



# Corporate Presentation

February 2020

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Oncology

**strontium<sup>89</sup>**  
Strontium Chloride Sr-89  
Injection, USP

**UTTROSIDE-B**

**METASTRON**

Ophthalmology

**MAN-01**

**MAN-11**

**GDF15**

Rare/Orphan Disease

**QBM-001**

**UTTROSIDE-B**

Vascular Disease

**MAN-03**

**MAN-04**

This is Our Growing Portfolio  
of High-Value Assets

# A Growing Pipeline Mitigates Risk and Drives Shareholder Value

DRUG CANDIDATE

PRECLINICAL

PHASE  
1

PHASE  
2

PHASE  
3

APPROVAL

COMMERCIALIZATION



Radiopharmaceutical for metastatic cancer bone pain

QBM-001

Pediatric non-verbal Autism Spectrum Disorder (Pre-IND 505b2)

UTTROSIDE-B

Chemotherapeutic for liver cancer

MAN 01

Topical eyedrops for glaucoma

MAN 02

Kidney Disease

MAN 03

Cardiovascular Diseases

MAN 04

Infectious Diseases



# Corporate Introduction



Rapid biotech growth has created a plethora of scientific assets. And with so many assets being developed so quickly, things fall by the wayside... even if they shouldn't.

That's the cost of innovation.





At Q BioMed, we find  
undiscovered or undervalued  
biomedical technologies and  
maximize their potential yield.

That's the opportunity



Our leading commercial asset is

**strontium<sup>89</sup>**  
Strontium Chloride Sr-89  
Injection, USP

FDA Approved November 2019  
Full Commercialization February/March 2020



# Oncology Landscape

## Current oncology landscape

- Science has extended life with cancer, but as a society we now need to address how we wish to experience the end of life
- The end of life demands better, multimodal care that puts the patient and their desires first for a dignified and pain-free transition

# Bone metastases

- The skeleton is a potential metastatic target of many malignant tumors
  - Up to 85% of prostate and breast cancer patients may develop bone metastases
  - Data suggest that ~10 million people worldwide experience daily pain due to malignant disease; in half of these people, metastatic bone discomfort is the dominant source of symptoms<sup>1</sup>
  - The prognosis of patients with metastases confined to the skeleton is usually superior to that of patients with soft-tissue metastases<sup>2</sup>
- Widespread skeletal metastases is difficult to effectively treat with external beam radiation alone — the primary treatment modality

1. World Health Organization. Cancer pain relief and palliative care. World Health Organ Tech Rep Ser. 1990;804:7-73.

2. Coleman RE, Smith P, Rubens RD. Clinical course and prognostic factors following bone recurrence from breast cancer. Br J Cancer. 1998;77:336-340.

## Mets lead to overwhelming bone pain

- The majority of patients with bone metastases develop severe pain as their disease progresses, resulting in a considerable reduction in their QoL
  - ~ 75% of patients with bone mets complain of pain as their main symptom and the dominant reason for a decreased QoL<sup>1</sup>
  - Appropriate pain management may be difficult, particularly in the case of poorly localized discomfort<sup>2</sup>
- A multidisciplinary approach to symptom palliation is recommended, tailoring treatment to individual need, with the aim of individualized treatment being “to add life to the years, not years to the life”
- Analgesic drugs, surgical interventions, local external-beam radiation therapy, and radiopharmaceutical therapies called ‘radionuclides’ have been developed and utilized for the systemic palliation of bone pain with more multilocular skeletal involvement

1. Tannock I, Gospodarowicz M, Meakin W, Panzarella T, Stewart L, Rider W. Treatment of metastatic cancer with low-dose prednisone: evaluation of pain and quality of life as pragmatic indices of response. *J Clin Oncol*. 1989;7:590-597.  
2. Wagner G. Frequency of pain in patients with cancer. *Recent Results Cancer Res*. 1984;89:64-71.

## Worldwide market opportunity



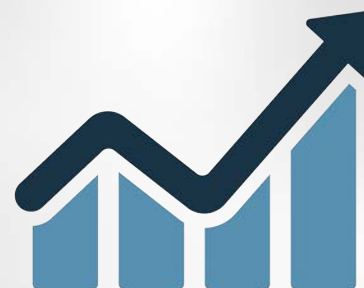
10 Million

The number of people worldwide that experience daily pain due to malignant disease<sup>1</sup>



75,000

The projected number of annual Sr-89 doses based on 0.5% of the market - 50,000 patients at 1.5 doses



8.4 Percent

The approximate CAGR at which the global bone metastasis market is expected to grow<sup>2</sup>

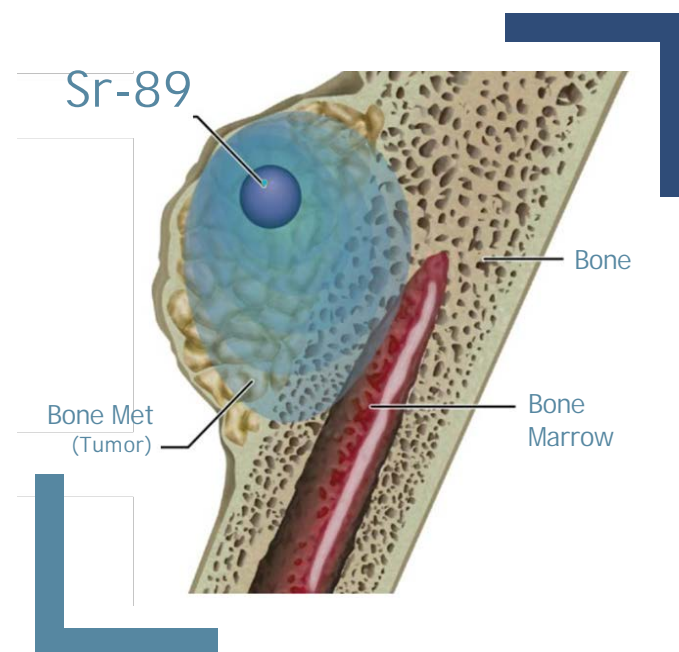
1. World Health Organization. Cancer pain relief and palliative care. World Health Organ Tech Rep Ser. 1990;804:7-73

2. Medgadget

# About Strontium-89/METASTRON™

## Sr-89 mechanism of action

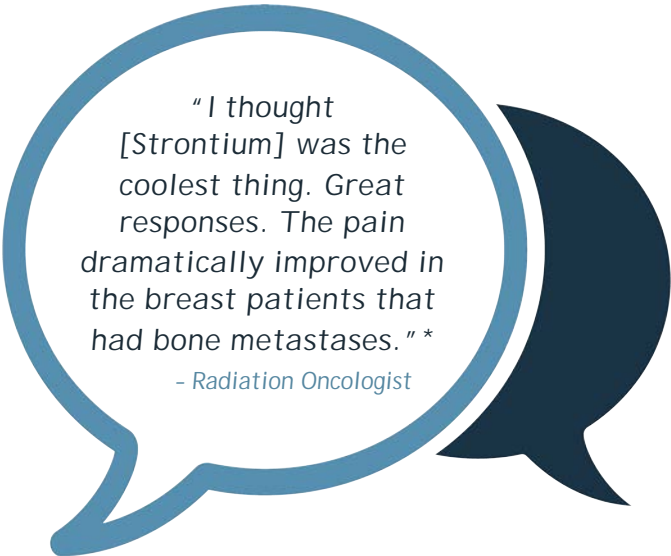
- Sr-89 selectively targets and accumulates in metastatic bone lesions with minimal risk of toxicity to surrounding normal tissue
- Sr-89 provides advantageous cross-fire destruction of targeted tumor cells
- The long half-life of Sr-89 enables widespread incorporation into bone lesion surfaces and prolonged targeting of metastatic sites
- The therapeutic range of Sr-89 within bone metastases helps provide comprehensive tumor targeting





# Efficacy of Sr-89 in the management of painful bone metastases

- Treatment with Sr-89 has led to a significant improvement in QoL for patients with metastatic bone disease associated with breast and prostate cancer
- Median duration of pain palliation with Sr-89 has been reported to span approximately 2-5 months
- Treatment with Sr-89 has been demonstrated to reduce or eliminate need for analgesics
- Addition of Sr-89 to other treatment modalities, including chemotherapy and EBRT, has been demonstrated to augment therapeutic efficacy

A graphic of a speech bubble with a blue outline and a dark blue tail pointing towards the right. Inside the bubble is a quote in black text.

*"I thought [Strontium] was the coolest thing. Great responses. The pain dramatically improved in the breast patients that had bone metastases." \**

*- Radiation Oncologist*

\*Source: Q BioMed Qual Market Research; July 2018

## METASTRON™ effectively palliates cancer bone pain

Study	Patients (N)	Dose	Cancer	Pain Relief
Fuster 2000	40	4 mCi	Breast	92%
Kraeber-Bodere 2000	94	4 mCi	Prostate	78%
Turner 2001	93	4 mCi	Prostate	63%
Ashayeri 2002	27	4 mCi	Prostate and Breast	81%
Gunawardana 2004	13	4 mCi	Prostate	57%
Liepe 2007	15	4 mCi	Prostate and Breast	72%

## METASTRON™ offers lasting pain relief

Study	Patients (N)	Dose	Cancer	Pain Relief	Median duration
Fuster 2000	40	4 mCi	Breast	92%	120 days
Kraeber-Bodere 2000	94	4 mCi	Prostate	78%	Moderate bone involvement: 5 mos Extensive bone involvement: 2 mos
Gunawardana 2004	13	4 mCi	Prostate	57%	56 days

## Potential for therapeutic indication

A decrease of >50% in serum PSAV was observed in 37% of patients with hormone-refractory prostate cancer after treatment with METASTRON™

In a multicenter, RCT involving 126 patients with mCRPC, all of whom received external beam radiotherapy, additional treatment with METASTRON™ delayed disease progression [Porter\_1993]

Many patients show a reduced intensity of hot spots on bone scan compared with pretreatment images.<sup>11,16</sup> suggesting a possible tumoricidal effect from METASTRON™

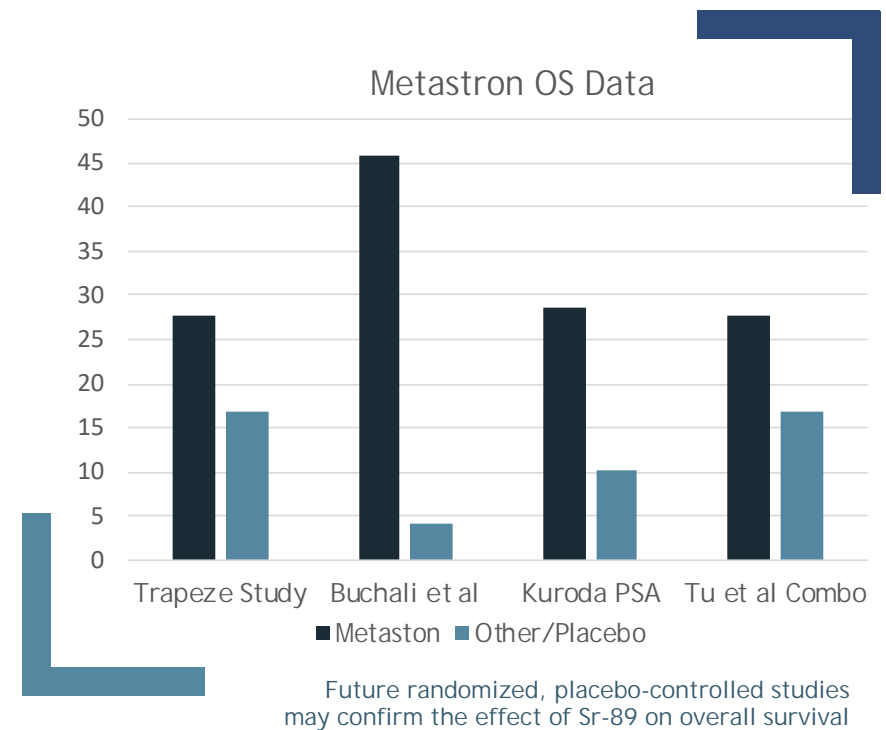
Case reports describe regression of osteoblastic and osteolytic bone metastases in patients with breast cancer and hepatocellular carcinoma after treatment with METASTRON™<sup>16,17</sup>

In the recent TRAPEZE randomized controlled trial of the clinical effectiveness and cost-effectiveness of chemotherapy with zoledronic acid (ZA), METASTRON, or both in men with bony metastatic castration-refractory prostate cancer, METASTRON was shown to improve CPFS, while ZA did not

*A potential survival benefit associated with the use of Sr-89 has been reported, and future randomized, placebo-controlled studies may confirm the effect of Sr-89 on overall survival*

# Increasing evidence of an overall survival benefit with METASTRON™

- In one study of 103 patients with mCRPC randomized to doxorubicin alone or doxorubicin with METASTRON, a median overall survival of 16.8 months and 27.7 months was seen, respectively<sup>9</sup>
- In an earlier trial examining METASTRON vs placebo in mPC and mCPRC patients, Buchali et al reported a survival rate 2 years after the start of treatment of 46% in METASTRON and 4% in placebo groups<sup>19</sup>
- In these clinical studies, differences in METASTRON dosing, baseline patient characteristics, and prior treatments are likely to affect reported outcomes



# METASTRON™ / Strontium-89: summary

## Today:

- FDA approved for pain palliation
- NDA and ANDA held by Q BioMed
  - Operationalizing radiopharmaceuticals is highly complex, creating a high barrier to generic entry
- Global market authorizations held for METASTRON in 22 countries
- Medicare/payor reimbursed
- Slated to be commercially available in Feb/March 2020  
(US FDA manufacturing facility approval - Nov 2019)

## In the future:

- Phase 4 clinical program planned to expand label to include overall survival (OS)

# The METASTRON™ U.S. commercial plan is in place...








Mannin  
RESEARCH

MAN-01

a  BioMed Portfolio Biotechnology

Pharmaceutical: MAN-01 Topical Drops

Condition: Primary Open-Angle Glaucoma

Addressable Market: 60 million patients  
worldwide

Technology Partner: Mannin  
RESEARCH

Stage: Preclinical

# THE CONDITION: Intraocular Pressure (IOP) and Primary Open-Angle Glaucoma

## Prevalence

60 million glaucoma patients worldwide

8 million with bilateral blindness

Typically no early warning signs. Therapy only slows progression

## Current Standards of Care

Medical (Pharmaceuticals)

Laser Surgery (Out-patient)

Traditional Surgery (In-patient)

## Market Is Seeking

Effective reduction in IOP

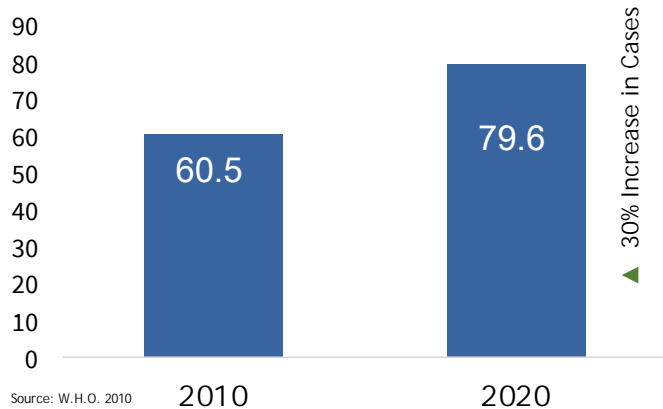
Innovative Drug Design

Increase compliance and adherence

Improved drug delivery and availability



Glaucoma Cases Expected to Increase 30% by 2020  
(millions of cases)



Projected Phase I Glaucoma Clinical Trial:

Q1 2021

Projected Lead Candidate Selection:

Q3 2020



- First-in-class drug to treat Glaucoma
- Novel therapeutic addresses need for innovation
- Mechanism targets the critical Schlemm's Canal  
The Schlemms Canal is responsible for 70%-90% of fluid drainage in the eye
- Primary indication for Primary Open-Angle Glaucoma  
*Additional indications may include:*
  - Acute Kidney Injury
  - Cardiovascular Disease
  - Infectious Diseases
- Mannin Research accepted into Johnson & Johnson Innovation, JLABS @ Toronto  
Developing a novel eye-drop to treat Primary Open-Angle Glaucoma utilizing the Angiopoietin-Tie2 Mechanism of Action

## Additional Indications: Pre-Clinical



**MAN 02**

Acute Kidney Injury

Treatment for Acute Kidney Injury, which contributes to high morbidity and mortality rate in a wide range of injuries, including common clinical care settings such as coronary artery bypass surgery, contrast-induced nephropathy and sickle cell nephropathy.

**MAN 03**

Cardiovascular Diseases

Treatment with our pharmacologic small molecule will likely protect the lungs and slow disease progression in patients with Pulmonary Artery Hypertension. Treatment may also provide protection to the myocardium in patients with Congestive Heart Failure and Myocardial Ischemia.

**MAN 04**


Infectious Diseases

Interventions targeting Ang-Tie2 pathway have been shown to play an important role in reducing the severity of viral and bacterial infections such as influenza, sepsis, tuberculosis, anthrax, toxic shock syndrome, cerebral malaria and Ebola, by promoting positive host-directed therapeutic (HDT) responses





# Gdf15

a  BioMed Portfolio Biotechnology

Biomarker & Companion Diagnostic:	GDF15
Condition:	Monitoring Glaucomatous Neurodegeneration
Addressable Market:	60 million
Technology Partner:	Washington University in St. Louis
Stage:	Preclinical Development of Diagnostic Kit; Clinical Trials using GDF15 as biomarker



## GDF-15: Novel Biomarker for Glaucoma

- Growth Differentiation Factor 15 (GDF15) is a member of the transforming growth factor (TGF- $\beta$ ) superfamily and was recently identified as a promising biomarker for glaucoma.
- Validated in both rat models of glaucoma and human patients and its expression correlated with disease severity.
- GDF15 represents an attractive biomarker for glaucoma with distinct advantages (i.e., early detection) over conventional clinical tests and has the potential to be a first-in-class diagnostic test.
- Provides a unique product offering in a huge market
- Companion diagnostic to Man01
- Diagnostic test for all patients
- Surrogate end-point test for Glaucoma trials (Pharma)

*Patent Application: 62/289,030*

# Monitoring Glaucomatous Neurodegeneration


- Accurate monitoring for evidence of disease progression is vital to preserve visual function of glaucoma patients
- Desired goal of any glaucoma therapeutic intervention is neuroprotection, leading to survival of retinal ganglion cells (RGCs)
- Physicians currently have only surrogate measures of glaucomatous neurodegeneration
- No single examination or diagnostic test is able to accurately predict disease progression

Tonometry (IOP measurement)	Optical Coherence Tomography (OCT)	Examination of the Optic Nerve	Perimetry (Visual Field Testing)
Pros: <ul style="list-style-type: none"><li>• Essential for assessing the effectiveness of IOP lowering treatment</li></ul>	Pros: <ul style="list-style-type: none"><li>• Automated</li><li>• Objectively quantifiable</li></ul>	Pros: <ul style="list-style-type: none"><li>• Can be performed routinely in a clinical setting</li><li>• Can be recorded by a photograph</li></ul>	Pros: <ul style="list-style-type: none"><li>• Direct measurement of glaucoma in the patient's visual function</li></ul>
Cons: <ul style="list-style-type: none"><li>• Values are affected by central corneal thickness</li><li>• No direct correlation with glaucomatous neurodegeneration</li></ul>	Cons: <ul style="list-style-type: none"><li>• No reliable normative database</li></ul>	Cons: <ul style="list-style-type: none"><li>• Subjective (observer designates the rim margin of the cup)</li></ul>	Cons: <ul style="list-style-type: none"><li>• Subjective (patients respond when the light is projected)</li></ul>





# UTTROSIDE-B

a  BioMed Portfolio Biotechnology

Chemotherapy: UTTROCIDE-B

Condition: Liver Cancer

Addressable Market: 700,000 diagnoses/year

Technology Partner: Oklahoma Medical Research Foundation

Stage: Preclinical

THE CONDITION:

# Liver Cancer

## The 10th Most Common Cancer

### Prevalence

More than 700,000 people worldwide are diagnosed each year  
Estimated 39,230 adults in the United States will be diagnosed every year  
Numbers have tripled since 1980

Poor 1-year survival rate  
18% 5yr Survival

### Current Standards of Care

#### RADIATION

High-energy x-rays or other particles destroy cancer cells

#### DRUG TREATMENT

Tyrosine kinase inhibitor antineoplastic agent, Nexavar™

#### SURGICAL

Hepatectomy or liver transplantation

#### CHEMOTHERAPY

Radiofrequency ablation (RFA) and microwave therapy

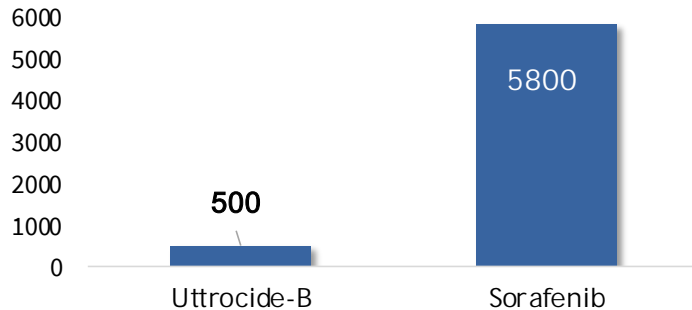
#### THERMAL

Percutaneous ethanol injection



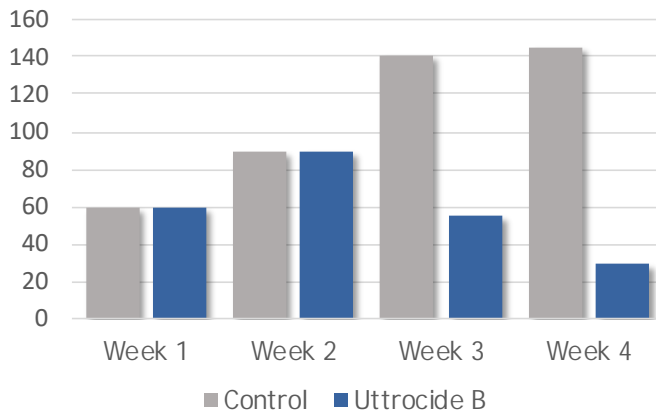
## IN VITRO

IC-50 of Sorafenib is 5.8  $\mu$ M in Hep G2 while Uttroside-B is 500



## IN VIVO

HepG2 Injected Into Mice Then Treated with 10mg of Uttroside-B for One Month



# UTTROSIDE-B Chemotherapy

P Uttroside-B appears to affect phosphorylated JNK (pro survival signaling) and capcase activity (apoptosis in liver cancer)

- A natural compound
- Fractionated Saponin derived from *S. nigrum*
- Small molecule
- Steroid Glycoside

Uttroside B increases the cytotoxicity of a variety of liver cancer cell types

- Up to 10x more potent than Sorafenib in preclinical studies

Cytotoxicity specific to cancerous liver cells

Provisional patent filed

Molecule syntheses completion Aug 2019

IND Ready Q4 2020

Sorafenib Tosylate (Nexavar™) is currently the only FDA- approved drug for the first line treatment of liver cancer. **2017 sales exceed \$1B**





**QBM-001**

a  BioMed Portfolio Biotechnology

Pharmaceutical: QBM-001 sprinkle formulation

Condition: Rare Pediatric Non-Verbal Disorder

Addressable Market: 50,000 cases worldwide  
15,000 in US alone

Stage: Pre-IND 505(b)2



THE CONDITION:

# Rare Pediatric Minimally Verbal Autism

## Prevalence

About 20,000 children will be diagnosed with pediatric minimally verbal autism each year in the US alone. They will have to rely on assisted living for the rest of their life. Of the estimated 20,000, QBM-001 should be able to treat about 15,000. There is estimated to be over 250,000 children globally with pediatric minimally verbal autism.

- The lifetime cost of care is estimated at \$5-10 M/person in the US.
- No treatment with lasting effects on how children develop
- Fundamental defects in social reciprocity and communication
- Repetitive and stereotypical behaviors

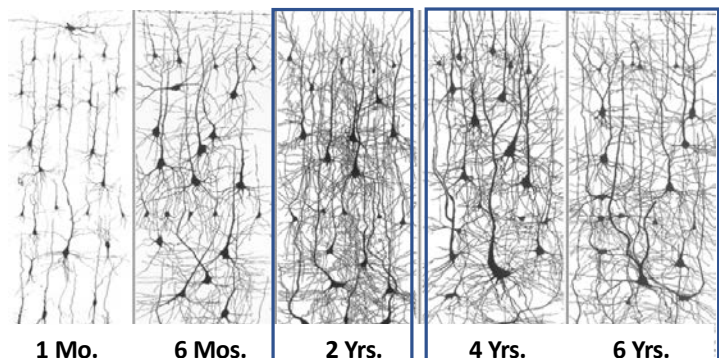
## Current \*Medications and 2016 Sales

Name	Condition	2016 Sales
Abilify®	Irritability	\$2.0 B + (off Patent)
Vyvanse®	ADHD	\$2.0 B
Risperdal®	Aggression	\$3.0 B

\*These medications do not treat the condition, rather they are psychotherapeutic interventions that ameliorate temperament/mood only.

## NEURON PRUNING

Children with ASD lose the ability to learn language once their language-specific neurons are naturally pruned



At 2 years of age, the brain is actively developing neuron connections at the peak of the learning process.

Around the age 2, the brain more actively prunes (eliminates) neurons that are not in use.

When language development is impeded in this subset of ASD children, their language neurons do not activate and are targeted for pruning by the brain.

If you do not use it, you lose it.

**QBM-001**

## Regulates Faulty Pathways to Allow Language Development

- 8-12 months - detection of early symptoms
- 12-15 months - language regression or the child never progresses with language
- Brain density in cortex (speech region) declines after 24
- Multiple studies confirm a loss in density of neurons in the cortex region in children with pediatric minimally verbal autism compared to other autistic children and healthy controls by age 7

### HOW IT WORKS

#### Diagnosis

- Differential diagnosis as early as 3.5 years of age
- Tested for elevated serum and biomarkers markers
- Genetically tested to exclude diseases that QBM-001 cannot treat

QBM-001 targets multiple pathways that are faulty in these children. It ameliorates negative feedback loops in the body of these children that prevents them from being able to develop language.

Biomarker Diagnosis - Q BioMed has also identified two unique miRNA biomarkers for this subset and is planning the next steps to validate these biomarkers. This would allow us to diagnose and treat as young as 2 years of age.



# QBM-001

## Price vs. Cost

### The Hard Facts and Emotional TRUTH

- There are NO drugs currently available to ameliorate this condition.
- Orphan drugs (less than 200k patients) average price \$100,000 per year (EvaluatePharma).
- The alternative - estimated at \$5m in direct costs and up to \$5M in lost productivity due to lifetime assisted living, supplemental healthcare costs, and lost productivity of family members.
- Not measuring the severe emotional strain of never talking to your child.
- Pediatric minimally verbal autism, where children lose or don't develop and manifest with ASD symptoms is rare and limited to approximately 250,000 children worldwide. 20,000 children a year in the US alone.

## MARKET POTENTIAL

United States alone: 20,000 patients per year @ \$100,000 - \$2B







# Capital Markets Overview and Management Outlook

# Capital Markets

As of Dec 4, 2018

Shares Outstanding	20,200,000	Market Cap	\$50M
Warrants	8,8M	Ave Price	\$3.50
Inside Ownership	25%	Avg. Volume 30 day	100,000
Float	~ 13,000,000	Year end	November 30

## 3-Month Trading History

Price \$ 3.00



# What to expect from us

Sales LAUNCH - Revenue generation expected in Q2 2020

Ph4 Post Marketing Study SAB for Expanded Therapeutic Label Q4 20  
Revenue in 2020

QBM-001

Pre-IND Filing, Q4 2020

1.5year Pivotal Clinical Trial Initiation Q2 2021 (505b2)

Uttroside-B - Liver Cancer

Complete pre-clinical and Prepare IND Q4 2020

Proof of Concept Studies H2 2021

MAN-01

Complete Molecule Optimization (Eye Drop)

Initiate Pre-IND Studies 2H2020 - Clinical Trial IND Q42020 - Clin Trial 2021

Additional Indications Formalized 2019/2020

Pharma Partnership opportunities

Potential up-list to national exchange in H2 2020





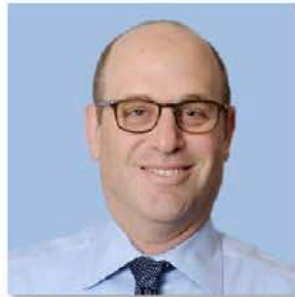
# Management Team



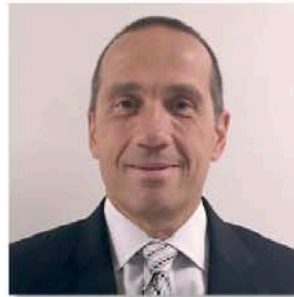
## Management Team



**Denis Corin**  
Chief Executive Officer  
Chairman of the Board



**William Rosenstadt**  
Chief Legal Officer  
General Counsel  
Director



**Dr. Rick Panicucci**  
Pharmaceutical Development  
Director



**Ari Jatwes**  
Business Development Analyst



**David Laskow-Pooley**  
VP Product Development



**Robert Derham**  
VP Orphan Products

## Advisory Board

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Director of the Center for  
Autism Research Excellence  
Boston University

**George Nikopoulos**  
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Director of Center  
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Professor, Pediatrics, UC Irvine  
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Recombinant Protein  
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Hypertension)



Accelerating Biomedical  
Technologies from  
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