



3D SIGNATURES

# Genomic imaging for **precision medicine**

TSX.V: **DXD**

OTCQB: **TDSGF**

FSE: **3D0**

October 25, 2017

# Forward Looking Statements



This presentation contains “forward-looking information” within the meaning of applicable securities laws in Canada, including statements about 3D Signatures Inc.’s (the “Company”) business and corporate strategy; the initiation, timing, cost, progress, structure and success of the Company’s research and development; the Company’s ability to advance product candidates into, and successfully complete, clinical trials; the utility, therapeutic benefits, effectiveness and safety of the Company’s tests; the Company’s commercialization, marketing and manufacturing capabilities and strategy; regulatory matters; intellectual property plans; estimates of the Company’s expenses, future revenue, capital requirements and its needs for additional financing and the expected development of 3D Signatures’ business, projects and partnerships. Particularly, information regarding our expectations of future results, performance, achievements, prospects or opportunities is forward-looking information. In some cases, forward-looking information can be identified by the use of forward-looking terminology such as “may”, “will”, “expect”, “intend”, “estimate”, “anticipate”, “believe”, “continue”, “plans” or variations of such words. In addition, any statements that refer to expectations, intentions, projections or other characterizations of future events or circumstances contain forward-looking information. For this purpose, any statement that is not a statement of historical fact should be considered forward-looking information.

In providing the forward-looking information included in this presentation, the Company has made various material assumptions, including, but not limited to obtaining positive results from the Company’s current clinical trials, obtaining regulatory approvals with respect to the Company’s clinical trials which are now ongoing or may in the future be commenced, assumptions regarding general business and economic conditions, the Company’s ability to successfully develop its tests, the Company’s current positive relationships with third parties will be maintained, the availability of future financing on reasonable terms, the Company’s ability to attract and retain skilled staff, assumptions regarding market competition and the products and technology offered by the Company’s competitors and the Company’s ability to protect patents and proprietary rights.

Forward-looking information is also subject to numerous risks and uncertainties, including: 3D Signatures’ short operating history; the possibility that 3D Signatures may never receive any product sales revenue or achieve profitability; risks involved in completing the clinical development of, and receiving regulatory approval for, our product candidates; uncertainties related to whether our product candidates under development will become effective diagnostics; as well as those risks and uncertainties discussed under “Risks and Uncertainties” in the 3D Signatures’ Management Discussion and Analysis, dated October 23, 2017 and available on the Company’s SEDAR profile at [www.sedar.com](http://www.sedar.com). Although we have attempted to identify important risk factors that could cause actual results to differ materially from those contained in the forward-looking information in this presentation, there may be other risk factors not presently known to us, or that we presently believe are not material, that could also cause actual results or future events to differ materially from those expressed in the forward-looking information in this presentation.

There can be no assurance that the forward-looking information in this presentation will prove to be accurate, as actual results and future events could differ materially from those anticipated in such information. The forward-looking information contained in this presentation represents our expectations as of the date of this presentation or the date indicated, regardless of the time of delivery of the presentation. 3D Signatures undertakes no obligation to update the forward-looking information in this presentation except as required by applicable law. All of the forward-looking information contained in this presentation is expressly qualified by the foregoing cautionary statements.

**STRIVING FOR BETTER TESTS,  
BETTER TREATMENTS,  
AND BETTER OUTCOMES.**

Our proprietary imaging software aims to **go beyond identifying** whether a patient suffers from a specific disease or condition.

Our analytics platform is designed to tell doctors how to **personalize treatment and best manage the disease** for **each individual patient**.

# PROPRIETARY ANALYTICS PLATFORM



**20+**

Years of research

**2,000+**

Patients

**130+**

Peer-reviewed papers

**14**

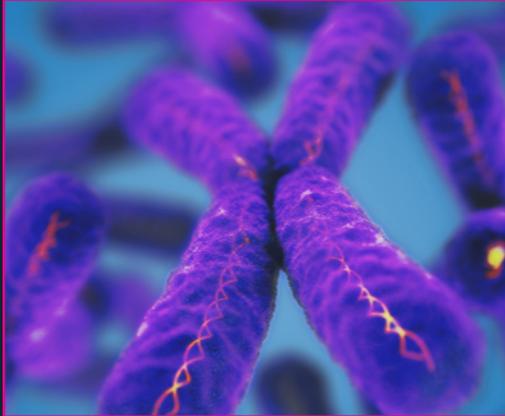
Diseases

**22+**

Clinical studies

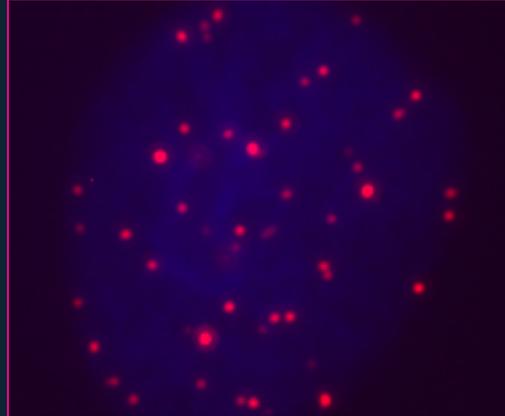
3D Telomere Analysis is a potentially **disruptive** technology based on a multi-modal **structural biomarker**

# 3D TELOMERE ANALYSIS

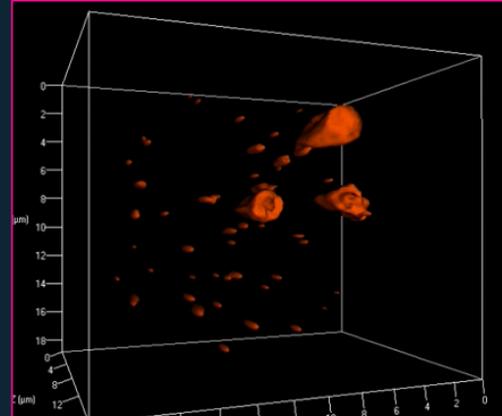


DNA is packaged into **chromosomes**.

At the tips of each chromosome are protective regions of DNA called **telomeres**.



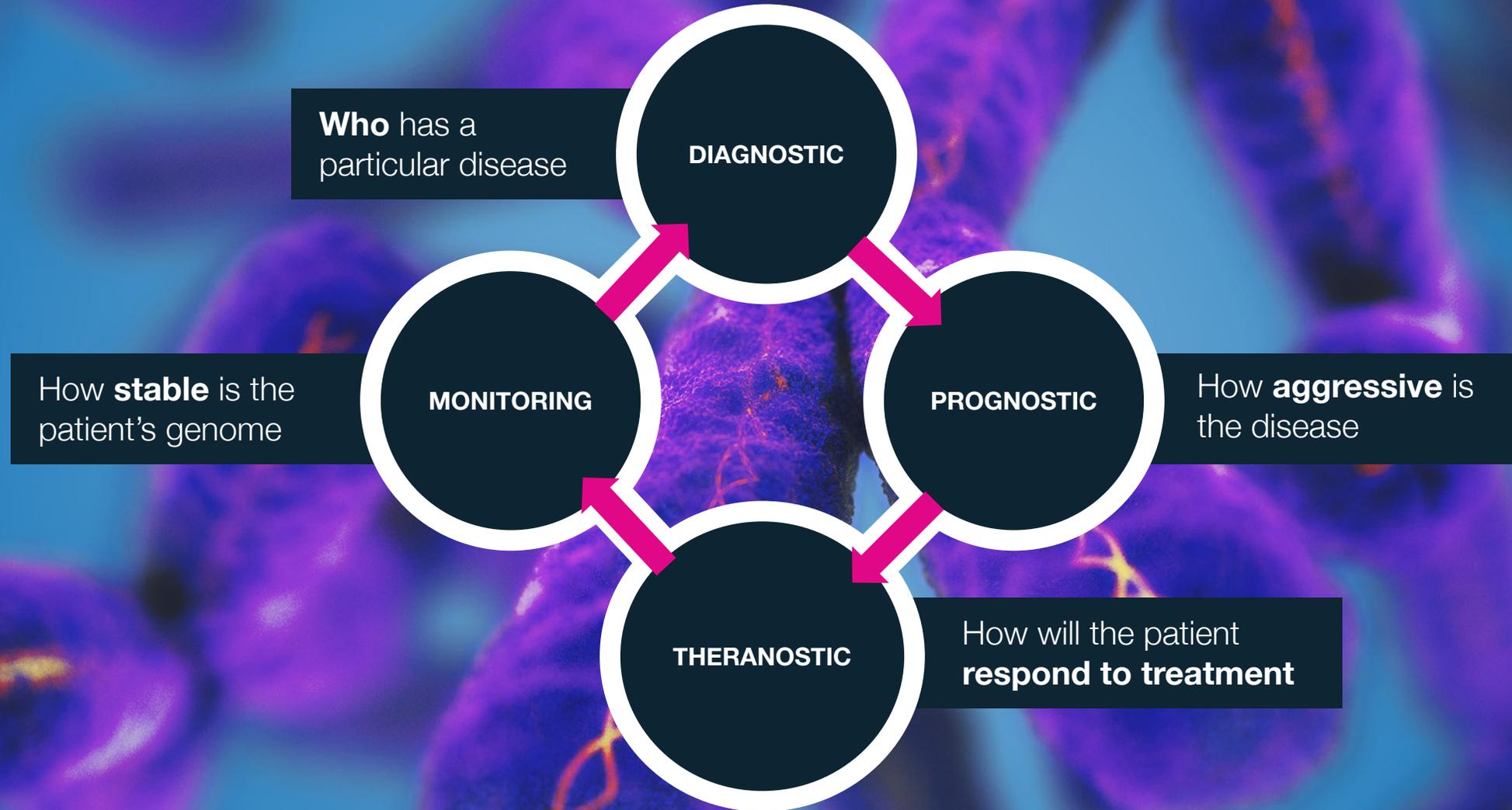
Using **fluorescent markers** and **high resolution microscopes**, the location of each telomere within a cell nucleus can be visualized and digitally analyzed.



The 3D organization of telomeres within a given cell is predictive of genomic instability and tumour aggressiveness.

3D Telomere Analysis has been demonstrated to be effective in stratifying patients in peer-reviewed clinical studies.

# PERSONALIZED MEDICINE



# STRUCTURAL BIOMARKER

Hodgkin's Lymphoma

Prostate Cancer

Multiple Myeloma

Alzheimer's

Thyroid Cancer

MDS/ML

Glioblastoma

Cholangiocarcinoma

Breast Cancer (TNBC)

Ependymoma

Esophageal Cancer

Neuroblastoma

NSC Lung Cancer



**Supporting clinical data** generated by our platform technology across numerous diseases

# INTELLECTUAL PROPERTY

NORTH AMERICA AND EUROPE



Intellectual Property includes **16 issued or pending patent applications** in the United States, Canada and Europe.

Includes tests for multiple cancers and diseases, including:

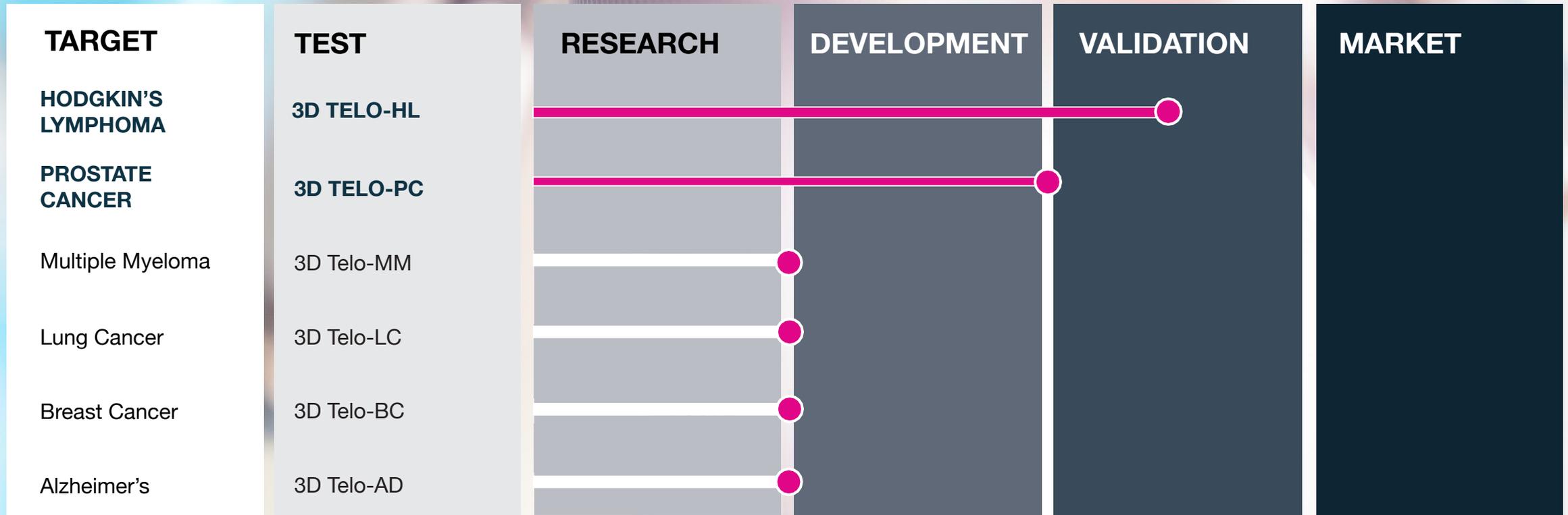
**Hodgkin's Lymphoma**

**Alzheimer's Disease**

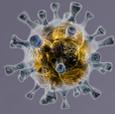
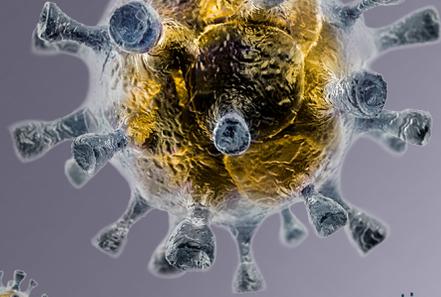
**Prostate Cancer**

**Multiple Myeloma**

# PRIORITY PIPELINE



# HODGKIN'S LYMPHOMA



**8,260**

estimated new cases in 2017\*

**1,070**

estimated deaths in 2017\*

**0.5%**

of all new cancer cases are diagnosed as Hodgkin's Lymphoma\*

**39 years old**

median age at diagnosis\*

**~\$400,000**

cost per relapsing patient vs. ~\$90,000 cost per non-relapsing patient\*\*

US Only

\*2017 US NIH, SEER (<http://seer.cancer.gov/statfacts/html/hodg.html>)

\*\*Hansen et al., The Cost of Relapse in Hodgkin's Lymphoma, ASCO 2014

3D Telomere Analysis aims to stratify patients **at the point of diagnosis** into non-relapsing and relapsing patients so that relapsing patients may be considered for **alternative treatments** to standard chemotherapy at the **beginning** of their treatment process.

# 20%

of patients with Hodgkin's Lymphoma **will not respond** to standard chemotherapy\*

We believe Telo-HL may provide several advantages to patients by potentially providing:

**New Treatment Options**

**Cost Savings**

**Reduced Complications**

**Shortened Treatment Cycles**

# HL VALIDATION SCHEDULE

Q1 2017 – Q1 2018



## Q1 2017

## Q1 2018

### ASSAY DEVELOPMENT

#### SUCCESSFULLY COMPLETED

Testing different components of the wet lab protocol, imaging protocol and image analysis; optimizing the different variables and combining the components into a single locked protocol.

### ASSAY VALIDATION

#### SUCCESSFULLY COMPLETED

This stage includes validating the consistency of key reagents and the reproducibility of the locked protocol.

### CLINICAL TRIAL

#### SUCCESSFULLY COMPLETED

Finalizing the scoring model includes processing 400+ retrospective HL patient samples that match the targeted prognostic criteria for the test. A statistical model will be developed from the data collected during the clinical trial.

### SCORING MODEL VALIDATION

#### ONGOING

Validating the scoring model includes processing approximately 70 – 100 retrospective HL patient samples and analyzing the results according to the scoring model developed in stage three. This validation stage will seek to confirm that the Telo-HL test results match the clinical outcomes for each of the patients.

### ANALYTICAL VALIDATION

If a clinical laboratory partner is chosen to launch Telo-HL it will conduct this final commercial validation step. Stage includes processing approximately 40 – 60 patient samples in duplicate or triplicate by different operators to confirm the reproducibility of the assay in a certified clinical laboratory setting.

# PROSTATE CANCER

**161,360**

estimated new cases in 2017\*

**26,730**

estimated deaths in 2017\*

**9.6%**

of all new cancer cases are  
diagnosed as prostate cancer\*

**66 years old**

median age at diagnosis\*

**2.9 million**

men diagnosed and still living today\*\*

US Only

\*2017 US NIH, SEER (<http://seer.cancer.gov/statfacts/html/prost.html>)

\*\*2017 American Cancer Society (<https://www.cancer.org/cancer/prostate-cancer/about/key-statistics.html>)

Stratifying patients  
based on **risk** of  
prostate cancer  
progression is a  
challenge for  
physicians.

# PROSTATE CANCER

## SIDE EFFECTS WITH CURRENT TREATMENTS

	PROSTATECTOMY*	RADIOTHERAPY*
URINARY INCONTINENCE	NO CONTROL OR FREQUENT URINARY LEAKAGE	
	10%	3%
	BOTHERED BY DRIPPING OR LEAKING URINE	
	11%	2%
BOWEL DYSFUNCTION	BOWEL URGENCY	
	14%	34%
	FREQUENT BOWEL MOVEMENTS, PAIN, URGENCY	
	3%	8%
SEXUAL FUNCTION	ERECTILE INSUFFICIENT FOR INTERCOURSE	
	79%	61%
	BOTHERED BY SEXUAL DYSFUNCTION	
	56%	48%

**A significant percentage of men** treated with radical prostatectomy, other surgery or radiation deal with erectile dysfunction or urinary incontinence.\*

\* Resnick et al. Long-Term Functional Outcomes after Treatment for Localized Prostate Cancer; New England Journal of Medicine, 2013 (Jan): 368:436-445

# TELO-PC

LIQUID BIOPSY



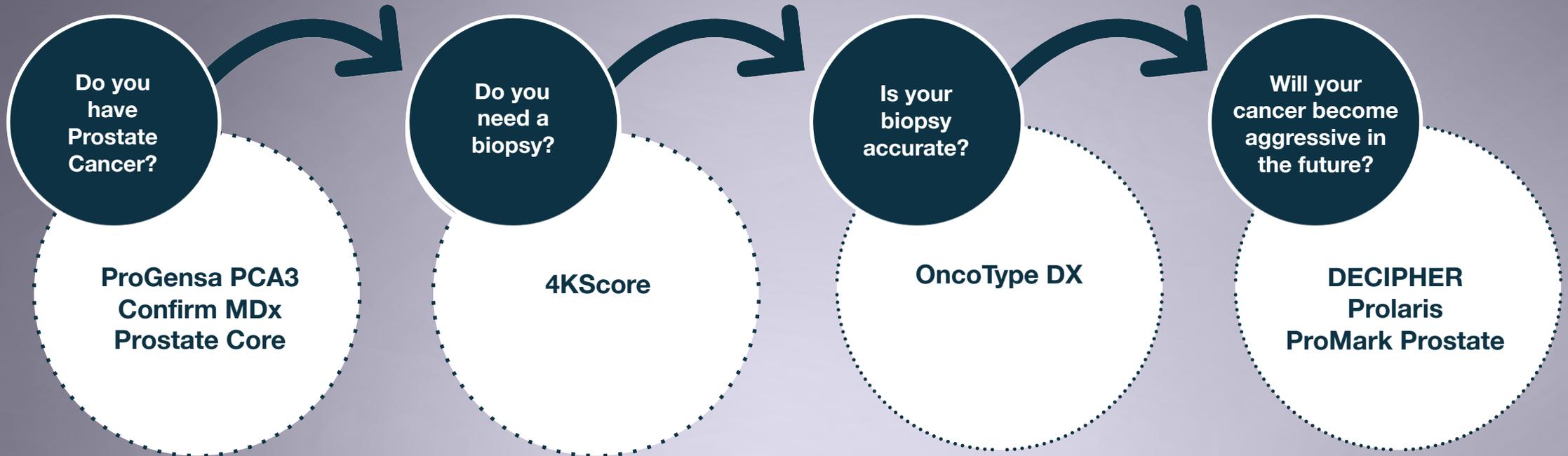
## STANDARD BIOPSY

An invasive test to remove samples of prostate tissue where a needle is inserted through the rectum, urethra, or between the anus and scrotum.

## TELO-PC

A blood test.

# COMPETITION



## 3D TELO-PC

### LIQUID BIOPSY

Designed to stratify all patients and predict a personalized treatment plan.

# TOTAL ADDRESSABLE MARKETS

UNITED STATES AND EUROPE



## NEW CASES PER YEAR

**HODGKIN'S  
LYMPHOMA**

**LUNG  
CANCER**

**MULTIPLE  
MYELOMA**

**8,260**<sup>1</sup>

UNITED STATES

**222,500**<sup>1</sup>

UNITED STATES

**30,280**<sup>1</sup>

UNITED STATES

**17,584**<sup>2</sup>

EUROPE

**409,911**<sup>2</sup>

EUROPE

**38,928**<sup>2</sup>

EUROPE

## PEOPLE LIVING WITH DISEASE

**PROSTATE  
CANCER**

**ALZHEIMER'S  
DISEASE**

**3.0 Mil**<sup>1</sup>

UNITED STATES

**5.5 Mil**<sup>3</sup>

UNITED STATES

**1.5 Mil**<sup>5</sup>

EUROPE

**8.7 Mil**<sup>4</sup>

EUROPE

1. SEER, National Cancer Institute, NIH

2. EUCAN, International Agency for Cancer Research, WHO

3. Alzheimer's Association, USA

4. Alzheimer's Europe

5. EUCAN, International Agency for Cancer Research, WHO, 5 year prevalence

# BOARD OF DIRECTORS



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**John Swift, LLB**  
**Chair, Board of Directors**

Past Principal Secretary in the Prime Minister's Office and Chief of Staff, Office of the Leader of the Opposition, Government of Canada. Past board member of GenXys Health Care Systems, Inex Pharma, Ultrasonix Medical Corp. and Neuromed Technologies Inc. Past Chairman of Central City Foundation.

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**Jason Flowerday**  
**CEO & Director**

Mr. Flowerday has extensive life sciences leadership experience including over a decade of business development and marketing work for two of the world's largest pharmaceutical companies, Germany's Bayer AG and US-based Johnson and Johnson. Other notable positions include executive leadership and entrepreneurial roles with Knight Therapeutics and Pro Bono Bio Inc. Mr. Flowerday was also co-founder and co-owner of both Orphan Canada and RxMedia Healthcare Communications. He is an independent Director of Aequus Pharmaceuticals.

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**Dr. Sabine Mai, PhD**  
**Director and Chair, Clinical & Scientific Advisory Board**

Dr. Sabine Mai is currently Professor of Physiology and Pathophysiology, Biochemistry and Medical Genetics, Human Anatomy and Cell Science, University of Manitoba. She is also Director of The Genomic Centre for Cancer Research and Diagnosis (GCCRD) at University of Manitoba.

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**Gordon McCauley**  
**Director**

President and CEO of Viable Healthworks Corp. and Chairman of Life Sciences BC. Co-founder and former President and COO of Neuro Discovery Inc. (NDI Capital). Past President and CEO of Allon Therapeutics.

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**Keith B. Cassidy**  
**Chief Financial Officer & Director**

Strategic health care, legal services and education leader. Former Executive Director for multiple law firms and former VP Finance and CFO for the Royal Victoria Hospital.

# MANAGEMENT TEAM



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## **Jason Flowerday** CEO & Director

Mr. Flowerday has extensive life sciences leadership experience including over a decade of business development and marketing work for two of the world's largest pharmaceutical companies, Germany's Bayer AG and US-based Johnson and Johnson. Other notable positions include executive leadership and entrepreneurial roles with Knight Therapeutics and Pro Bono Bio Inc. Mr. Flowerday was also co-founder and co-owner of both Orphan Canada and RxMedia Healthcare Communications. He is an independent Director of Aequus Pharmaceuticals.

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## **Kevin Little, PhD** Chief Scientific Officer

Dr. Little is an accomplished industry executive with a strong history of success in leading life sciences ventures through the creation of collaborative business ecosystems. Prior to his position at 3DS, Dr. Little worked as an independent consultant, offering strategic advisory services to help facilitate new life sciences collaborations and research-related ecosystems for public and private sector clients, including Thomson Reuters, Illumina, Janssen, McGill University and the Global Alliance for Genomics and Health. Dr. Little holds a Bachelor of Science degree in Biology from the University of Victoria, and earned his Ph.D. in Experimental Medicine from McGill University, specializing in DNA repair and functional human genomics.

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## **Joost Van Der Mark** Chief Business Officer

Mr. van der Mark is a seasoned healthcare executive with over two decades of experience in the biopharmaceutical industry and joined 3D Signatures as its Chief Business Officer, focused on business development. Prior to 3D Signatures, Mr. van der Mark served as Vice President of Corporate Development of BioSyent Inc., responsible for acquisition and licensing activities. Mr van der Mark was co-founder and co-owner of Orphan Canada Inc. prior to its sale to Knight Therapeutics, and also held progressive positions at Nycomed (Takeda), Sanofi Pasteur and Bayer. Mr. van der Mark holds an M.Sc. in Physiology and Pharmacology from the University of Western Ontario and an M.B.A. from the Schulich School of Business.

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## **Keith B. Cassidy** Chief Financial Officer & Director

Strategic health care, legal services and education leader. Former Executive Director for multiple law firms and former VP Finance and CFO for the Royal Victoria Hospital.

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## **Oumar Samassekou, MD, PhD** VP, Clinical Programs

Trained in medical genetics, cytogenetics and other molecular genetics with expertise in prenatal diagnosis and cancer genomics. Involved in development of non-invasive diagnostic procedure to detect fetal chromosomal abnormalities from maternal peripheral blood.

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## **Hugh Rogers, LLB** VP, Corporate Finance

Leader in business management, regulatory compliance, finance and investor relations for private and public companies within health sciences, digital technology and resource industries. He is a director of MCorpCX Inc. and Coronado Resources Ltd.

# CLINICAL AND SCIENTIFIC ADVISORY BOARD



## DR. SABINE MAI, PhD – DIRECTOR AND CHAIR, CLINICAL AND SCIENTIFIC ADVISORY BOARD

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### **Kenneth C. Anderson, MD**

Dr. Anderson is the Kraft Family Professor of Medicine at Harvard Medical School, as well as a Director of the Lebow Institute for Myeloma Therapeutics and Jerome Lipper Multiple Myeloma Center at Dana-Farber Cancer Institute. He is a Doris Duke Distinguished Clinical Research Scientist and American Cancer Society Clinical Research Professor. After graduating from Johns Hopkins Medical School, he trained in internal medicine at Johns Hopkins Hospital, and then completed hematology, medical oncology, and tumor immunology training at the Dana-Farber Cancer Institute. Over the last three decades, he has focused his laboratory and clinical research studies on multiple myeloma. He has developed laboratory and animal models of the tumor in its microenvironment which have allowed for both identification of novel targets and validation of novel targeted therapies, and has then rapidly translated these studies to clinical trials culminating in FDA approval of novel targeted therapies. His paradigm for identifying and validating targets in the tumor cell and its milieu has transformed myeloma therapy and markedly improved patient outcome.

### **Laurence Klotz, MD**

Dr. Klotz is internationally recognized for his contributions to the treatment of prostate cancer, notably for pioneering the adoption of Active Surveillance as a standard aspect of patient care. Dr. Klotz obtained his medical degree and residency training from the University of Toronto with a special fellowship in uro-oncology and tumour biology at Memorial Sloan Kettering Cancer Centre, New York. He is a widely published uro-oncologist who serves on the board or heads many medical/scientific organizations. He is a Professor, Department of Surgery, University of Toronto, past Chief of Urology, Sunnybrook Health Sciences Centre, Toronto, and Chairman, World Uro-Oncology Federation. Dr. Klotz was awarded the Order of Canada in 2014 for his contribution to prostate cancer treatment.

### **Hans Knecht, MD**

Dr. Knecht established himself as a prominent haematologist through his ground-breaking translational research on lymphoma biology. His current focus is on the molecular events leading to the transition from the mononuclear Hodgkin to the multinuclear Reed-Sternberg cell and the impact of 3D nuclear telomere organization on this transformation. Dr. Knecht received his medical degree from the University of Zurich, Switzerland with post-graduate work under both Maxime Seligmann (Haematology) and Karl Lennert (Haematopathology) in Paris and Kiel, respectively. Dr. Knecht is currently a Professor of Medicine and Chief, Division of Haematology at McGill University and Jewish General Hospital, Montreal.

# CLINICAL AND SCIENTIFIC ADVISORY BOARD



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## Darrel Drachenberg, MD

Dr. Drachenberg is a urologic oncologist and researcher and strong proponent of Active Surveillance for prostate cancer patients. Dr. Drachenberg attended medical school at the University of British Columbia and urology residency at Dalhousie University. He is an American Foundation of Urology Scholar with fellowship training in urologic oncology at the National Cancer Institute in Bethesda, Maryland. He founded the laparoscopic urology program and prostate brachytherapy, cryotherapy, and HIFU programs at the University of Manitoba where he works as assistant professor of surgery and director of research for the Manitoba Prostate Center and Section of Urology and Chair of the Genito-Urinary disease site group, CancerCare Manitoba.

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## Rami Kotb, MD

Dr. Kotb completed his medical residency training in Paris, France, and then became a staff member at Paris XI University. He joined the Hematology-Oncology team at Sherbrooke University (QC, Canada) in 2005 as an Assistant, then Associate Professor. He also worked as the Director of Hematology undergraduate education, Head of the supra-regional team of Hematological Neoplasia and Head of the Institutional Oncology Quality Sub-committee. Late 2011, he moved to British Columbia to work at the BC Cancer Agency as an Oncologist/Hematologist, Associate Professor at the University of British Columbia and affiliate Professor at the University of Victoria. He joined the team at CancerCare Manitoba in September 2014. His practice and research activity will be focused on lymphoid neoplasia, primarily myeloma and lymphoma.

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## Thomas Cremer, MD

Dr. Cremer is an internationally-recognized scientist specializing in the studies of nuclear architecture. He is one of the pioneers of interphase cytogenetics and comparative genomic hybridization (CGH). These methods have become widely used tools for cytogenetic analyses of chromosomal imbalances. He is a corresponding member of the Heidelberg Academy for Sciences and Humanities since 2000, a member of Germany's National Academy of Sciences Leopoldina since 2006, an honorary member of both the European Cytogenetics Association (ECA) and the German Society of Human Genetics since 2011, as well as the recipient of the medal of Honor of this Society. Dr. Cremer is an independent expert to 3DS.

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## Ian Smith, PHD

Dr. Smith, OC, PhD, DSc, FRSC, is currently the Chairman of the Centre for Imaging Technology Commercialization. His past research and commercialization achievements include significant success in the field of magnetic resonance imaging. Dr. Smith is a former Director General of the NRC Institute for Biological Sciences, Ottawa, ON, and founder and Director General of the Institute for Biodiagnostics, Winnipeg, MB. He is a passionate advocate for the advancement of diagnostics for the early detection and treatment of disease.

# BUSINESS ADVISORY BOARD



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**Jonathan Goodman**  
**Director & CEO,**  
**Knight Therapeutics Inc.**

Prior to Knight, Mr. Goodman was the co-founder, President and CEO of Paladin Labs Inc. which was acquired by Endo for \$3.2 billion. Prior to co-founding Paladin in 1995, Mr. Goodman was a consultant with Bain & Company and also worked in brand management for Procter & Gamble. Mr. Goodman holds a B.A. with Great Distinction from McGill University and the London School of Economics with 1st Class Honours. Additionally, Mr. Goodman holds an LL.B. and an M.B.A. from McGill University.

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**Dr. Heiner Dreismann**  
**Past President & CEO,**  
**Roche Molecular Diagnostics**

Dr. Dreismann is a seasoned executive with more than 24 years experience in the healthcare industry, and is regarded as a pioneer in the early adoption of the polymerase chain reaction (PCR) technique, one of the most ubiquitous technologies in molecular biology and genetics research today. He had a successful career at the Roche Group from 1985 to 2006 where he held several senior positions, including President and CEO, Roche Molecular Systems, Head of Global Business Development, Roche Diagnostics and Member of Roche's Global Diagnostic Executive Committee. Dr. Dreismann currently serves on the boards of several public and private health care companies. He earned a master of science degree in biology and his doctor of philosophy degree in microbiology/molecular biology (summa cum laude) from Westfaelische Wilhelms University (The University of Munster) in Germany.

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**John Lindsay**  
**Founder, SciPartners**

Mr. Lindsay began his career at Millipore Corporation, Merck KGaA, and quickly advanced to become the youngest Vice President in the history of the company. He was promoted to Executive Vice President of several divisions, including the Analytical Group and Milligen Biosearch Divisions. In 2000, he founded SciPartners, with the objective of building a platform for development of early stage European and North American firms. His focus is the Life Science market, and over the past 14 years he has successfully built up sales and marketing that led to rapid growth and increased revenues for many companies, and the acquisition of ProXeon by ThermoFisher and the acquisition of Halo Genomics by Agilent.

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**Nigel Terrett**

As chairman of the board of Excelleris Technologies, Mr. Terrett led the creation of one of the largest integrated patient and physician diagnostic database in Canada. During his tenure as chief strategic officer of LifeLabs, he created innovative collaborative programs with health institutions, provincial governments and health providers to improve health care while reducing costs. As senior vice-president and general manager of Life Labs British Columbia, Mr. Terrett was responsible for 900 operational staff, 90 branch locations and two state-of-the-art medical laboratories providing over 15 million medical results per year. As chief information officer of MDS Diagnostics, he led the restructuring of information technology services that resulted in multimillion-dollar savings for the company. During his tenure as vice-president of information technology at MDS Diagnostics, Mr. Terrett led a North American team that increased operating income by over 50 per cent.

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**Harry Glorikian**

Mr. Glorikian has over 30 years of private and public company success in the biomedical and life sciences industries and is a recognized global innovator in the field of medical diagnostics. Recent experience includes roles as Entrepreneur in Residence to GE Ventures – New Business Creation Group and as a member of the board of directors of GeneNews Ltd. He also serves on the advisory board of Nucleis and Evidation Health. Mr. Glorikian is also a co-founder and an advisory board member of DrawBridge Health. Previously he co-founded and held the position of managing director and head of consulting services for Scientia Advisors which was acquired by Precision for Medicine in 2012. Among his other professional roles, Mr. Glorikian served as senior manager for global business development at PE Applied Biosystems, founded X-Cell Laboratories, managed global sales at Signet Laboratories and held various roles at BioGenex Laboratories.

# CAPITAL STRUCTURE



<b>3D SIGNATURES</b>	<b>TSX.V: DXD</b>
Issued & Outstanding Shares	<b>55,408,780</b>
Options & Warrants	<b>12,160,895</b>
Fully Diluted Shares	<b>67,569,675</b>
Board and Management Ownership (Fully Diluted)	<b>33%</b>

As at October 25, 2017. Also trading on OTC and FSE.

# CONTACT



## Corporate

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Toronto, Ontario, Canada  
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**T** 467.673.8487

## Investor Relations

Hugh Rogers  
VP, Corporate Finance  
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**T** 604.428.8842

# INTELLECTUAL PROPERTY

## NORTH AMERICA AND EUROPE



Title	Layman Description	Country and Number
Method of Monitoring Genomic Instability Using 3D Microscopy and Analysis	Prognostic, risk predictive and monitoring test for several cancers	Canada National Phase; 2515792 USA National Phase; 7801682 – Granted Sept 2010 Europe National Phase; EP 4713499.4 – Granted Dec 2015 (validated in UK, Germany, France & Spain)
Methods of Detecting and Monitoring Cancer Using 3D Analysis of Centromeres	Prognostic, risk predictive and monitoring test for several cancers	Canada National Phase; 2665100 – Granted June 2016 USA National Phase; 8849579 – Granted Sept 2014 Europe National Phase; EP07815918.3 – Granted Nov 2015 (Validated in UK, Germany & France)
Diagnostic Methods for Hematological Disorders	Prognostic and risk predictive test for blood cancers	Canada National Phase; 2760873 USA National Phase; 692645
Methods for Diagnosing Alzheimer's Disease	Prognostic and risk predictive test for Alzheimer's disease patients	Canada National Phase; 2895211 Canada National Phase; 2771621 USA National Phase; 14/365141 Europe National Phase; EP12857141.1
Methods for Evaluating Alzheimer's Disease and Disease Severity	Prognostic and risk predictive test for Alzheimer's disease patients	Canada National Phase; 2856419 USA National Phase; 9758830 – Granted September 2017
Method for Characterizing and Isolating Circulating Tumour Cell Subpopulations (Prostate Cancer)	Prognostic and risk predictive test for Prostate Cancer patients	Canada National Phase; 2775315 USA National Phase; 13/869797
Diagnostic Methods Using Granulometry	Prognostic, risk predictive and monitoring for several cancers by examining DNA-occupied territories inside the cell/nucleus	USA National Phase; 9784666 – Granted Oct 2017
Methods for Identifying Mutations of Circulating Tumor Cells	Prognostic and risk predictive test for Prostate Cancer Patients	USA Provisional; 62527201

# PUBLICATION SUMMARY



## HODGKIN'S LYMPHOMA

1. Knecht H, Mai S. The use of 3D telomere FISH for the characterization of the nuclear architecture in EBV-positive Hodgkin's lymphoma. (Invited manuscript). *Methods Mol Biol* 2016 (e-pub November 25) 2017, 1532:93-104.
2. Righolt CH, Knecht H, Mai S. DNA Superresolution Structure of Reed-Sternberg Cells Differs Between Long-Lasting Remission Versus Relapsing Hodgkin's Lymphoma Patients. *J Cell Biochem*. 2016 Jul;117(7):1633-7
3. Lajoie V, Lemieux B, Sawan B, Lichtensztein D, Lichtensztein Z, Wellinger R, Mai S, Knecht H. LMP1 mediates multinuclearity through downregulation of shelterin proteins and formation of telomeric aggregates. *Blood*. 2015 Jan 7. pii: blood-2014-08-594176.
4. Kongruttanachok N, Cayre YE, Knecht H, Mai S. Rapid separation of mononuclear Hodgkin from multinuclear reed-Sternberg cells. *Lab Hematol*. 2014 Mar 1;20(1):2-6.
5. Righolt CH, Guffei A, Knecht H, Young IT, Stallinga S, van Vliet L, Mai S. Differences in nuclear DNA organization between lymphocytes, Hodgkin and Reed-Sternberg cells revealed by structured illumination. *J Cell Biochem*. 2014 Mar 4.
6. Knecht H, Righolt C, Mai S. Genomic Instability: The Driving Force behind Refractory /Relapsing Hodgkin's Lymphoma. *Cancers*. 2013, 5(2), 714-725.
7. Knecht H, Kongruttanachok N, Sawan B, Brossard E, Prevost S, Turcotte E, Lichtensztein Z, Lichtensztein D, Mai, S. 3D telomere signatures of Hodgkin- and Reed-Sternberg cells at diagnosis indicate refractory/relapsing Hodgkin's lymphoma. *Translational Oncology*. Aug;5(4):269-77. 2012.
8. Knecht H, Mai S. 3D imaging of telomeres and nuclear architecture: an emerging tool of 3D nano-morphology based diagnosis. *J Cell Physiol*. 2011 Apr;226(4):859-67.
9. Knecht H, Bruderlein S, Wegener S, Lichtensztein D, Lichtensztein Z, Möller P and Mai S. 3D nuclear organization of telomeres in the Hodgkin cell lines U-HO1 and U-HO1-PTPN1: PTPN1 expression prevents the formation of very short telomeres including "t-stumps". *BMC Cell Biology*. 2010 Dec 14;11(1):99. *BMC Cell Biology* cover image of the month.
10. Guffei A, Sarkar R, Klewes R, Righolt C, Knecht H, Mai S. Dynamic chromosomal rearrangements in Hodgkin's lymphoma are due to ongoing 3D nuclear remodeling and breakage-bridge-fusions. *Haematologica*. 2010 Dec;95(12):2038-46.
11. Knecht H, Bruderlein S, Mai S, Möller P, Sawan B. 3D structural and functional characterization of the transition from Hodgkin to Reed-Sternberg cells. *Ann Anat*. 2010 Sep 20;192(5):302-8. Article and journal cover.
12. Knecht H, Sawan B, Lichtensztein Z, Lichtenstern D, Mai S. 3D Telomere FISH defines LMP1 expressing Reed-Sternberg Cells as End-Stage Cells with Telomere-poor Ghost Nuclei and very short Telomeres. *Lab Invest*. 2010 Apr;90(4):611-9.
13. Knecht H, Sawan B, Lichtensztein D, Lemieux B, Wellinger R, Mai S. The 3D nuclear organization of telomeres marks the transition from Hodgkin to Reed-Sternberg cells. *Leukemia*. 2009 Mar;23(3):565-73.

## PROSTATE CANCER

1. Adebayo Awe J, Saranchuk J, Drachenberg D, Mai S. Filtration-based enrichment of circulating tumor cells from all prostate cancer risk groups. *Urol Oncol*. 2017 Feb 12 pii S1078-1439(16)30415
2. Wark L, Thomas Klonisch T, Quon H, Mai S. Three dimensional telomere signature dynamics in circulating tumor cells of early follow-up high-risk prostate cancer patients undergoing androgen-deprivation and radiation therapy. *Urol Oncol*. 2016 Dec 9. pii: S1078-1439(16)30332-5.
3. Adebayo Awe J, Saranchuk J, Drachenberg D, Mai S. Filtration-based enrichment of circulating tumor cells from all prostate cancer risk groups. *Urol Oncol*. 2016 Accepted
4. Alsaadi A, Awe JA, Wark L, Saranchuk JW, Drachenberg D, and Mai S. Enumeration and Morphological Features of CTCs in all Risk Groups of Localized and Metastatic Prostate Cancer Using Size-Based Filtration. *Urol Oncol*. 2016 Submitted
5. Awe JA, Xu MC, Wechsler J, Benali-Furet N, Cayre YE, Saranchuk J, Drachenberg D, Mai S. 3D telomeric analysis of isolated circulating tumor cells (CTCs) defines CTC subpopulations. *Translational Oncology*. 2013 2013 Feb;6(1):51-65.

## MULTIPLE MYELOMA

1. Sathitruangsak C, Righolt CH, Klewes L, Chang DT, Kotb R, Mai S. Distinct and shared three-dimensional chromosome organization patterns in lymphocytes, monoclonal gammopathy of undetermined significance and multiple myeloma. *Int J Cancer*. 2016. Accepted for publication.
2. Taylor-Kashton C, Lichtensztein D, Baloglu E, Senapedis W, Shacham S, Kauffman MG, Kotb R, Mai S. XPO1 Inhibition Preferentially Disrupts the 3D Nuclear Organization of Telomeres in Tumor Cells. *J Cell Physiol*. 2016 Dec;231(12):2711-9.
3. Martin LD, Harizanova J, Mai S, Belch AR, Pilarski LM. FGFR3 preferentially colocalizes with IGH in the interphase nucleus of multiple myeloma patient B-cells when FGFR3 is located outside of CT4. *Genes Chromosomes Cancer*. 2016 Dec;55(12):962-974.
4. Sathitruangsak C, Righolt CH, Klewes L, Tammur P, Ilus T, Tamm A, Punab M, Olujuhunge A, Mai S. Quantitative Superresolution Microscopy Reveals Differences in Nuclear DNA Organization of Multiple Myeloma and Monoclonal Gammopathy of Undetermined Significance. *J Cell Biochem* 2014 Dec 10.
5. Klewes L, Vallente R, Dupas E, Brand C, Grün D, Guffei A, Sathitruangsak C, Awe JA, Kuzyk A, Lichtensztein D, Tammur P, Ilus T, Tamm A, Rubinger M, Olujuhunge A, Mai S. 3D nuclear telomere organization in multiple myeloma. *Translational Oncology* 2013 6(6): 749–756.
6. Martin LD, Harizanova J, Righolt CH, Zhu G, Mai S, Belch AR, Pilarski LM. Differential nuclear organization of translocation-prone genes in nonmalignant B cells from patients with t(14;16) as compared with t(4;14) or t(11;14) myeloma. *Genes Chromosomes Cancer*. 2013 Jun;52(6):523-37.
7. Martin LD, Harizanova J, Zhu G, Righolt C, Belch A, Mai S, Pilarski L. Lineage-specific repositioning and increased proximity of translocation-prone genes in normal B-cells from multiple myeloma patients. *Genes Chromosomes Cancer* 2012 Aug;51(8):727-42.

## ALZHEIMER'S

1. Garcia A, Huang D, Righolt A, Kalaw MC, Mathur S, McAvoy E, derson J, Luedke A, Itorralba J, Mai S. Super-resolution structure of DNA significantly differs in buccal cells of controls an Alzheimer's patients. *Journal of Cell Physiol*. Dec 2016 Accepted
2. Garcia A, Mathur S, Kalaw MC, McAvoy E, Anderson J, Luedke A, Itorralba J, Mai S. Quantitative 3D telomeric imaging of buccal cells reveals Alzheimer's disease-specific signatures. *J of Alzheimer's Disease*. Nov 2016 Submitted
3. Mai S. Editorial: Towards New Approaches in Alzheimer's Research and Alzheimer's Disease. *Curr Alzheimer Res*. 2016;13(7):728-9
4. Mathur S, Glogowska A, McAvoy E, Righolt C, Rutherford C, Willing C, Banik U, Ruthirakuban M, Mai S, Garcia A. Three-dimensional quantitative imaging of telomeres in buccal cells identifies mild, moderate and severe Alzheimer patients. *J of Alzheimer's Disease*. 2014 Jan 1;39(1):35-48.
5. Rak M, Gough K, Del Bigio MR, Mai S, Westaway D. In Situ FTIR Spectromicroscopy of Brain Tissue from a Transgenic Mouse Model of Alzheimer Disease. *Vibr Spectrosc* 38, 133-141. 2005.

# FOR CANADIAN PURCHASERS ONLY

## RIGHTS OF ACTION FOR DAMAGES OR RESCISSION



The following statutory rights of action for damages or rescission will only apply to a Canadian purchaser of securities of the Company in the event that this presentation is deemed to be an offering memorandum pursuant to applicable securities legislation in certain provinces of Canada. These remedies, or notice with respect thereto, must be exercised, or delivered, as the case may be, by the purchaser within the time limits prescribed by the applicable provisions of the provincial securities legislation. Purchasers should refer to the applicable securities legislation for the complete text of these rights or consult with a legal adviser. Where used in this section, “Misrepresentation” means an untrue statement of a material fact or an omission to state a material fact that is required to be stated or that is necessary to make a statement not misleading in light of the circumstances in which it was made.

### **Ontario**

Securities legislation in Ontario provides that purchasers of securities are entitled to rights of action for rescission or damages where an offering memorandum and any amendment to it contains a Misrepresentation. In accordance with Section 130.1 of the Securities Act (Ontario) (the “Ontario Act”), in the event that an offering memorandum or any amendment thereto contains a Misrepresentation, a purchaser who purchases securities offered by such offering memorandum during the period of distribution has, without regard to whether the purchaser relied upon the Misrepresentation, a right of action against the issuer for damages, or, while still the owner of such securities purchased by that purchaser, for rescission. If the purchaser elects to exercise the right of rescission, the purchaser will have no right of action for damages against the issuer. The issuer will not be liable if it proves that the purchaser purchased the securities with knowledge of the Misrepresentation. Furthermore, in the case of an action for damages, the issuer will not be liable for all or any portion of the damages that it proves do not represent the depreciation in value of the securities as a result of the Misrepresentation relied upon. In no case will the amount recoverable in any action exceed the price at which the securities were sold to the purchaser.

No action shall be commenced to enforce these statutory rights more than: (a) in an action for rescission, 180 days from the date of the transaction that gave rise to the cause of action; or (b) in an action for damages, the earlier of: (i) 180 days after the plaintiff first had knowledge of the facts giving rise to the cause of action; or (ii) three years after the date of the transaction that gave rise to the cause of action.

A purchaser resident in Ontario should refer to the provisions of the Ontario Act and its regulations for particulars of the rights and defences discussed above and consult with a lawyer. The rights discussed above are in addition to and without derogation from any other right or remedy which a purchaser might have at law.

# FOR CANADIAN PURCHASERS ONLY

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### Saskatchewan

A purchaser resident in Saskatchewan is given certain rights of action under the Securities Act, 1988 (Saskatchewan) (the “Saskatchewan Act”) if this corporate presentation, or any amendment to this corporate presentation, contains a Misrepresentation.

These rights include, but are not limited to:

1. Section 80.1 – on receipt of an amended offering memorandum delivered in accordance with Subsection 80.1(3) of the Saskatchewan Act, the right to withdraw from an agreement to purchase securities by delivering a notice to the person who, or company that, is selling the securities indicating an intention not to be bound by the purchase agreement, such notice to be delivered within two business days after receipt of the amended offering memorandum.
2. Subsections 138(1) and 138(2) – a right of action for rescission or for damages against the issuer, its directors and every person selling the securities on behalf of the issuer where the offering memorandum and any amendment to the offering memorandum contains a Misrepresentation.
3. Subsection 138.1(3) – a right of action for damages against the issuer, its directors and every person selling the securities on behalf of the issuer for a Misrepresentation in advertising and sales literature.
4. Subsection 138.2(1) – a right of action for damages against an individual who makes a verbal Misrepresentation before or contemporaneously with the purchase of the securities.
5. Subsection 141(1) – a right to void the purchase agreement and recover the purchase price if the securities are sold by a vendor who is trading in contravention of the Saskatchewan Act or the regulations to the Saskatchewan Act.
6. Subsection 141(2) – a right of action for rescission or for damages if the offering memorandum or any amendment to the offering memorandum is not delivered to the purchaser as required by subsection 80.1 of the Saskatchewan Act.

Such rights of rescission and damages are subject to certain limitations including the following:

1. if the purchaser elects to exercise its right of rescission against the issuer, it shall have no right of action for damages against that party;
2. in an action for damages, a defendant will not be liable for all or any portion of the damages that the defendant proves do not represent the depreciation in value of the securities resulting from the Misrepresentation relied on;
3. no person or company, other than the issuer, will be liable for any part of the offering memorandum, or any amendment to it, purporting to be made on the authority of the person or company as an expert, or purporting to be a copy of or an extract from the person’s or company’s own report, opinion or statement as an expert, unless the person or company failed to conduct a reasonable investigation sufficient to provide reasonable grounds for a belief that there had been no Misrepresentation or believed there had been a Misrepresentation;

# FOR CANADIAN PURCHASERS ONLY

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4. in no case shall the amount recoverable exceed the price at which the securities were offered; and
5. no person or company is liable in an action for rescission or damages if that person or company proves that the purchaser purchased the securities with knowledge of the Misrepresentation.

Pursuant to the Saskatchewan Act, the rights discussed above must be exercised within certain time periods. An action for rescission must be started within 180 days after the date of the transaction that gave rise to the action. An action for damages must be started by the earlier of (i) one year after the purchaser first had knowledge of the facts giving rise to the action; or (ii) six years after the date of the transaction that gave rise to the action.

A purchaser resident in Saskatchewan should refer to the provisions of the Saskatchewan Act and its regulations for particulars of the rights and defences discussed above and consult with a lawyer. The rights discussed above are in addition to and without derogation from any other right or remedy which a purchaser might have at law.

### **Manitoba**

Section 141.1 of the Securities Act (Manitoba) (the “Manitoba Act”) provides that where an offering memorandum contains a Misrepresentation, a purchaser who purchases a security offered by the offering memorandum is deemed to have relied upon that Misrepresentation, if it was a Misrepresentation at the time of purchase, and has a right of action for rescission against the issuer, or has a right of action for damages against: (a) the issuer; (b) every director of the issuer at the date of the offering memorandum; and (c) every person who or company that signed the offering memorandum. If the purchaser elects to exercise its right of rescission against the issuer, the purchaser shall have no right of action for damages against a person or company referred to above.

If a Misrepresentation is contained in a record that is incorporated by reference in, or that is deemed to be incorporated into, an offering memorandum, the Misrepresentation is deemed to be contained in the offering memorandum.

When a Misrepresentation is contained in an offering memorandum, no person or company is liable:

1. if the person or company proves that the purchaser had knowledge of the Misrepresentation;
2. other than with respect to the issuer, if the person or company proves: (i) that the offering memorandum was sent to the purchaser without the knowledge or consent of the person or company, and (ii) that, after becoming aware that it was sent, the person or company promptly gave reasonable notice to the issuer that it was sent without the knowledge or consent of the person or company;

# FOR CANADIAN PURCHASERS ONLY

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3. other than with respect to the issuer, if the person or company proves that, after becoming aware of the Misrepresentation, the person or company withdrew the consent of the person or company to the offering memorandum and gave reasonable notice to the issuer of the withdrawal and the reason for it;
4. other than with respect to the issuer, if, with respect to any part of the offering memorandum purporting to be made on the authority of an expert or to be a copy of, or an extract from, an expert's report, opinion or statement, the person or company proves that the person or company did not have any reasonable grounds to believe, and did not believe, that: (i) there had been a Misrepresentation; or (ii) the relevant part of the offering memorandum: (A) did not fairly represent the expert's report, opinion or statement, or (B) was not a fair copy of, or an extract from, the expert's report, opinion or statement; or
5. other than with respect to the issuer, with respect to any part of the offering memorandum not purporting to be made on an expert's authority and not purporting to be a copy of, or an extract from, an expert's report, opinion or statement, unless the person or company: (i) did not conduct an investigation sufficient to provide reasonable grounds for a belief that there had been no Misrepresentation; or (ii) believed there had been a Misrepresentation.

Such rights of rescission and damages are subject to certain limitations including the following:

1. in an action for damages, a defendant is not liable for all or any part of the damages that it proves do not represent the depreciation in value of the securities as a result of the Misrepresentation; and
2. the amount recoverable shall not exceed the price at which the securities were offered under the offering memorandum.

No action may be commenced to enforce a right: (a) in the case of an action for rescission, more than 180 days after the day of the transaction that gave rise to the cause of action; or (b) in any other case, more than the earlier of (i) 180 days after the day that the plaintiff first had knowledge of the facts giving rise to the cause of action, or (ii) two years after the day of the transaction that gave rise to the cause of action.

A purchaser resident in Manitoba should refer to the provisions of the Manitoba Act and its regulations for particulars of the rights and defences discussed above and consult with a lawyer. The rights discussed above are in addition to and without derogation from any other right or remedy which a purchaser might have at law.

### **New Brunswick**

The right of action for damages or rescission described herein is conferred by Section 150 of the Securities Act (New Brunswick) (the "New Brunswick Act"). Section 2.1 of New Brunswick Securities Commission Rule 45-802 - Prospectus and Registration Exemptions provides that the statutory rights of action for damages or rescission referred to in Section 150 of the New Brunswick Act apply to information relating to an offering memorandum that is provided to a purchaser of securities in connection with a distribution made in reliance on certain exemptions listed in National Instrument 45-106 - Prospectus Exemptions. The New Brunswick Act provides,

# FOR CANADIAN PURCHASERS ONLY

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in relevant part, that where an offering memorandum contains a Misrepresentation, a purchaser who purchases securities offered by the offering memorandum shall be deemed to have relied on the Misrepresentation if it was a Misrepresentation at the time of purchase and: (a) the purchaser has a right of action for damages against the issuer and any selling security holder(s) on whose behalf the distribution is made; or (b) where the purchaser purchased the securities from a person referred to in paragraph (a), the purchaser may elect to exercise a right of rescission against the person, in which case the purchaser shall have no right of action for damages against the person. This statutory right of action is available to New Brunswick purchasers whether or not such purchasers relied on the Misrepresentation. However, there are various defences available to the issuer and the selling security holder(s). In particular, no person will be liable for a Misrepresentation if such person proves that the purchaser purchased the securities with knowledge of the Misrepresentation. Moreover, in an action for damages, the amount recoverable will not exceed the price at which the securities were offered under the offering memorandum, and any defendant will not be liable for all or any part of the damages that the defendant proves do not represent the depreciation in value of the security as a result of the Misrepresentation. If the purchaser intends to rely on the rights described in (a) or (b) above, such purchaser must do so within strict time limitations. The purchaser must commence an action to cancel the agreement within 180 days after the date of the transaction that gave rise to the cause of action. The purchaser must commence its action for damages within the earlier of: (a) one year after the purchaser first had knowledge of the facts giving rise to the cause of action; or (b) six years after the date of the transaction that gave rise to the cause of action.

A purchaser resident in New Brunswick should refer to the provisions of the New Brunswick Act and its regulations for particulars of the rights and defences discussed above and consult with a lawyer. The rights discussed above are in addition to and without derogation from any other right or remedy which a purchaser might have at law.

### **Nova Scotia**

The following is a summary of the rights of rescission and damages available to purchasers of the securities under securities legislation applicable in Nova Scotia. This summary is subject to the express provisions of the Securities Act (Nova Scotia) (the “NSSA”), and the rules, regulations and other instruments thereunder, and reference should be made to the complete text of such provisions contained therein. The right of action for rescission or damages conferred by Section 138 of the NSSA is in addition to and without derogation from any other right or remedy available at law or otherwise to a purchaser. Prospective investors should consult a lawyer with respect to their legal rights.

# FOR CANADIAN PURCHASERS ONLY

## RIGHTS OF ACTION FOR DAMAGES OR RESCISSION



Section 138 of the NSSA provides that if an offering memorandum, or any advertising or sales literature (as defined in the NSSA) in respect of securities, together with any amendment thereto or any record incorporated or deemed incorporated by reference therein, contains a Misrepresentation, any purchaser to whom such offering memorandum is sent or delivered who purchases securities referred to therein, and any purchaser who purchases securities referred to in such advertising or sales literature, is deemed to have relied on that Misrepresentation if it was a Misrepresentation at the time of purchase and has, subject as hereinafter provided, a statutory right of action for damages against the seller (the term “seller” includes the issuer), every director of the seller at the date of the offering memorandum, and every person who signed the offering memorandum (and the liability of such persons and companies is joint and several with respect to the same cause of action). Alternatively, the purchaser may elect instead to exercise a statutory right of rescission against the seller in which case the purchaser has no right of action for damages against the seller, any director of the seller at the date of the offering memorandum, or any person who signed the offering memorandum. The aforementioned rights to damages or rescission are subject to the following:

1. no action shall be commenced to enforce the right of rescission or damages created under Section 138 of the NSSA more than 120 days after the date payment was made for the securities, or after the date on which initial payment was made for the securities where payments subsequent to the initial payment are made pursuant to a contractual commitment assumed prior to, or concurrently with, the initial payment;
2. no person or company is liable under Section 138 of the NSSA if the person or company proves that the purchaser purchased the securities with knowledge of the Misrepresentation;
3. no person or company, other than the issuer, is liable under Section 138 of the NSSA if the person or company proves that: (a) the offering memorandum, or an amendment thereto, was sent or delivered to the purchaser without the knowledge or consent of the person or company and that, on becoming aware of its delivery, the person or company gave reasonable general notice that it was delivered without the knowledge or consent of the person or company; (b) after delivery of the offering memorandum, or an amendment thereto, and before the purchase of the securities by the purchaser, on becoming aware of any Misrepresentation in the offering memorandum, or an amendment thereto, or any record incorporated or deemed incorporated by reference therein, the person or company withdrew the consent of the person or company to the offering memorandum, or amendment thereto, or such record, and gave reasonable general notice of the withdrawal and the reason for it; or (c) with respect to any part of an offering memorandum, or amendment thereto, or any record incorporated or deemed to be incorporated by reference therein, purporting to be made on the authority of an expert, or to be a copy of, or an extract from a report, an opinion or a statement of an expert, the person or company had no reasonable grounds to believe, and did not believe, that there had been a Misrepresentation, or that the relevant part of the offering memorandum, or amendment thereto, or such record, did not fairly represent the report, opinion or statement of the expert, or was not a fair copy of, or extract from, the report, opinion or statement of the expert;

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4. no person or company, other than the issuer, is liable under Section 138 of the NSSA with respect to any part of an offering memorandum, or amendment thereto, or any record incorporated or deemed incorporated by reference therein, not purporting to be made on the authority of an expert, or to be a copy of or an extract from, a report, opinion or statement of an expert, unless the person or company failed to conduct a reasonable investigation to provide reasonable grounds for a belief that there had been no Misrepresentation, or believed that there had been a Misrepresentation;
5. in an action for damages under Section 138 of the NSSA, the defendant is not liable for all or any part of the damages that the defendant proves does not represent the depreciation in value of the securities resulting from the Misrepresentation;
6. the amount recoverable by a plaintiff under Section 138 of the NSSA may not exceed the price at which the securities were offered under the offering memorandum or amendment hereto;
7. a person or company is not liable in an action under Section 138 of the NSSA for a Misrepresentation in forward-looking information (as defined in the NSSA), other than forward-looking information in a financial statement or forward-looking information in a document released in connection with an initial public offering, if the person or company proves all of the following things: (a) the document containing the forward-looking information contained, proximate to that information (i) reasonably cautionary language identifying the forward-looking information as such, and identifying material factors that could cause actual results to differ materially from a conclusion, forecast or projection in the forward-looking information, and (ii) a statement of the material factors or assumptions that were applied in drawing a conclusion or making a forecast or projection set out in the forward-looking information; and (b) the person or company had a reasonable basis for drawing the conclusions or making the forecasts and projections set out in the forward-looking information.

### **Prince Edward Island, Newfoundland and Labrador, Québec, Northwest Territories, Yukon and Nunavut**

The Securities Act (Prince Edward Island), the Securities Act (Newfoundland and Labrador), the Securities Act (Québec) the Securities Act (Northwest Territories), the Securities Act (Yukon) and the Securities Act (Nunavut) each provide a statutory right of action for damages or rescission to purchasers resident in Prince Edward Island, Newfoundland and Labrador Québec, Northwest Territories, Yukon and Nunavut, respectively, in the event that an offering memorandum or an amendment thereto contains a misrepresentation. Purchasers resident in these jurisdictions should refer to the provisions of their respective acts and regulations for particulars of the rights discussed above and consult with a lawyer.

### **British Columbia and Alberta**

Notwithstanding that the Securities Act (British Columbia) and the Securities Act (Alberta), and the rules, regulations and instruments thereunder, do not provide, or require the issuer to provide, to purchasers resident in these jurisdictions any rights of action in circumstances where this presentation or an amendment thereto contains a misrepresentation, the issuer hereby grants to such purchasers contractual rights of action that are equivalent to the statutory rights of action set forth above with respect to purchasers resident in Ontario.

### **General**

The securities laws of British Columbia, Alberta, Saskatchewan, Manitoba, Ontario, Québec, New Brunswick, Newfoundland and Labrador, Nova Scotia, Prince Edward Island, Northwest Territories, Nunavut and Yukon are complex. Reference should be made to the full text of the provisions summarized above relating to rights of action. The rights discussed above are in addition to, and without derogation from, any other rights or remedies which purchasers may have at law.

**Purchasers should consult their own legal advisors with respect to their rights and the remedies available to them.**