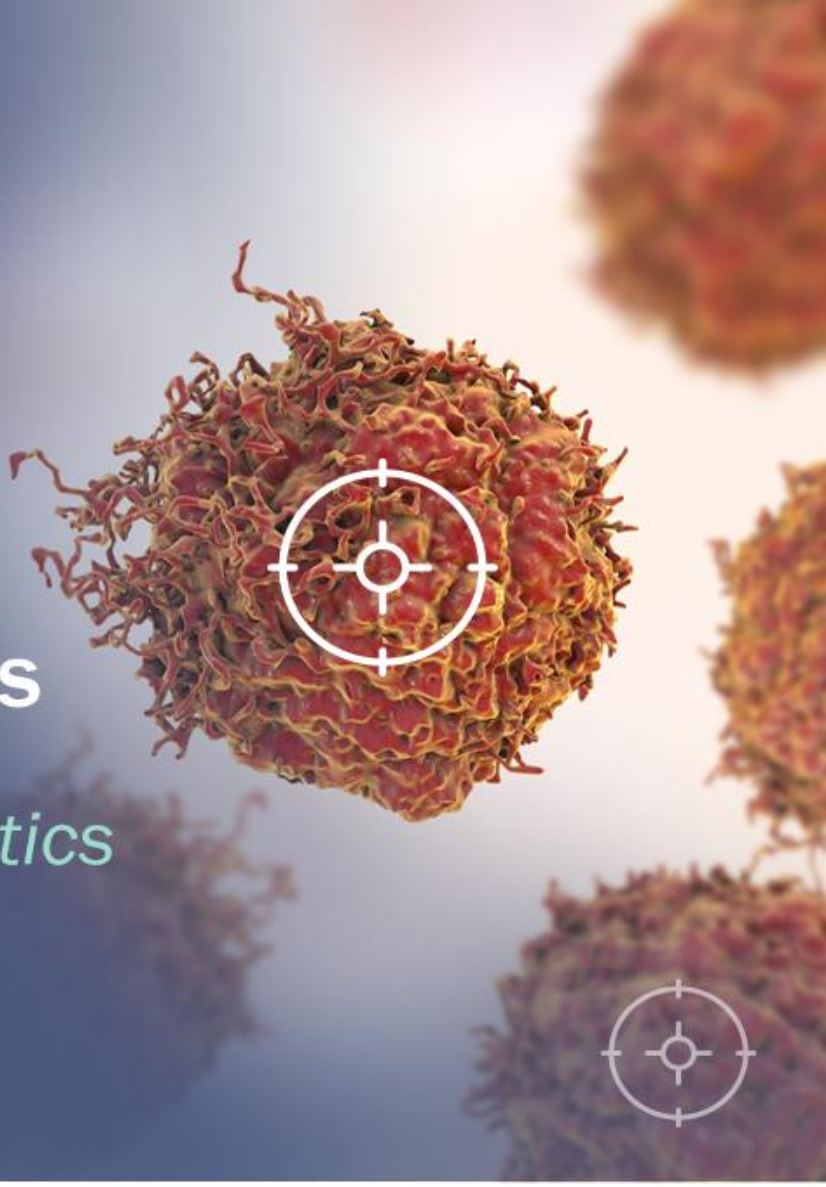
Defeating Metastatic Disease Through a Revolutionary Platform of Targeted Therapeutics

Invest in TransCode Therapeutics



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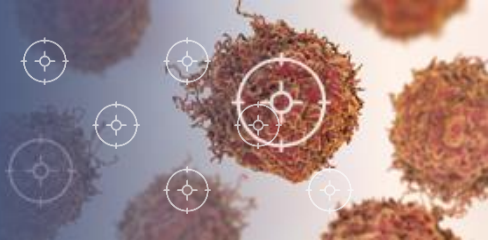
Disclaimers



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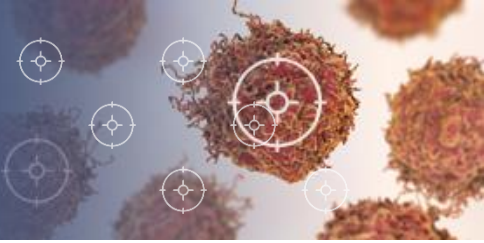
Executive Summary



Therapeutic Solutions to Address 90% of Cancer Deaths

Problem: 90% of cancer deaths attributed to metastasis, not primary tumors from which they originate

Mission: Focus on treating metastasis, cancers that spread to other parts of the body

TransCode Discovery:

Metastatic tumor cells cannot survive without the overexpression of a specific non-coding RNA molecule, microRNA-10b, which regulates the viability of metastatic tumor cells

microRNA-10b over-expression is validated in more than 18 different tumor types

Inhibiting microRNA-10b → death of metastatic tumor cells → treating metastasis

TransCode has found a way to inactivate microRNA-10b in animal studies, resulting in complete regression of established metastases with no recurrence and no toxicity.

TransCode has developed a portfolio of targeted therapeutics addressing multiple tumor types

TTX-MC138, TransCode's patented lead therapeutic, licensed from Massachusetts General Hospital, has achieved proof of concept both *in vitro* and *in vivo. In addition,* TransCode has also developed, patented and licensed a companion Biomarker test for non-invasive detection of microRNA activity

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Team

Board of Directors

- **Michael Dudley**, Co-Founder, CEO
- **Thomas Fitzgerald**, MBA, CFO
- **Philippe Calais**, PhD, Former CEO of Isarna Therapeutics B.V.

Management Team

- **Michael Dudley**, CEO
- **Thomas Fitzgerald**, MBA, CFO
- **Oliver Steinbach**, PhD, VP R&D*
- **Zdravka Medarova**, PhD, Co-Founder, Drug Discovery*
- **Alan Freidman**, Investor Relations

Corporate/Scientific Advisors

- **Anna Moore**, PhD, Co-Founder, Professor of Radiology and Physiology, Michigan State University
- **Richard Peters**, MD, PhD, President/CEO/Director, Merrimack Pharmaceuticals
- **Jack Henneman**, JD, Former CFO, NewLink Genetics
- **Keith Flaherty**, MD, Director of Termeer Center for Targeted Therapy, MGH Cancer Center
- **Raghu Kalluri**, MD, PhD, MD Anderson Cancer Center
- **George Calin**, MD, PhD, MD Anderson Cancer Center
- **Carlo Croce**, MD, Ohio State University Cancer Center
- **Dmitry Samarsky**, PhD, CTO, Sirnaomics
- **Peter Ordentlich**, PhD, CSO and Founder, Syndax
- **Betsabeh Madani**, MBA, Entrepreuneur in Residence, Innovation Boulevard

*Identified individuals to be phased in once capitalized

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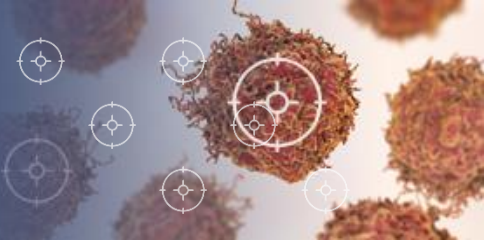
Intellectual Property



- Lead Therapeutic—*Therapeutic Nanoparticles and Methods of Use Thereof*
  - Composition of Matter for TTX-MC138 (Patent expected to issue Q1 2019). Expires 2031
  - Method Patent for treating metastatic breast cancer (Issued 4/17). Expires 2031
- Biomarker—*miRNA Profiling Compositions and Methods of Use*
  - Nanosensor for non-invasive detection of microRNA activity (Issued 10/2/18). Expires 2033
- Freedom to Operate (FTO)
  - FTO completed on IP for TTX-MC138 by Goodwin Law LLP
- IP License
  - Exclusive worldwide license with MGH signed November 22, 2018

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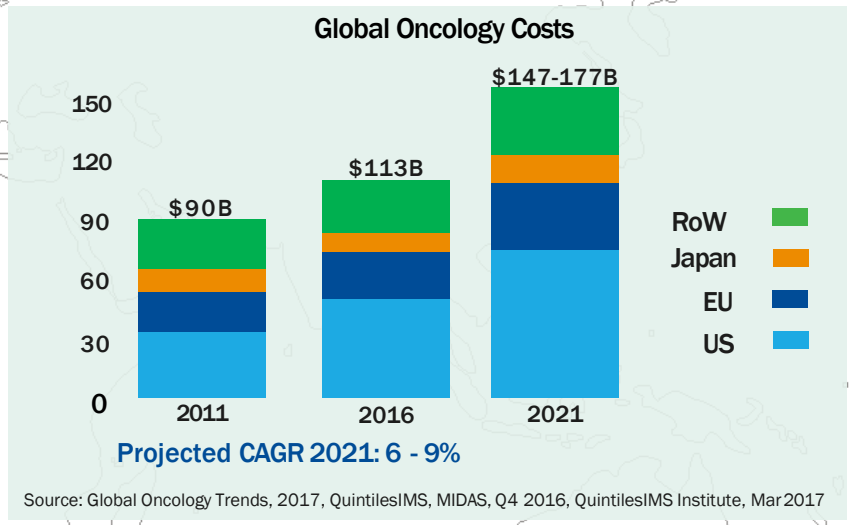
In 2018, Cancer Will Be Responsible for 9.6 Million* Deaths Globally and 90% Are Attributed to Metastasis

Global costs of Metastatic Cancer therapeutics exceed 50% of all Cancer costs with $54.11B in 2017—anticipated to reach $98.24B by 2025**

Metastasis Treatments:
Limited Options
Poor survival rates***

Annual Cancer Deaths*
Global: 9.6M in 2018
U.S.: 0.61M in 2018

Cancer Deaths in 2018*
Lung 1.76M
Colorectal 0.86M
Stomach 0.78M
Liver 0.78M
Breast 0.63M



***72 cancer therapies approved from 2002-2014 led to 2.1 months average extended life expectancy

*World Health Organization: http://www.who.int/news-room/fact-sheets/detail/cancer
**IQVIA Institute for Human Data Science

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Identifying a Metastasis Target

Association of microRNA-10b and metastasis (spread of cancer) is extensively validated*

Across 18 > tumor types, over 120 studies (including a number of meta analysis publications) on microRNA-10b and metastasis have been published

Contents lists available at ScienceDirect

Clinica Chimica Acta

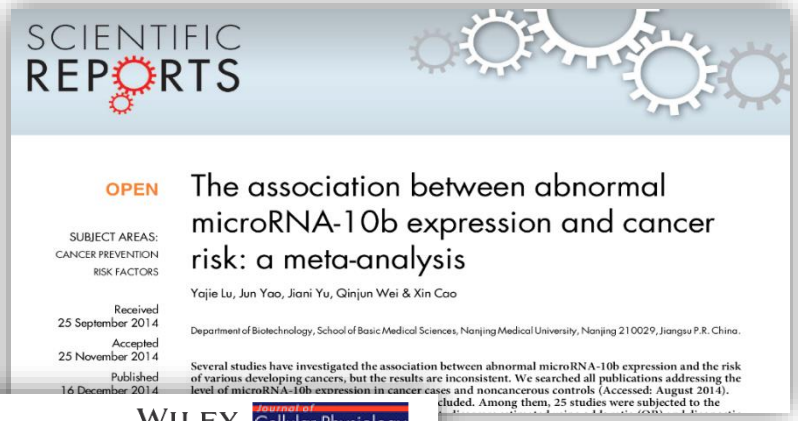
journal homepage: www.elsevier.com/locate/cca

Review

MicroRNA-10b and the clinical outcomes of various cancers: A systematic review and meta-analysis

Qiangxin Huang[a,*,1], Qian Song[b,1], Weixian Zhong[b], Yalan Chen[b], Ludong Liang[c]

[a] Department of Cardiothoracic Surgery, The First Affiliated Hospital of Guangxi Traditional Chinese Medical University, Nanning, Guangxi Zhuang Autonomous, Region, 530023, PR China
[b] Department of Thoracic and Cardiovascular Diseases, The First Affiliated Hospital of Guangxi Medical University, Nanning, Guangxi Zhuang Autonomous, Region, 530021, PR China
[c] Department of Cardiothoracic Surgery, The People's Hospital of Baise, Baise, Guangxi Zhuang Autonomous Region 533099, PR China



SCIENTIFIC REPORTS

OPEN

The association between abnormal microRNA-10b expression and cancer risk: a meta-analysis

Yajie Lu, Jun Yao, Jiani Yu, Qinjun Wei & Xin Cao

SUBJECT AREAS: CANCER PREVENTION RISK FACTORS

Received 25 September 2014
Accepted 25 November 2014
Published 16 December 2014

Department of Biotechnology, School of Basic Medical Sciences, Nanjing Medical University, Nanjing 210029, Jiangsu P.R. China.

Several studies have investigated the association between abnormal microRNA-10b expression and the risk of various developing cancers, but the results are inconsistent. We searched all publications addressing the level of microRNA-10b expression in cancer cases and noncancerous controls (Accessed: August 2014). cluded. Among them, 25 studies were subjected to the

REVIEW ARTICLE

WILEY Journal of Cellular Physiology

MicroRNA-10b expression predicts long-term survival in patients with solid tumor

Yi Zhang[1]* | Li-Juan Wang[2]* | He-Quan Yang[3]* | Rong Wang[1] | Hua-Jun Wu[3]

[1]Department of General Surgery, The First People's Hospital of Neijiang, Neijiang,

Abstract

*See Appendix slides for a list of scientific references

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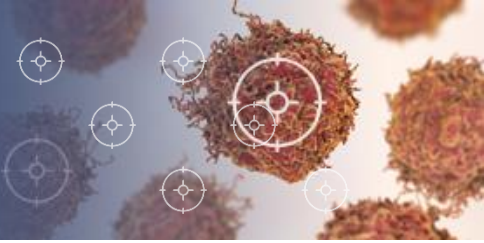
Why microRNA-10b? A Unique Biomarker



Four separate meta-analysis studies involving 7,237 patients showed microRNA-10b:

Biomarker for Metastasis

- High expression associated with tumor cell migration and proliferation
- Marker of local and distant metastasis

Involved in Multiple Cancer Types

- Breast, Pancreatic, Non-small cell lung, Hepatocellular Carcinoma, Melanoma
- Colorectal, Glioma, Prostate, Esophageal, Ovarian, Gastric and Thyroid Cancer

Linked to Higher Cancer Risk and Poor Survival Outcomes

- Carcinogenesis and Presence of cancer
- Poor overall-survival

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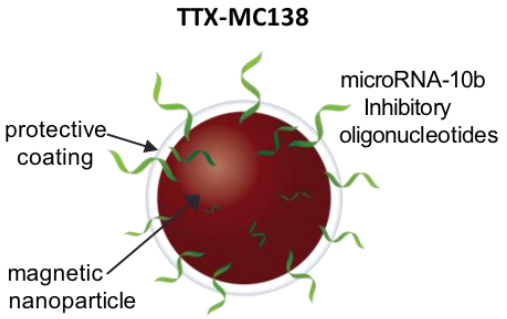
Solution: Proprietary Targeted Solution

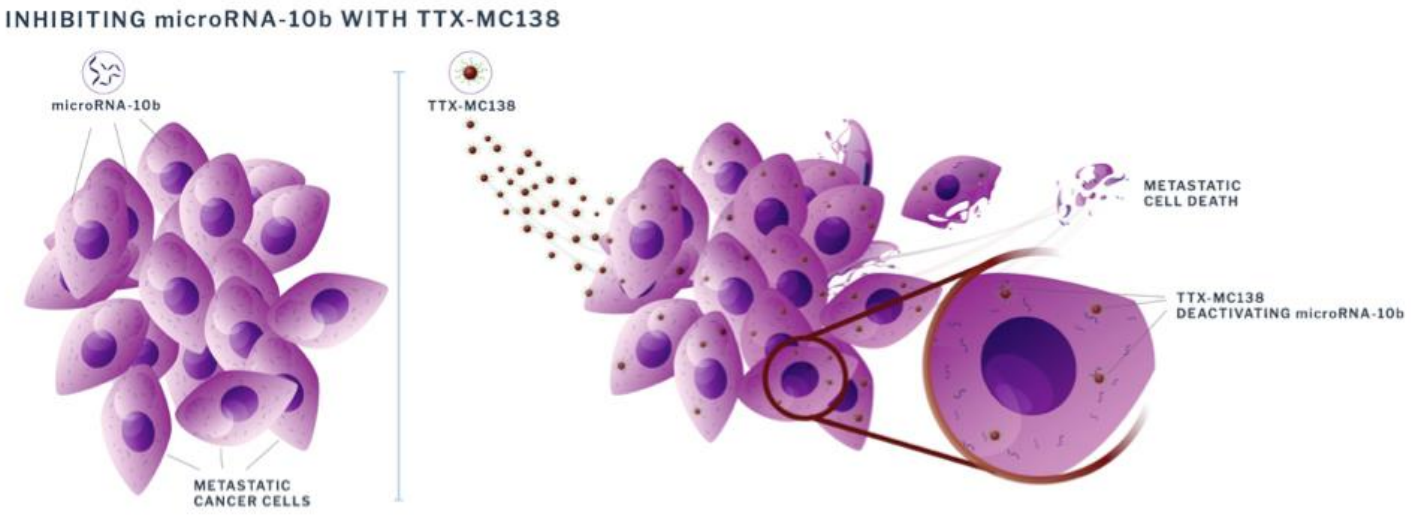
Lead Therapeutic Candidate: TTX-MC138

IONP + Inhibitory Oligonucleotide sequenced to miRNA-10b

- ✓ Eliminates metastasis by inhibiting microRNA-10b
- ✓ Inhibition results in death of metastatic tumor cells
- ✓ Proven delivery system optimized for designated target
- ✓ Image guided delivery key competitive advantage
- ✓ Unique capability to accumulate at metastatic sites



TTX-MC138: Mechanism of Action: Eliminates metastasis by inhibiting microRNA-10b

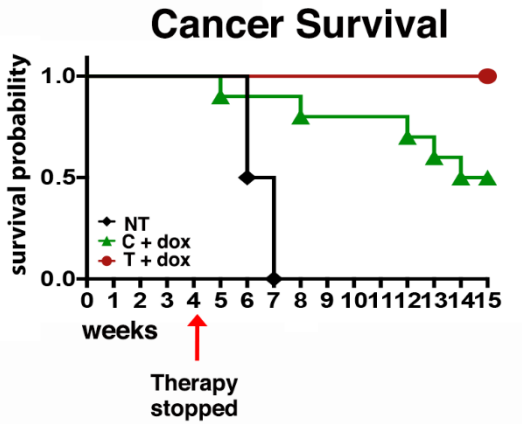


Proof of Concept

Pre-Clinical POC: TTX-MC138

Stage II/III Metastatic Triple-Negative Breast Cancer, Mouse Model

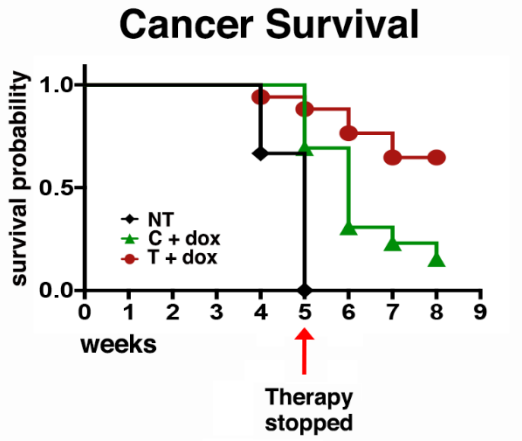
- TTX-MC138 superior to control + low-dose doxorubicin*
- Eliminates pre-existing ***local*** metastases



After metastases were eliminated, the therapy was stopped in both models and there was no recurrence or toxicity

Stage IV Metastatic Triple-Negative Breast Cancer, Mouse Model

- TTX-MC138 superior to control + low-dose doxorubicin*
- Eliminates pre-existing ***distant*** metastases



NT—No therapy
C—Control (Irrelevant oligo)
T—TTX-MC138
dox—low-dose doxorubicin

*Doxorubicin was used to slow down cell division in tumor cells. In pre-clinical studies that utilize aggressive metastatic tumor models, the use of doxorubicin was necessary to allow TTX-MC138 to fully inhibit microRNA-10b. Because metastatic growth is slower in humans, the use of a cytostatic such as doxorubicin will likely be unnecessary, and TTX-MC138 would be administered as a monotherapy.

Therapeutic Pipeline*

Therapeutic	Target	Discovery	*In vitro***	Preclinical	Phase II/III
TTX-MC138	miR-10b	MTNBC			
	miR-10b	Colorectal cancer			
	miR-10b	NSCL cancer			
	miR-10b	Pancreatic cancer***			
	miR-10b	Glioblastoma**			
	miR-10b	Hepatocellular cancer***			
Lin28b Inhibitor	Lin28b	Pancreatic cancer***			
anti-miR-xxx	miR-xxx	Other cancer types			
siRNA	PD-L1	Pancreatic Cancer***			

*Pipeline currently in development—selected therapeutics and targets may change
**TTX-MC138 demonstrated therapeutic efficacy *in vitro* in 77% of 624 human tumor cell lines representing the spectrum of metastatic and non-metastatic cancers. *PLOS ONE* | https://doi.org/10.1371/journal.pone.0201046 *July 2018*
***Cancer types classified as orphan diseases

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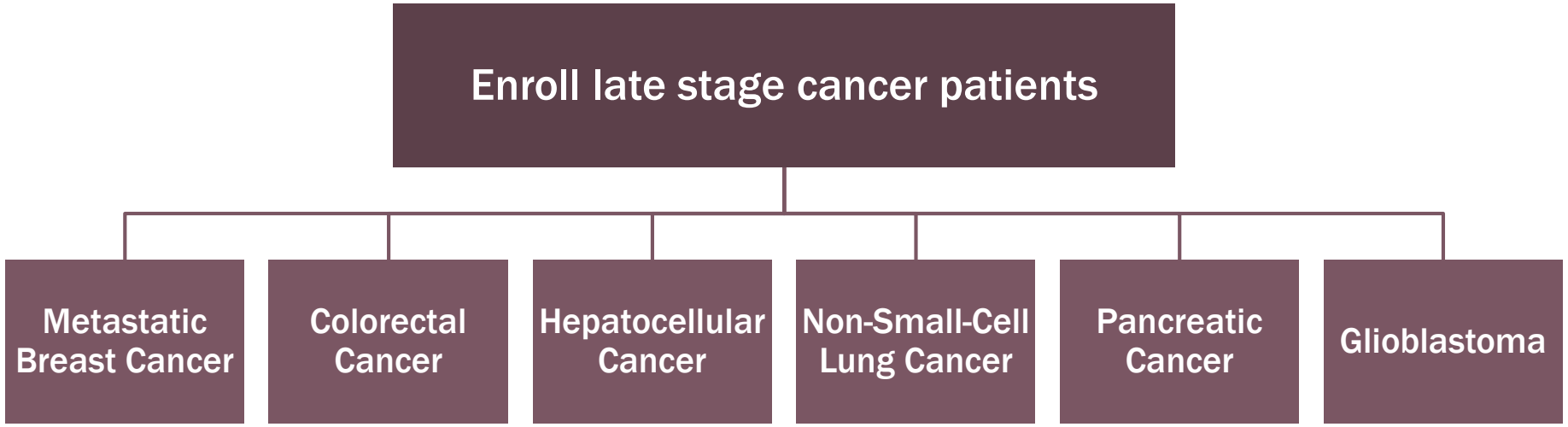
Clinical POC Strategy: Adaptive Trial Design



- PhIIa trial—Single IND
- Up to 6 different tumor types
- Patients with cancer types with known microRNA—10b over-expression
- Enroll additional patients in the arm showing the greatest success
- Enable continuation from PhIIa—to PhIII

No patients have been enrolled yet and trials need to be designed first.

Therapeutic Programs—Projected Milestones

(Subject to Pre-IND meeting with FDA)

Program		Timeline			
Therapeutic	Cancer Type	2019	2020	2021	2022
TTX-MC138	MTNBC				
	Colorectal				
	NSCL				
	Pancreatic				
	Glioblastoma				
	Hepatocellular				
Lin28b Inhibitor*	Pancreatic				
siRNA*	Pancreatic				

License* | IND Enabling | FDA Review | File IND | Patient Enrollment | Dose 1st Patient | POC | NDA

*License in process

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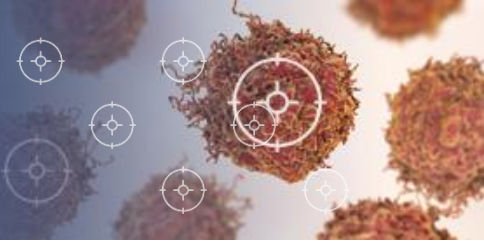
Funding



Investment to Date

$550,000 Seed

- MGH License
- New Website
- Marketing Communications
- Legal expenses

Grants to date $5.3M*

- Therapeutic development
- Biomarker development
- Preclinical POC

Current Investment Round

$36M Series A Preferred

- Hire management team
- IND Enabling Studies for TTX-MC138
- File IND
- Phase IIa clinical trial
- Achieve clinical POC
- Expand IP portfolio
- In-license other microRNA assets
- NDA

Exit Strategy

- IPO
- Acquisition—Strategic Partner
  - Leading Oncology companies—Roche, BMS, Novartis, Pfizer, Abbvie, Merck and others
  - MicroRNA companies—Alnylam, Ionis Pharma

*NIH Grants to researchers while at MGH

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Path to Liquidity