology Programs

Clayton Fletcher
Senior Vice President, Business Development and Strategic Planning

Kathryn Haviland
Vice President, Rare Diseases

Vincent Milano
Chief Executive Officer

STOCKHOLDERS' MEETING

The 2015 Annual Meeting of Stockholders will be held at the Company's offices at 167 Sidney Street, Cambridge, MA, on June 8, 2015, at 2:00 p.m. E.T. 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, 2014, as filed with the Securities and Exchange Commission, are available upon request to:

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INDEPENDENT AUDITORS

Ernst & Young, LLP
200 Clarendon Street
Boston, MA 02116

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" in Idera's Annual Report on Form 10-K for the year ended December 31, 2014. Idera disclaims any intention or obligation to update any forward-looking statements.

"I believe Idera has all of the ingredients to develop medicines for people who need it most, including a powerful combination of exceptional people, meaningful clinical opportunities and breakthrough technology platforms."

— Vin Milano

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PHARMACEUTICALS

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