

# MICROBIX

BIOSYSTEMS INC.

Corporate Presentation

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## Infectious Disease Specialists

Spring 2020



# Forward-Looking Statements

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- This presentation contains forward-looking statements about trends and objectives.
- Risks and uncertainties related to such statements could cause actual outcomes to differ materially.
- Such risks include those related to customers or markets, growth drivers, products or technologies, product pricing or costs, development projects, financial results, and access to capital.
- Forward-looking statements represent Microbix's current judgment and it disclaims any obligation to update them.

# MICROBIX BIOSYSTEMS INC.

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## Our Company Today



Develops, makes, and sells biological products or technologies to customers in North America, Europe, Asia, and other markets.



Leads in supplying “antigens”, as a critical part of medically important infectious disease tests and lab-oriented quality assessment products (QAPs™).



Owns global rights to Kinlytic® urokinase, a clot-buster biologic drug that has existing approvals from U.S. FDA and Health Canada.

> \$13M

Averages growing sales now at more than C\$1.0 million per month, primarily to multinational diagnostics companies, currently running close to break-even.



Primed for continuing sales growth, product development, near-term expanded gross margin, increasing net earnings, and share price appreciation.

# Management

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## **Cameron L. Groome** CEO, President, and Director

Has served on the MBX BoD and AC since 2012, and was appointed CEO in 2017. More than 25 years' experience in senior life sciences and finances roles. Successful leader, executive, director, and advisor for public and private companies.

## **Jim Currie** Chief Financial Officer

Joined MBX as CFO in 2016 after several CFO roles and a VP of Finance role at MDS SCIEX, a global leader in life science and analytical technologies. Jim holds a Bachelor of Commerce and holds a CPA and a CMA.

## **Ken Hughes, Ph.D.** COO

Executive and biomedical scientist with 25 years of experience in biotech and pharma. Previously was CEO of iTP Biomedica, VP, Sci. & Reg. Affairs at Innovative Medicines Canada and Co-founder and Advisory Board member of PlantForm Corporation.

## **Phil Casselli** Senior Vice President Business Development, Sales, and Marketing

Manages MBX's relationship with over 100 makers of infectious disease diagnostics across multiple regions. He holds a Bachelor of Applied Science in Chemical Engineering and has more than 30 years' experience in the biotech and pharmaceutical industries.

## **Mark Luscher, Ph.D.** Senior Vice President, Scientific Affairs

Responsible for scientific programs, he is a specialist in cell biology, immunovirology, and cytometry. He is an inventor on numerous patents and patent applications and oversees scientific and technological programs and initiatives related to MBX's products.

## **Kevin Cassidy** Vice President Biopharmaceuticals

Responsible for MBX's pathogens and toxins license from Public Health Agency of Canada, with over 30 years' experience in the biotech industry. Among other responsibilities, is also the lead executive directing the Kinlytic® urokinase biologic clot-buster program.

# Board of Directors

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**William J. Gastle**  
Executive Chairman

A virologist, Mr. Gastle is the founder of Microbix and has served as a Director since its inception. He is now Executive Chairman of the Board. Mr. Gastle has set the strategic direction of the Company and been the architect of its infectious diseases expertise.

**Mark A. Cochran, Ph.D.**  
Director

Dr. Cochran is Executive Director of Johns Hopkins Medicine. His experience spans all levels of the drug discovery and development value chain, including operational and executive roles in the healthcare, venture capital, pharmaceutical, and biotech industries.

**Joe Renner**  
Director

Mr. Renner, Chairman of Zydus Pharmaceuticals, Pennington, New Jersey, has more than 25 years' experience in the pharmaceutical industry. He has enjoyed a successful career leading businesses with many drug approvals in the United States.

**Martin Marino**  
Director

Mr. Marino has more than 30 years' experience in corporate legal roles and executive management functions, with emphasis on transaction-based corporate development. He also has considerable experience in conflict resolution and litigation management.

**Vaughn C. Embro-Pantalone**  
Director

Mr. Embro-Pantalone has held multiple executive roles in life sciences, with responsibility for licensing, business development, and strategic planning. His experience includes executive roles with Bayer, Novopharm and Terra International. He is a Chartered Director and Audit Committee Certified through McMaster University.

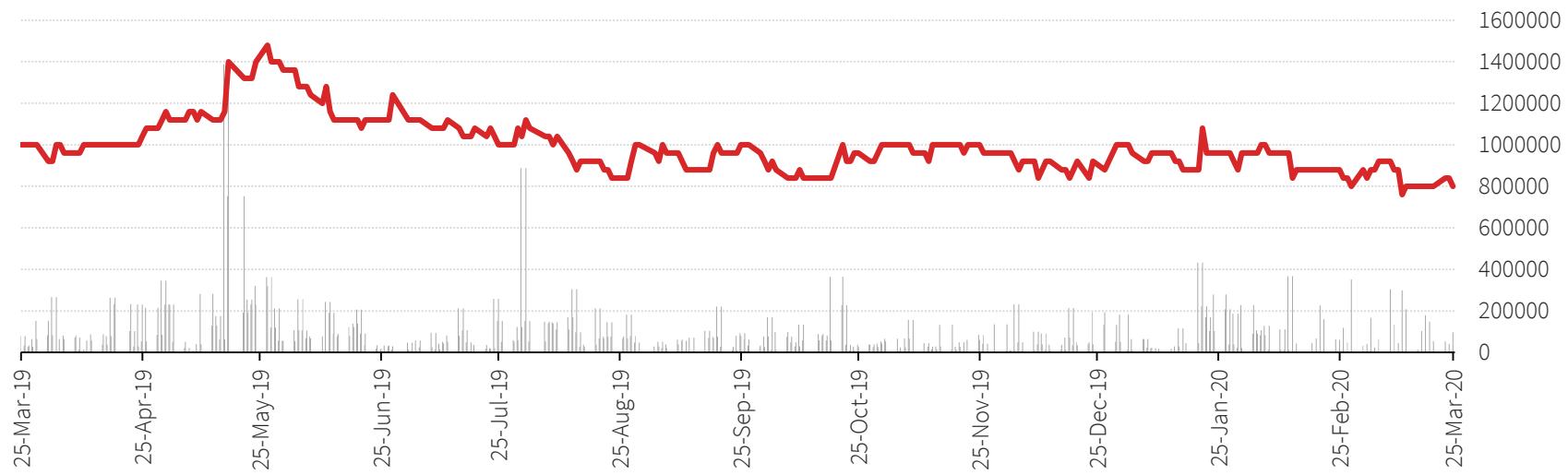
**Dr. Peter M. Blecher**  
Director

Dr. Blecher is the founder of several biotech ventures, including one purchased by MBX. He has practiced emergency medicine at Lakeridge Health, pain medicine at CPM Centers for Pain Management, and is Medical Director of Starseed Medicinal, Inc.

**Cameron Groome**  
Director

Mr. Groome is President and CEO of Microbix.

# Capital Structure



TSX Listed, Symbol: MBX

Current Price	\$0.20 (Mar 25)	Market Capitalization	\$21.8M
Shares Outstanding (Basic)	108.77M	Avg. Daily Volume	100K
(Fully Diluted)	161M	Cash and Line of Credit	\$2.5 M
52 Week High	\$0.38	Longer Term Debt	\$2.6M BDC
52 Week Low	\$0.17		\$7M debentures*

\*\$4.5M convertible at \$0.23

# Microbix's Three Business Divisions

Current platform and capacity enables accelerating sales growth by a well-established multi-product life sciences business

## 1 Global leader in native antigen production

- Critical supplier to >100 global makers of tests for infectious diseases.
- >95% export sales, to clients in the Americas, Europe and Asia.
- Poised to benefit from increasing infectious disease testing and tech-driven margin expansion.

## 2 Global leader in EQA/PT controls, OEM and Lab support through Quality Assessment Products (QAPs)

- A leading supplier to agencies that accredit clinical laboratories.
- Expanding markets via supporting test developers and clinical laboratories.
- Adding new and innovative QAPs with large sales potential at good margins.

## 3 Kinlytic® Urokinase

- Own all rights to a clot-buster biologis that is already FDA-Approved.
- Working to partner to validate new production and return the drug to U.S. and other markets.
- An opportunity with potential sales in excess of US\$ 100 million per year.

### Immunoassays

Diagnostic tests that measure an antigen-antibody reaction, and for infectious diseases, can:

- a) suggest the presence of a pathogen,
- b) establish exposure to a pathogen, or
- c) assess the level of immunity to a pathogen.

### Uses of Immunoassays

To diagnose exposure or immunity to pathogens that can affect health in adults, children, neonates, or life in utero. For such vital uses, *immunoassays cannot be replaced by nucleic acid-based tests*.

### Microbix's Role

Growing, purifying, and inactivating real bacteria and viruses for use as antigens for more than 100 leading international diagnostics companies.

**Microbix provides antigens on a large scale, most often as a critical sole-source supplier.**

**Bacterial and Viral Expertise:** Microbix has royalty-free title to its bacterial, host-cell, and viral libraries, a large competitive advantage. It has developed expertise in growing the required organisms safely and economically at scale.

## Respiratory

- Influenza A, B
- Adenovirus
- Parainfluenza 1, 2, 3
- Respiratory syncytial (RSV)
- *Mycoplasma pneumoniae*
- *Chlamydia pneumoniae*

## Sexually Transmitted

- Herpes simplex 1, 2 (HSV)
- *Chlamydia trachomatis*
- *Neisseria gonorrhoeae*

## Vector-Borne

- Dengue 1, 2, 3, 4
- Dengue NS1
- *Borrelia burgdorfi*

## Pediatric/Maternal (TORCH panel)

- Toxoplasma gondii
- Rubella (German Measles)
- Cytomegalovirus (CMV)
- Herpes simplex 1, 2 (HSV)

# Growth Outlook for Antigens Business

1 Antigens

Antigens currently comprise ~90% of total sales, and have demonstrated material sales growth over the past 2 years.



90%  
of sales

- ✓ May benefit from greater global attention to testing as a result of the COVID-19 pandemic, notably for respiratory pathogens.
- ✓ In the more mature markets of the USA and Europe, growth can be derived from expanding relationships with established diagnostics clients.
- ✓ Further growth likely from adoption of public health-oriented immunoassays in new regions, such as Asia-Pacific nations.
- ✓ Microbix antigens are already being incorporated into dozens of tests seeking approval for use in China, for a large emerging-market opportunity.
- ✓ Improvements to processes, including the use of bioreactor technologies for viral antigen production, are expected to enhance gross margins for this segment.

### → The QAPs™ Opportunity

Microbix has identified an important role for its antigens, beyond usage in immunoassays, as **Quality Assessment Products (QAPs™)**.

Proper Quality Control (QC) of infectious disease tests is critical to health outcomes.

- *Optimal QC requires emulation of real patient samples to ensure correct results.*
- *This requirement applies to both immunoassay and nucleic acid tests.*
- *US and European labs are recommended to use 3<sup>rd</sup> party Quality Controls when available*

Microbix has the rare expertise needed to make a broad range of such products.

Growing many bacterial and viral organisms safely, economically, and at scale

Inactivating organisms in order to have intact surface antigens AND nucleic acids

Augmenting by using leading-edge biology tools where traditional methods fall short

Formulating to concentrations representative of clinical samples

Stabilizing samples for optimal commercial shelf-life and temperature stability

Validating product performance through enhanced quality systems (ISO 13485)

Microbix is therefore developing a line of clinically-important QAPs, an opportunity well suited to its capabilities and market *bona fides* and a **large, low-risk market opportunity**.

# Established Supplier to Lab Accreditation Organizations

2 Quality Assessment Products

**Provides QAPs on a white-label basis  
(widely used, but not identified as  
from Microbix)**

To Proficiency Testing (PT) Organizations  
\$1.0M Sales in f2019

Sales began in 2008.

Major and minor accounts

- Mainly to North America (USA/Canada)
- Also Australia, and recently into EU

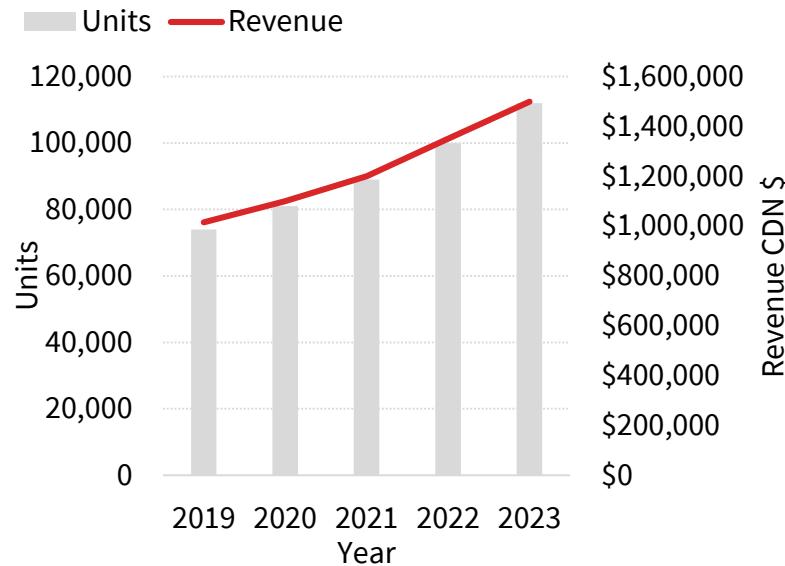
Sales had plateaued from no new SKUs.

Recent efforts to expand product line

- Originally by five respiratory analytes
- Now to include HPV line, Other STIs, Respiratory and GI organisms, etc.

- New products to spur growth (multiple organisms, product formats)
- Initial HPV panel to be broadened (MBX appears to have leading position)
- PT sales into EU expected to grow (starting in 2020 and building from there)
- Targeting addition of new customers (in U.S., EU, and other markets)

## PT 5 Year Trend



# PT Is Only the Beginning for QAPs™

| 2 Quality Assessment Products

Microbix is now opening new markets, providing its QAPs to key participants across the diagnostics industry.

## PROCEED™

PROCEEDx™ – For qualifying new instruments and training technicians

To Instrument Manufacturers  
*Sales began in f2019*

## RED controls™

REDx Controls™ – To support the formal QC and QA programs of clinical laboratories

To Clinical Laboratories  
*Sales beginning in f2020*

PROCEEDx™ and REDx Controls™ to be:  
(a) labelled as Microbix products;  
(b) sold in greater volumes at higher prices.



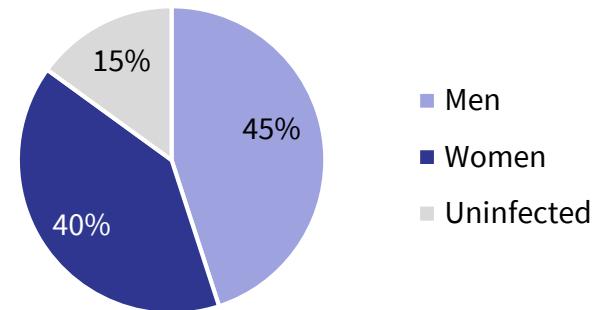
The QAPs product line is expected to provide sales growth in North America, Europe, and Asia-Pacific, at more favourable gross margins.

## Current Product Focus: HPV

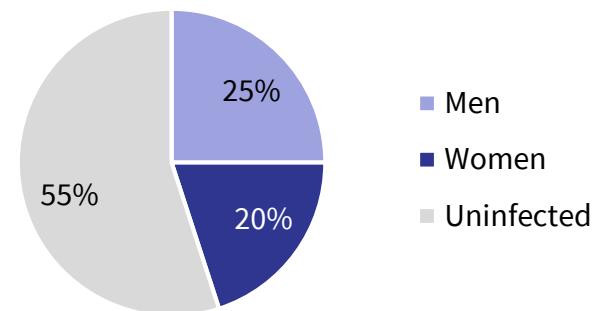
### → HPV infection demographics

- 85% of the adult U.S. population is infected with HPV, comprising 45% men & 40% women.
- Of those infected, 45% carry one or more of the “high risk” oncogenic HPV types, with 5% more men than women.
- The wide distribution of the “high risk” HPV types makes testing for the oncogenic types very important for public health.
- **Men are not covered** by cervical “PAP” testing programs. Therefore, their only option is new Molecular (MDx) testing techniques.
- **Adequate QC controls have been lacking for the support of MDx HPV tests and restricting HPV MDx adoption.**

*Percentage of U.S. Adults with Genital Infection, 2014*



*Percentage of U.S. Adults with High Risk Genital Infection, 2014*

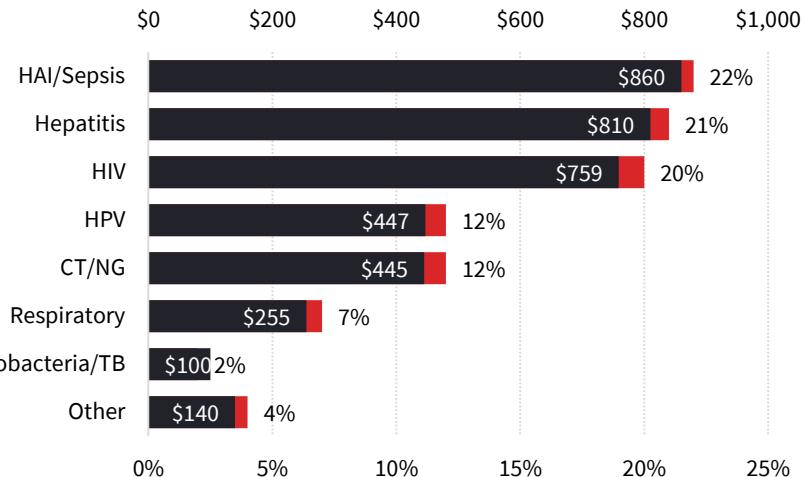


## HPV Market Opportunity

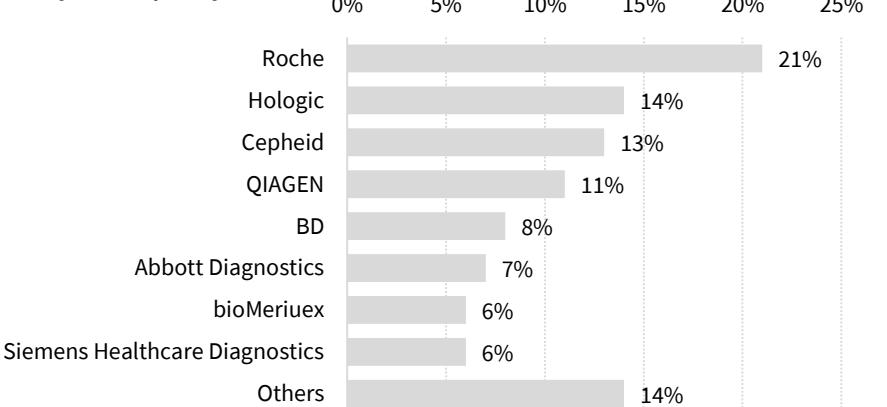
### → Current HPV market information

- HPV is ~12% of global MDx testing market.
- Two companies dominate HPV MDx testing, with ~70% of the total market.
  - ✓ A short-list of companies dominates infectious disease testing.
- The global HPV MDx testing market is increasing at a CAGR of ~7%.
  - ✓ USA is ~50% of the market.
  - ✓ EU target countries at ~14% market share, with a CAGR of > 8%.
- Spending on controls is typically ≤ 10% of testing – this is Microbix's target market.

*Global Infectious Disease MDx Market Share by Test (\$ millions, %)*



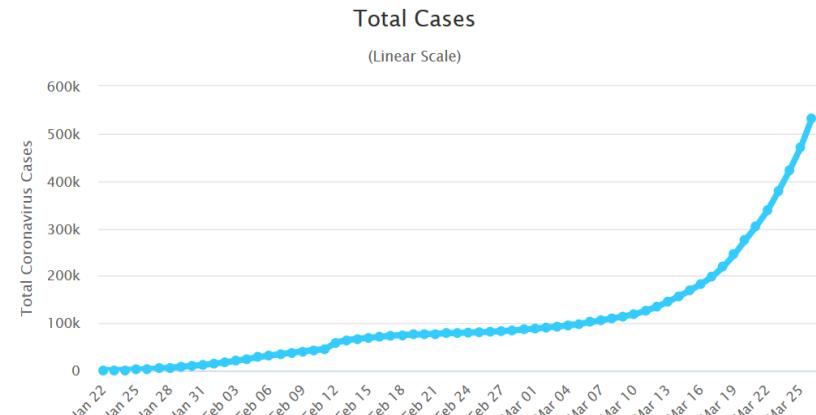
*Global Infectious Disease MDx Market Share by Company (%)*



## Market Opportunity: “COVID-19”

### → An Emerging Global Pandemic

- Ongoing logarithmic growth in cases in almost every nation worldwide.
- Accurate and widespread testing is critical to slowing community-derived spread.
- Emerging tests need external means of ensuring the accuracy of their results.
- The opportunity exists for Microbix to use its QAPs expertise to develop controls for tests for SARS-CoV-2 (the virus causing COVID-19).
- Demand for controls relating to other respiratory pathogens may also increase – Healthcare professionals will want clear diagnosis of other respiratory infections and need to know if COVID-19 patients also have co-infections (e.g., Flu A, Flu B, RSV, etc.).



Source: [www.worldometers.info/coronavirus/](http://www.worldometers.info/coronavirus/)



### Laboratory testing for coronavirus disease (COVID-19) in suspected human cases

“Each NAAT run should include both external and internal controls, and laboratories are encouraged to participate in external quality assessment schemes when they become available. It is also recommended to laboratories that order their own primers and probes to perform entry testing/validation on functionality and potential contaminants.”

## Our Potential QAPs Markets

PTD™

**~\$2.0M in sales targeted – US\$10-US\$20/unit**

**Usually unbranded**

- Sold directly to a limited pool of lab accreditation organizations
- Likely to double from its current base of ~\$1.0M/year

PROCEED™

**> \$2.0M in sales targeted – US\$20-US\$50/unit**

**Usually branded**

- Sold directly to Dx OEMs that are mostly existing Microbix customers
- Dx OEM validation/specification to help with development of laboratory customers

RED controls™

**> Multiple of \$10s of millions in targeted sales – >US\$50/unit**

**Branded**

- Sold directly to largest regulated laboratory chains
- Sold through distributors to unaffiliated regulated labs
- Strong sales potential for HPV and other value-added product categories
- Targeting multiple company and distributor accounts of >\$100K/year
- Gross margins expected of > 70% for these QAPs across multiple product formats

# Partnering Opportunity

## 3 Kinlytic® Urokinase

### → Kinlytic® Urokinase

Microbix's expertise in biologicals led to its securing rights to this clot-buster drug, which is approved in the USA and Canada.

- For sales to resume, production of the drug must be restarted and the new product shown to be equivalent to past batches.
- Microbix has validated a path back to market with the U.S. FDA, obtained detailed 3<sup>rd</sup> party quotations, and is now moving to secure development partners to fund the project.

A partner to return Kinlytic to the U.S. market is now being sought. Microbix's goal is to secure a material upfront fee and retain a meaningful proportion of economics.

#### Recent Kinlytic Activities:

##### Refined Project Scope

Catheter Clearance Indication  
*U.S. market as a value driver*

##### Established Precise Costs

Quotes from qualified vendors  
*Remove risk for partners*

##### Engaged Licensing Agent

Well-respected NYC firm  
*More effective project outreach*

##### Prepared for Due Diligence

Electronic Data Room Created  
*~1,300 pp. updated and organized*

## → Kinlytic® Urokinase

Urokinase is a human protein that dissolves blood clots and has been used to treat multiple clot-related disorders in millions of patients.



- The U.S. return of Kinlytic starts with its FDA-approved use for catheter clearance.
- Clearing blood clots from I.V. catheters is now a **>US\$330 million monopoly** in the USA, held by tPA and growing by about 10% annually.
- **Microbix aims for sales in excess of US\$200 million by breaking that monopoly.**
- **Refiling is achievable in 2.5 years with investment of less than US\$20 million.**

Kinlytic is therefore believed to represent a large value-creation opportunity.

# Recent Results

## 4 Financials

**Fiscal 2019 (Sept 30) sales of \$13.4 million, up 7% from f2018, and 31% from f2017.**

- f2019 gross margin of 49%, up from 43% in f2018, and 47% in f2017.
- f2019 EBITDA\* of \$1.7M, up from \$0.8M in f2018, and (\$0.1M) in f2017.
- Positive operating income before impairments in f2019, versus loss of (\$0.7M) in f2018, and loss of (\$1.5M) in f2017.
- Results improvements achieved prior to full implementation of new antigen production technologies and widespread launch of new QAPs (e.g., HPV REDx Controls).



\* EBITDA is a non-IFRS measure & therefore unaudited

### F2020 is a year of challenges and opportunities for life sciences firms

1. Creating, registering, and launching additional QAPs, including STIs (e.g., HPV) and respiratory pathogens (e.g., SARS-CoV-2)
2. Building global distributor and customer base for novel, value-added QAPs
3. Implementing full-scale use of new production technology (bioreactors) to enhance antigen gross margin & capacity.
4. Actively pursuing partnership agreement to enable the return-to-market of Kinlytic urokinase.
5. Improving margins and bottom-line results to drive share price appreciation.

### Corporate Targets

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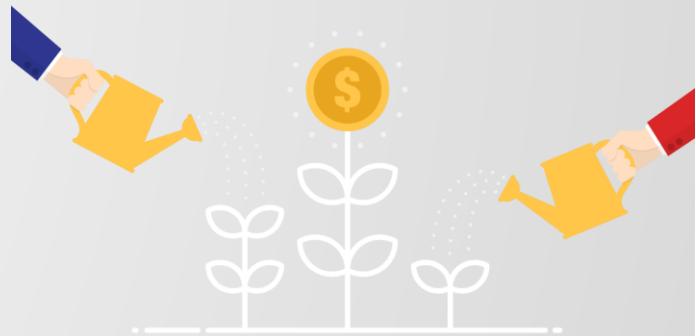
Surging Sales  
Mushrooming Margins  
Expanding Earnings  
Climbing Cashflow



# Microbix's Opportunities

## Actions

- ✓ Continue Sales Growth of antigens
- ✓ Launch New Products in QAPs™ lines
- ✓ Enhance Gross Margins across all products
- ✓ Drive Cash Flow from Operations
- ✓ Partner successfully on Kinlytic® urokinase



## Results

- ✓ Double-Digit Annual Sales Growth
- ✓ Positive and Increasing Net Earnings
- ✓ Partnering-Driven Value Creation from Kinlytic® urokinase
- ✓ Share Price Appreciation
- ✓ Increasing Business Development Opportunities

# Takeaway Messages

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***A Real Business*** – Meaningful sales to a broad range of international customers



***Big Opportunities*** – Realizable potential from in-scope operations and projects

- Growing sales of antigens at improving margins
- New offerings and customers for QAPs™ product lines
- Partnering potential for Kinlytic® urokinase



***Responsible Management*** – Financial and operational controls are in place



***An Investable Company*** – We ask that you evaluate Microbix for your portfolio

# THANK YOU

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**Cameron Groome**

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