Virtual Pitch Event

毎月カナダの各都市と繋ぎ、エコシステムの紹介と、その都市を代表するスタートアップによるピッチを実施！
初回の今回は、トロントと繋ぎます！

Discover Life Science Canada

by JETRO Canada and Shonan iPark

#1 Toronto EcoSystem

日時

日本時間
9am-10am on 8/7(Friday)

EST
8pm-9pm on 8/6(Thursday)

会場 Web EX

ミーティング番号(アクセスコード)
131 495 6679

ミーティングパスワード
iParkevent123@

https://onetakeda.webex.com/webappng/sites/onetakeda/meeting/info/167876527285913229?MTID=m4734f24be3d83ba55c7f321f7a40eea0

Agenda

1. **Opening Remarks**
   - Toshio Fujimoto, General Manager, Shonan iPark
   - SAKAI Takuji, Executive Director, JETRO Toronto
2. **Overview of Ontario Life Sciences Ecosystem**
   Ontario Government
3. **Startup Pitch**
   Cyclica / Ovensa / Lumasonix
4. **Q&A**

MC
- Tyson Garbe, Associate Director, JETRO Toronto
- Yuri Ogiso, Commercial and Business Development, Shonan iPark

JETRO Toronto　iPark Shonan

Overview of Ontario Life Sciences Ecosystem

Ontario Government

Presenter

Jenny Ge

Senior Sector Adviser
MEDJCT's Industry and Sector Strategy Division
(Life Sciences team)

As Canada's most populous province, a driver of national economic growth and the location of both Canada's capital city and largest city, Ontario is the headquarter for a large number of multinational corporations and innovative home-grown companies. Ontario is home to a thriving and comprehensive life sciences ecosystem, comprised of the pharmaceutical industry, the medical device industry and a thriving biotechnology industry in regenerative medicine and cell therapy. The numerous benefits of investing and being located in Ontario will be discussed, such as government incentive programs, top research organizations and Ontario's strengths in cutting edge technologies such as artificial intelligence (AI).

Startup Pitch

Cyclica Inc.

Presenter

Naheed Kurji

Co-Founder, President & CEO

Cyclica is the first company to approach polypharmacology with a structure-based, AI-augmented in silico discovery platform, centered on Ligand Design and Ligand Express. Powered by MatchMaker™, a proprietary deep learning proteome screening technology, and POEM™, an innovative supervised learning technology for predicting molecular properties, Cyclica's platform is suited uniquely to the design of novel, chemical matter by simultaneously prioritizing compounds based on their on- and off-target polypharmacological profiles as well as their developmental properties. With a world-class team that has deep roots in the industry, a first-in-class platform, and an innovative decentralized partnership model, Cyclica is creating medicines with greater precision for unmet patient needs.

https://www.cyclicarx.com/
https://www.cyclicarx.com/science

Ovensa Inc.

Presenter

Stéphane Gagné

President & CEO

Ovensa Inc. is a Canadian preclinical stage company committed to advance its siRNA lead candidate silencing galectin-1 overexpression in the tumor microenvironment to improve therapeutic outcomes of an immuno-oncology anti-PD-1 checkpoint inhibitor as a combination therapy in head & neck cancer. The company is also advancing its collaboration programs with pharmaceutical companies to develop precision and combination medicines. Ovensa leverages the cationic charges on its patented biopolymer called TRIOZAN™, to cross the skin, the mucosae or the blood-brain barrier in order to deliver the therapeutic molecule to the targeted tissue or cell.

https://ovensa.com/

Lumasonix Inc.

Presenter

Morris Smith

VP Partnerships and Product

Lumasonix is a 2020 Bio International Convention Startup finalist transforming cancer care through early detection. We are developing the first general cancer screening through the detection of circulating tumor cells (CTC's) in blood. Tumors shed CTCs in blood as they grow, and through Photo-acoustic and Ultrasound imaging, we detect their physical characteristics, classify and count the CTCs. This process will be fully automated to annually screen a national population with a low-cost test.

http://www.lumasonix.com/

Virtual Pitch Event

JETRO Toronto

iPark Shonan

DISCOVER LIFE SCIENCE CANADA

by JETRO Canada and Shonan iPark

#1

Toronto EcoSystem

Opening Remarks

Toshio Fujimoto

General Manager

Shonan iPark

Shonan iPark Introduction 2020

Shonan Health Innovation Park

Aug 2020

70 resident companies with 27 members joined iPark and create a big community >2,000 scientists

iPark Shonan

Pharmaceutical
Ansès, ASKA Pharmaceutical Co., Ltd., LION, SUN PHARMA, maruho, Takeda, Mitsubishi Tanabe Pharma, TORAY Innovation by Chemistry

Members
Daiichi-Sankyo, Takata

Drug Discovery
CARDURION PHARMA, Chordia Therapeutics, FIMECS, GEXVal, K Pharma, LTT Bio-Pharma, neopharma Japan, I.a.m, PRISM BioLab, ReboMAB, SCOHIA

New Modality
ACTmed, JKiC, KIRIN, 国立がん研究センター, Noile-Immune Biotech, REPROCELL, 湘南鎌倉総合病院, T-CiRA

Members
YNU 横浜国立大学

Research and Development Support
AXCELEAD, ChromaJean Co., FUJIFILM, GenAhead Bio, ITM, JUZEN, 片山化学工業株式会社, LSI Medience Corporation, NIPPON SHOKUBAI, RABICS, Rena Therapeutics, SEEDSUPPLY, SCAS, T.N.TECHNOS, TORAY Toray Research Center, Inc.

Members
PHARMASPUR, Fukuzyu Pharmaceutical

Research Equipment / Medical Devices
NSK, PHC, SIEMENS Healthineers, YOKOGAWA

Members
TERUMO, キタハマ

AI / IoT Robotics
DIMENSIONALMECHANICS, hatapro, IBM, RobiZy

Business Support
FORESIGHT & LINX, iama, inner Resource, KISTEC, SONDERHOFF EINSEL

Members
SUNFLARE

Investment
CATALYS PACIFIC

Administration
神奈川県

Insurance Members
Aflac

Trading Company Members
alfresa, KikoTech

*Includes tenants and membership companies

Becoming a Gateway for Global companies from and to Japan

Global Network*

Lab | Central

TIM

biohub TAIWAN 國家生技研究園區 創服育成中心 BioHub Taiwan of National Biotechnology Research Park

*MoU signed with iPark

Japan / Asia

- **Jump start** at the state-of-the-art facility with one of the largest wet-lab in Japan
- **Access** to robust regional and national science clusters
- **Rich business support:** Regulatory, HR, legal and science

2 ways to join iPark Community

1. **Join as Residents**
2. **Join Membership**

You can find a new growth opportunity at iPark

Opening Remarks

JETRO Toronto

SAKAI Takuji

Executive Director

Jetro Toronto

Overview of Ontario Life Sciences Ecosystem

Ontario

Ontario Government

Jenny Ge

Senior Sector Adviser

MEDJCT's Industry and Sector Strategy Division

(Life Sciences team)

Province of Ontario

WHERE INVESTMENT MEETS OPPORTUNITY

Life Sciences Sector Overview

www.InvestinOntario.com

AUGUST 2020

About Us:

Ministry of Economic Development, Job Creation and Trade

- One of 24 ministries in the Ontario Government.
- We support a strong, innovative economy that can provide jobs and prosperity for all Ontarians.
- Works with all ministries (ex. Ministry of Health and Ministry of Long-Term Care) and other levels of government.
- Main office in Toronto.

ONTARIO CANADA | OPEN FOR BUSINESS

Ontario is Open for Business

We make it easier, faster and cheaper for businesses to start, grow and operate in Ontario

Timely Customized Business Intelligence to inform investment decisions – including data on key business costs in comparison to competing jurisdictions, duties and relief programs for imports and exports, available talent pools and more.

Tailored insight on business immigration pathways, employee settlement services, talent partnerships with colleges and universities and more.

Early investment-specific assessment and facilitation of federal, provincial and municipal incentives available to offset expected business costs.

Ready partnerships within the larger government community to understand relevant local policies and programs and certifications or compliance checks. This includes site permitting and approvals navigation.

Customized Ontario tours for investors including informational briefings and tours showcasing Ontario regions, suitable sites, available skilled labour, academic institutions and local business partners.

Easy access to local professional services to meet an investor's corporate and commercial needs – legal expertise, commercial real estate brokerage, banking and financing, tax and financial planning, marketing, public relations and more.

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Ontario is Strategically Located for Business Growth

Located in the heart of North America

- 14 million people and over 200 languages spoken.
- Connected to at least 175 international destinations.

Canada's economic powerhouse

- 7th largest subnational economy in North America by GDP.
- 39% of the country's population and GDP.
- 46% of Canada's goods produced in Ontario.
- 63% of foreign enterprises in Canada are present in Ontario

Access to global markets

- Free trade deals with 51 countries.
- Daily two-way trade between Ontario and the U.S. was over $1 billion in CAD (2018).
- 41.8% of Canada's global goods exports are from Ontario.

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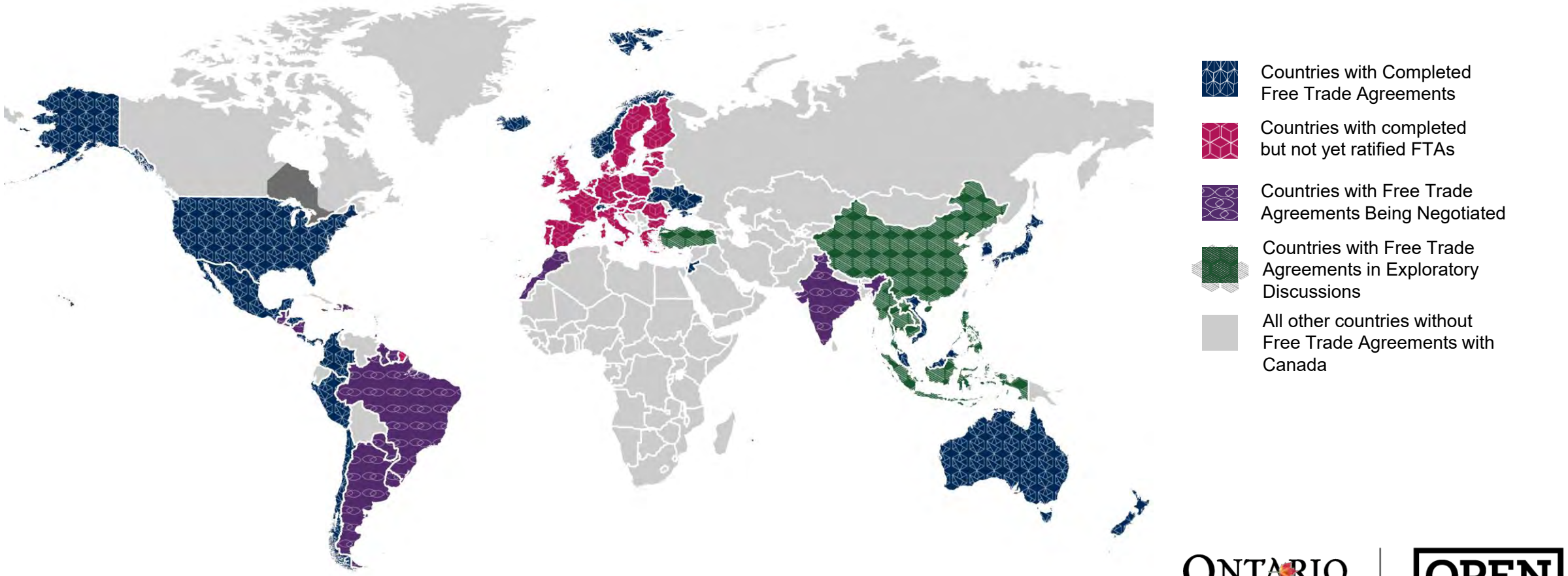
A Ready Gateway to Global Markets

Canada's 14 trade agreements with 51 countries offer Ontario companies privileged access to global markets, totaling a combined GDP of **$67 trillion in CAD** ($52 trillion in USD)**.** These opportunities support global sales expansion and supply chain development for companies in Ontario.



ONTARIO CANADA | OPEN FOR BUSINESS

Note: FTA coverage does not include WTO Agreements.
Source: Global Affairs Canada, and MEDJCT

Easy Access to the U.S. Market

- Companies in Ontario have access to **143 million consumers within a day's drive.**
- The **daily two-way goods trade** between Ontario and U.S. in 2018 was valued at over **$1 billion in CAD.**

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Sources: Trade Data Online, with data from Statistics Canada and U.S. Census Bureau; Statistics Canada, Population estimates on July 1st, by age and sex; US Census Bureau, Counties Population Estimates, July 1, 2017 data.

Research and Development (R&D) Savings in Ontario

Our R&D savings make it easier for you to reinvest in your business growth and productivity.
(see Appendix for list of government incentive programs)

After-Tax Cost of $100 Research & Development (R&D) Expenditure

Small & Medium-sized Manufacturers

Type of Expenditure	R&D Expenditure *(in-house)*	R&D Expenditure *(outsourced)*	R&D Expenditure *(at eligible Ontario research institutes)*
Gross expenditure	$100.00	$100.00	$100.00
Actual after-tax expenditure	$47.50	$60.28	$50.44

Note: based on information as of June 1, 2018.
Source: Ernst & Young, 2018; Commissioned by Ministry of Economic Development, Job Creation and Trade.

A Steady Pipeline of Science Talent

Laurentian University (Sudbury)
Biology (M.Sc.), Chemical Sciences (M.Sc.),
Engineering Science (M.A.Sc., M.Eng., PhD),
Biomolecular Sciences (PhD)

Lakehead University (Thunder Bay)
Biology (M.Sc.), Chemistry (M.Sc.),
Biotechnology (PhD),
Chemistry and Materials Science (PhD) and
Chemical Engineering (M.Sc.)

Trent University (Peterborough)
Environmental and Life Sciences (PhD)

University of Waterloo (Waterloo)
Biology (M.Sc. & PhD),
Chemistry (M.Sc. & PhD)
Pharmacy (M.Sc. & PhD)

Wilfred Laurier University (Waterloo)
Chemistry (M.Sc.)

University of Windsor (Windsor)
Biological Sciences (M.Sc. & PhD)
Chemistry and Biochemistry (M.Sc. & PhD)
Medical Biotechnology (MMB)

Western University (London)
Biology (M.Sc. & PhD)
Biomedical Engineering
(M.Sc. & PhD)
Neuroscience (M.Sc. & PhD)

University of Guelph (Guelph)
Biomedical Sciences (M.Sc. & PhD)
Biotechnology (MBIOT)
Chemistry (M.Sc. & PhD)
Clinical Studies (M.Sc.)
Molecular & Cellular Biology (M.Sc. & PhD)

Brock University (St. Catherines)
Biological Sciences (M.Sc. & PhD)
Biotechnology (M.Sc. & PhD)
Chemistry (M.Sc. & PhD)

University of Ottawa (Ottawa)
Biology (M.Sc. & PhD)
Chemistry (M.Sc. & PhD)

Carleton University (Ottawa)
Biomedical Engineering (M.Sc. & PhD)

Ontario Tech University (Oshawa)
Applied Bioscience (M.Sc. & PhD),
Materials Science (M.Sc. & PhD)

York University (Toronto)
Biology (M.Sc. & PhD) and Chemistry (M.Sc. & PhD)

Ryerson University (Toronto)
Biomedical Engineering (MASc & PhD),
Chemical Engineering (MASc & PhD),
Molecular Science (M.Sc. & PhD)

University of Toronto (Toronto)
Biochemistry (M.Sc.), Biomedical Engineering (MEng),
Biomedical Engineering (PhD), Biotechnology,
Chemistry (M.Sc. & PhD), Clinical Engineering,
Laboratory Medicine and Pathobiology (M.Sc. & PhD),
Materials Science and Engineering (M.Sc. & PhD),
Pharmaceutical Sciences (M.Sc. & PhD)
Pharmacology (M.Sc. & PhD)

McMaster University (Hamilton)
Biochemistry and Biomedical Sciences (M.Sc. & PhD)
Biology (M.Sc. & PhD), Chemical Biology (M.Sc. & PhD)
Biomedical Discovery & Commercialization (M.B.D.C)
Biomedical Engineering (M.A.Sc. & PhD)
Chemical Engineering (M.A.Sc. & PhD)
Chemistry (M.Sc. & PhD)
Engineering Physics (M.A.Sc. & PhD)
Manufacturing Engineering (M. Eng. Manufacturing)

Source: http://www.ontariouniversitiesinfo.ca

Canada's Largest Life Sciences Centre

Ontario is Canada's largest life sciences jurisdiction with >50% of total life sciences economic activity.

We are multicultural, young, globally connected and highly educated.

Drives economic growth

Fueled by the best talent

Doing world-class R&D

Attracting global capital

1,900+
Firms

66,200
Employees

$53.2B
Revenue

$9.7B
Exports

23
Research hospitals, institutions

44
Universities, Colleges

49,300
STEM grads annually

Highest
Education attainment of all OECD countries

TOP 10
pharmas all doing clinical trials

$1.66B
Academic R&D annually

$650M+
Industrial R&D annually

3,000+
clinical trials

$50M
Invested through Ontario's Life Science Venture Fund

$1.1B
VC capital invested in Canada's life science industry in 2019 through 117 deals.

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Comprehensive and Vibrant Life Sciences Ecosystem

PHARMACEUTICALS / BIOTECHNOLOGY / MEDICAL TECHNOLOGY

APOTEX ADVANCING GENERICS · Baylis MEDICAL · CONAVI · intellijoint surgical · synaptive · Takeda · SANOFI · gsk · Johnson & Johnson · TARO · Roche · teva · Bayer · NOVARTIS · AMGEN · CardinalHealth · Lilly · Biogen · janssen · 3M · Baxter · Pfizer · MERCK · Medtronic · GE Healthcare · AstraZeneca · therapure BIOPHARMA INC. · Patheon part of Thermo Fisher Scientific · SST SURGICAL SAFETY TECHNOLOGIES · stryker · TELUS Health · Mylan · SANDOZ · BlueRock Therapeutics · abbvie · Abbott Point of Care · TRUDELL MEDICAL INTERNATIONAL · NORTHERN BIOLOGICS · Fusion · ProteinQure · PHENOTIPS · ANALYTICS 4 LIFE · BenchSci · deep genomics · SWIFT · PHENOMIC AI · newtopia · CYCLICA · WINTERLIGHT · bora

ACADEMIA & TALENT

UNIVERSITY OF TORONTO · McMaster University · UNIVERSITY of GUELPH · Queen's UNIVERSITY · UNIVERSITY OF WATERLOO · Western UNIVERSITY · CANADA · uOttawa L'Université canadienne Canada's university · OntarioTech UNIVERSITY · YORK UNIVERSITY · LaurentianUniversity UniversitéLaurentienne · Ryerson University

RESEARCH INSTITUTES & SUPPORT ORGANIZATIONS

VECTOR INSTITUTE · WATERLOO.AI WATERLOO ARTIFICIAL INTELLIGENCE INSTITUTE · FACIT Cancer Breakthroughs. Realized. · SGC · CLINICAL TRIALS ONTARIO · Ontario Genomics · ONTARIO BRAIN INSTITUTE · camh Centre for Addiction and Mental Health · CCRM · OICR · The Ottawa Hospital RESEARCH INSTITUTE · LAWSON HEALTH RESEARCH INSTITUTE · IC/ES · CENTRE FOR AGING + BRAIN HEALTH INNOVATION Powered by Baycrest

WORLD LEADING RESEARCH HOSPITALS

SickKids · UHN Toronto General · Toronto Western · Princess Margaret · Toronto Rehab · Michener Institute · robarts RESEARCH · Mount Sinai Hospital · Sunnybrook HEALTH SCIENCES CENTRE

INCUBATORS & ACCELERATORS & INNOVATION HUBS

CREATIVE DESTRUCTION LAB · JLABS @ Toronto · MaRS · DMZ · COMMUNITECH · ventureLAB Mentoring | Partnering | Connecting · ONTARIO CANADA · OPEN FOR BUSINESS

Bora Pharmaceuticals: North American HQ

- World's 3rd largest CDMO. Bora operates in over 17 countries globally.
- Bora chose Ontario as the site of their North American headquarters in March 2020.
- The Greater Toronto Area (GTA) will serve as Bora's access into the entire North American market.
- Largest investment by a Taiwanese company in Canada.

Bora Pharmaceuticals

"The Mississauga-based facility is ideally suited with our intention to grow our technical capabilities and scale in the global contract development and manufacturing organization (CDMO) marketplace."

-Bobby Sheng, CEO, Bora Pharmaceuticals

Regenerative & Personalized Medicine

- 300+ regenerative medicine researchers with networks across the globe.

McEwen UHN Stem Cell Institute

Since 2007, the McEwen Stem Cell Institute has been a recognized leader in stem cell research and regenerative medicine.
Dr. Gordon Keller is a world-renowned stem cell scientist in the field of pluripotent stem cells.

PGP

Public resource of genomics data based at the Hospital for Sick Children (SickKids)

BlueRock Therapeutics

Largest office in Toronto, valued at $1B for engineered cell therapies (neurology, cardiology, immunology)

CCRM Commercializing Living Therapies

Non-profit, public-private research consortium developing foundational cell and gene therapies

CARE forRARE

Pan-Canadian team led out of the Children's Hospital of Eastern Ontario (CHEO) focusing on rare diseases

SGC

Public-private partnership for basic science of relevance to drug discovery. Partners include Janssen, Pfizer and Takeda

MEDICINE by DESIGN

Converging engineering, medicine and computer science to accelerate regenerative medicine to the clinic

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Global Hub of Artificial Intelligence (AI) Innovation

- The Vector Institute is home to Dr. Geoffrey Hinton, a world-renowned researcher and a pioneer of deep learning, and is training the **world's finest AI talent**.
- Fujitsu opened its first Canadian R&D centre in 2017. LG invested in a 5-year research partnership in 2018.
- $100M University of Toronto Schwartz Reisman Innovation Centre to open in 2022 to anchor AI scientists with biomedical scientists in 750,000 sq. ft. of office and lab space in the heart of downtown Toronto.
- Canadian companies are revolutionizing the drug discovery process by combining science with AI.

LG Electronics opens AI lab and signs partnership with the University of Toronto (Aug 2018)

Schwartz Reisman Innovation Centre to advance AI and biomedicine at the University of Toronto (March 2019)

Google will triple Canadian workforce and build two new offices in Ontario, employing over 5000 (Feb 2020)

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Convergence of AI and Life Sciences in Ontario

1	July 2019	ProteinQure	ProteinQure raises $5.2M for protein-focused drug design platform backed by machine learning
2	Sept 2019	deep genomics	Toronto- based therapeutics company discover a drug candidate in 18 months using AI, achieving a first in the world, then raises $40M in January 2020
3	Nov 2019	CYCLICA	Cyclica announces partnership with Yuhan Pharmaceuticals, a South Korean healthcare company, for two oncology R&D programs using AI platform
4	Feb 2020	BenchSci	AI-antibody selection startup BenchSci has raised $45M since being founded in 2017 and is backed by Google

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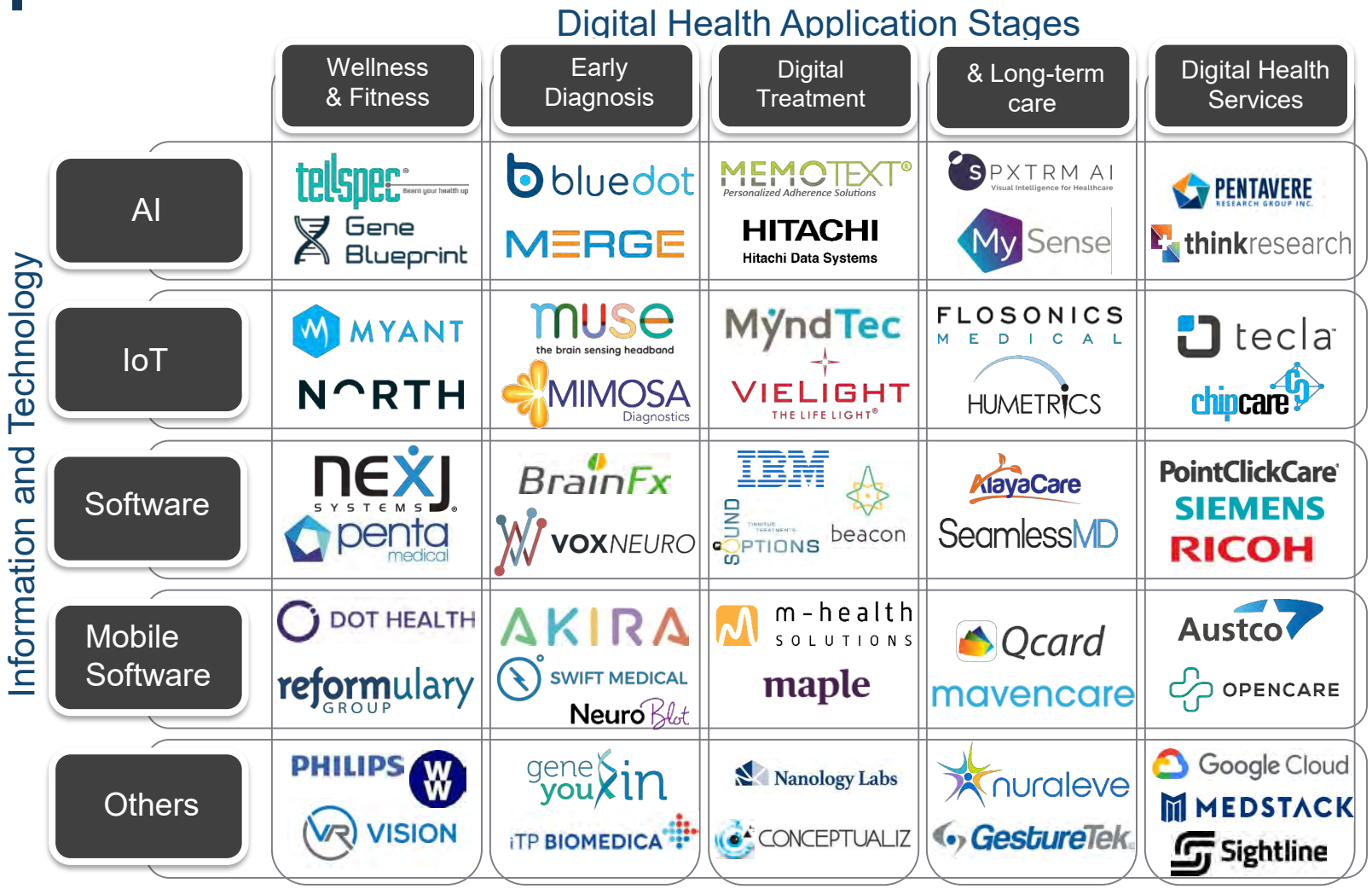
Digital Health Companies in Ontario

- Ontario has **more than 300 digital health companies.**
- BlueDot, based in Toronto and started by a University of Toronto professor, used AI to predict the COVID-19 outbreak before the WHO.
- PointClickCare, an Ontario company, is a world leader in EMR solutions for long-term care homes.



*Please note that the above companies may operate in multiple categories. Classification conducted in a simplified manner and may not represent all activities of the companies.

ONTARIO CANADA | OPEN FOR BUSINESS

Healthcare Reforms Present an Opportunity

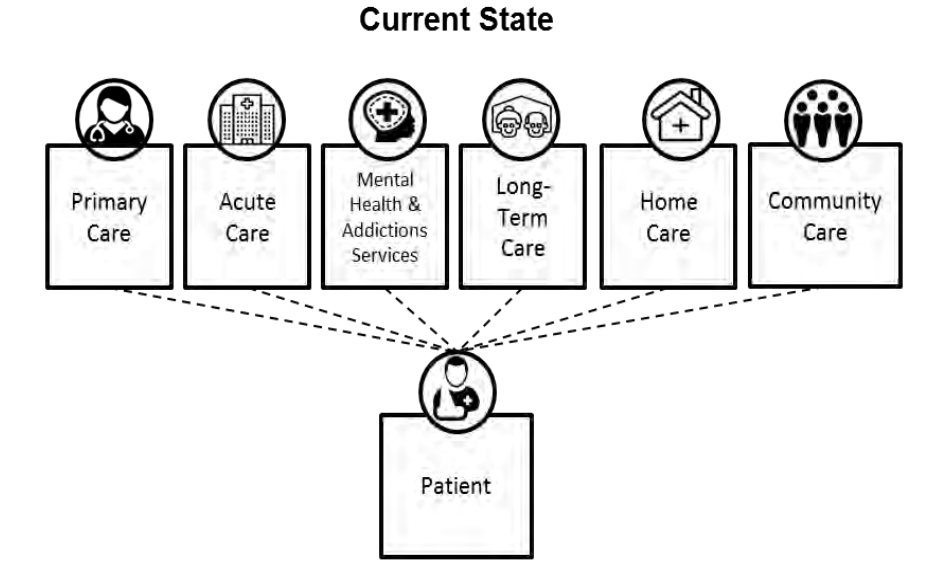
The establishment of Ontario Health Teams (OHTs) as part of the government's plan to build a modern, sustainable and integrated health care system (Started in February 2019, on going).

Developing the Digital First for Health Strategy and releasing **Ontario Health Teams: Digital Health Playbook** to help OHTs build their digital health plan and capacity.

Making effort to modernize the *Personal Health Information Protection Act, 2004* and subsequent regulations to promote patients' access to their personal health information in a secure manner.

Approving new temporary physician billing codes to enable doctors to continue to provide routine health care services by video and telephone, including assessment of possible COVID-19 symptoms.

Developing a new health data platform (the Ontario Health Data Platform) to allow researchers to better support health system planning and responsiveness for COVID-19.



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Contact Ontario's Life Sciences Team

Alison McConnell
Manager
E: Alison.McConnell@Ontario.ca
C: +1 647-924-0301

Karin Goegginger
Team Lead
E: Karin.Goegginger@ontario.ca
C: +1 416 456 4626

Michael Mathiu
Senior Account Executive
E: Michael.Mathiu@Ontario.ca
C: +1 (416) 679-8829

Jenny Ge
Senior Sector Advisor
E: Jenny.Ge2@ontario.ca
C: +1 647 802-2959

Keith Jarvie
Senior Sector Advisor
E: Keith.Jarvie@Ontario.ca
C: +1 (647) 522-1185

Stephen Bahnesli
Senior Account Executive
E: Stephen.Bahnesli@Ontario.ca
C: +1 (647) 983-5176

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ONTARIO CANADA | OPEN FOR BUSINESS

APPENDIX

Government Incentive Programs

Competitive Tax Rates

Ontario's tax regime fosters a strong business climate for your business growth.

	Ontario	Quebec	Massachusetts
Combined Corporate Tax (Federal and Provincial)	**25.0%** (M&P)* **26.5%** (General)	**26.5%** (General)	**27.320%** (General)
Sales Tax	**13%**** (General goods)	**9.975%** (Quebec Sales Tax), **14.975%** (Combined)	**6.25%** (State Local and Combined)

* Manufacturing and Processing

** The Harmonized Sales Tax (HST) is a value-added tax that offers a competitive advantage for business as it allows most businesses that pay HST on their inputs to net this amount off the HST they collect and remit to the government. In comparison, U.S. states sales taxes does not generally permit businesses to recover the sales tax they pay on inputs retaining the business burden of these taxes.

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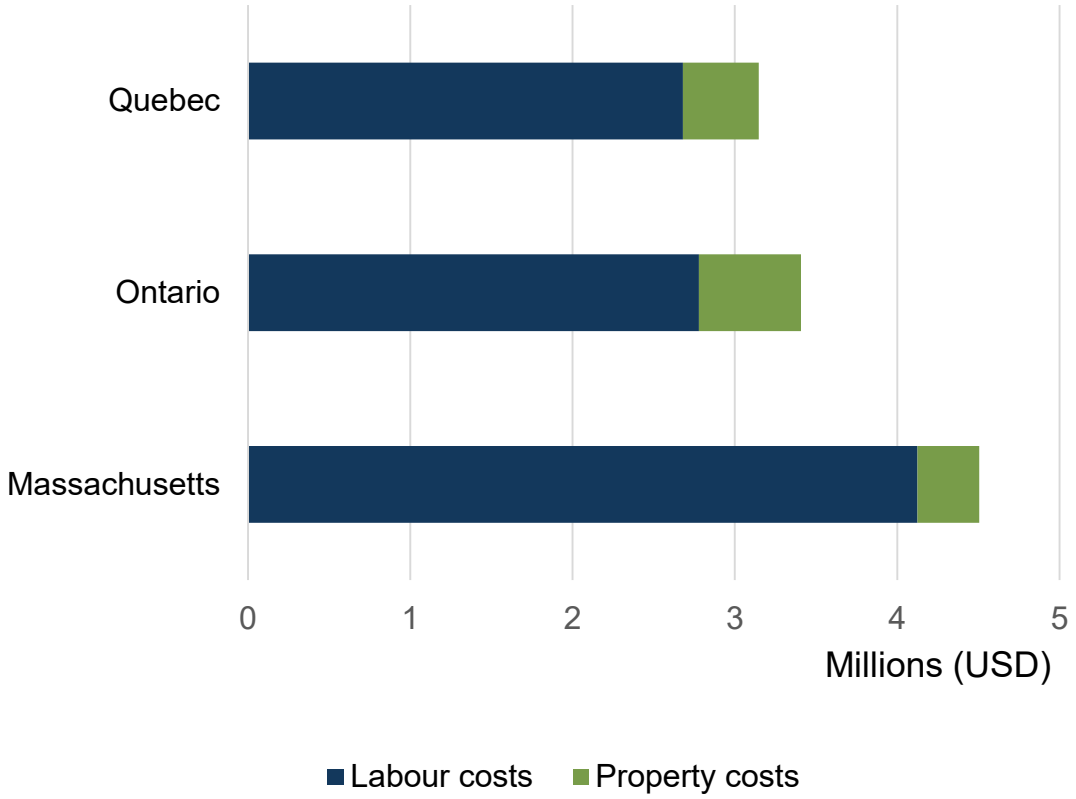
Source: Government of Ontario Commissioned study by Ernst and Young, Ontario Ministry of Finance, Tax Foundation (2020)

Note: Where discrepancies are noted between the above information and the information available at sourced online government websites , the latter will govern.

Lower Business Costs

Setting up a biomanufacturing facility in Ontario is **comparable** to Quebec and **cheaper** than Massachusetts.

Total Cost Overview



Location	Total costs	Labour costs	Property costs
Quebec	$3,147,244	$2,680,619	$466,624
Ontario	$3,407,706	$2,777,645	$630,061
Massachusetts	$4,504,717	$4,125,685	$379,032

All costs shown in USD - United States Dollar (0.75 USD = 1 CAD - February 2020).

ONTARIO CANADA | OPEN FOR BUSINESS

Source: fDi Benchmark from the Financial Times Ltd 2020

Faster Access to Global Talent

Recruit temporary foreign workers:

- The **Global Skills Strategy (GSS)** provides faster access to top global talent for companies bringing new skills to Canada and creating more Canadian jobs.
- **Ontario is a Referral Partner for the GSS**
  - Employers get access to the **dedicated service channel** for specific company needs.
  - Through the **Global Talent Stream**, employers receive Labour Market Impact Assessments in ten (10) business days and work permits in ten (10) business days[1].

Retain long-term foreign talent:

- The **Ontario Immigrant Nominee Program (OINP)** allows Ontario employers to recruit foreign nationals while giving them a pathway to permanent resident status in Canada.

ONTARIO CANADA | OPEN FOR BUSINESS

[1] Immigration, Refugees and Citizenship Canada, 2017

GROW

REPAYABLE CONTRIBUTION/ GRANTS

- Strategic Innovation Fund
- Business Scale-up And Productivity
- Regional Funds Southwestern Ontario Development Fund (SWODF)
- Regional Funds Eastern Ontario Development Fund (EODF)
- Capital Cost Allowance
- Save-on-Energy
- Industrial Conservation Initiative
- Natural Gas

INNOVATE

TAX CREDITS

- Scientific Research and Experimental Development Tax Incentive Program
- Ontario Research and Development Tax Credit
- Ontario Innovation Tax Credit
- Ontario Business Research Institute Tax Credit

GRANTS

- Mitacs Elevate
- Mitacs Accelerate
- Sustainable Development Technology Fund

HIRE

REPAYABLE CONTRIBUTION

- Industrial Research Assistance Program (IRAP)

WAGE SUBSIDY

- Science Horizons Youth Internship Program

TAX CREDITS & BONUSES

- Apprenticeship Job Creation Tax Credit
- Apprenticeship Training Tax Credit
- Apprenticeship Employer Signing Bonus
- Co-operative Education Tax Credit

TRAIN

GRANTS

- Canada-Ontario Job Grant
- Student Work Placemat
- Engage Grants
- Applied Research and Development Grants

GROW FOR LESS IN ONTARIO – FEDERAL PROGRAMS

Federal Programs	Description	Funding
Strategic Innovation Fund	This federal program is available to Canadian incorporated companies of all sizes, across all of Canada's industrial and technology sectors. • Strategic Innovation Fund can help companies with: 1. Research & Development and Commercialization, 2. Firm Expansion and Growth, 3. Investment Attraction and Reinvestment 4. Collaborative Technology Development and Demonstration	• Stream 1, 2, & 3 - A Canadian incorporated company could receive up to 50% of the costs for eligible activities. Project size is expected to involve **$10 million** or more in requested contribution from Strategic Innovation Fund. Funds secured may be non-repayable in part. • Stream 4- A company could receive up to 50% of eligible costs. Federal contributions are non-repayable. Academic institutions and networks may receive 100% of their eligible costs. Networks may receive 100% of its eligible costs.

Incentives Note: Information provided in this deck is for reference purposes only. Where discrepancies are noted between the financial incentive information in this deck and the information available on the financial program page(s) online, the latter will govern.

GROW FOR LESS IN ONTARIO – FEDERAL PROGRAMS

Federal Programs	Description	Funding
Business Scale-up and Productivity	This federal program helps established Southern Ontario businesses scale-up and assists with the adoption of new, innovative technologies that support productivity, and entry into new markets to help companies become globally competitive.	• The business must be Canadian or provincially incorporated, located in Southern Ontario with a minimum of five (5) full time employees. • This repayable contribution targets investments that range from $500,000 up to a maximum of $10 million per project. Applicants are eligible to receive up to 35% of eligible and supported project costs at no-interest. • Capital, non-capital, labour and expertise costs of project may be eligible for funding. • NOTE: Program is not suitable for new businesses and start ups. Must be existing companies.

Incentives Note: Information provided in this deck is for reference purposes only. Where discrepancies are noted between the financial incentive information in this deck and the information available on the financial program page(s) online, the latter will govern.

GROW FOR LESS IN ONTARIO – PROVINCIAL PROGRAMS

Provincial Program	Description	Funding

Regional Development Program (RDP)
 	
Southwestern Ontario Development Fund
	This Ontario program is available to businesses of all sizes and sectors based in Southwestern Ontario (eg: London, Kitchener and Waterloo) that are expanding operations, improving productivity and becoming more globally competitive. The program also offers the business coordinated access to complementary services like skills and training supports, etc.
	
	The program has defined application rounds. Application opening Round two is from **March 5, 2020-April 20, 2020.**
	
	Southwestern Ontario geographic area
		Businesses:
		• Company must be located in, or plan to locate in, a community in southwestern Ontario and employ a minimum of 10 or more employees with three years of operating experience and financial statements.
		• Company must commit to creating at least 5 new jobs (or 30% increase for companies with fewer than 15 employees)
		• Companies must invest a minimum of $500K that will invest in equipment, technology and/or staff training; and that lead to broad economic impacts and new jobs.
		
		Funding (Grants and/or Loans):
		• Funding amount is up to 15% of eligible project costs.
		• **Loans** - Up to 15% funding to a maximum of $5M, interest free during the project period (up to 4 years). If you achieve your investment and job targets, up to 30% of the loan (to a maximum of $500,000) may be forgiven.
		• **Grants** are available only for specific circumstances, up to 15% to a maximum:
		  • Of $500,000 if your company has fewer than 100 employees and is based in rural Ontario (population of your community is less than 100,000 or population density is less than 100 people per square kilometre)
		  • Of $1,500,000 for strategic projects that are foreign direct investments or from companies competing against other jurisdictions

Incentives Note: Information provided in this deck is for reference purposes only. Where discrepancies are noted between the financial incentive information in this deck and the information available on the financial program page(s) online, the latter will govern.

GROW FOR LESS IN ONTARIO – PROVINCIAL PROGRAMS

Provincial Program	Description	Funding

Regional Development Program (RDP)
 	
Eastern Ontario Development Fund
	This Ontario program is available to businesses of all sizes and sectors based in Eastern Ontario (eg: Ottawa) that are expanding operations, improving productivity and becoming more globally competitive. The program also offers the business coordinated access to complementary services like skills and training supports, etc.
	
	The program has defined application rounds. Application opening Round two is from **March 5, 2020-April 20, 2020**
	
	Eastern Ontario geographic area
		Businesses:
		• Company must be located in, or plan to locate in, a community in Eastern Ontario and employ a minimum of 10 or more employees with three years of operating experience and financial statements.
		• Company must commit to creating at least 5 new jobs (or 30% increase for companies with fewer than 15 employees)
		• Companies must invest a minimum of $500K that will invest in equipment, technology and/or staff training; and that lead to broad economic impacts and new jobs.
		
		Funding (Grants and/or Loans):
		• Funding amount is up to 15% of eligible project costs.
		• **Loans** - Up to 15% funding to a maximum of $5M, interest free during the project period (up to 4 years). If you achieve your investment and job targets, up to 30% of the loan (to a maximum of $500,000) may be forgiven.
		• **Grants** are available only for specific circumstances, up to 15% to a maximum:
		  • Of $500,000 if your company has fewer than 100 employees and is based in rural Ontario (population of your community is less than 100,000 or population density is less than 100 people per square kilometre)
		  • Of $1,500,000 for strategic projects that are foreign direct investments or from companies competing against other jurisdictions

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SET-UP OR GROW FOR LESS IN ONTARIO TAX WRITE-OFFS ON CAPITAL INVESTMENT

The federal Capital Cost Allowance (CCA) system determines the amount of depreciation that can be claimed annually for federal and Ontario income tax purposes.

Programs	Description	Write-Offs
Government of Canada* Provides an increased first-year CCA deduction for property acquired after November 20, 2018. Phases out starting in 2024, and expires for property put into use after 2027.[1]	Manufacturing and Processing Machinery and Equipment	Businesses can immediately **expense the full cost** of machinery and equipment used for the **manufacturing or processing** of goods (class 53).
	Clean Energy Equipment	Businesses can immediately **expense the full cost** of specified clean energy equipment (classes 43.1 and 43.2).
	Accelerated Investment Incentive for other depreciable property	Businesses can claim a **CCA rate of up to 3 times the normal rate** in the first year the asset is put into use.[2]
Ontario Job Creation Investment Incentive (Government of Ontario)	Ontario parallels the immediate expensing measures and the Accelerated Investment Incentive in calculating Ontario taxable income	

Notes

1. The accelerated CCA measures were announced in the federal government's November 2018 Fall Economic Statement. The March 2019 federal budget extended immediate expensing to eligible zero-emission vehicles acquired after March 18, 2019, with the same phase-out period as the measures announced in November 2018. Ontario is also paralleling this immediate write-off.
2. The normal CCA rate for the particular asset class applies for the second and subsequent years that the asset is in use.

SET-UP OR GROW FOR LESS IN ONTARIO TAX WRITE-OFFS ON CAPITAL INVESTMENT

Businesses in Ontario can **free up more capital for investments** in business growth, innovation and productivity by **writing-off a larger share of their capital costs in the year of the investment**

Illustrative Impact of Immediate Expensing and the Accelerated Investment Incentive on Selected Assets		
Depreciable Capital Asset[1]	**Normal First Year CCA Rate[2]**	**First Year CCA Rate with the Enhanced Deduction[3]**
Manufacturing and processing machinery and equipment	25%	100%
Clean energy equipment	25%	100%
Computer software	50%	100%
Computers	27.5%	82.5%
Trucks and tractors for hauling freight	20%	60%
Motor vehicles	15%	45%
Data network infrastructure equipment	15%	45%
Office equipment	10%	30%
Fibre-optic cables	6%	18%
Buildings used in manufacturing and processing	5%	15%
Other non-residential buildings	3%	9%
Goodwill	2.5%	7.5%

Source: 2018 Government of Canada Fall Economic Statement

1. The CCA rate for a particular asset is determined by the rate for the applicable class of depreciable property.
2. The CCA rate in the first year is generally limited to one-half the full year rate that would apply to the asset.
3. Capital Cost Allowance rates in effect under the federal Immediate Expensing, Accelerated Investment Incentive and the Ontario Job Creation Investment Incentive for the period up to 2024. The measures start to phase out in 2024 and expire for property put into use after 2027.

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SET-UP FOR LESS IN ONTARIO TAX WRITE-OFFS ON CAPITAL INVESTMENT

Illustrative Scenario – New Operation:

In 2019, a company sets up a new manufacturing plant in Ontario. This greenfield project involves new facility construction and the purchase of capital assets that are put into use in 2020.

Capital Cost Allowance Deduction in 2020

Capital Asset Acquired	Capital Cost Eligible for CCA	Allowable First Year CCA Deduction	
		Pre CCA Enhancements	Post CCA Enhancements
Manufacturing Building	$10,000,000	$500,000	$1,500,000
Machinery and Equipment	$2,000,000	$500,000	$2,000,000
Clean Energy Equipment	$750,000	$187,500	$750,000
Data Network Infrastructure Equipment	$500,000	$75,000	$225,000
Fibre-Optic Cables	$150,000	$9,000	$27,000
Computers	$100,000	$27,500	$82,500
Computer Software	$50,000	$25,000	$50,000
Office Equipment	$50,000	$5,000	$15,000
Total	**$13,600,000**	**$1,329,000** (i.e., 10% of total capital cost)	**$4,649,500** (i.e., 34% of total capital cost)

Notes on example above:

- All values expressed in Canadian dollars.
- All assets are assumed to be eligible for the federal Immediate Expensing or Accelerated Investment Incentive and the Ontario Job Creation Investment Incentive.
- This example does not consider the impact from any capital assets sold by the manufacturer in 2019, and does not include or consider the impact on taxable income from other tax deductions that may be claimed by the manufacturer.
- This scenario is for illustrative purposes only. FDI Investment Services can facilitate a conversation with an accounting firm.

HIRE FOR LESS IN ONTARIO

Federal Programs	Description	Funding
Apprenticeship Job Creation Tax Credit	This is a non-refundable tax credit given to employers who hire and train an eligible apprentice in a prescribed trade in the first two years of their apprenticeship contract. The contract must be registered with Ontario or the federal government under an apprenticeship certification or licensing program. Includes Red Seal Trades. **Examples:** • Instrumentation and Control Technician • Industrial Electricians	• Businesses may receive 10% of the eligible salaries and wages paid to the eligible apprentice. The maximum claimable credit is $2,000 per year for each eligible apprentice. • An eligible apprentice is someone who is working in a prescribed trade in the first two years of an apprenticeship contract registered with the federal or Ontario government under an apprenticeship program designed to certify or license individuals in the trade. • Trades are not limited to Red Seal Trades.

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HIRE FOR LESS IN ONTARIO

Federal Programs	Description	Funding
Apprenticeship Training Tax Credit	This is a refundable Ontario tax credit available to employers who hire and train eligible Ontario apprentices in certain skilled trades in Ontario's industrial/ manufacturing and motive power during the first 36 months of an apprenticeship program. 120 out of 150 Ontario skilled trades are eligible for this credit.	Businesses may receive **25% of eligible expenditures (30% for small businesses)** made during the first 36 months of an apprenticeship program. **The maximum credit for each apprenticeship is $5,000 per year.**

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HIRE FOR LESS IN ONTARIO

Federal Programs	Description	Funding
Apprenticeship Employer Signing Bonus	This Ontario incentive is intended to encourage employers to hire, register and train apprentices in skilled trades in Ontario. **Examples:** • Process Operator — Refinery, Chemical and Liquid Processes • Facilities Mechanic • Facilities Technician • General Machinist • Industrial Electrician	• Eligible employers who hire, register and train apprentices using Employment Ontario's Employment Service Job Matching, Placement and Incentives service could be eligible to receive a **$2,000 one time signing bonus per apprentice. There is no limit to amount of apprentices** a company can hire per year as long as all requirements are met. • Employers must have an Ontario establishment, be a **registered member of the Ontario Colleges of Trade** and have the facilities, people (supervisors) and equipment needed to provide the training to the hired apprentice. • Apprentices can be hired through job bank postings, Employment Ontario or Ontario Youth Apprenticeship program. • The apprentice can be from Ontario or across Canada, must be 16 years old and meet minimum educational requirements of the trade.

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HIRE FOR LESS IN ONTARIO

Program	Description	Funding
Co-operative Education Tax Credit	A refundable tax credit available to employers who hire students enrolled in a co-operative education program at an Ontario university or college. The Coop Program Directory can help identify diversity of coop programs **(undergraduate, Masters, PhD)** available at Ontario universities and colleges. **Examples:** • Chemical Laboratory Technology - Science Laboratory • Biotechnology, Biochemistry • Honours Life Sciences Co-op • Computer Science	Financial assistance for companies to hire Ontario university and college students enrolled in a post-secondary co-operative education program – **25% to 30% refundable up to $3,000**. Most work placements are for a minimum employment period of 10 weeks up to a maximum of 4 months.

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HIRE FOR LESS IN ONTARIO

Program	Description	Funding
Industrial Research Assistance Program Youth Employment Program	This federal program allows small and medium sized (SMEs) companies of all sectors that are looking to develop new products or improve their technical production processes to hire an intern to work on (R&D) innovation projects.	• SMEs that are incorporated, for-profit with 500 or less full-time employees are eligible for a **maximum contribution funding of $30,000 per youth candidate to cover up to 100% of youth salary costs.** • Intern must be a post-secondary graduate between 15 – 30 years of age.

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HIRE FOR LESS IN ONTARIO

Program	Description	Funding
Canada-Ontario Job Grant	The Canada-Ontario Job Grant supports Canadian businesses to train new or existing employees to excel and succeed in jobs that need to be filled. **Training is employer-driven and third-party service provider delivered.**	• Companies with more than 100 employees may receive up **1/2 of eligible training costs, for a maximum of $10,000** for a job that is also located in Ontario. • Companies that employ less than 100 employees need to contribute **1/6 of eligible training costs, for a maximum of $10,000 per person trained in Ontario.** • Eligible training costs include tuition or other training provider fees, textbooks, software and other required materials. • Note: there is no limit on the number of employees for training that can be covered in an application.

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HIRE FOR LESS IN ONTARIO

Program	Description	Funding
Student Work Placemat Program (SWPP)	The Student Work Placement Program (SWPP) gives Canadian companies access to funds and hire students registered in STEM or business and all other programs at Canadian post-secondary institutions.	• Canadian incorporated company must hire a student for a full-time position (37.5 hours/week), 5 days a week for a minimum of 16 weeks. • Company must cover the cost of a co-op student's salary by 50%, up to a maximum of $5,000 and 70% up to a maximum of $7,000 for first-year students and under-represented groups (women in STEM, indigenous students, persons with disabilities, and newcomers).

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HIRE FOR LESS IN ONTARIO

Program	Description	Funding
Science Horizons Youth Internship Program	The Science Horizons Youth Internship Program is wage subsidy program that gives Canadian companies access to recent graduates eligible to work in science, technology, engineering, or mathematics (STEM) fields.	• Canadian incorporated company must hire a student for a full-time position (37.5 hours/week), 5 days a week for a minimum of 6-12 months. • The Canadian company could receive up to a maximum of $15,000 in wage subsidies to help hire STEM graduate talent the company needs. • Company must contribute a minimum of 50% of the total cost of each internship • Please note: The wages for this position must not be funded by another federally-funded program like IRAP, Mitacs, etc.

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HIRE FOR LESS IN ONTARIO

Program	Description	Funding
College and Community Innovation Program - Engage Grants Natural Sciences and Engineering Research Council of Canada (NSERC)	Engage Grants are designed to provide Canadian companies access to the knowledge and expertise available at Canadian colleges. These grants are intended to develop new research partnerships by supporting short-term research and development projects aimed at addressing a company-specific problem.	• **Engage Grants:** o Engage Grants support well-defined research projects undertaken by eligible college researchers and their industrial partners. o A maximum grant of $25,000 over a period of normally six months will be awarded to support the project costs. • **Engage Plus Grant:** o This grant is to provided to companies that wish to or continue the same project with the same Engage team while seeking longer-term support can receive an additional 6 months. o The industrial partner must contribute cash to the direct project costs in an amount at least equal to the amount requested from NSERC. NSERC will match the cash contribution of the partner up to a maximum of $12,500. In-kind contributions are also required to reflect the company's ongoing involvement in the project, but will not be matched by NSERC. o Only one Engage Plus Grant can be awarded as a follow-on to an Engage Grant.

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HIRE FOR LESS IN ONTARIO

Program	Description	Funding
College and Community Innovation Program (CCI) - Applied Research and Development Grants: **Natural Sciences and Engineering Research Council of Canada (NSERC)**	The Applied Research and Development (ARD) Grants are available to Canadian companies with defined research projects along with their private sector partners gain access to knowledge, expertise and capabilities available at Canadian colleges.	• Projects may range from one year to three years in duration. • The company partner(s) must participate in the project and contribute to the direct costs of the applied research and development project. The expected company contributions vary with the grant size: • For grants up to $75,000 per year: The eligible company partner(s) must actively participate and contribute at least half of the amount requested in CCI support, in cash and/or in-kind—of which at least half, i.e., 25% of the requested grant amount, must be in cash. For example, if the application requests $75,000 per year, the company contribution must be at least $37,500 per year, of which a minimum of $18,750 must be in cash. • For grants between $75,000 and $150,000 per year: The eligible company partner(s)'s contribution(s) must be at least equal to the amount requested in CCI support, in cash and/or in kind—of which at least 40% must be in cash.

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INNOVATE FOR LESS IN ONTARIO

Tax Credit	Description	Funding
Scientific Research and Experimental Development Tax Incentive Program (SR&ED)	Canada's SR&ED program is among the most generous tax incentives for research and development in the industrialized world. Canadian companies use this federal tax credit to lower costs for key inputs like salaries/wages, overhead and contracts related to their applied research and experimental development work done for technological advancement.	• A Canadian-controlled private corporation can earn a refundable credit at the rate of 35% on SR&ED expenditures, up to a maximum threshold ($3 million) and at the standard rate of 15% for eligible expenditures above the threshold. • Other corporations can earn a non-refundable credit of 15%. • Credit can be used to offset taxes payable for up to 3 years prior to the year the credit was claimed and up to 20 future years.
Ontario Research and Development Tax Credit (ORDTC)	Ontario offers SR&ED tax credits to supplement the federal tax credit on the same annual claim for federal SR&ED tax credits.	A Canadian corporation based in Ontario can earn a non-refundable credit at the rate of 3.5% on expenditures for SR&ED work done in Ontario to offset corporate income taxes payable.

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INNOVATE FOR LESS IN ONTARIO

Tax Credit	Description	Funding
Ontario Innovation Tax Credit (OITC)	• Ontario offers SR&ED tax credits to supplement the federal tax credit on the same annual claim for federal SR&ED tax credits.	• A Canadian corporation based in Ontario can earn a refundable credit at the rate of 8% on a maximum of $3 million expenditures for SR&ED work done in Ontario to offset corporate income taxes payable. The maximum tax credit amount that can be earned is $240,000. The refundable tax credit rate is applied to the lesser of the corporation's qualified expenditures incurred in Ontario and its annual expenditure limit.
Ontario Business Research Institute Tax Credit (OBRITC)	Ontario offers SR&ED tax credits to supplement the federal tax credit on the same annual claim for federal SR&ED tax credits. This credit is to offset expenditures for SR&ED work performed in Ontario under contract with eligible research institutes (e.g. Ontario universities)	• A Canadian corporation based in Ontario can earn a refundable credit at the rate of 20% on a maximum of $20 million expenditures for SR&ED work done in Ontario to offset corporate income taxes payable. The maximum tax credit amount that can be earned is $4 million.

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INNOVATE FOR LESS IN ONTARIO

Program	Description	Funding
Mitacs Accelerate	An internship program suitable for Ontario research and development projects that need to access steady research talent with operational flexibility, e.g. 1 or more PhD fellows/post-docs for short-term or multi-year projects. Each internship grant starts with a 4-month term and is scaled up to research and development project needs. There is no limit on the number of internships used by a company under Accelerate and applications can be made throughout the year. Note: Mitacs Accelerate International allows a business to get specialized foreign talent as interns from Mitacs's partner countries (France, Israel, and Norway) to undertake R&D projects in Canada.	• Each internship grant starts with a 4-month term and is scaled up to research and development project needs. • An internship is valued at $15,000 per intern per term (4 months). With Mitacs funding, a company pays for only 50% of the cost ($7,500) of each intern's term.

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INNOVATE FOR LESS IN ONTARIO

Program	Description	Funding
Mitacs Elevate	A fellowship program suitable for Ontario companies looking to develop an in-house research and development team and access a talent pipeline of prospective employees (postdocs) matched to their expertise needs. There is no limit on the number of fellowships used by a company under Elevate. Applications can be made throughout the year.	• Each fellowship grant is for a 2-year term. • A fellowship is valued at $60,000 per fellow per year. With Mitacs funding, company pays for only 50% of the cost ($30,000) of each fellow's annual compensation. The fellowship value includes an additional sum of up to $5,000 for the fellow's research equipment, travel and other expenses. • During the 2 years, the fellow also receives corporate finance/management skills development training (valued at $15,000) from Mitacs to develop as a candidate for the company's research and development team.

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INNOVATE FOR LESS IN ONTARIO

Federal Programs	Description	Funding
Sustainable Development Technology Fund (SDTC)	The Sustainable Development Technology Fund is non-repayable grant that supports company projects that are pre-commercial and have the potential to demonstrate significant environmental and economic benefits in one or more of the following areas: climate change, clean air, clean water and clean soil. Please Note: Funding from all levels of government must not surpass 75% of eligible costs.	• The business must be Canadian developing a new technology that will benefit the Canadian market following execution of the project. • SDTC funds, on typically fund, up to 33% and no more than 50% of eligible project (examples of costs: Supplies, equipment, licence fees and permits) costs for any given project. Eligible project costs must be incurred in Canada. • 25% of the eligible costs must be funded through private sector contributions (including in-kind). • The average contribution is $3 million, with funds disbursed in five years or less.

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ENERGY COST REDUCTIONS IN ONTARIO

Programs	Description	Funding
Save-on-Energy	These incentives are intended to help industrial consumers manage and conserve their energy usage better.	Varies according to each project. • Industrial businesses could receive different types of incentives for retrofits, high performance construction etc. with values of incentives varying according to each project. Examples: • Energy Manager – Upon meeting certain conditions, the IESO will provide facilities an upfront payment of $40,000 with an annual total funding cap of $150,000. The energy manager must achieve a minimum energy savings of 1,000 MWh per year, with $40 paid for every megawatt hour saved above 1,000 MWh. • Retrofit Program – Equipment replacement projects for energy-efficiency technology such as lighting and lighting controls, HVAC and VFDs. • Process and Systems Upgrade – Incentives for engineering feasibility studies to determine current energy usage and potential energy-saving opportunities or technologies.

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ENERGY COST REDUCTIONS IN ONTARIO

Programs	Description	Funding
Industrial Conservation Initiative (ICI)	This program is intended to support large electricity consumers. Global adjustment charge is a key cost factor on electricity bills. This program reduces the global adjustment charge on a manufacturer's electricity bill by about one-third as they shift their electricity consumption to off-peak hours. Businesses must register to become an ICI participant.	• ICI participants are charged global adjustment based on their contribution to the "top five peak" demand hours in a year, rather than on the total volume of electricity they consume during a year. • Cost impact varies based on electricity contribution. For example, a manufacturer with an average peak demand of 2 MW that participates in the ICI program could see its electricity price reduced from $154 per MWh to as low as $102 per MWh. This would result in energy cost savings of up to $42,000 per month.

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ENERGY COST REDUCTIONS IN ONTARIO

Programs	Description	Funding
Natural Gas	These incentives are intended to help natural gas industrial consumers manage and conserve their energy usage better.	• Varies according to project and service provider for example: • Enbridge – Commercial Retrofit Program offers commercial businesses one-time incentives of $0.15 per m3 of natural gas saved, up to $100,000, on the implementation of any number of energy-saving measures. Eligible measures include higher efficiency boilers, higher efficiency combination water and space heating systems, better building controls, water conservation and efficient make-up air and ventilation (including ENERGY STAR certified models).

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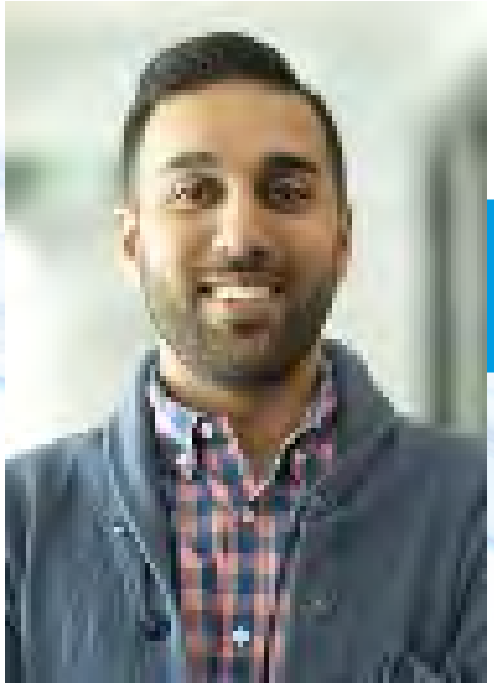
JETRO Toronto iPark Shonan

Startup Pitch



CYCLICA

Cyclica Inc.

Naheed Kurji

Co-Founder, President & CEO

Structure-based and AI-augmented Drug Discovery Platform

Company Overview

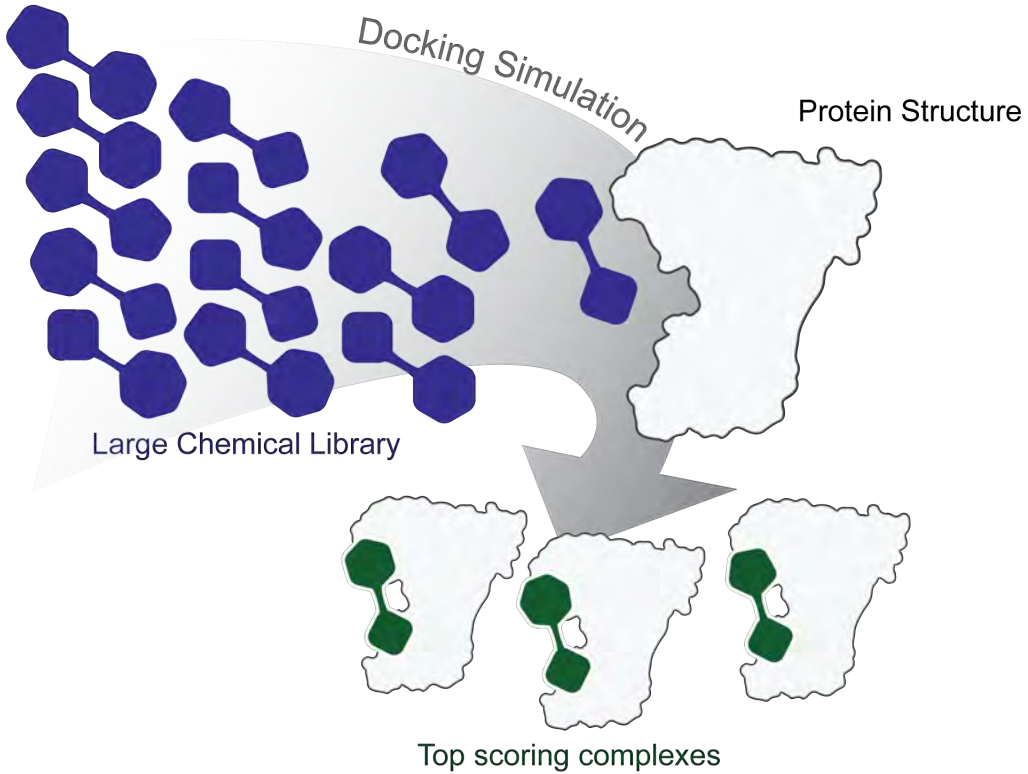
- Operational since 2014
- Technology developed and patented at Cyclica (2014 - ongoing); strong IP position
- Validated and commercialized (2015 - ongoing); working with many top 50 pharma, academic, biotech
- 35+ employees; computational scientists, experimentalists, data scientists, software developers
- CAD$37.5M raised to date (CAD$23M Series B closed in June 2020)

Ranked as a top 100 AI Company Globally (only AI Healthcare company in Canada)

A Top 20 AI-Based Drug Discovery Company in 2018

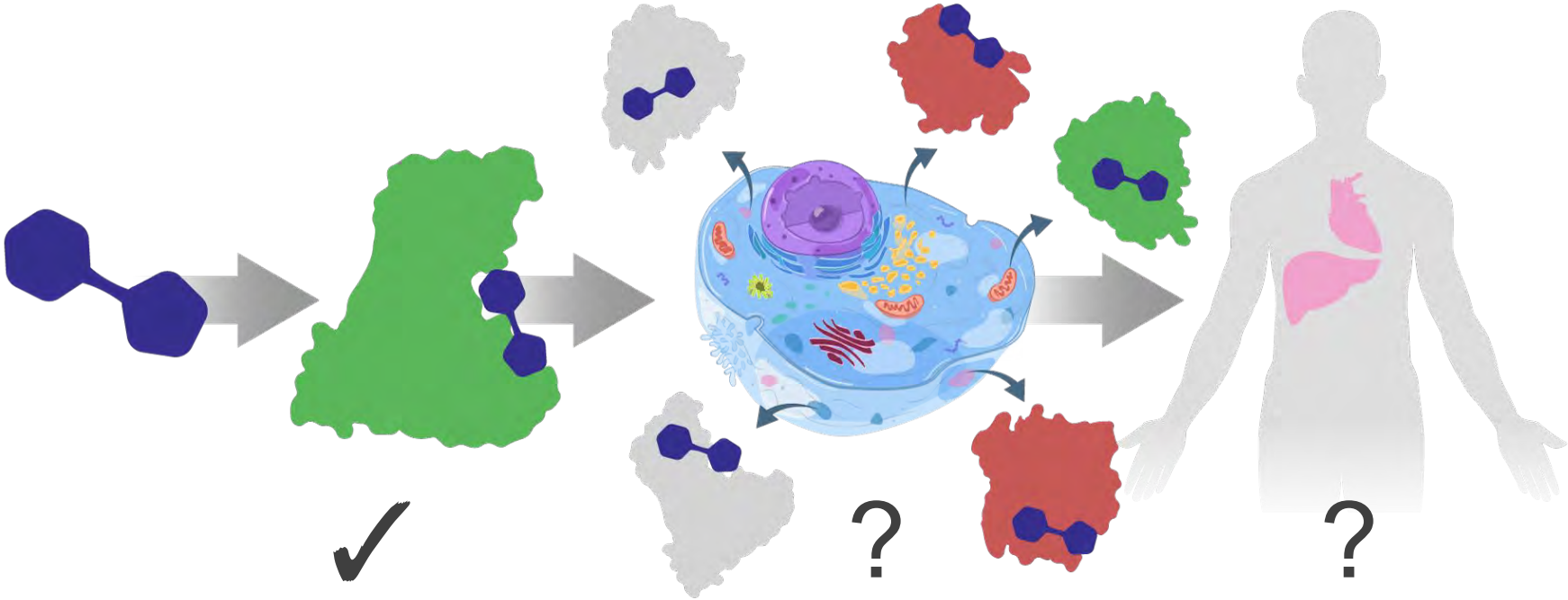
Most Innovative AI-Based Drug Discovery Biotech Company 2020 (Canada)

Classical Target Centric Virtual Screening



Drug Development Pain Points

A small molecule interacts with anywhere from 30 up to 300 separate off-targets.



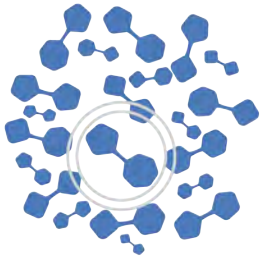
Ligand Design™

Design medicines. Deepen discovery. Drive outcomes.

Rapid Discovery with AI-based Ligand Design

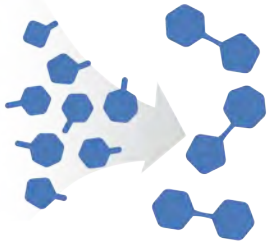
Cyclica's Ligand Design utilizes our deep learning engine, MatchMaker, to assess multiple targets simultaneously and discover active small molecules. Three separate discovery modes provides flexibility in addressing your research questions.

Explore Chemical Space Using Three Modes with Ligand Design:



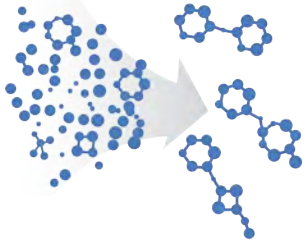
Library Screening

Screen ~4 million diverse and readily purchasable compounds for multiple targets of interest.



Semi-generative

Intelligently explore Enamine's Real Space, an enumerated virtual library consisting of 13^{10} molecules. Molecules are purchasable through Enamine

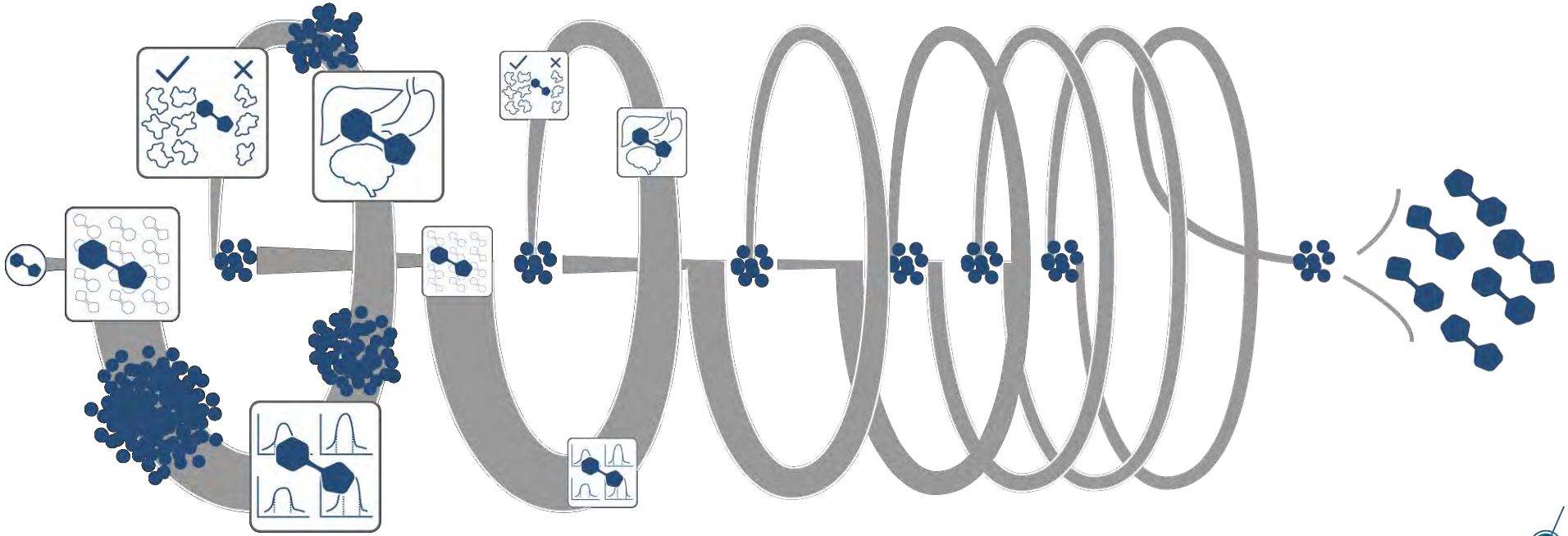


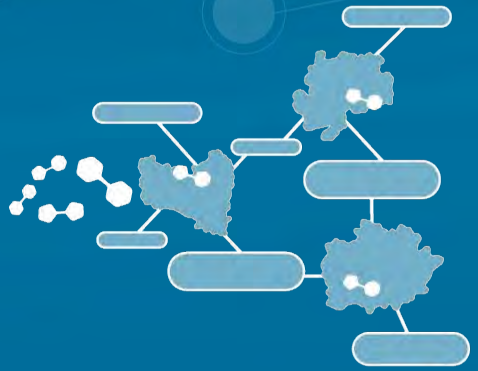
Fully generative

Use Cyclica's fragment library to explore small molecule, drug-like space (~10^{30}). Novel molecules generated by this method requires synthesis

Ligand Design

Using multiple selective pressures to **design** novel compounds optimized to bind/avoid multiple targets, to maintain retrosynthetic rules, and ensure preferred PK properties.



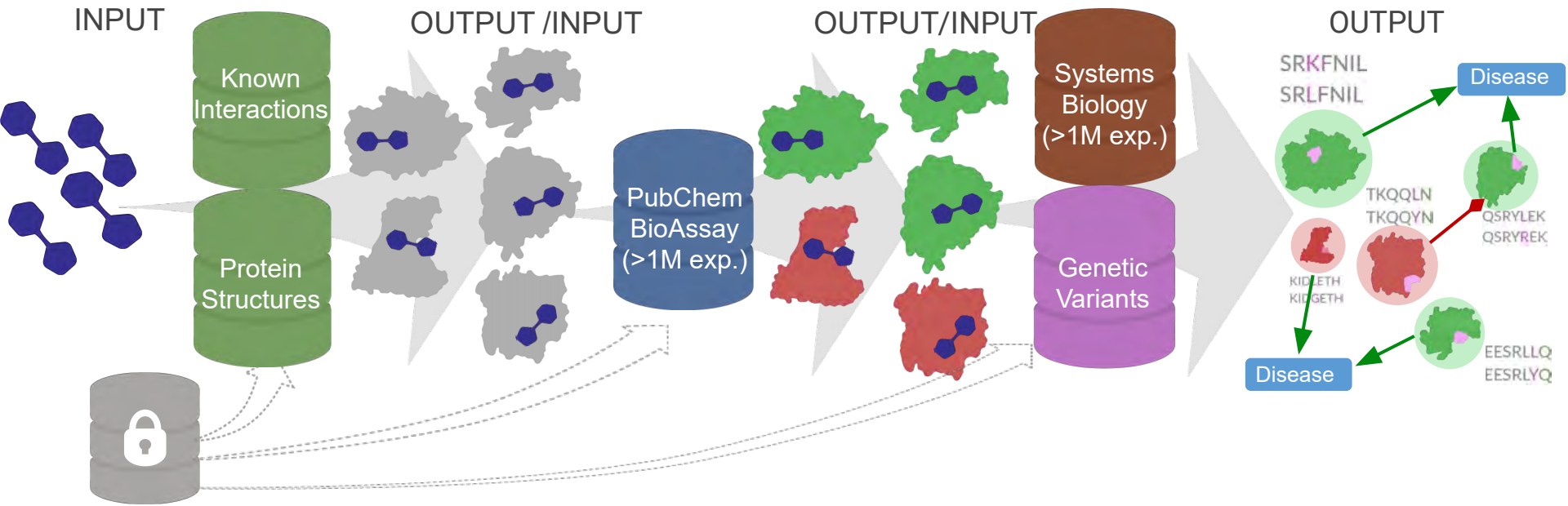


Ligand Express®

Generate insights into a small molecule's polypharmacology
to determine off-target interactions of drugs

Ligand Express® - Powered by MatchMaker™

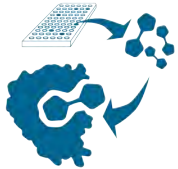
PROTEOME SCREENING EFFECT PREDICTION (AI) NETWORK ANALYSIS



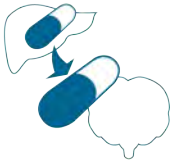
Optional incorporation of client data

Ligand Express: Applications

Use Proteome Screening, Effect Prediction, Network Analysis and the recently integrated Property Prediction to better understand drug molecules

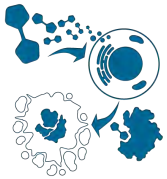


Target Deconvolution



Drug Repurposing

Lead Prioritization



Adverse Effect Elucidation

ADMET Prediction

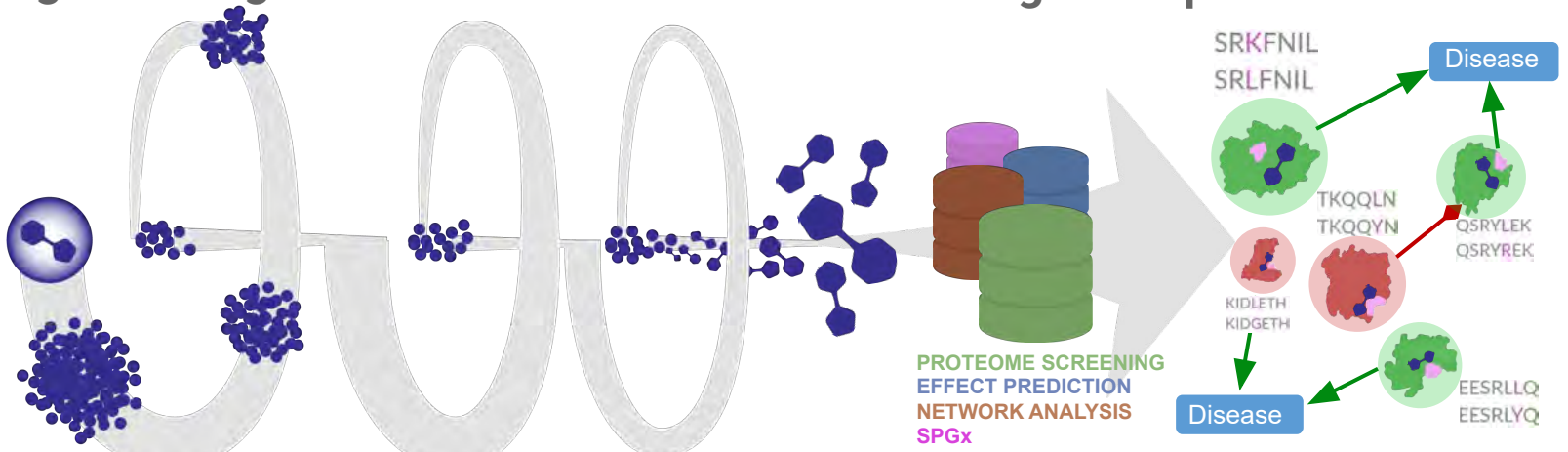
... and more

Integrated Workflow

Design novel compounds to bind a panel of targets and screen for unanticipated off-targets interactions. Powered by **POEM™** and **MatchMaker™**

Ligand Design

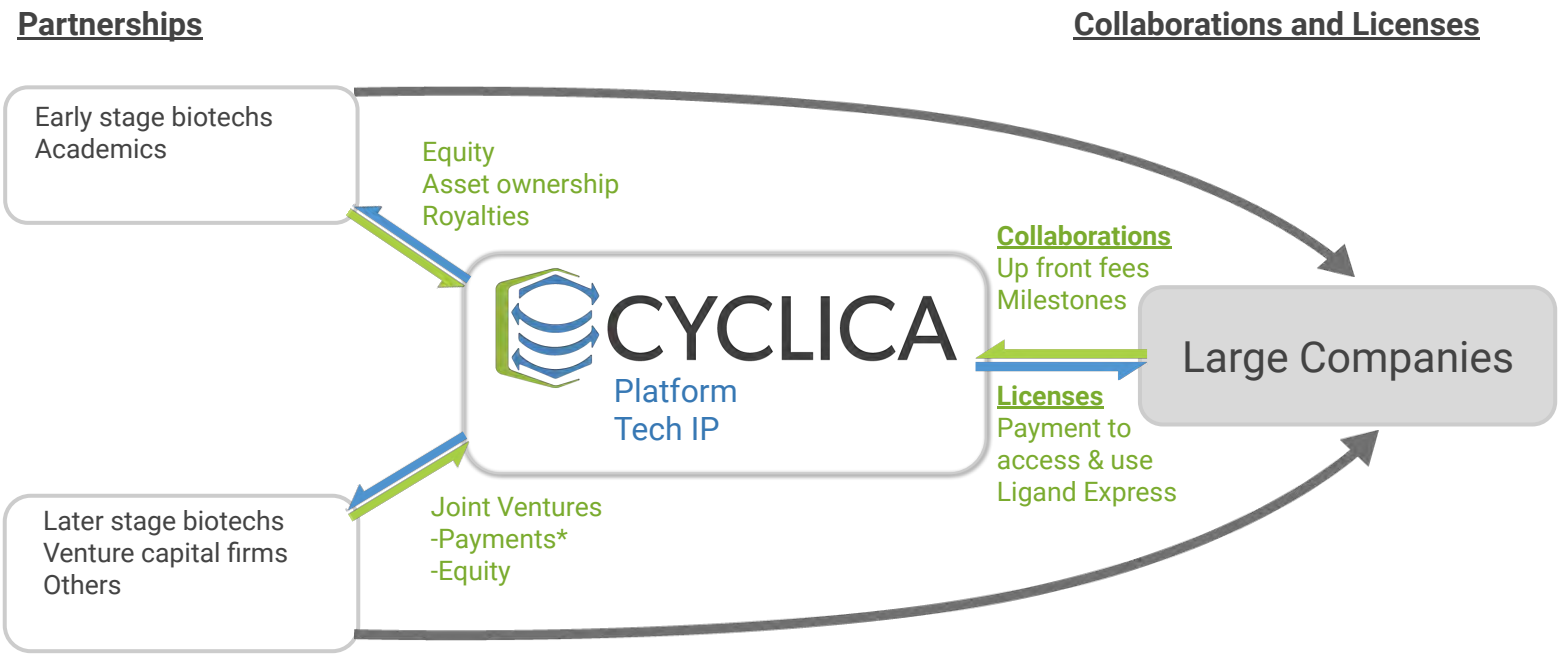
Ligand Express



Selective pressures direct the exploration of chemical space leading to **novel compounds** with favorable properties

Identify **unanticipated** targets via proteome screening, predict modulatory activity, and apply structural pharmacogenomic information

Partnerships, Collaborations, and Licenses



Testimonials

"We are using Cyclica's world-class AI platform for high throughput screening in compound identification and optimization—which we believe can more efficiently identify new therapeutic molecules with symptomatic or disease-modifying potential."

- John Renger, Ph.D., Chief Scientific Officer, Cerevel Therapeutics

"...artificial intelligence applications like Ligand Express® will provide important insights to enhance how we think about target identification to support phenotypic screening and off-target profiling in general...[Their] technology fits well into our increasing focus on phenotypic high-throughput screening, adding a target deconvolution method that takes 3D target information into account, which is a unique feature. "

- Dr. Friedrich Rippmann, Director of Computational Chemistry & Biology

Merck KGaA
Darmstadt, Germany

""We are extremely pleased to be working with Cyclica...our collaboration represents a unique approach that unites two completely novel and complementary approaches...[to] accelerate our ability to build novel EGFR inhibitors...and will thus speed up their implementation in the clinic."

- Dr. Igor Stagljar, Professor, University of Toronto

CYCLICA

Let’s Partner to Advance Your R&D Programs.

207 Queens Quay West
Toronto, Ontario M5J 1A7

www.cyclicarx.com @cyclica naheed.kurji@cyclicarx.com

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Startup Pitch

ovensa

Ovensa Inc.

Stéphane Gagné

President & CEO

WE ARE

A Precision Drug Delivery Company

COLLABORATING

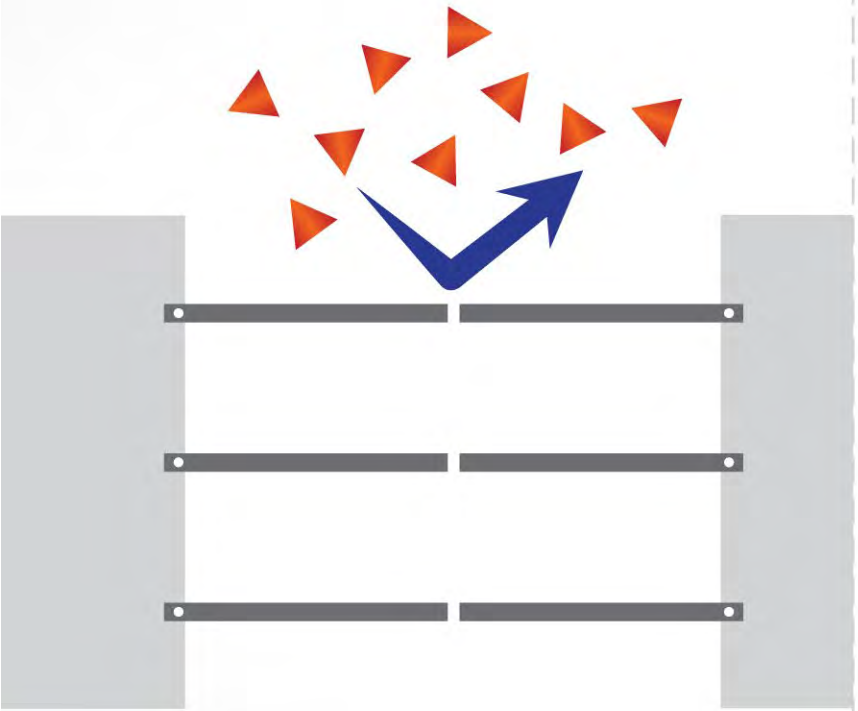
With Biotech & Pharma to cross the BBB, and

FOCUSING ON IMMUNO-ONCO

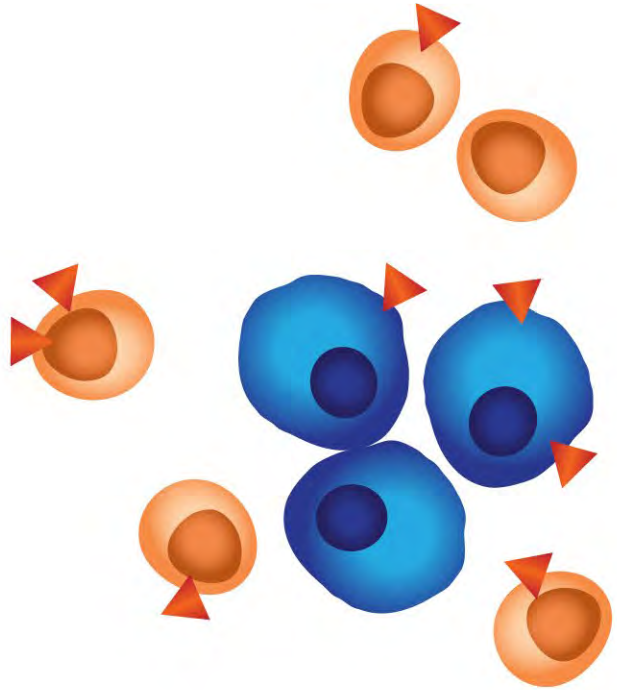
with our siRNA/Gal-1 in Head & Neck Cancer

Challenges with Therapeutics

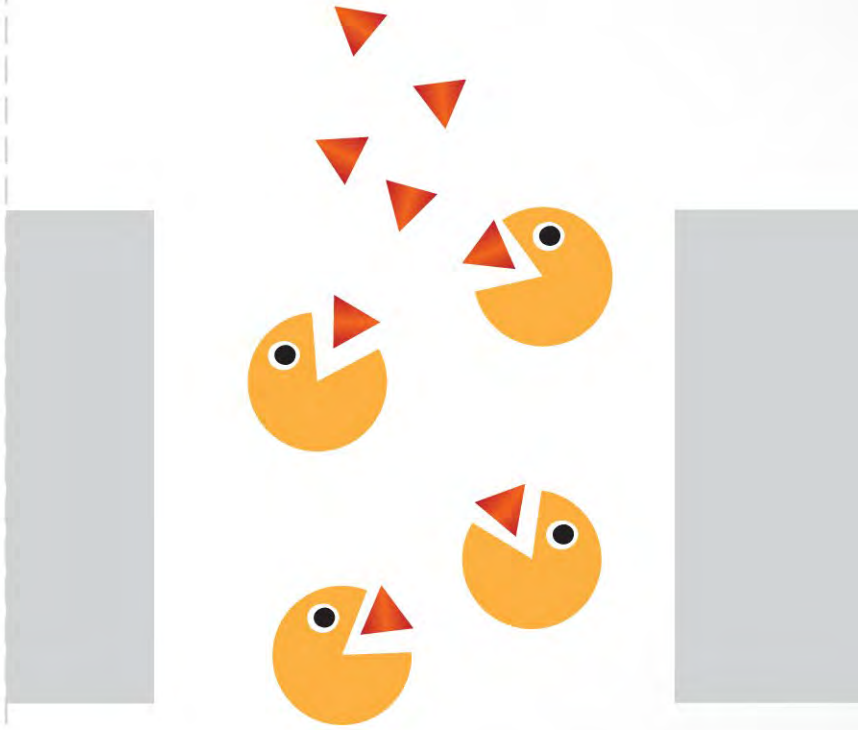
DIFFICULT TO CROSS BARRIERS



AFFECT HEALTHY CELLS

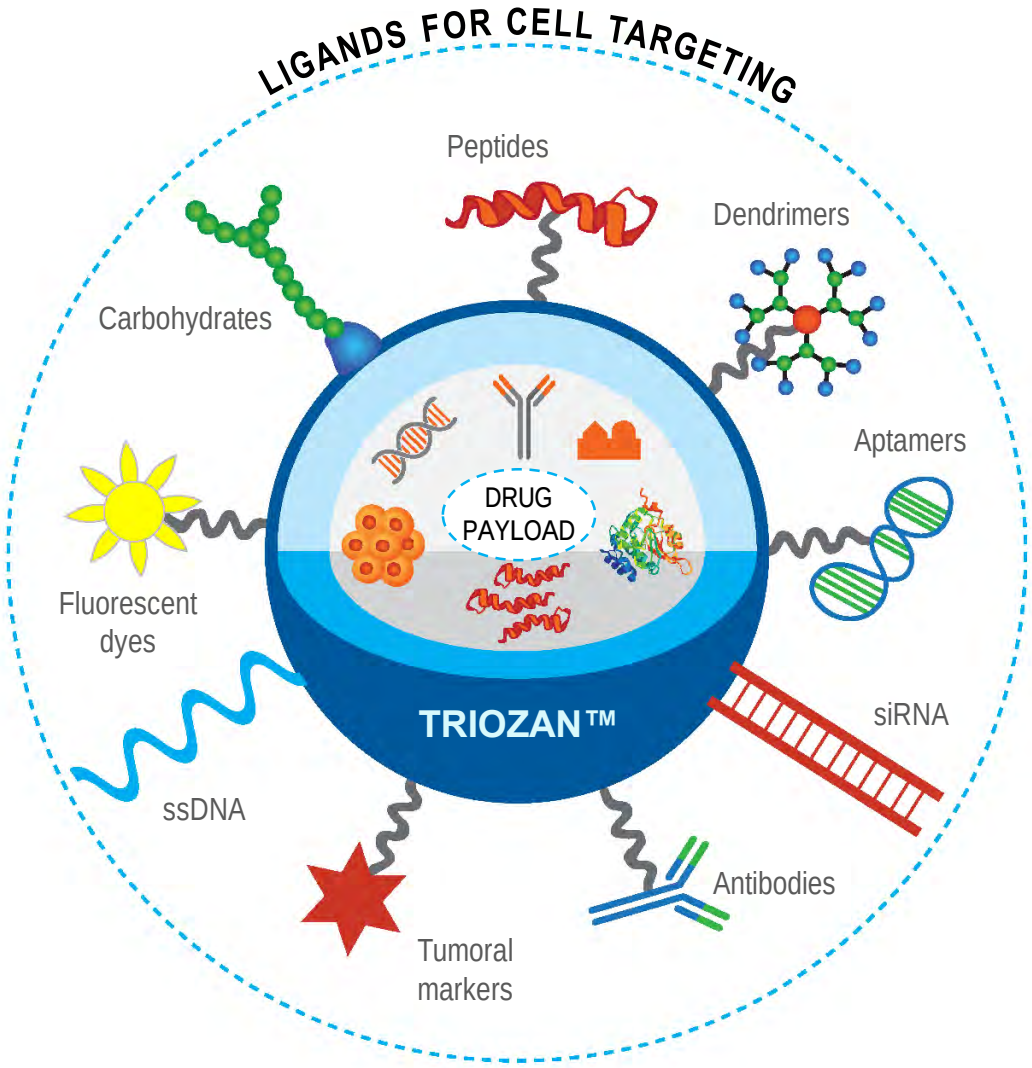


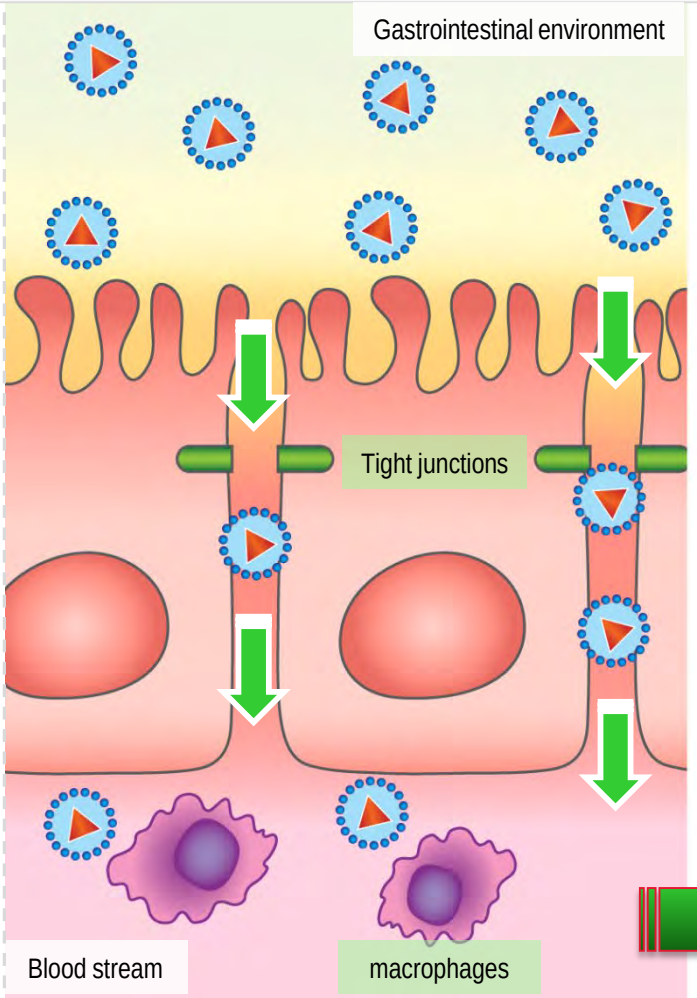
DESTROYED BY NATURAL DEFENSES

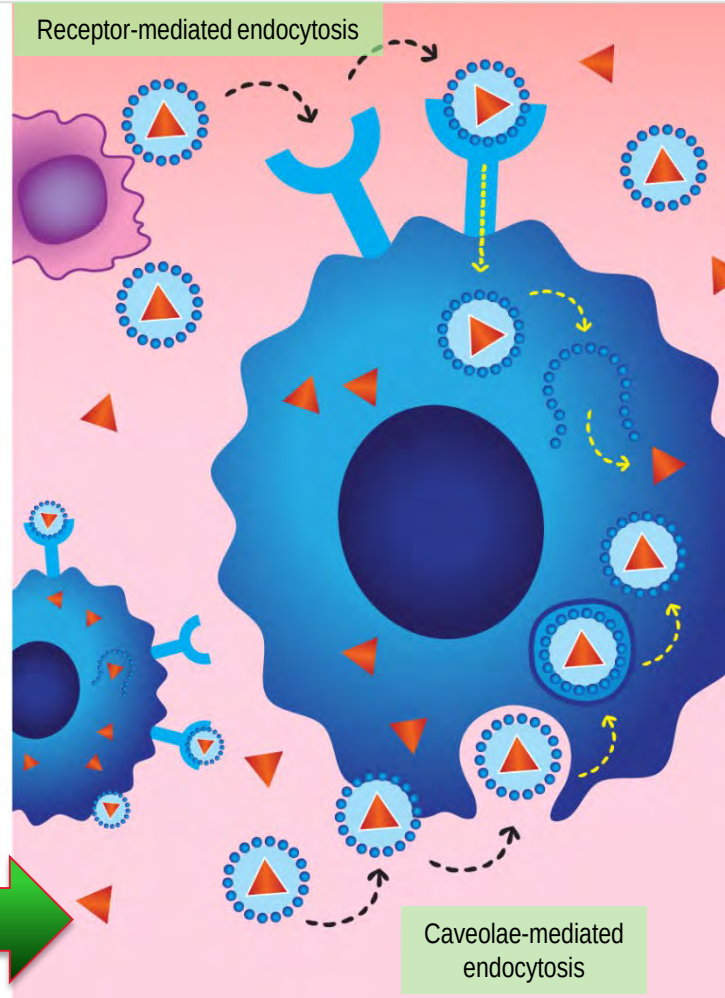


END RESULTS ► Lack efficacy & often see side effects

TRIOZAN™ Platform – Modulating Therapeutic Responses

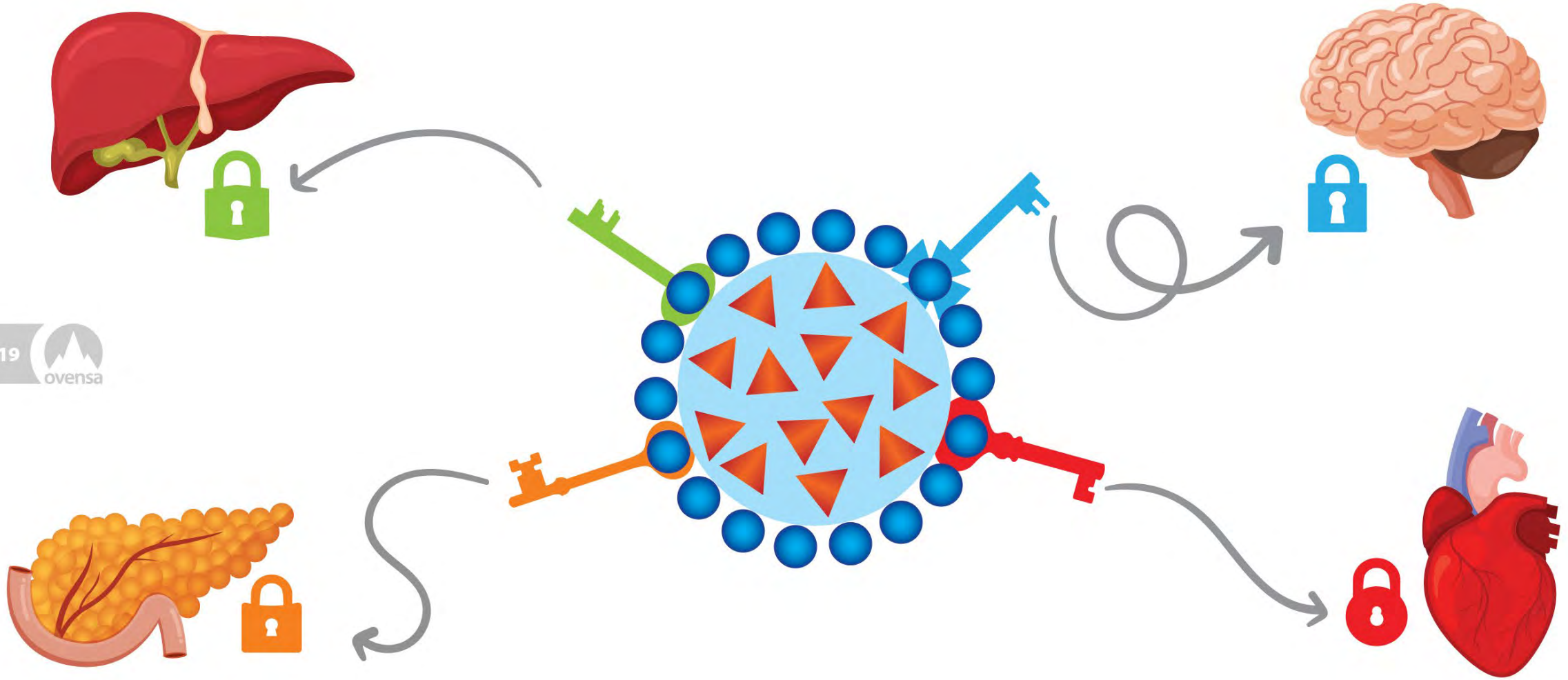




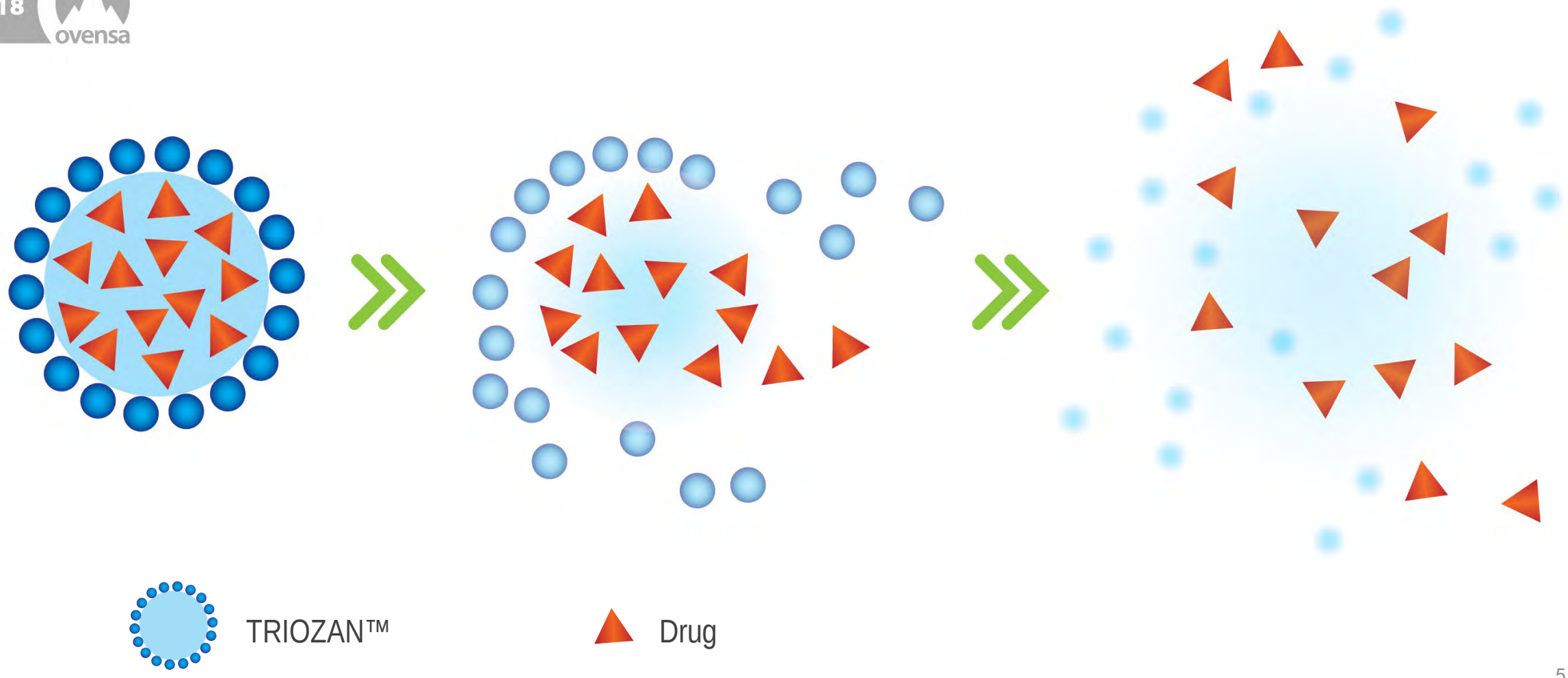


TRIOZAN™ protects the drug and helps cross the barriers (ex. Intestinal, skin) until it reaches the targeted cells and internalize its payload.

TRIOZAN™ Targeted Delivery (Tissue and Cell Specific)



TRIOZAN™ Modulated Release (Quick vs Sustained)



Achieving Brain Targeting for CNS Applications

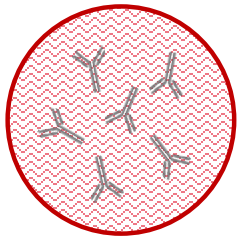
- Use of Various Routes of Administration, AMT & RMT (Internal GPCR Technology and/or External Typical Ligands)

ROUTE OF ADMINISTRATION	BBB PERFORMANCE*
Intraperitoneal	Hypothalamus to Plasma Ratio 33x (Small Molecule Nano)
Intravenous	Significant Improvement (mAb alone & GPCR Ligands Alone Combination)
Intranasal	40% Protein Decrease (siRNA Nanoformulation)
Intra-arterial	5x-30x vs I.V. (Small Molecule vs Nanoformulation)
Intra-arterial	3x-6x (Small Molecule vs Nanoformulation)
Intra-arterial	4x-8x vs Small Molecule Nano (GPCR Ligands Alone & Small Molecule Nano Combination)

* For information purposes only (ongoing optimization)
Ref. Internal Data

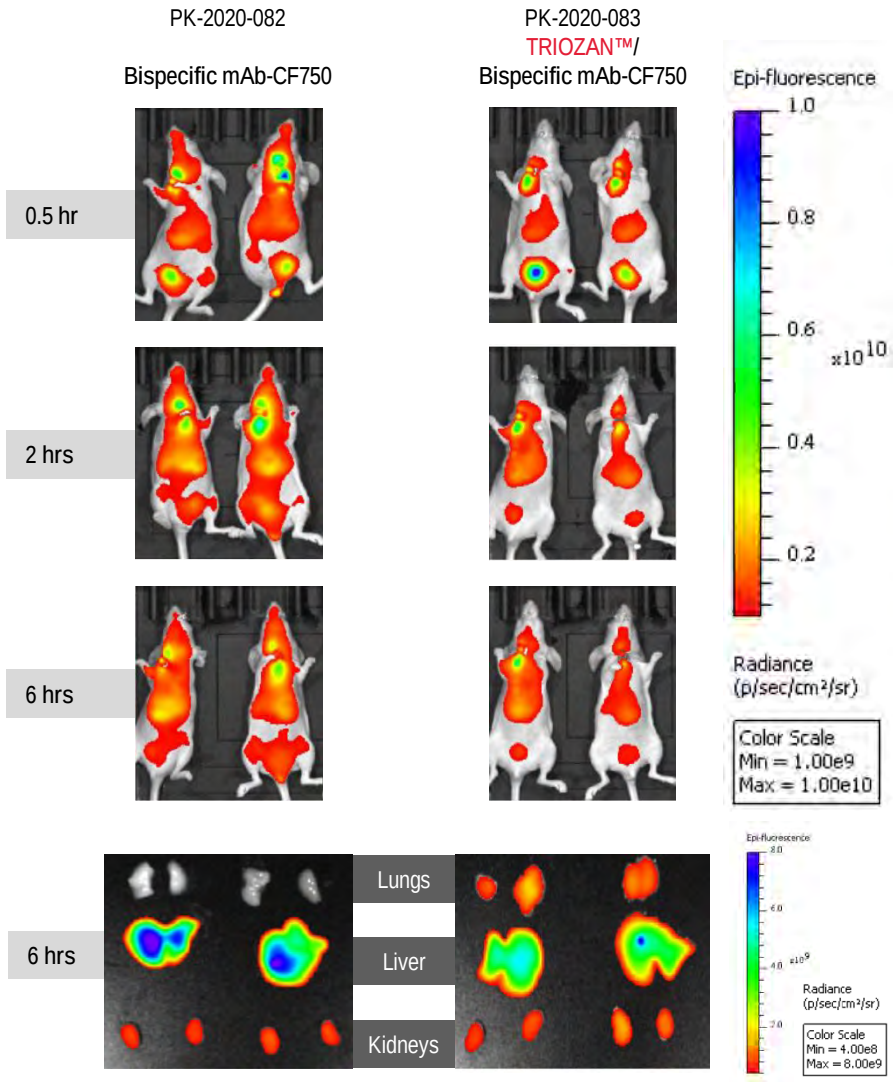
TRIOZAN™/ Bispecific mAb Nanoparticle

Fluorescence Evaluation – Intravenous (IV)



Nanoparticle
TRIOZAN™/
Bispecific mAb

Full Non-Covalent

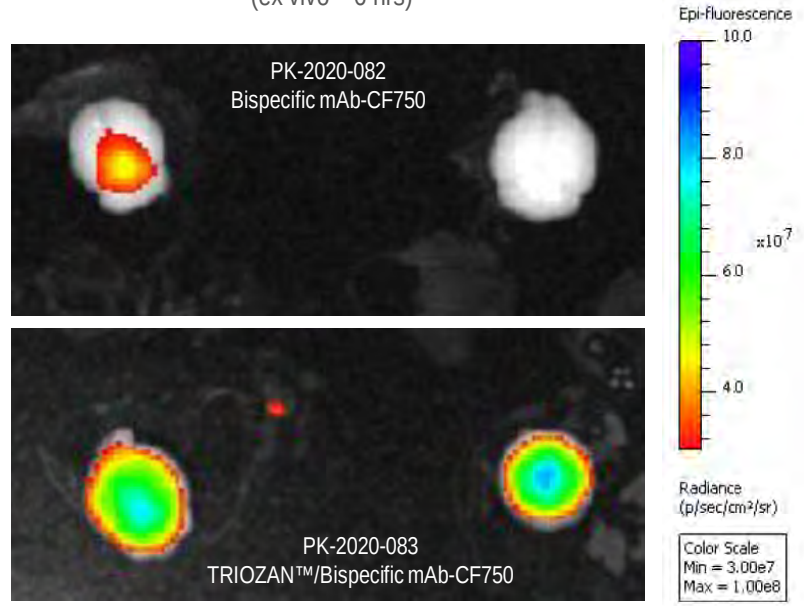


SIGNIFICANT BRAIN DELIVERY

of

TRIOZAN™/Bispecific mAb vs Bispecific mAb

(ex vivo – 6 hrs)



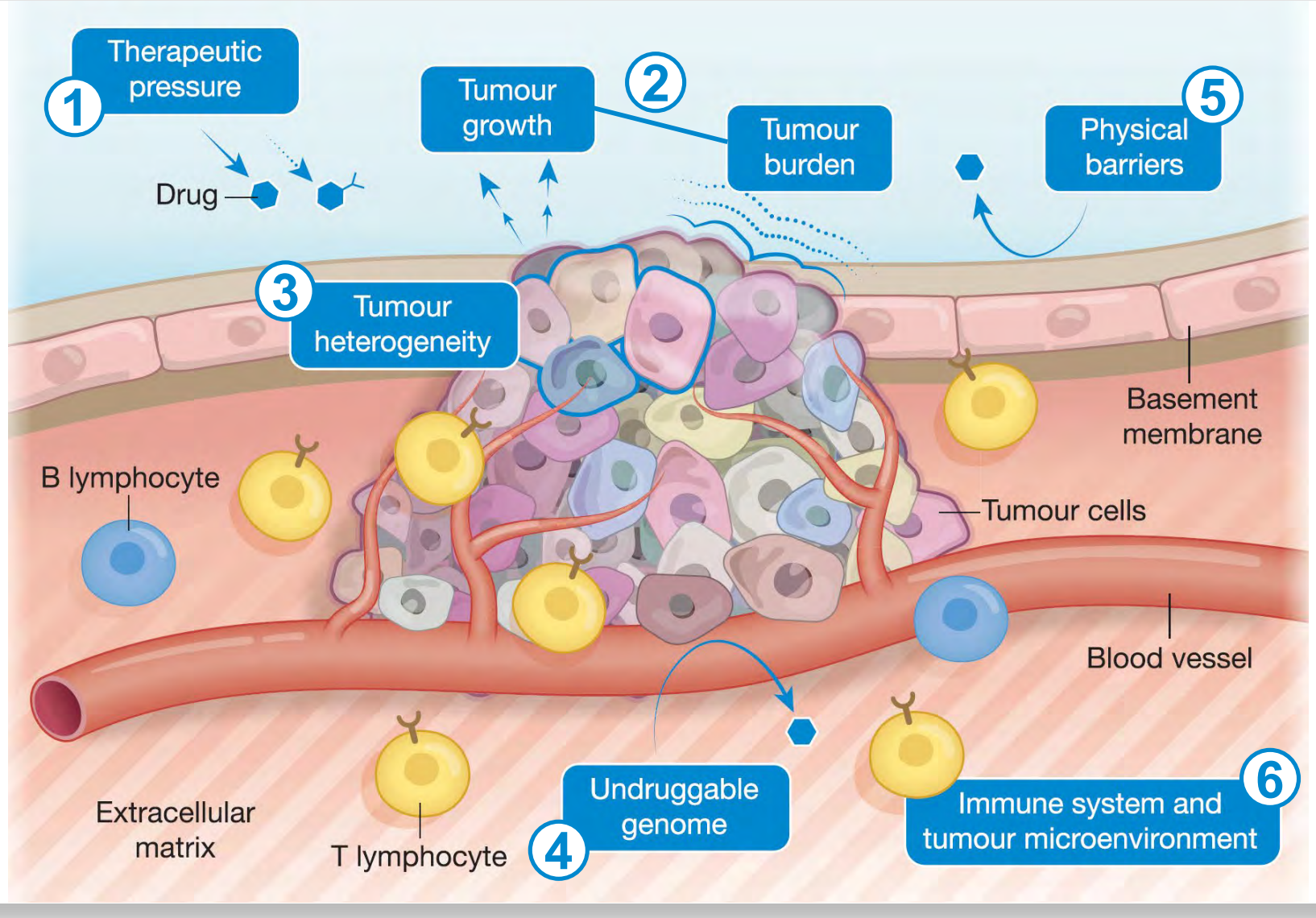
Female Nude CD-1 Mice | mAb (*Bispecific mAb)-CF750 Tag | IVIS

10 mg/kg Bispecific mAb dose | IV Route of Administration

Resistance to Cancer Therapies: Biggest Challenge Today

- Only 13% of patients respond to checkpoint inhibitors

1. Acquired resistance
2. Size & speed highly variable
3. Genetic mutations diversity
4. Powerful oncogenes and tumour suppressor genes – e.g. MYC, RAS, TP53

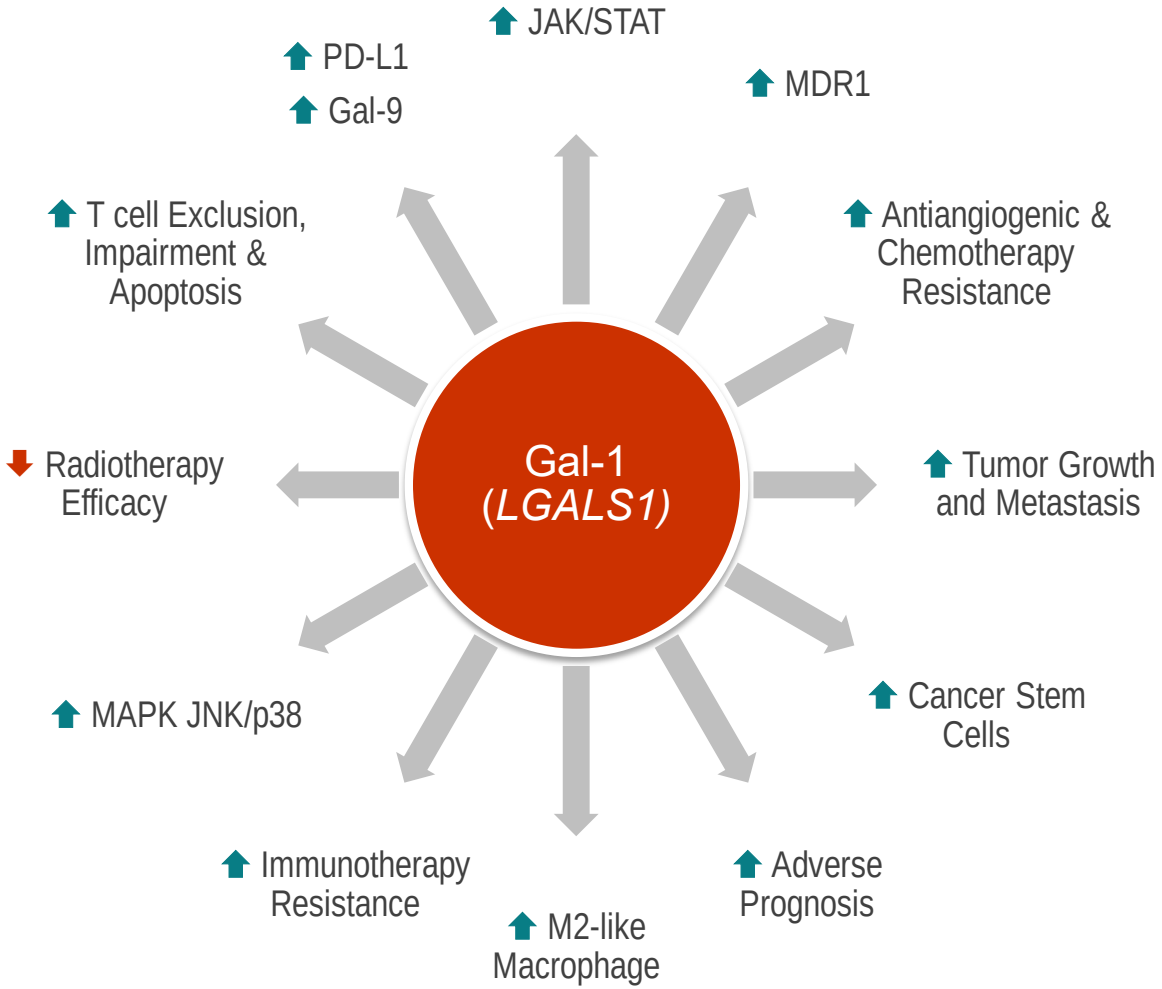


5. Sites difficult to reach such as hypoxia and CNS
6. Immune evasion

Ref. Vasan N, Baselga J, Hyman DM. A view on drug resistance in cancer. *Nature*. 2019;575(7782):299–309. doi:10.1038/s41586-019-1730-1

Galectin-1 (Gal-1)

▶ Overexpressed in TME of Various Cancers – Potential Target to Fight Checkpoint Inhibitor's Resistance



Gal-1 is expressed intracellularly in several cell types:

- Tumor Cells;
- Regulatory T Cells (Tregs);
- CD4+ T Cells,
- CD8+ Cytotoxic T Cells;
- Antigen-Presenting Cells (e.g. Dendritic Cells, Macrophages);
- CD16+ Natural Killer (NK) Cells.

Ref. Nambiar DK, Aguilera T, Cao H, et al. Galectin-1-driven T cell exclusion in the tumor endothelium promotes immunotherapy resistance. J Clin Invest. 2019;129(12):5553–5567. doi:10.1172/JCI129025

TRIOZAN™/siRNA Gal-1 Lead Candidate

▶ Silencing Gal-1 Overexpression through a siRNA Combinational Approach in Head & Neck Cancer

COMBINATION REGIMEN (IV) – MOC2 RODENT MODEL

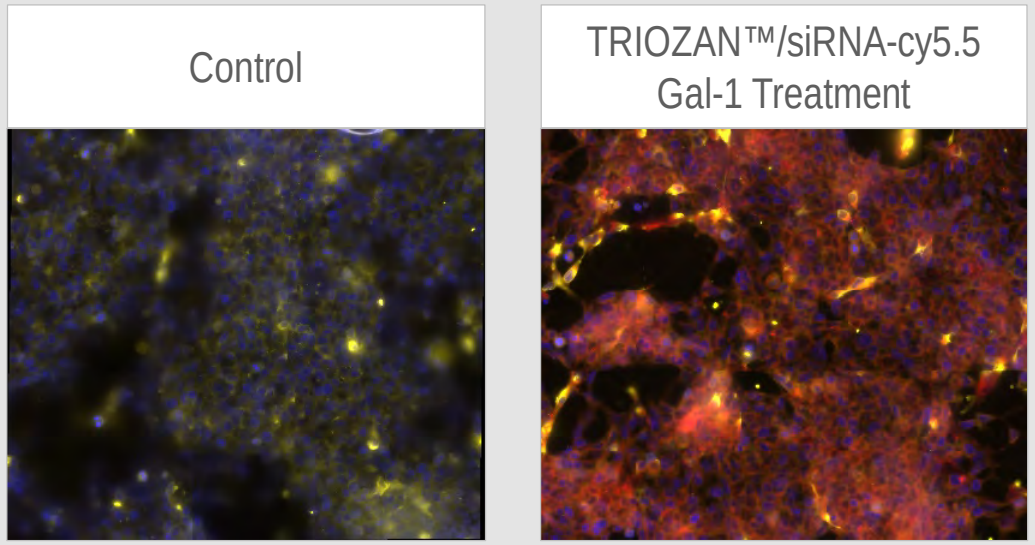
Results to Come

Nanoparticle
TRIOZAN™/siRNA Gal-1

anti-PD-1 mAb

PRELIMINARY DATA SHOWS

- Non lipidic engineering resulting in a high transfection efficiency
- Low cell toxicity
- Safe through IV (rodent - *in vivo*)
- Good size, stability and encapsulation efficiency with control release effect

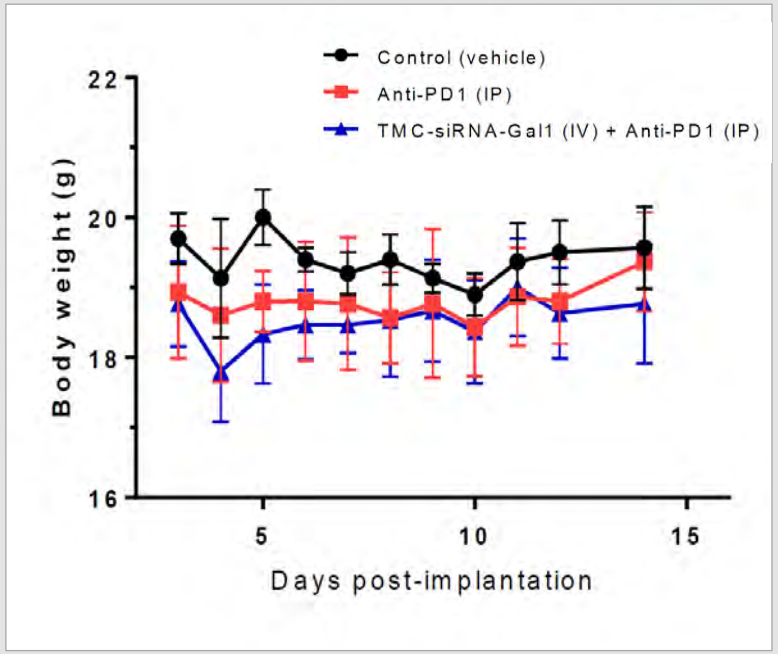


High transfection efficiency of TRIOZAN™/siRNA-cy5.5 Gal-1 in GL261 cells

TRIOZAN™/siRNA Gal-1 Lead Candidate (I.V.)

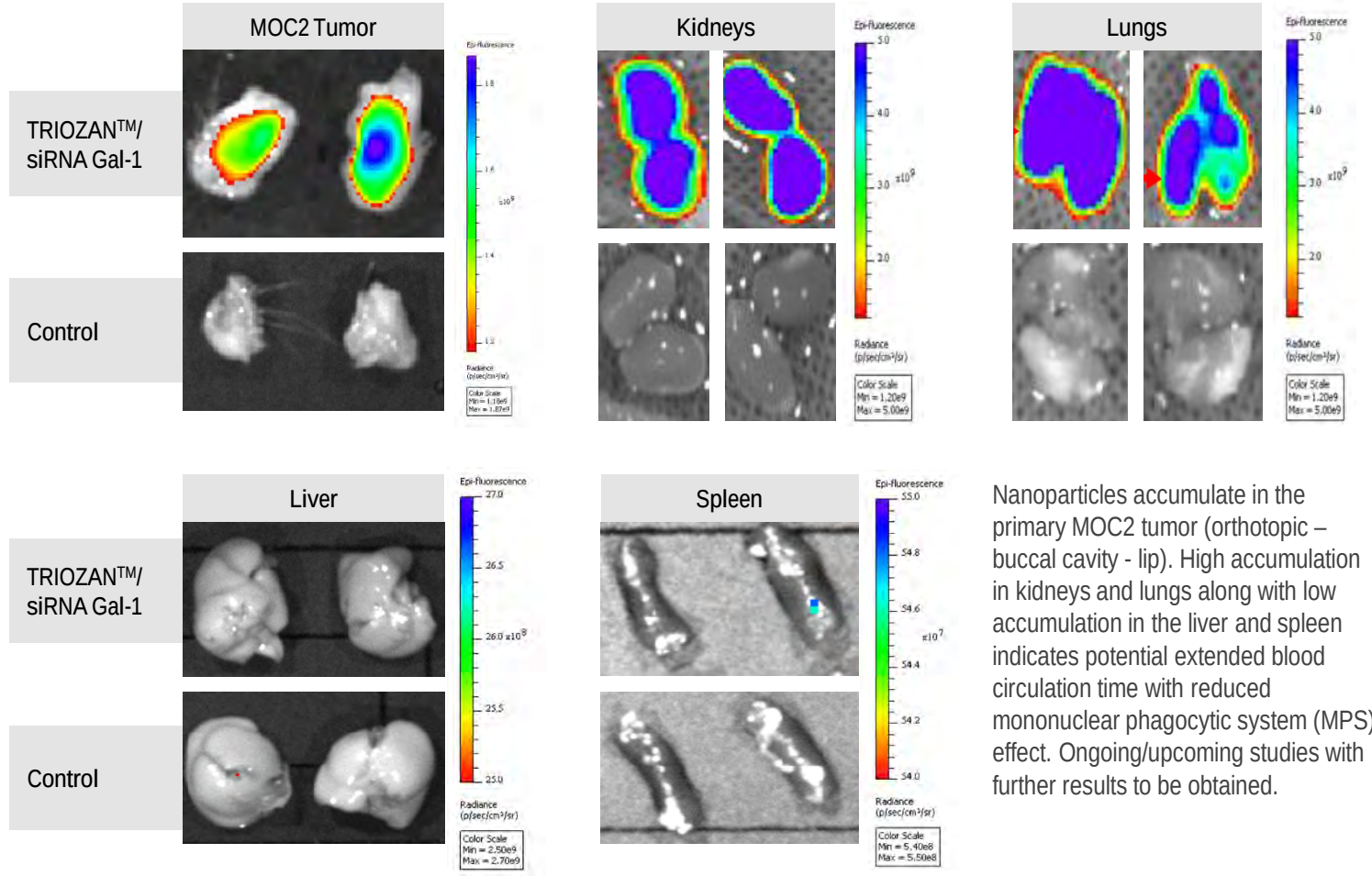
▶ Preliminary Data: Well Tolerated, Accumulation in the Tumor, Kidney, and Lungs in a Head & Neck Model

BODY WEIGHT MONITORING



MOC2 orthotopic xenograft mice model (pilot study; n=3 per group) to evaluate first safety and biodistribution performance insights related to the combination of TRIOZAN™/siRNA Gal-1 (IV) and an anti-PD-1 mAb (IP). The IV administration of TRIOZAN™/siRNA Gal-1 has been well tolerated.

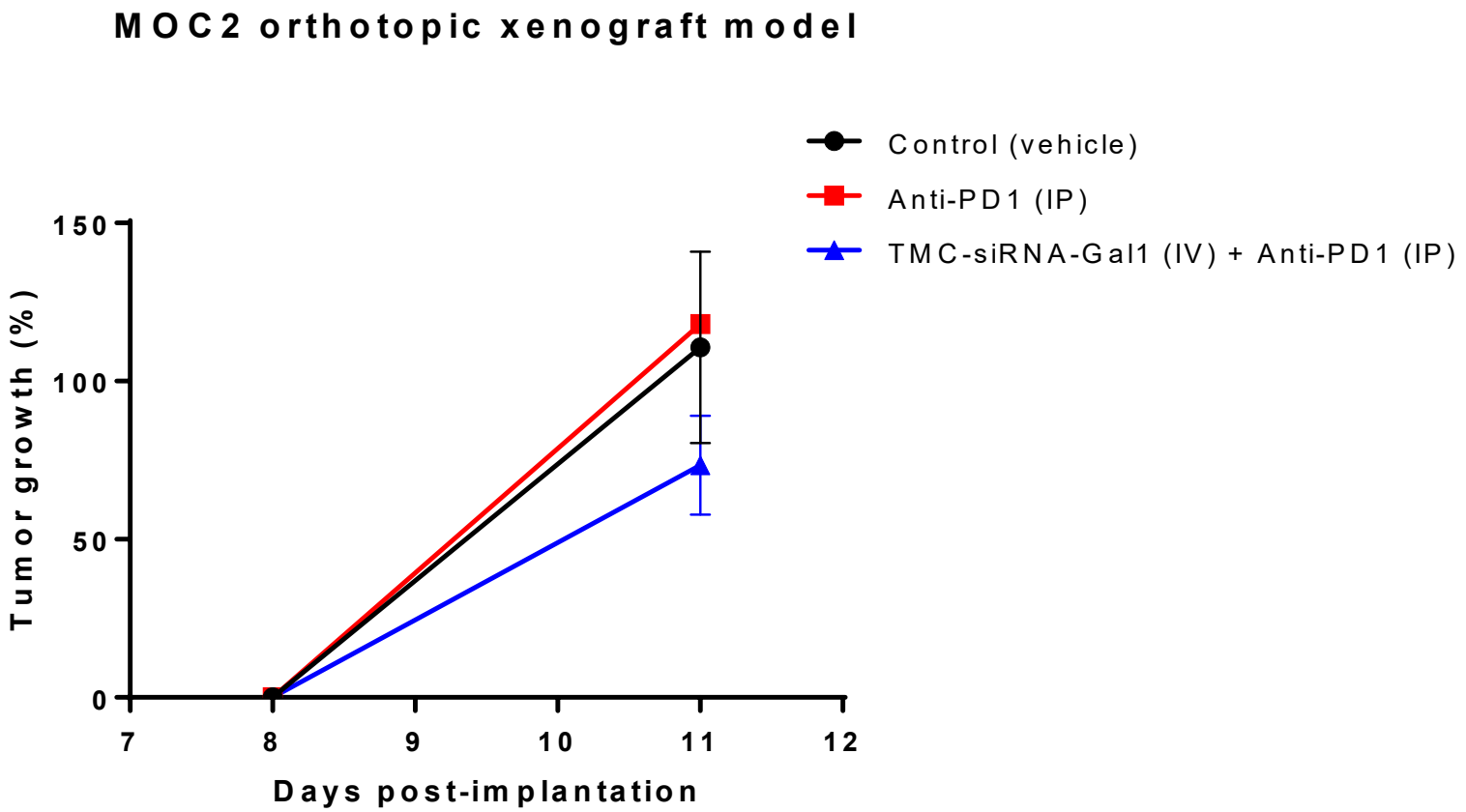
BIODISTRIBUTION EX VIVO IMAGING



Nanoparticles accumulate in the primary MOC2 tumor (orthotopic – buccal cavity - lip). High accumulation in kidneys and lungs along with low accumulation in the liver and spleen indicates potential extended blood circulation time with reduced mononuclear phagocytic system (MPS) effect. Ongoing/upcoming studies with further results to be obtained.

TRIOZAN™/siRNA Gal-1 Lead Candidate

- Preliminary Data: Potentially Reverses PD-1 Blockade Resistance in a Head & Neck Model



MOC2 orthotopic xenograft mice model (pilot study; n=3 per group) to evaluate first performance insights related to the combination of TRIOZAN™/siRNA Gal-1 (IV) and an anti-PD-1 mAb (IP).

Combined Gal-1 gene silencing and PD-1 blockade potentially reduced tumor growth by around 40-50% (day 11) compared with the control and anti-PD-1 treated groups.

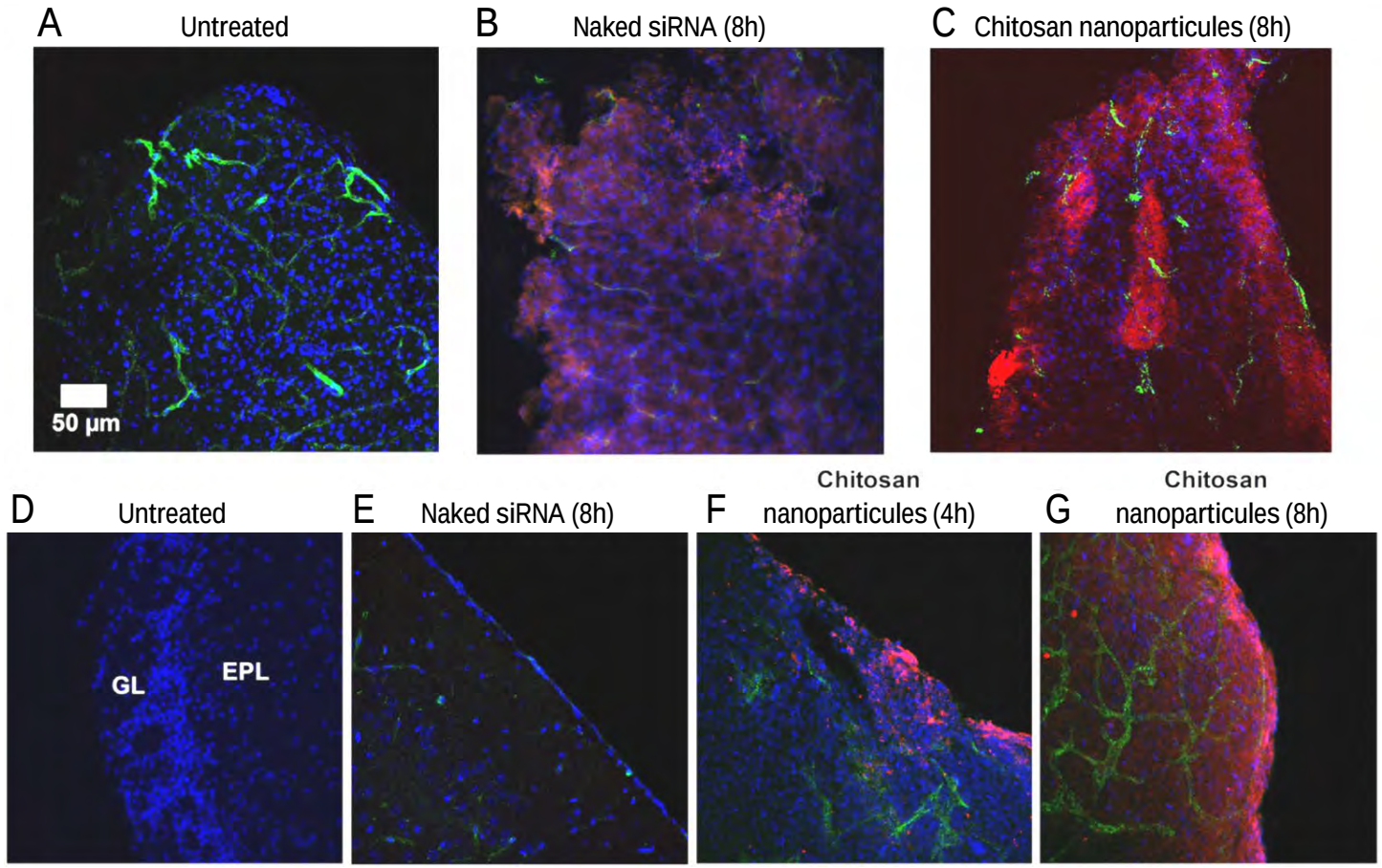
Ongoing/upcoming studies with further results to be obtained.

Galectin-1 Science in Glioblastoma Multiforme (GBM)*

- Preliminary Data - Intranasal Administration of RNA-Chitosan Nanoparticles Efficiently Reach CNS

Rapid spread into the nasal mucosa, and furthermore into the olfactory bulbus and the hindbrain

Confocal picture of nasal mucosa of A) control untreated mouse, (B)mouse treated with naked Red Dye siRNA, 8 h post administration and (C) mouse treated Red Dye siRNA-loaded chitosan nanoparticles, 8 h post administration. Transport in the olfactory bulbus was revealed with confocal picture of (D) control untreated mouse, which received no treatment and (E) mouse treated with naked Red Dye siRNA treated mouse, 8 h post administration, (F) mouse treated with Red Dye siRNA-loaded chitosan nanoparticles 4 h after and (G) 8 h post administration of Red Dye siRNA-loaded chitosan nanoparticles. Finally, a profound signal from the siRNA in the hindbrain, 4 h and 24 h after a single administration, has been observed (not shown here).



* Rodent model involving a preliminary chitosan/siRNA nanoparticle formulation

Ref. Van Woensel M, Wauthoz N, Rosière R, Mathieu V, et al., Development of siRNA-loaded chitosan nanoparticles targeting Galectin-1 for the treatment of glioblastoma multiforme via intranasal administration, J Control Release. 2016 Apr 10;227:71-81.

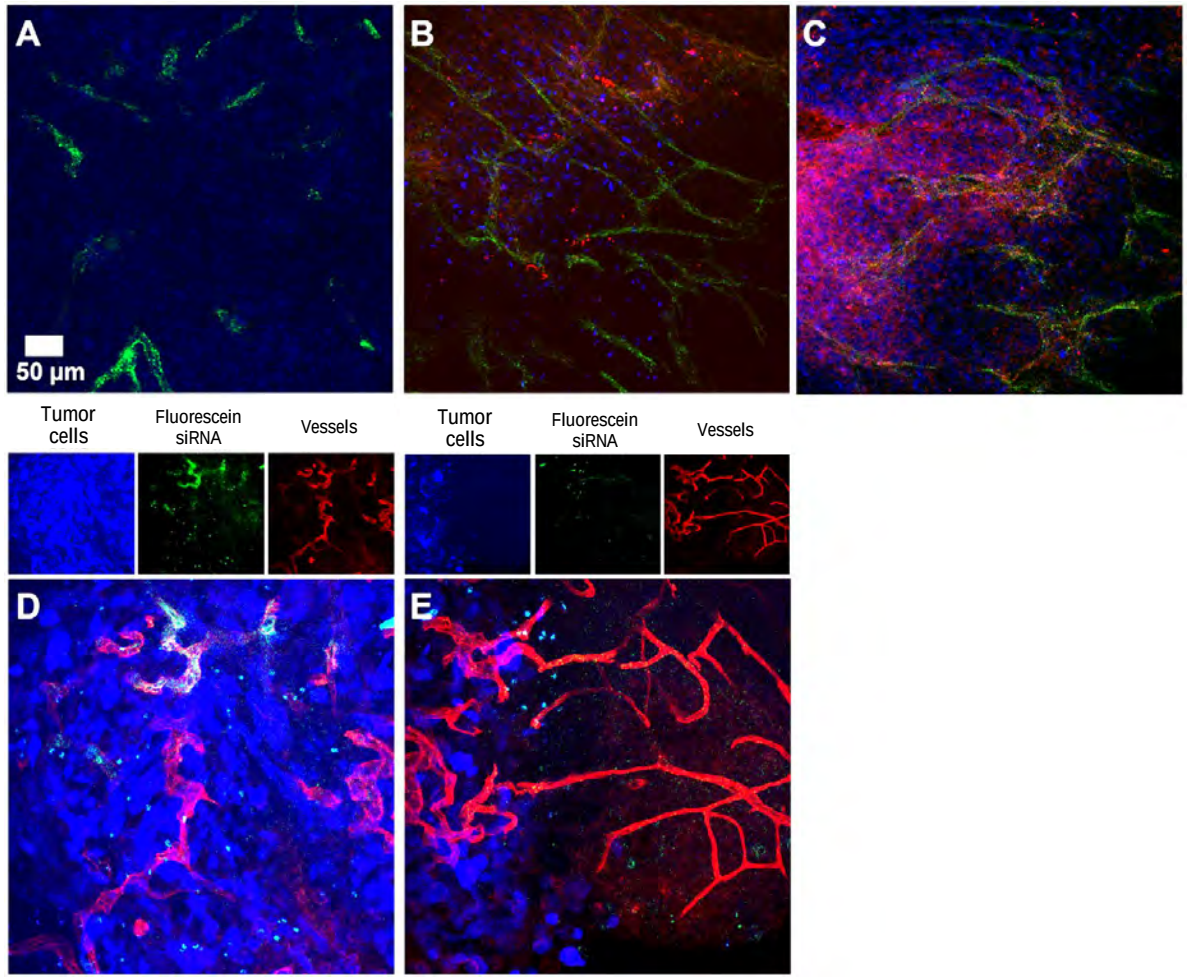
Galectin-1 Science in Glioblastoma Multiforme (GBM)*

- Preliminary Data - Intranasal Administration of RNA-Chitosan Nanoparticles Efficiently Reach CNS

Successful Tumor Microenvironment and Intracellular Delivery of siRNA

Rapid distribution in the tumor microenvironment. Confocal picture of (A) control untreated mouse, (B) Red Dye-siRNA loaded chitosan nanoparticles treated mouse 4 h, and (C) after 8 h.

Distribution/local tropism in the tumor micro environment was demonstrated by confocal picture of treated mouse 4h after the last administration green fluorescein siRNA loaded chitosan nanoparticles at the tumor center (D) or border (E) of BFP-GL261 tumors.



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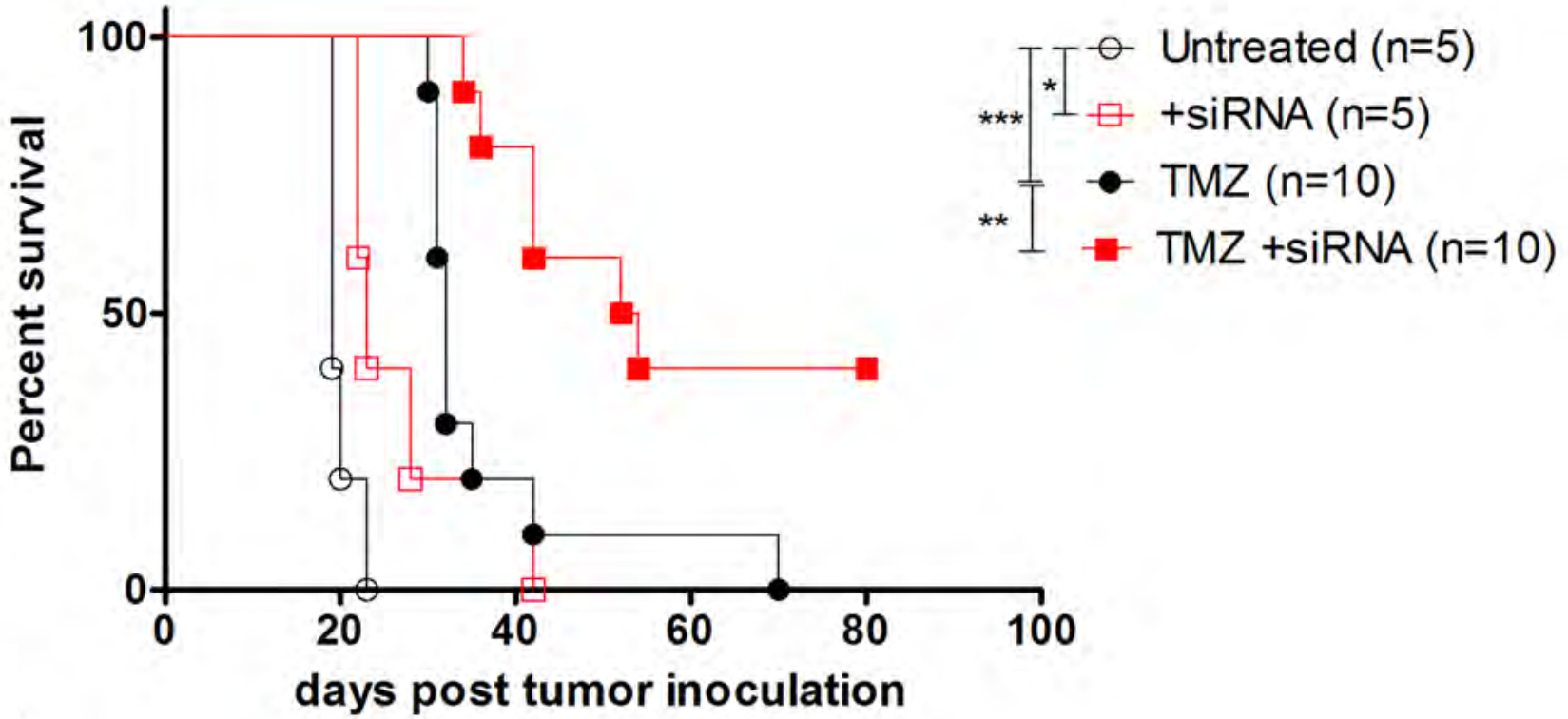
Preliminary Data in GBM: Temozolomide Combination*

- 40% Median Survival Improvement with 40% Long Term Survival



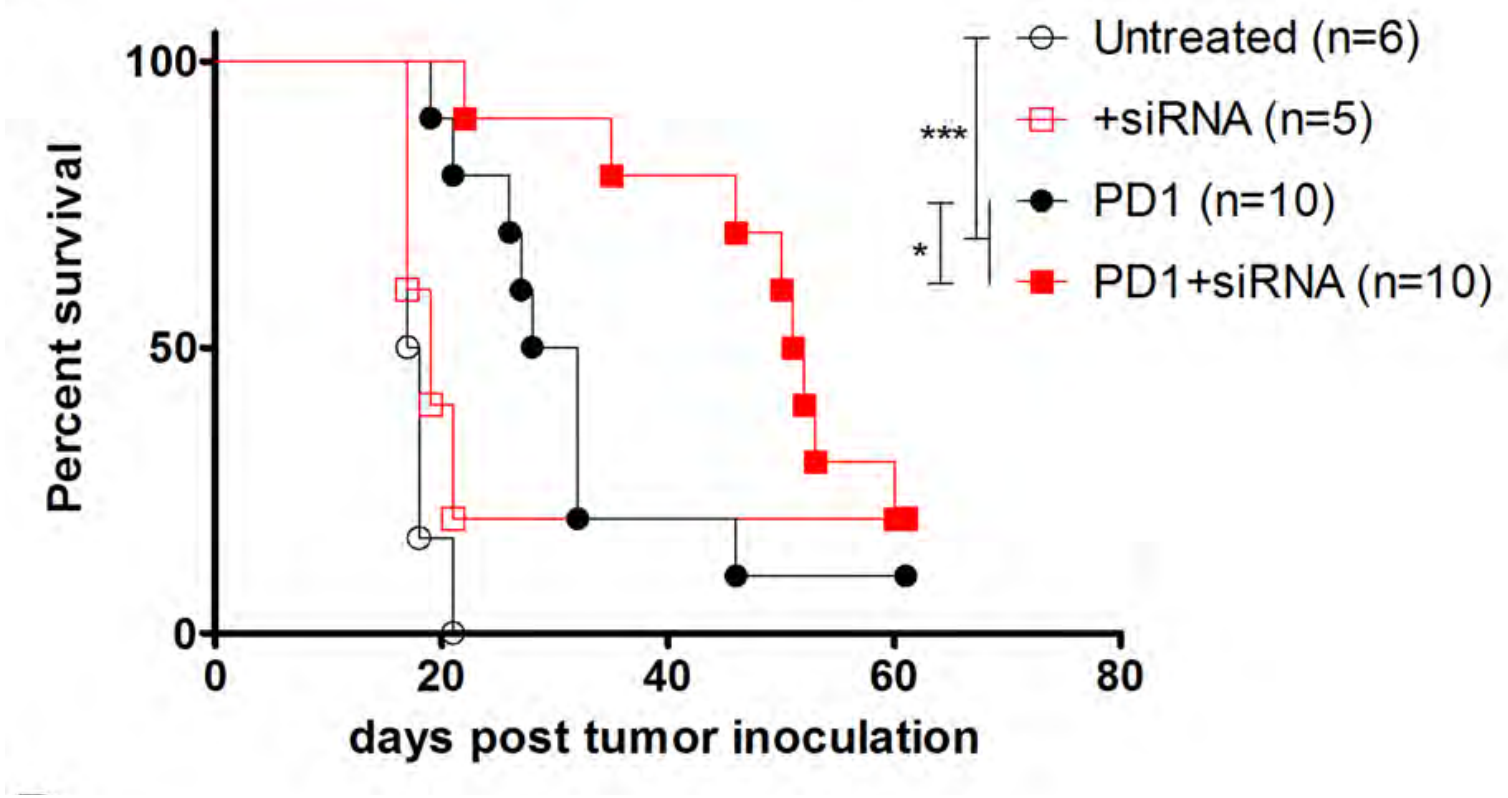
Survival Benefit of siRNA Gal-1 NPs in Combination with Chemotherapeutic (Synergistic Effect)

* Rodent model involving a preliminary chitosan/siRNA nanoparticle formulation

Ref. Van Woensel M, Mathivet T, Wauthoz N, Rosière R, et al., Sensitization of glioblastoma tumor micro-environment to chemo- and immunotherapy by Galectin-1 intranasal knock-down strategy, Sci Rep. 2017 Apr 27;7(1):1217.

Preliminary Data in GBM: Anti-PD-1 mAb Combination*

- 42% Median Survival Improvement with 20% Long Term Survival

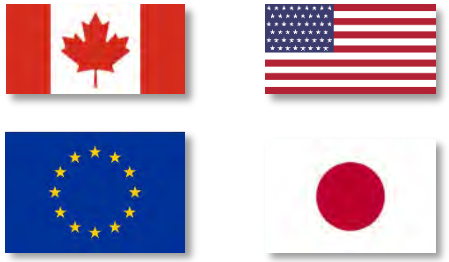
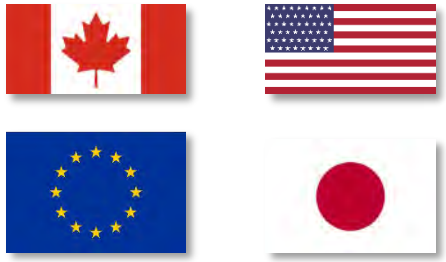
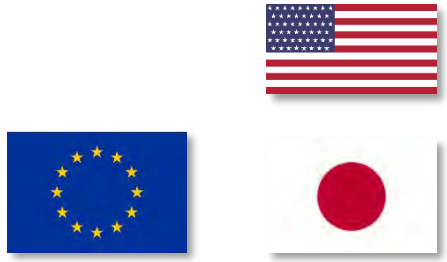


Survival Benefit of siRNA Gal-1 NPs in Combination with Immunotherapy (Synergistic Effect)

* Rodent model involving a preliminary chitosan/siRNA nanoparticle formulation

Ref. Van Woensel M, Mathivet T, Wauthoz N, Rosière R, et al., Sensitization of glioblastoma tumor micro-environment to chemo- and immunotherapy by Galectin-1 intranasal knock-down strategy, Sci Rep. 2017 Apr 27;7(1):1217.

IP Summary – TRIOZAN™ and Complementary Technologies

Delivery System	Targeting & Imaging	Brain Cancer Drug
TRIOZAN™ Alone or Combined Valid until June 2031	TRIOZAN™ Combined with B1R-Cu64 Valid until June 2035	TRIOZAN™ Combined with siRNA Valid until November 2035
		
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Mark David Vincent, M.D.
Lung & Gastrointestinal
Cancer Oncologist –
London Health Sciences Centre

Seeking Investors & Combination Collaborations

INVESTORS

- Ovensa is currently raising 15MM USD for its Series A, planning for a close in the fall 2020
- Use of Proceeds for CMC, pre-IND package and Phase I completion

COMBINATION COLLABORATIONS

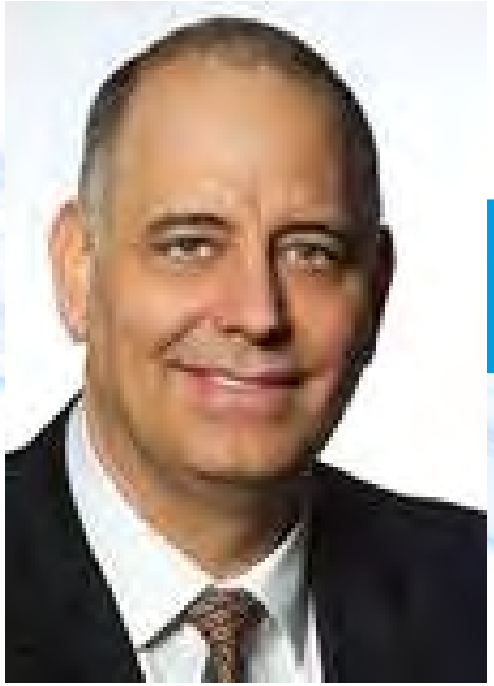
- Seeking R&D collaborations combining our siRNA/Gal-1 with checkpoint inhibitors or other immuno-oncology therapies
- Co-development and licensing opportunities for targeted drug delivery

Stéphane Gagné
President & CEO

☎ 416.728.9932
@ sgagne@ovensa.com

www.ovensa.com

Startup Pitch



lumasonix
Imaging the Sound of Light

Lumasonix Inc.

Morris Smith

VP Partnerships and Product

Lumasonix

General Cancer Screening Through Blood Imaging

Morris Smith
VP Product & Partnerships
morris@lumasonix.com
Ph: 416-850-7812

Cancer Detection – The Problem

- Cancer is mostly detected through symptoms - 37.6% of population are diagnosed, 18.8% die (US Statistics).
- Develops over long periods, which may extend well over a decade prior to visible symptoms.
- Early detection is the single most important change that will impact outcomes. Most can be saved with early detection.
- Early detection through general screening requires a simple, reliable, fast, low cost, test that can be scaled for millions of people.
- There is no general screening test.
- Current detection uses biochemical reagents for some specific cancers but isn't practical for general screening since it targets a limited number of cancer types, and is expensive, labor intensive, slow, and damages the sample.
- Published alternate approaches use reagents.

US Cancer Statistics
https://seer.cancer.gov/csr/1975_2014/browse_csr.php?sectionSEL=2&pageSEL=sect_02_table.14.html

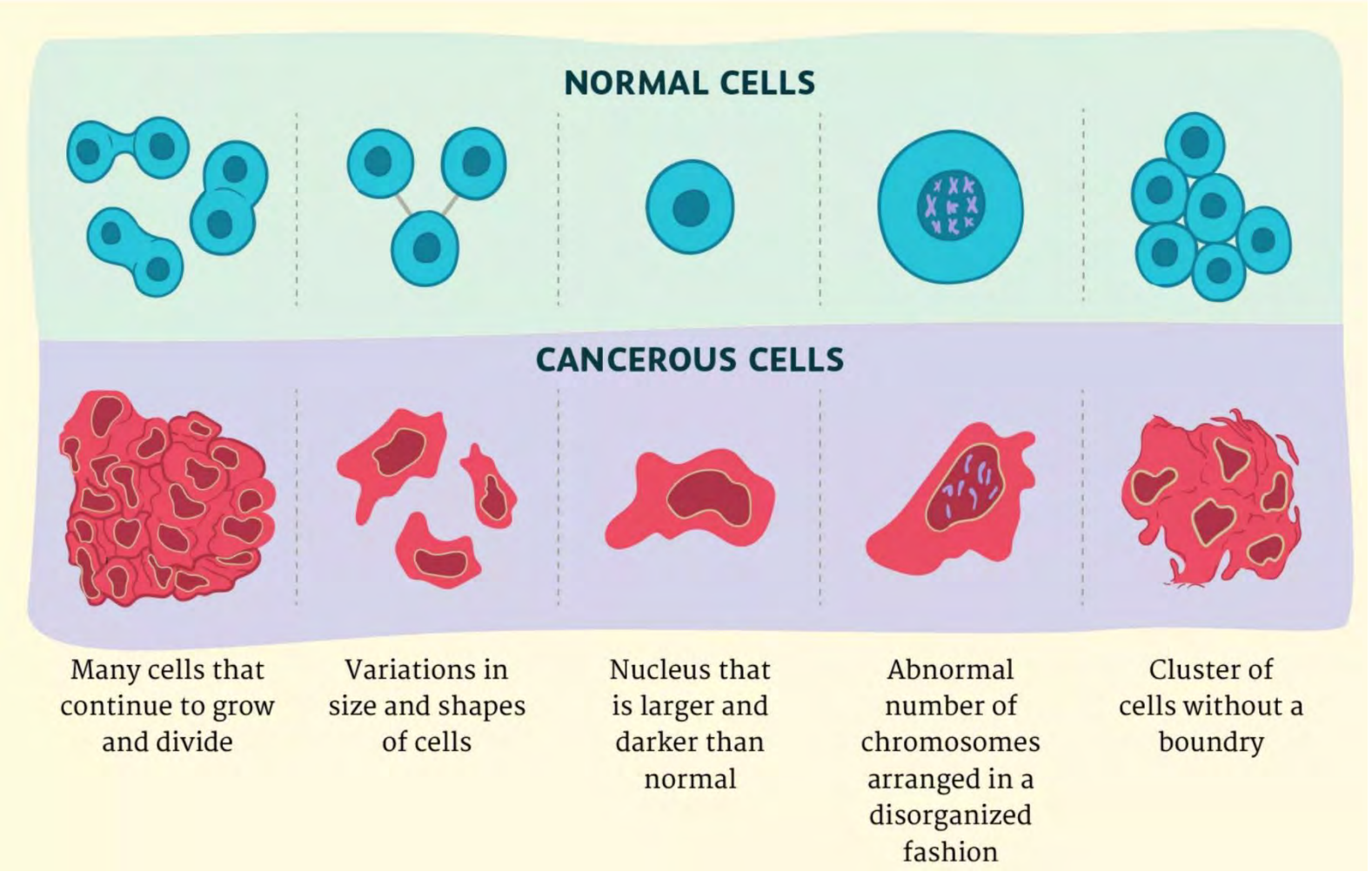
Lumasonix Cell Analyzer (LCA) – The Solution

- Lumasonix is at commercialization for general cancer screening with imaging based detection.
- Photo-acoustic and ultrasound sensors will collect data on each cell in a blood sample.
- AI engine classifies healthy cells and circulating tumor cells - cancer type based on physical data collected.
- Circulating tumor cells (CTC's) are tumor cells shed from a growing tumor. CTC's cause cancer to spread.
- Detection using photo-acoustics, and ultrasound imaging, with data analysis to count and classify tumor cells.
- No reagents needed.
- Fast, low cost automated screening for circulating tumor cells.
- The only system that will be trained to recognize cancers from patient blood samples.
- Potential advantages also for new drug trials or treatment monitoring – may improve data quality, or provide faster reporting by counting ctc's relative to alternatives.

LCA Development Overview

- 2 to 3 year development effort to implement our current manual process into an automated screening machine.
- Manual process is documented, and the product of university research.
- 4th year and later, self sustaining based on a fee split model with current blood testing labs in North America.
- Technology development modelled on US healthcare practices, FDA approvals, amounts in USD.
- Accelerated, reduced fee FDA medical device approval process available, and in the regulatory process throughout development.
- Substantial government grants are available in Canada for local development, to leverage outside investor funds.

In contrast to normal cells, cancer cells often exhibit much more variability in cell size—some are larger than normal and some are smaller than normal. In addition, cancer cells often have an abnormal shape, both of the cell, and of the nucleus. The nucleus appears both larger and darker than normal cells. The reason for the darkness is that the nucleus of cancer cells contains excess DNA. Up close, cancer cells often have an abnormal number of chromosomes that are arranged in a disorganized fashion.



Lumasonix Cell Analyzer

Determines the morphology & internal structure of individual (cancer) cells.

Fast, reagent free, proprietary Cytometry using: Ultra-High Frequency Ultrasound, Photo-acoustic and Optical Imaging Technologies

Raw Interrogation

- No biomarker staining with reagents required
- Not constrained to expression of any biomarker

Characterizes EACH cell in the specimen

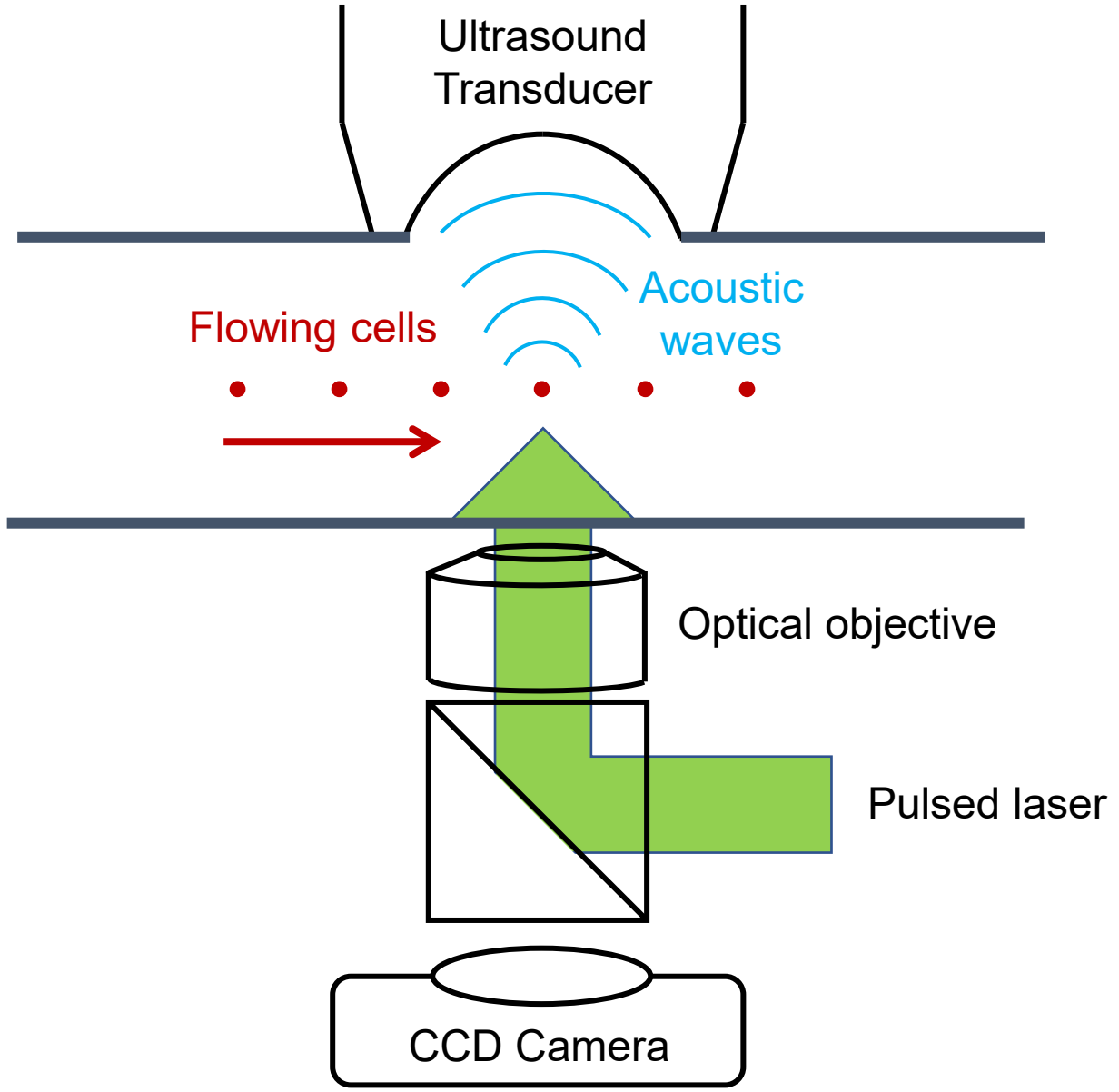
- Delivers individual cell profiles
- Interrogates entire distribution
- Identifies, counts, measure sizes of cells
- Determines entire spectrum of CTC mutations

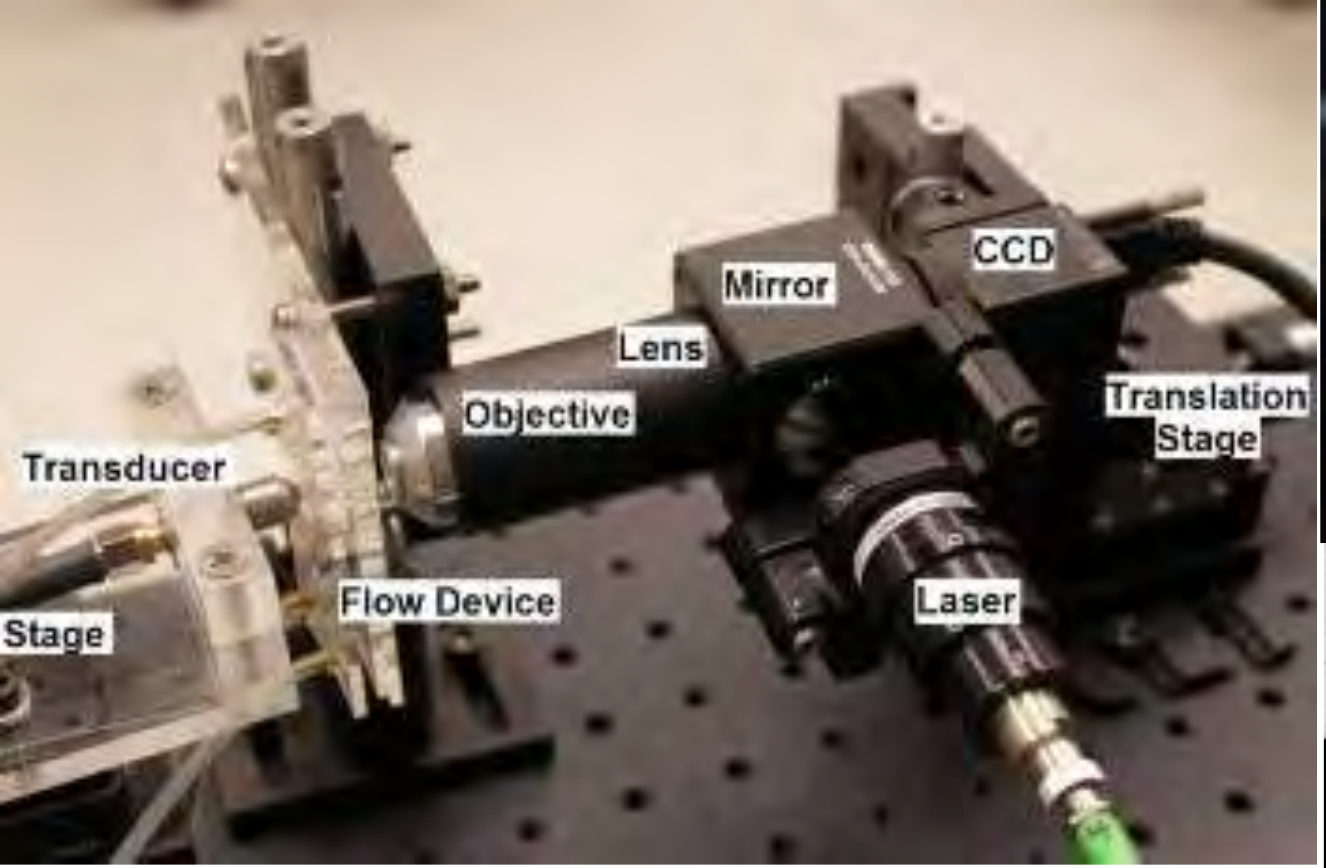
Innovative AI Algorithms identify the tumor type, and count all cells.

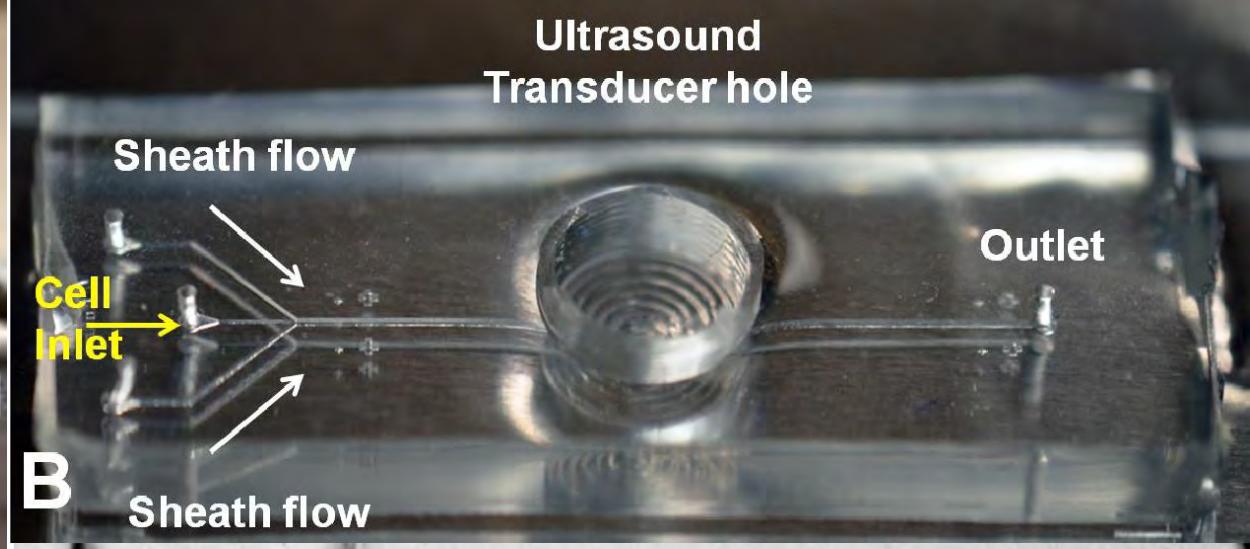
Flow & Plate Cytometer Implementations

Broad Applications outside Cancer.

Patented Technology US10175158







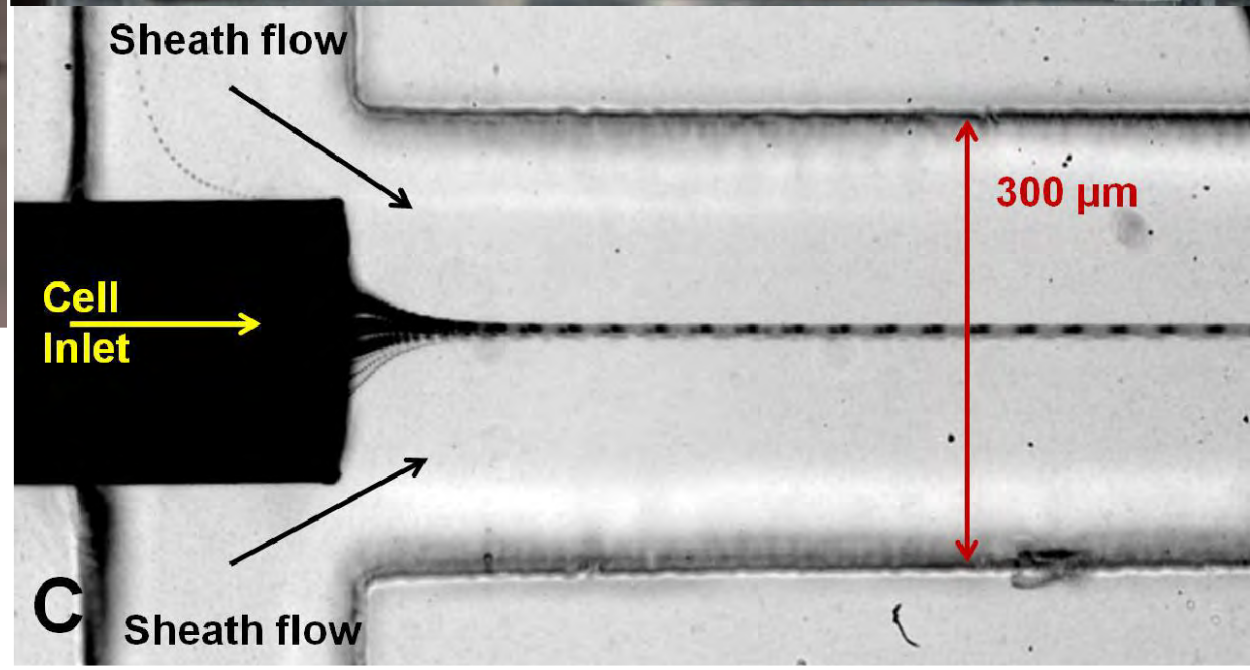


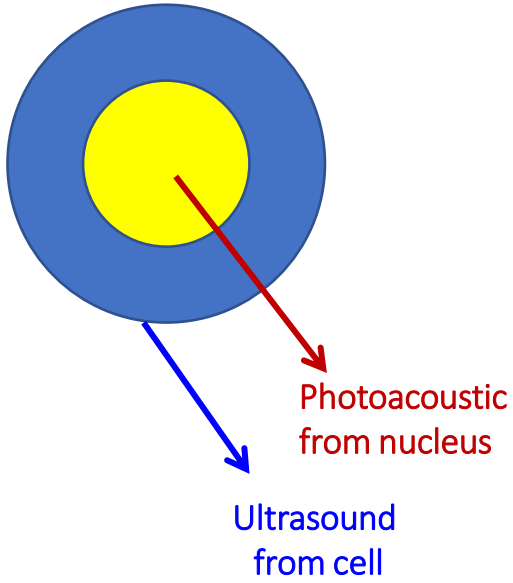
Figure 2. The Prototype Flow Cytometer has three orthogonal measurement channels: Ultra-high frequency ultrasound transducer on the left of microfluidic Flow Device; Photoacoustic excitation laser through microscopic objective on the right; and the CCD for optical imaging. (**B**) shows the details of the micro-fluidic device; and (**C**) is an enlarged view of the 300 µm diameter fluid channel below the hole for the ultrasound transducer showing uniformly spaced cells flowing in a 10 µm diameter cylindrical virtual column.

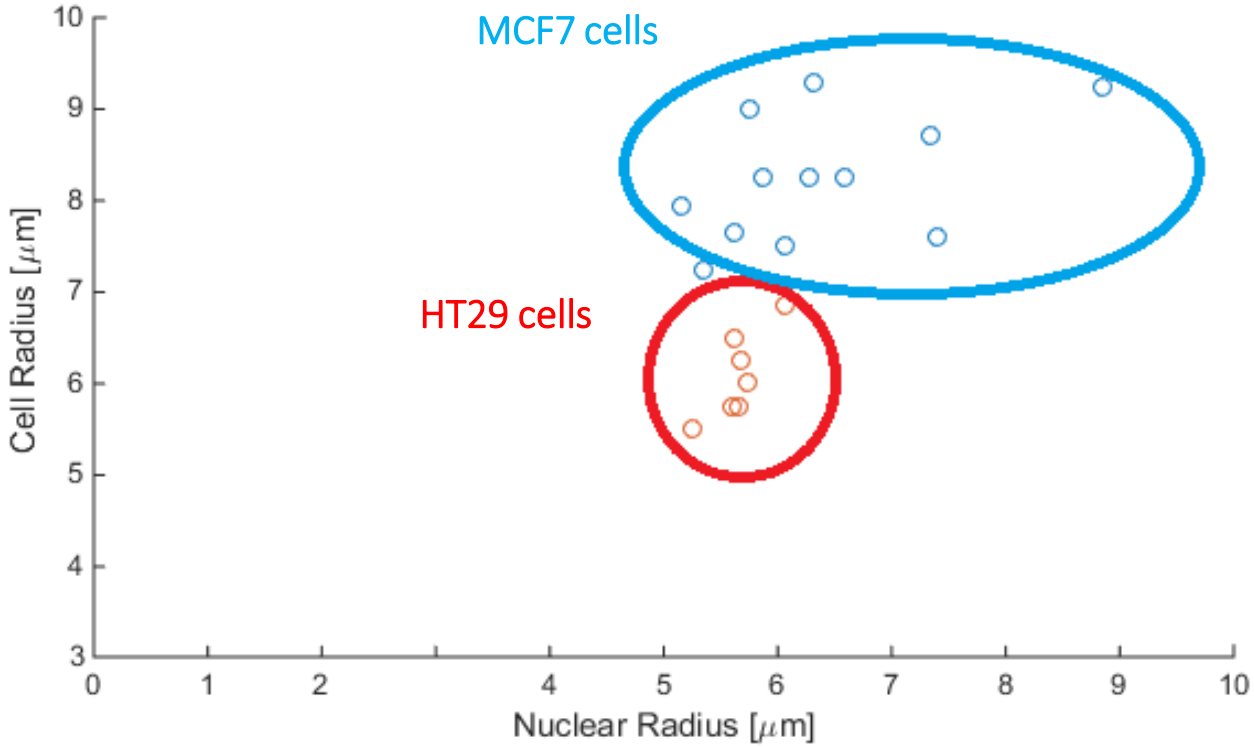
Strohm, E. M. *et al.* Classification of biological cells using a sound wave based flow cytometer. in *Proceedings of SPIE* **9708,** 97081A–97081A–6 (2016)

Figure 3. Cancer Type classification according to cell's size & nuclear:cytoplasm ratio

(Nucleus targeted with UV (266 nm) laser in label free mode or with a 532 nm laser when using a dye)

Extensible to Lung and other Cancer Types/Cells



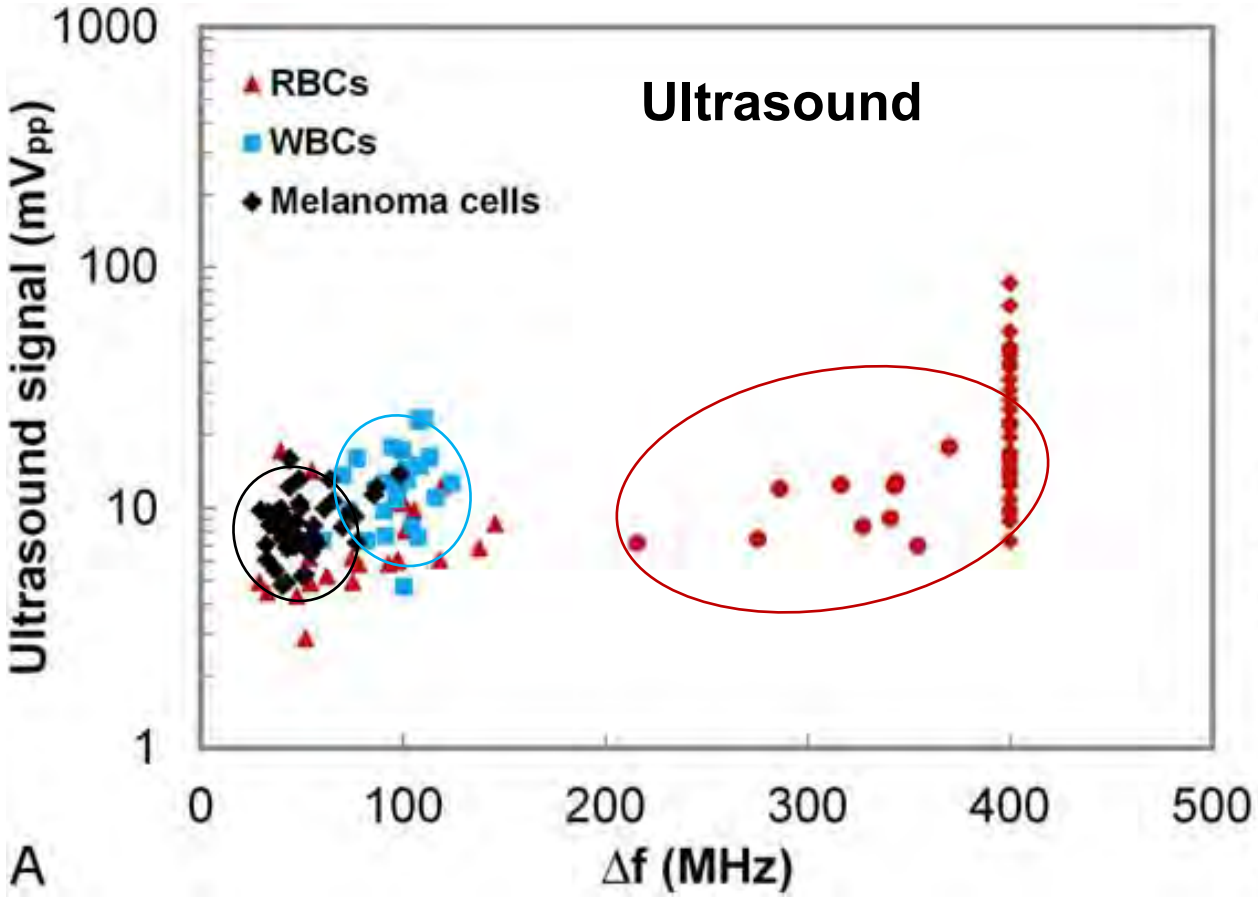


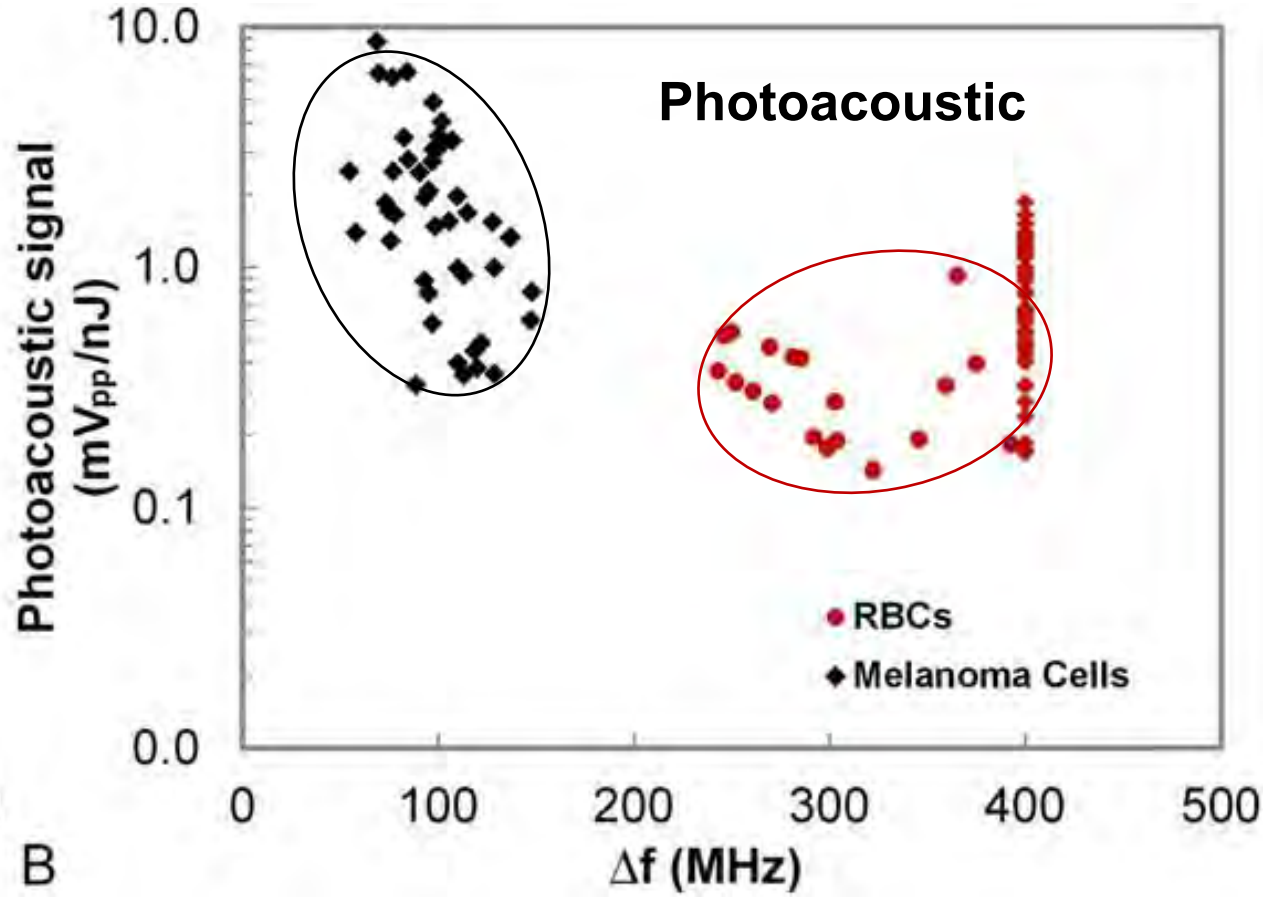
MCF7: Breast Cancer Cells

HT29: Colorectal Cancer Cells

M. J. Moore, E. M. Strohm, M. C. Kolios, Assessment of the Nucleus-to-Cytoplasmic Ratio in MCF-7 Cells Using Ultra-high Frequency Ultrasound and Photoacoustics, Int J Thermophysics 37, 118 (2016).

Figure 4. Cell classification according to measured parameters: RBCs and melanoma cells generate a photoacoustic signal with 532nm laser, but the WBCs do not.





E. M. Strohm, M. C. Kolios, Classification of blood cells and tumor cells using label-free ultrasound and photoacoustics, *Cytometry Part A,* 87, 741–749 (2015)

Fig. 5: Scatterplots of Cancer and Normal Cells with Respect to Inner Diameter (μm) and Circularity (%) by Volume

(a) LLC: mouse; Lewis Lung Carcinoma,

(b) B16: mouse; Melanoma,

(c) K562: **human**; chronic myelogenous leukemia

(d) HeLa: **human**; uterine cancer,

(e) A549: human; lung adenocarcinoma,

(f) Colon-26: mouse; colorectal cancer,

(g) Jurkat: **human**; T cell lymphoma,

(h) Molt-4: **human**; T cell lymphoma,

(i) MDA-MB-468: **human**; breast cancer,

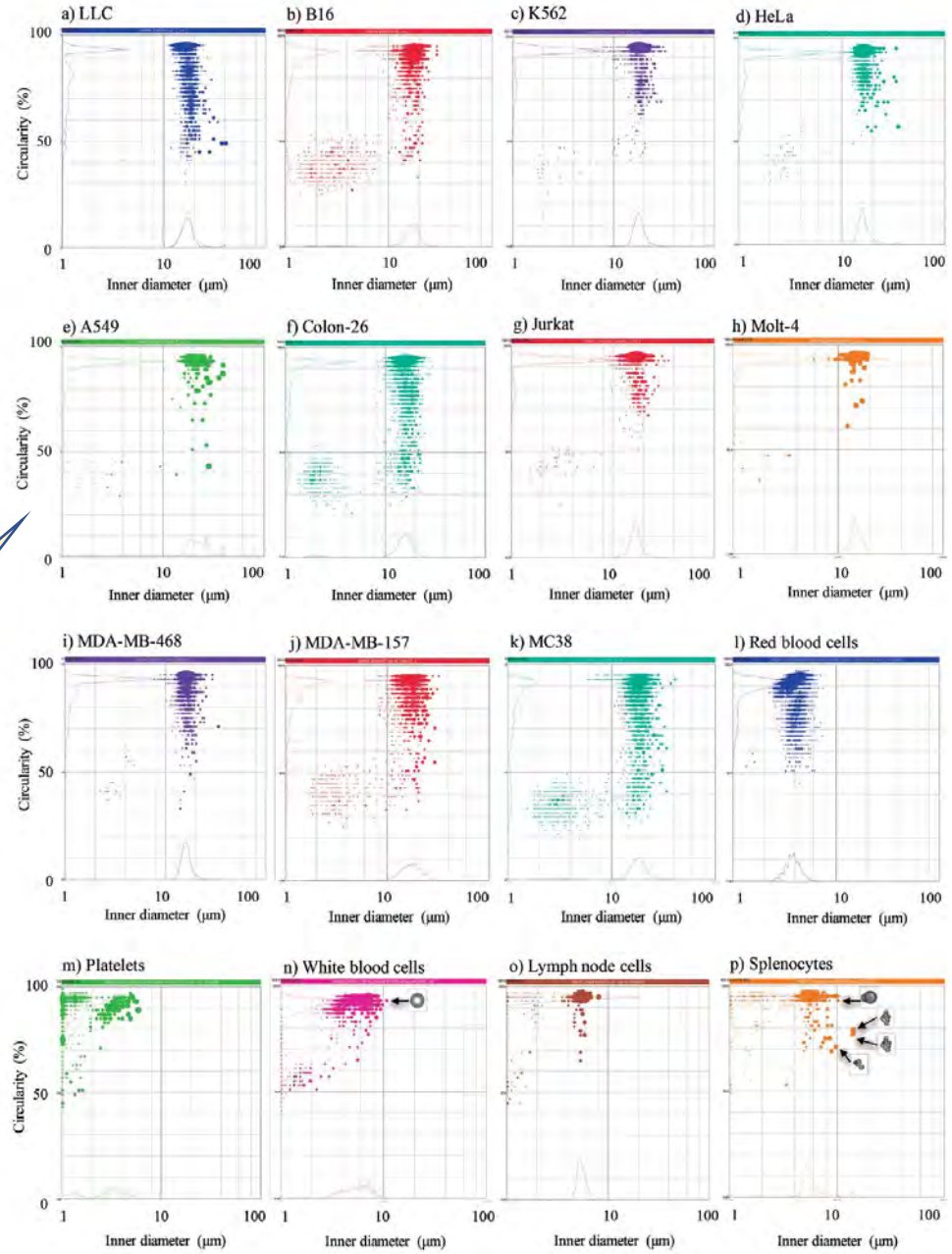
(j) MDA-MB-157: **human**; breast cancer,

(k) MC38: mouse; colon cancer,

(l) red blood cells, (m) platelets, (n) white blood cells, (o) lymph node cells,

(p) splenocytes (cell aggregates are shown in the inset).

A549 <17.3μ>: Lung Cancer Cells



Babita Shashni, et. al: "Size-Based Differentiation of Cancer and Normal Cells by a Particle Size Analyzer Assisted by a Cell-Recognition PC Software"; Biol. Pharm. Bull. 41, 487–503 (2018)

Competitive Advantages

Works without expensive fluorescent reagents. No reagents needed to flag a specific biomarker. Independent of specific biomarkers of cancer types. Fluorescent dyes also require fixation before cells can be scanned rendering these cells unfit for further examination using other methods

Characterizes each cell individually delivering high sensitivity & specificity. Cell / CTC Imaging with image & pattern recognition. Alternate systems rely on optical fluorescence (destructive) or size/density, which lacks specificity.

Does not depend on the presence of specific cancer biomarkers. Competing methods rely on detection of the epithelial growth marker; these measurements may miss the mutated cells as the biomarkers expressed by cancer cells change expression over time.

The LCA determines full distribution profiles of cell mutations: Helping determine disease progression / remission for tailored personalized treatments. Enumerates CTC mutations & variations feeding the proprietary machine learning models.

Characterizes full spectrum of CTCs & cfDNA as opposed to just a particular expression of the DNA fragments. No prior knowledge of cancer type required – AI algorithms automate classification using cells' physical properties

Non-Destructive: Optional cell sorter to collect a narrow range or type of cells. Separates cells of interest for lysing and further analysis.

Business Model

- Provide a fully automated classification and count of tumor cells in a standard blood sample.
  - A very sensitive detection test, current diagnostics will be used to locate the tumor.
- In the US, fee split with major lab test providers. They will provide the service.
  - Test cost modelled at $100 per patient.
  - Lumasonix builds, maintains, and places screening machines at current labs.
  - Testing fees from patients split with the lab.
  - US and Canadian patients typically have annual checkups with survey blood tests currently. LCA is an additional test with the same blood, and does not damage the sample if needed for other tests.
- A large additional revenue source for labs, at much greater than their average 8% net margin, and without a capital commitment.
- We don’t rely on insurance payment, however they would want to pay, and have expressed that, in order to shift to much cheaper early stage care.
- Initial estimated $400 K capital cost to build an LCA, which declines over time. Cost is recovered from a fee split with test provider. No consumables.

Investment

- $2 M minimum investment to develop LCA prototype.
- Global patient cancer screening opportunities.
- Manufacturing Opportunities
- Opportunities for testing cats and dogs.
- Future lab applications.
- Testing fees received from first production forward, will completely support production and placement of the LCA in the North American market.
- Bank financing of working capital likely, from Business Development Bank of Canada (BDC) from first commercial contract.
  - BDC is a Canadian government funded bank for business development.
- Lumasonix will contract with medical product manufacturers for the building of machines.

Q&A Session

Ontario Government

Jenny Ge

Senior Sector Adviser
MEDJCT's Industry and Sector Strategy Division
（Life Sciences team）

Cyclica Inc.

Naheed Kurji

Co-Founder,
President & CEO

Ovensa Inc.

Stéphane Gagné

President & CEO

Lumasonix Inc.

Morris Smith

VP Partnerships
and Product