A Clinical-Stage Oncology Company
Focused on Treating Metastatic Disease

TRANSCODE
THERAPEUTICS™

NASDAQ Symbol: RNAZ

Disclaimer | Forward Looking Statements

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Sources of Capital	Amount
Seed Capital (Angel investors)	$2,240,000
SBIR Grant	2,300,000
IPO	25,400,000
S-3 Financings (2023)	2,756,094
S-1 (June 2023)	6,090,000
S-1 (September 2023)	$7,144,691
Total	$45,930,785

NASDAQ Symbol: RNAZ	Shares
Common Stock	25,097,596
Options (WAEP $10.84)	267,277
Warrants (WAEP $3.00)	5,331,683
Total	30,696,556

As of December 4, 2023

Company Overview

- Scientific Co-Founders – Former Professors of Radiology Harvard Medical School
- 12 years of R&D and optimization before company formation
- Two major discoveries during this period:
  - Discovered RNA molecule responsible for metastatic progression and survival of metastatic tumor cells in 20+ different solid tumors
  - Developed and optimized a delivery system to enable therapeutic delivery inside tumor cells to genetic targets undruggable up until now

First-in-Class Therapeutic Candidate Targeting Metastatic Cancer

90% of Cancer Deaths Due to Metastatic Cancer*

$136.9B - Global Metastatic Cancer Treatment Market by 2032**

TransCode has developed the first ever therapeutic candidate specifically targeting metastatic cancer and have demonstrated complete regression of stage IV disease in multiple tumor types in preclinical studies

* CA Cancer Journal, Global Cancer Statistics 2020; H. Sung et al, May 2021;**July 6, 2023 /PRNewswire/ -- Allied Market Research published a report, titled, "Metastatic Cancer Drugs Market"

Critical Need for a Therapy to Treat Metastatic Cancer

- Cancer localized to a primary tumor is susceptible to curative intervention
- Standard of care treatment with chemotherapy and/or radiation has been shown to drive metastatic spread in multiple tumor indications*
- Metastatic cancer is essentially incurable once it has seeded distant sites**
- TTX-MC138 (lead therapeutic candidate) has the potential to treat metastatic cancer irrespective of organ of origin

Most oncology targets are currently undruggable using mAbs and small molecules. Our ability to engage these targets through the TTX delivery system could revolutionize the way we treat cancer and open up a vast pipeline of new anti-cancer drugs by making these targets druggable.

Metastasis: Cancer that spreads from organ of origin to other places in the body

*Source: 2019 American Cancer Society, Inc., Surveillance Research; International Agency for Research on Cancer in its report named GLOBOCAN 2022: Precedence Research January 2022 **Oncotarget, 2023, Vol. 14, pp: 216-218, Therapy drives genomic evolution in metastatic cancer;

Lead Therapeutic Candidate

TTX-MC138

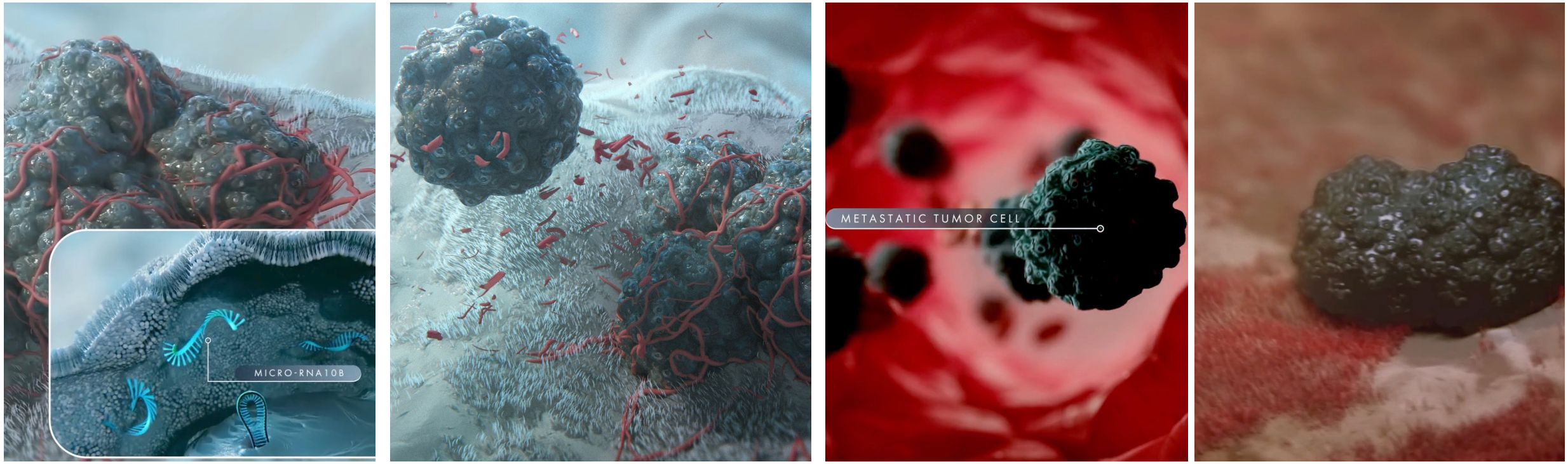
Targeting Mechanisms of Cancer Progression in Multiple Cancer Indications

Validated Biomarker

microRNA-10b is a Unique, Well Documented Biomarker of Metastasis

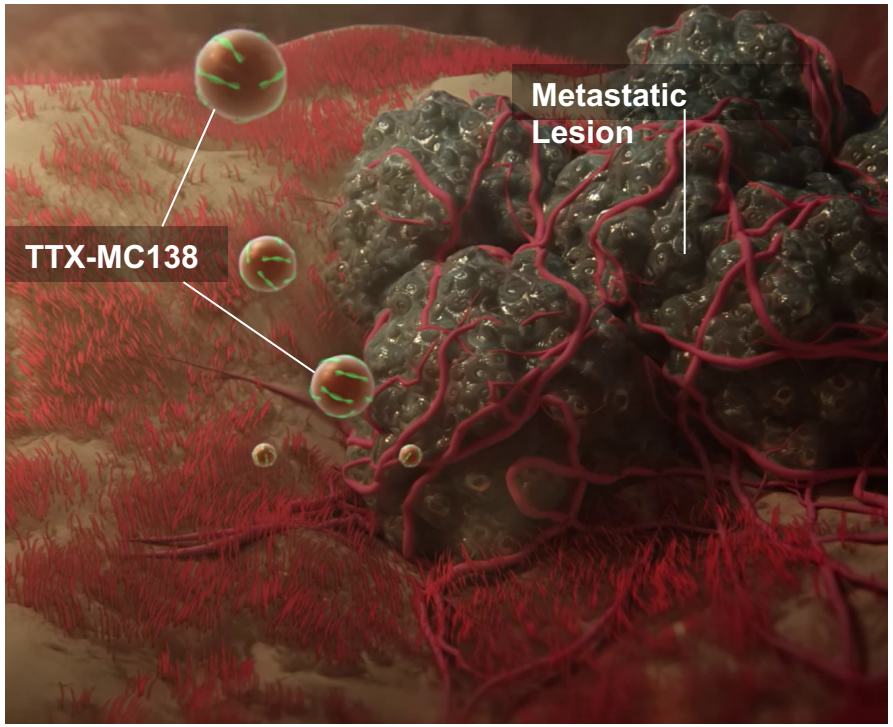
Clinical evidence demonstrated in >100 peer-reviewed publications over the last ten years

- Biomarker of cancer progression, higher cancer risk and poor survival outcomes
- Linked to metastatic progression in multiple cancer indications including Breast, Colorectal, Pancreatic, SCLC, Osteosarcoma, Liver and other rapidly proliferating cancers like GBM etc.



miR-10b upregulation in primary tumor cells leads to metastatic tumor cell formation, detachment from the primary tumor and migration to other areas of the body forming new metastases

MOA | TTX-MC138 - Designed to Inhibit miR-10b and Eliminate Metastasis



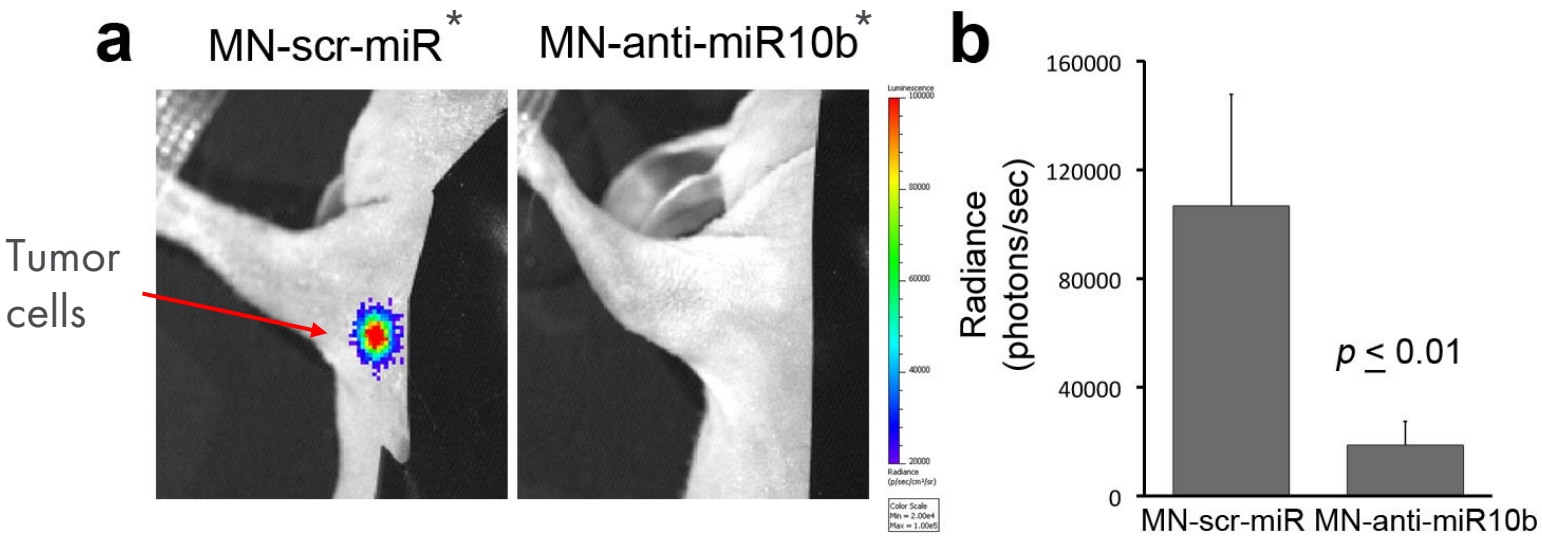
TTX-MC138 delivered to tumor cells in metastatic lesions to engage miR-10b

miR-10b inhibition has been shown to activate miR-10b downstream apoptotic pathway

miR-10b inactivation has been shown to lead to tumor cell death and elimination of existing metastases

Cancer Res 75, 4407-4415 (2015); Sci Rep 7, 45060 (2017)

Prevention of Metastatic Breast Cancer



* MN-anti-miR10b = TTX-MC138
MN-scr-miR = inactive TTX-MC138

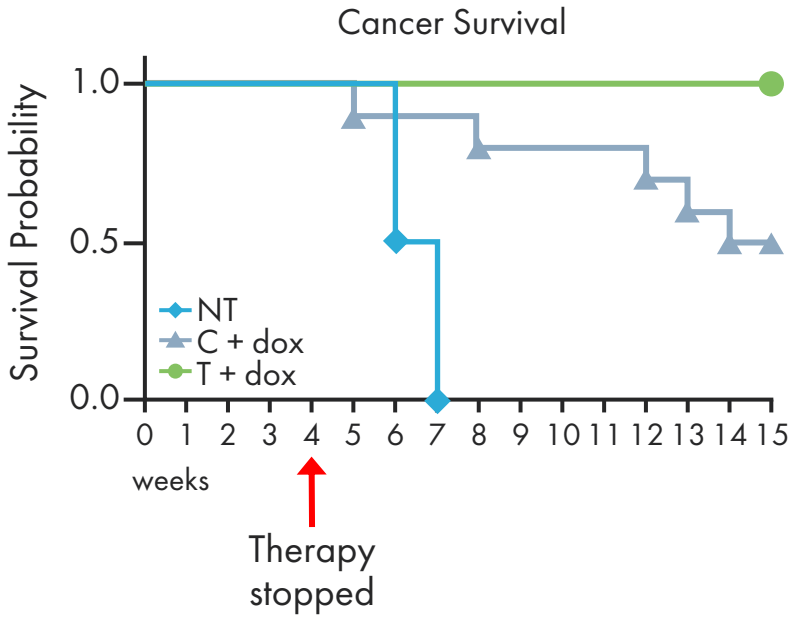
- Human breast cancer cells implanted orthotopically into immunocompromised mice
- Mice were treated with MN-anti-miR10b (TTX-MC138) prior to formation of metastasis
- None of the treated animals formed metastases
- By contrast, control animals treated with an inactive form of TTX-MC138 (MN-scr-miR) formed detectable lymph node metastases within 4 weeks

Source: Oncogene 32:1530. 2013.

Elimination of Existing Metastases in Metastatic Breast Cancer

Stage II/III Metastatic Burden

Treatment stopped after 4 weekly treatments once there was evidence (via imaging) that metastases were eliminated



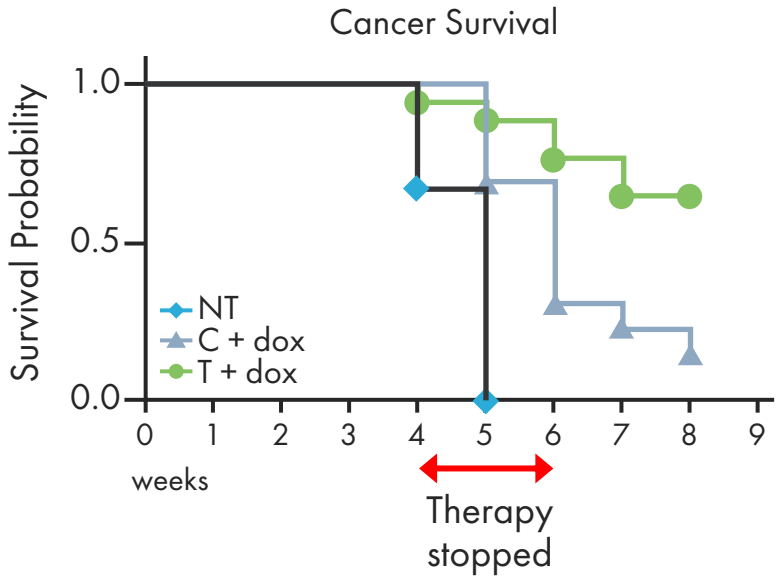
NT: No therapy, C: Control (scrambled oligo), T: TTX-MC138, dox: doxorubicin

Study design: mice (n=35) implanted with MDA-MBA-231 -luc-D3H2LN

TTX-MC138 eliminated pre-existing local metastases (lymph node metastases) in 100% of the animals treated

Stage IV Metastatic Burden

Treatment stopped after 4-6 weekly treatments once there was evidence (via imaging) that metastases were eliminated



NT: No therapy, C: Control (scrambled oligo), T: TTX-MC138, dox: doxorubicin

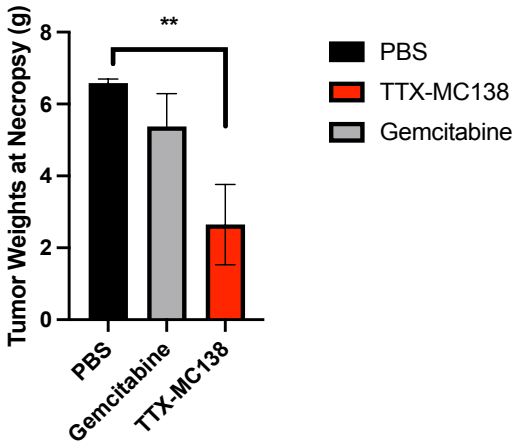
Study design: mice (n=39) implanted with 4T1-luc2 cells

TTX-MC138 eliminated pre-existing distant metastases (cancer spread to distant organs like lung metastases) in 65% of the animals treated

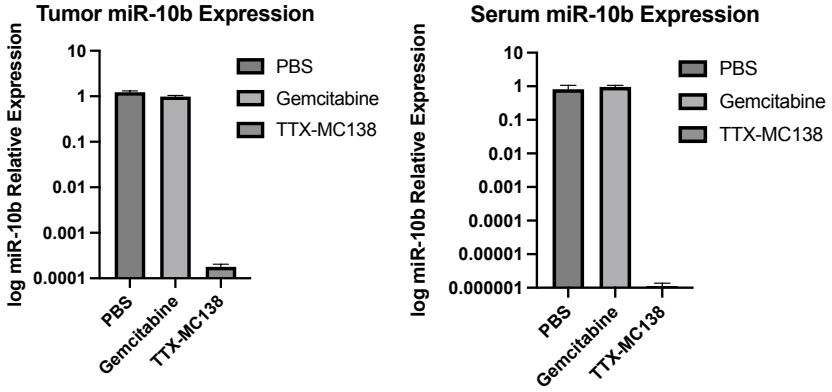
Sources: Yoo B, et al. Cancer Res. 2015;75(20):4407-4415; Yoo B, et al. Sci Rep. 2017;7:45060; Figure 11 in S-1 Preclinical results of TTX-MC138 in models of metastatic breast cancer.

Preliminary Results of Pre-Clinical Efficacy in Pancreatic Cancer Model*

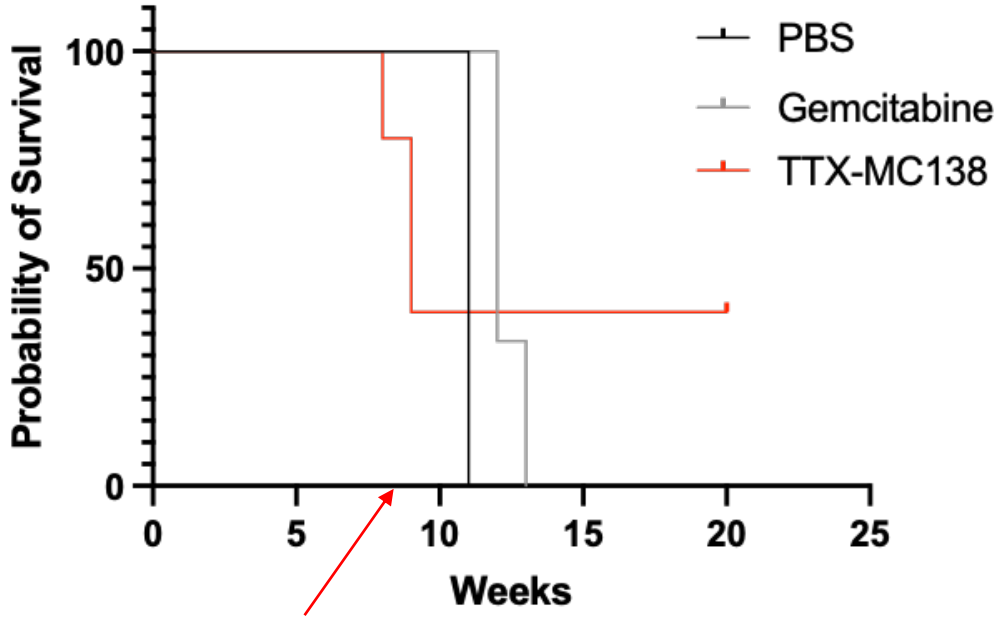
Tumor Weight at Necropsy



miR-10b Inhibition



Cancer Survival



treatment stopped after 8 weekly treatments

- Results: 40% of animals treated with TTX-MC138 showed 100% regression of disease without recurrence during the length of the study (20wks)
- qRT-PCR shows target engagement and the potential to use miR-10b expression in serum as a biomarker of therapeutic success

BxPC3-Red-Fluc cells (melanoma) orthotopically implanted into immunocompromised mice; TTX-MC138 Received Orphan Drug Designation from FDA in pancreatic cancer

Preclinical Results Synopsis

- Extensive preclinical results with TTX-MC138 informs the potential to regress existing metastatic cancer in patients
  - Successful TTX delivery to tumors and metastases demonstrated in multiple tumor indications
  - TTX-MC138 inhibits miR-10b > 90% in multiple metastatic cancers in multiple species of animals
  - Inhibition of miR-10b has been shown to lead to regression of disease
  - miR-10b biology is nearly identical in multiple animal species including humans

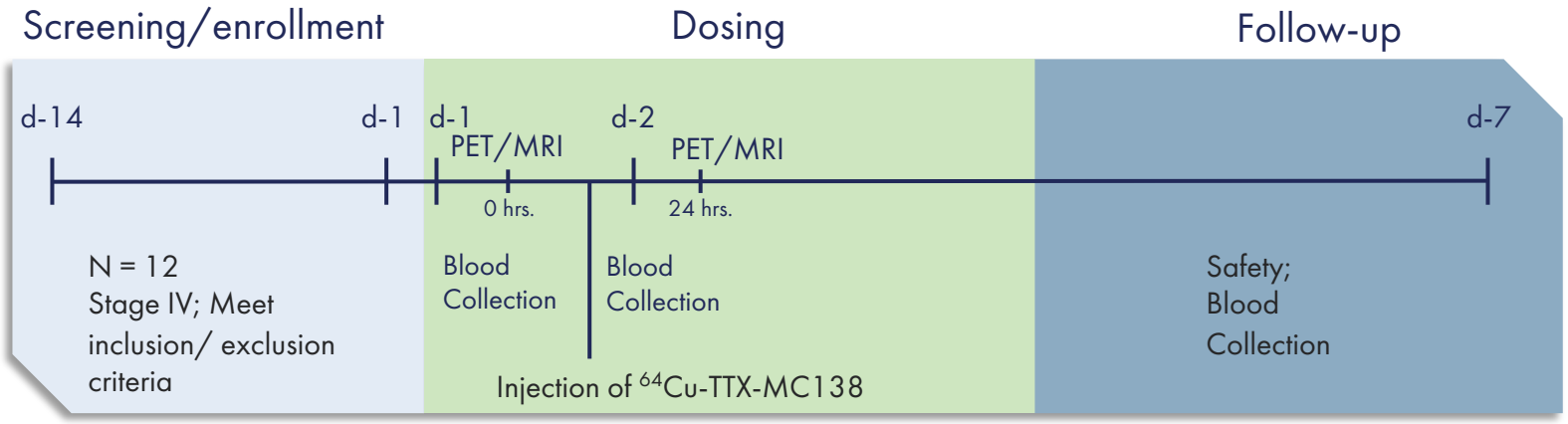
TTX-MC138 Clinical Path Forward

First In Human (FIH) Phase 0 Study Underway

Preliminary Results of Patient 1

First-in-Human Ph 0 Clinical Trial – Currently Enrolling*

- Demonstrate quantifiable evidence of delivery to metastatic lesions in cancer patients with advanced solid tumors
- Validate delivery for the TTX pipeline and open-up additional previously undruggable RNA targets



- **Primary Endpoints:**
  - PET/MRI pre and post therapy to visualize and quantify delivery of radio-labeled TTX-MC138
  - Demonstrate delivery of ^{64}Cu-TTX-MC138 to metastatic lesions
- **Secondary Endpoints**
  - Inform Phase I/II dose level from microdose results
  - Inform Ph I/II clinical trials by measuring pharmacokinetics & biodistribution in vital organs & other tissues
- **Exploratory Objectives:**
  - Measure microRNA-10b expression in patient serum pre and post dose

First Patient Successfully Dosed and Scanned – Continuing Patient Enrollment

*ClinicalTrials.gov ID NCT05908773

Blood Analysis - Plasma Radioactivity

p.i. = post injection

Parameter/Timepoint	Pre	15 min p.i.	30 min p.i.	1 hr p.i.	2 hr p.i.	4 hr p.i.	10-30 hr p.i.
Date of sample Collection (DD/MMM/YYYY)	22-Aug-2023	22-Aug-2023	22-Aug-2023	22-Aug-2023	22-Aug-2023	22-Aug-2023	23-Aug-2023
Time of sample collection (HH:MM)	12:36	14:16	14:36	15:03	16:03	18:08	14:00
Metabolite analysis (Percent intact compound %)	-	90.3	93.1	93.7	96.3	98.1	95.6
Plasma radioactivity per volume (kBq/mL)	-	13.4	13.1	12.0	11.1	11.0	5.3

- Diagnosis – Female, Stage IV, Metastatic Breast Cancer
- Primary Mets Site: Bone, Liver, Lungs
- All sample timepoints collected; pre-dose sample collected but not analyzed
- No adverse events reported

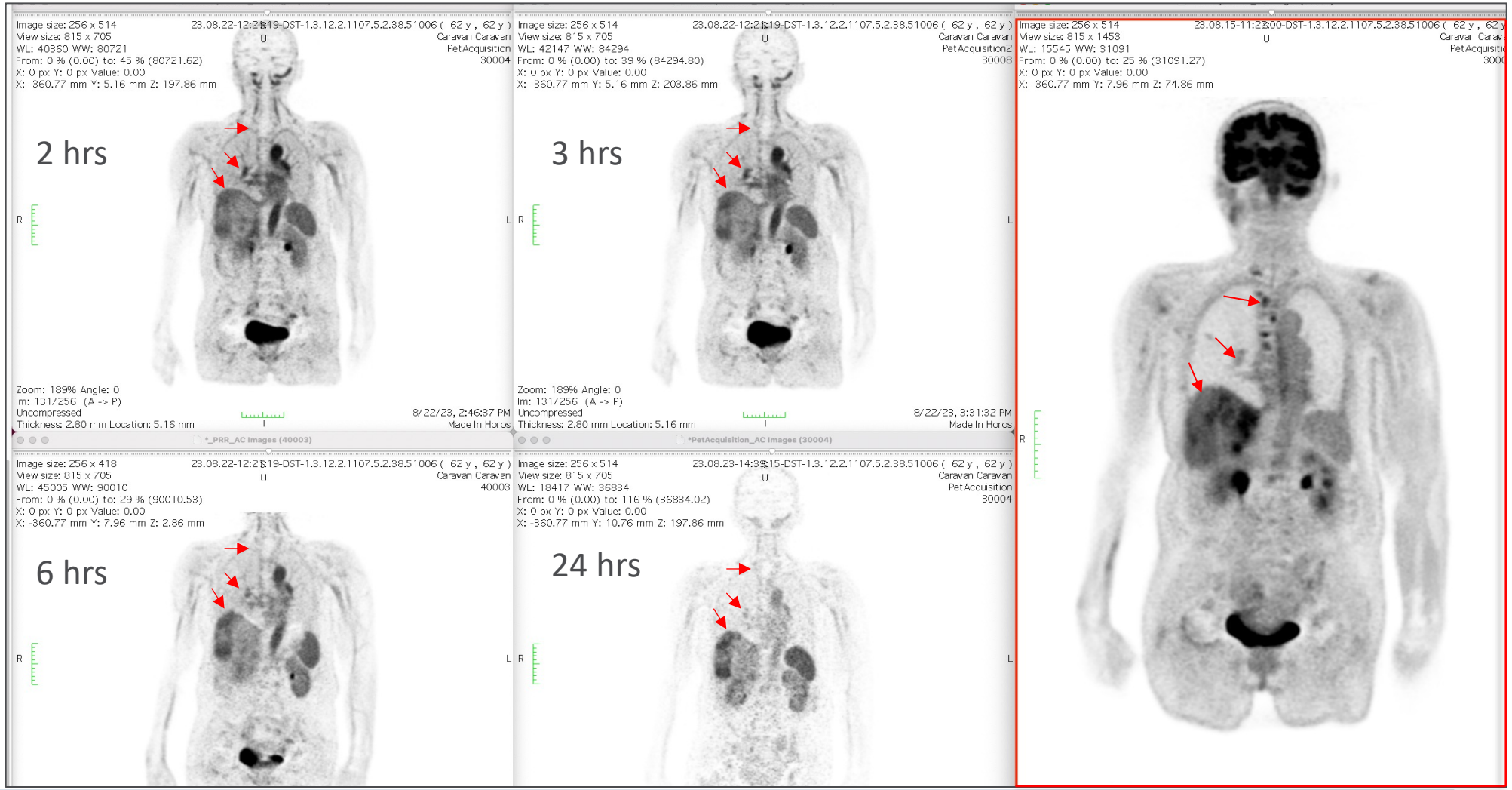
❖ Preliminary Data - Data Entry and data monitoring is ongoing

Dynamic Imaging Data - Data Entry and Data Monitoring is Ongoing

- Image on far right using FDG PET-MRI before dosing of TTX drug to indicate location of metastatic lesions (red arrows)
- On left panels - PET/MRI images at 2, 3, 6 and 24 hrs post dosing of TTX drug
- PET/MRI indicates TTX drug accumulation (red arrows) in the same metastatic lesions diagnostically indicated with FDG PET-MRI

^{Cu}64-TTX-MC138 PET-MRI

FDG PET-MRI



Clinical Trials

TTX-MC138 Clinical Path Forward

Anticipate IND Filing in Q1 2024
for Phase I Clinical Trial

Proposed Phase I Trial Design

Study Summary

Proposed Trial design

Screening

Abbreviated criteria
- microRNA-10b expression in serum
- Stage IV with primary tumor resected

Phase 1a

Escalation (SAD and MAD)
Solid tumors (not otherwise specified)
Bayesian Optimal Interval Design (BOIN)
N = up to18
Design Scenario: Adaptive/All comers

Phase 1b

Expansion
All-comers that meet inclusion criteria
Expansion at MED dose N = up to 30
Design Scenario: All comers, one or three tumor types

- Phase 1a objective: Safety assessment (up to 3 Dose Levels)
  - Secondary objectives: Confirm delivery to tumor site & evaluate pharmacokinetics, pharmacodynamics
- Phase 1b objective: Exploratory Clinical Pharmacology (Dose Level)
- Secondary objectives: ORR according to investigator's assessment, duration of response, safety and additional pharmacokinetic & pharmacodynamic evaluations
- Multi-center trial; up to 48 subjects
- Follow up: Up to 6 months

- Critical Inputs Being Evaluated:
- Dose Rationale: Non-clinical data, NHP data, Physiologic PK Model
- Schedule: Tox study design gives us coverage of up to two doses, one week apart.
  - FDA may allow for more frequent dosing given late-stage oncology (Pre-IND question)
  - FDA may require more tox data for longer duration of dosing
- Indications: How do different tumors react to dose and/or schedule?

Clinical trial design assesses safety & RP2D* and potential indication of clinical pharmacology (target inhibition)

*RP2D – Recommended Phase II dose

Overcoming the Challenge of Delivery

Persistent Oncology Therapeutic Delivery Challenge:

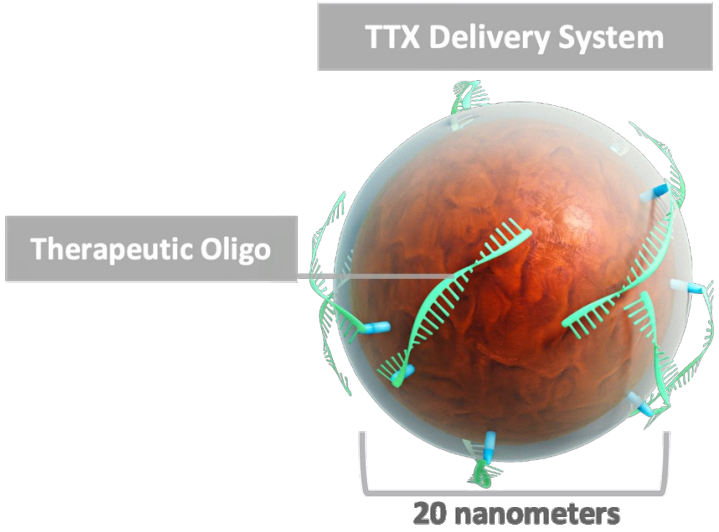
- Enable intracellular delivery of molecular therapeutics with high efficiency of endosomal release
- Efficient delivery of RNA therapeutics to relevant oncology targets in tumors and metastases
- Precise genome editing using systemically-administered genome editing tools (e.g., CRISPR)
- Delivery of potent and safe mRNA vaccines for oncology applications

We believe overcoming the challenges of delivery would represent a vital step in unlocking therapeutic access to a variety of documented genetic targets that are currently undruggable with small molecule and mABs

Our therapeutic delivery strategy employs nanoparticles extensively used in imaging that have been *repurposed* and *optimized* to efficiently deliver therapeutic payloads to oncology targets

Vast preclinical evidence TTX overcomes delivery challenge:

- **High efficiency of endosomal release via the proton sponge effect for cytosolic delivery – essential for overcoming RNA dysregulation**
- Unique magnetic property able to confer numerous multimodal therapies/theranostics
- Size and surface chemistry "high tunability"
- Scalable and cost-effective manufacturing
- Safety - biodegradability and low immunogenicity



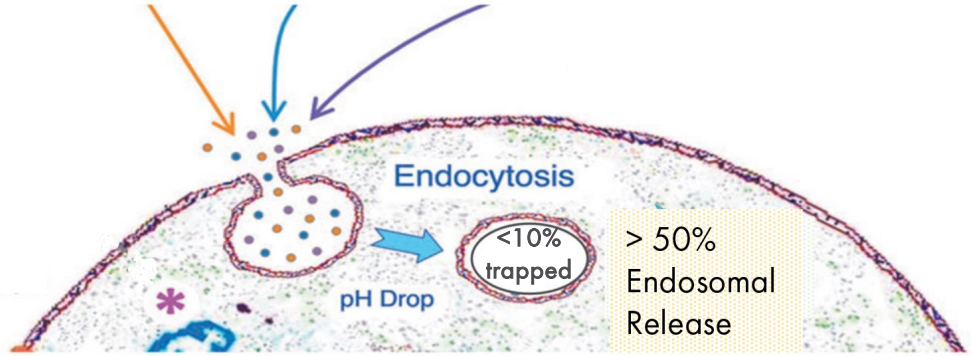
Yoo B, et al. J Biomed Nanotechnol. 2014;10(6):1114-1122; Yigit MV, et al. Pharm Res. 2012;29(5):1180-1188; Weissleder R, et al. Radiology. 1991;181(1):245-249.

Comparison of Endosomal Release Characteristics in Cancer Cells

TTX

- Endosomes comprise a lipid bilayer that entraps 99% or more of competitive RNA therapeutics
- **TTX nanoparticles** are endocytosed into cancer cells and due to the proton sponge effect are released from endosomes with high efficiency **= 90%+ RNA target inhibition in pre-clinical studies**

siRNA; ASOs and Mimics

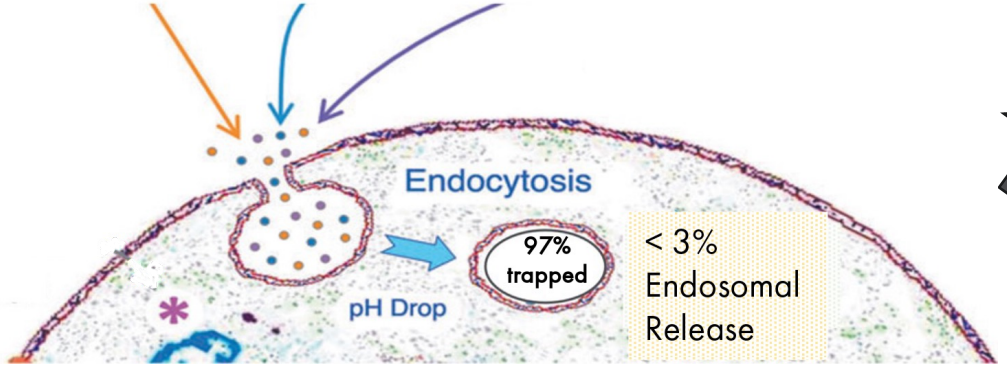


> 90% genetic target inhibition

Competitors

- Other delivery agents including lipid particles (LNPs) and GalNAc are entrapped inside endosomes and only 1-3% enter the cytosol* severely limiting RNA target engagement in cancer cells
- These delivery systems have been shown to have limited delivery success in tumors and metastases due to entrapment by endosomes

siRNA; ASOs and Mimics



Limited efficacy in modulating RNA in cancer

* Dowdy, Steven F., Setten, RL, Cui, XS, Jadhav, SG; Nucleic Acid Therapeutics Vol 00, Number 00, 2022, Delivery of RNA Therapeutics: The Great Endosomal Escape!

Therapeutic Delivery

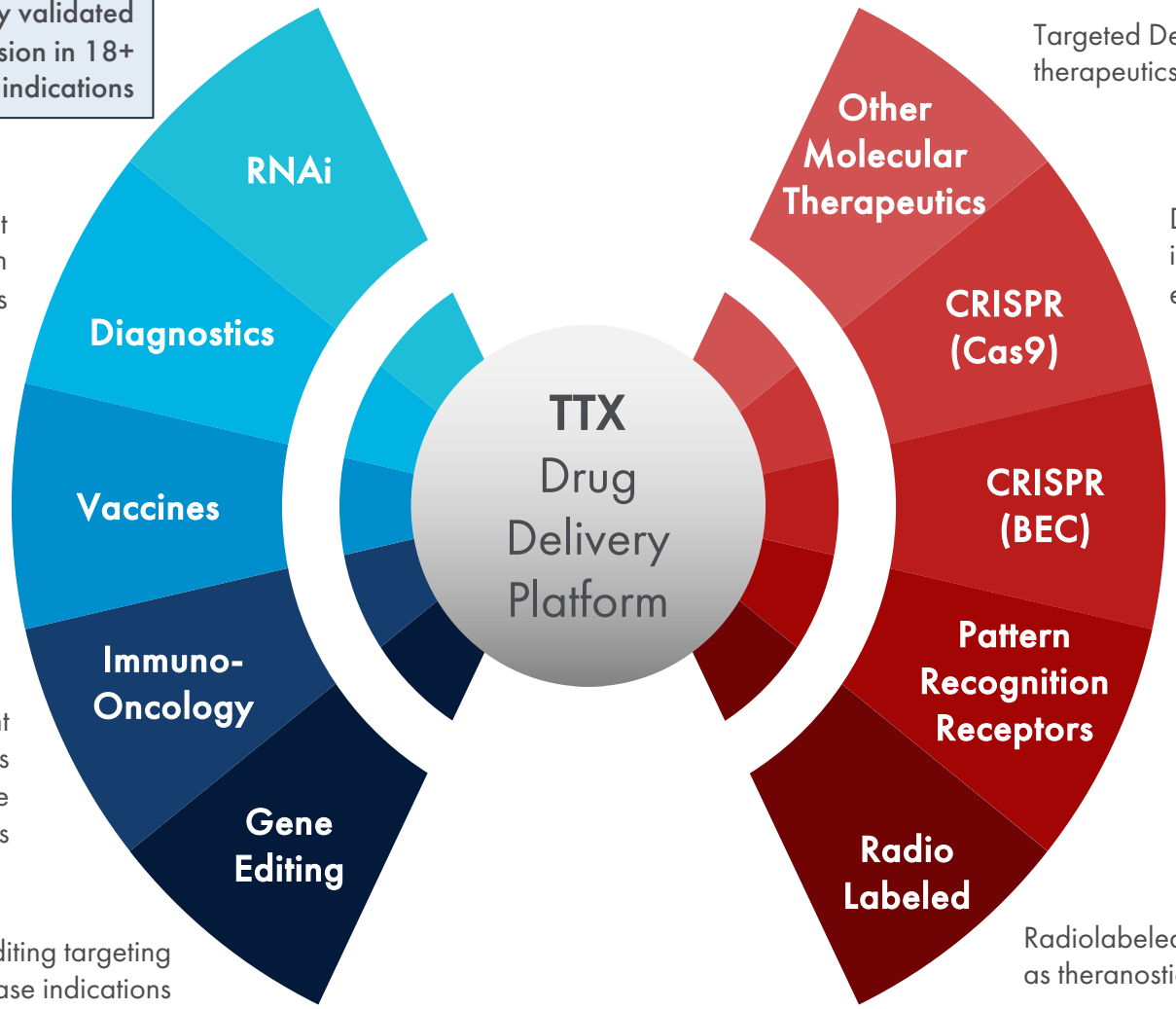
Proprietary Delivery Platform

Advancing First-in-Class Therapeutics

Delivery Platform

Proprietary Platform with Potential to Deliver a Broad Array of Therapeutics

TTX-MC138 – Lead therapeutic candidate targeting miR-10b, a clinically validated driver of metastatic progression in 18+ tumor indications



A sensor assay to detect microRNA expression in serum to track treatment success

Messenger RNA-based cancer vaccine – capable of expressing oncogenic epitopes

siRNA-based PDL1 checkpoint inhibitor for multiple solid tumors inhibiting expression of PDL1 inside tumor cells and macrophages

Gene editing targeting other disease indications

Targeted Delivery of other molecular therapeutics (Nanobodies, Proteins etc.)

Delivery of CRISPR (Cas9) inside cancer cells for genome-editing in multiple solid tumors

Collaboration with Akribion Genomics, (spinout of BRAIN Biotech), for targeted tumor cell ablation

Activating the innate immune system by building an agonist inside a cancer cell stimulating a lasting tumor-specific immune response

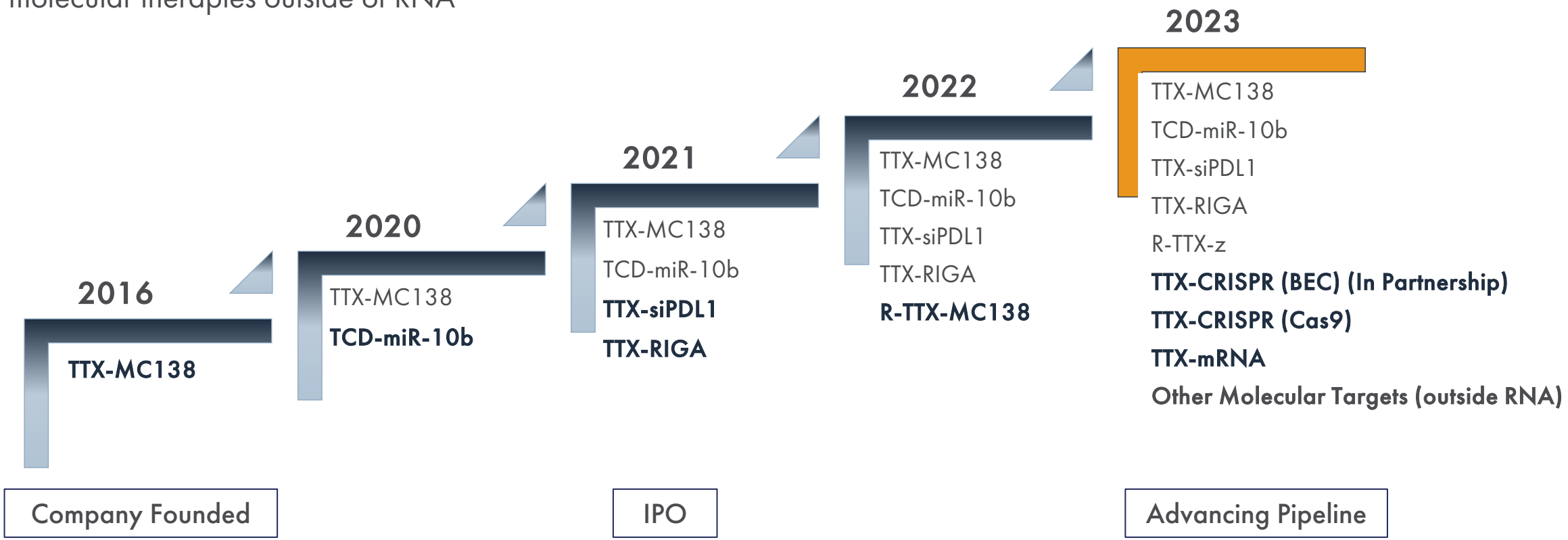
Radiolabeled therapeutic candidates to be used as theranostics or radio-immunotherapeutics

Product Pipeline

Advancing a Pipeline of First-in-Class RNA Therapeutic Candidates

Historical Timeline for Product Development

Expanding delivery capability includes CRISPR-based genome editing and mRNA vaccines as well as other molecular therapies outside of RNA



* R indicates radio-labeled therapeutic

Pipeline | # Advancing a Pipeline of First-in-Class RNA Therapeutic Candidates

Drug Candidate	Target	Type	Disease Indication	R&D	Preclinical	IND Enabling	Phase 0	Phase 1	Phase 2	Phase 3
TTX-MC138	miR-10b	RNAi	Metastatic Cancer							
			*Glioblastoma (GBM); **Pancreatic Cancer							
			*SCLC, & Osteosarcoma							
TTX-siPDL1	PD-L1	RNAi	**Pancreatic Cancer							
TTX-RIGA	Multiple	PRR-RIGI	Cancer Agnostic							
TTX-CRISPR	Multiple	CRISPR (Cas9)	Cancer Agnostic							
TTX-CRISPR	Multiple	CRISPR (BEC)	Cancer Agnostic							
TTX-mRNA	Vaccine	mRNA	Cancer Agnostic							

* Seeking Orphan designation status
**Received Orphan designation status from FDA

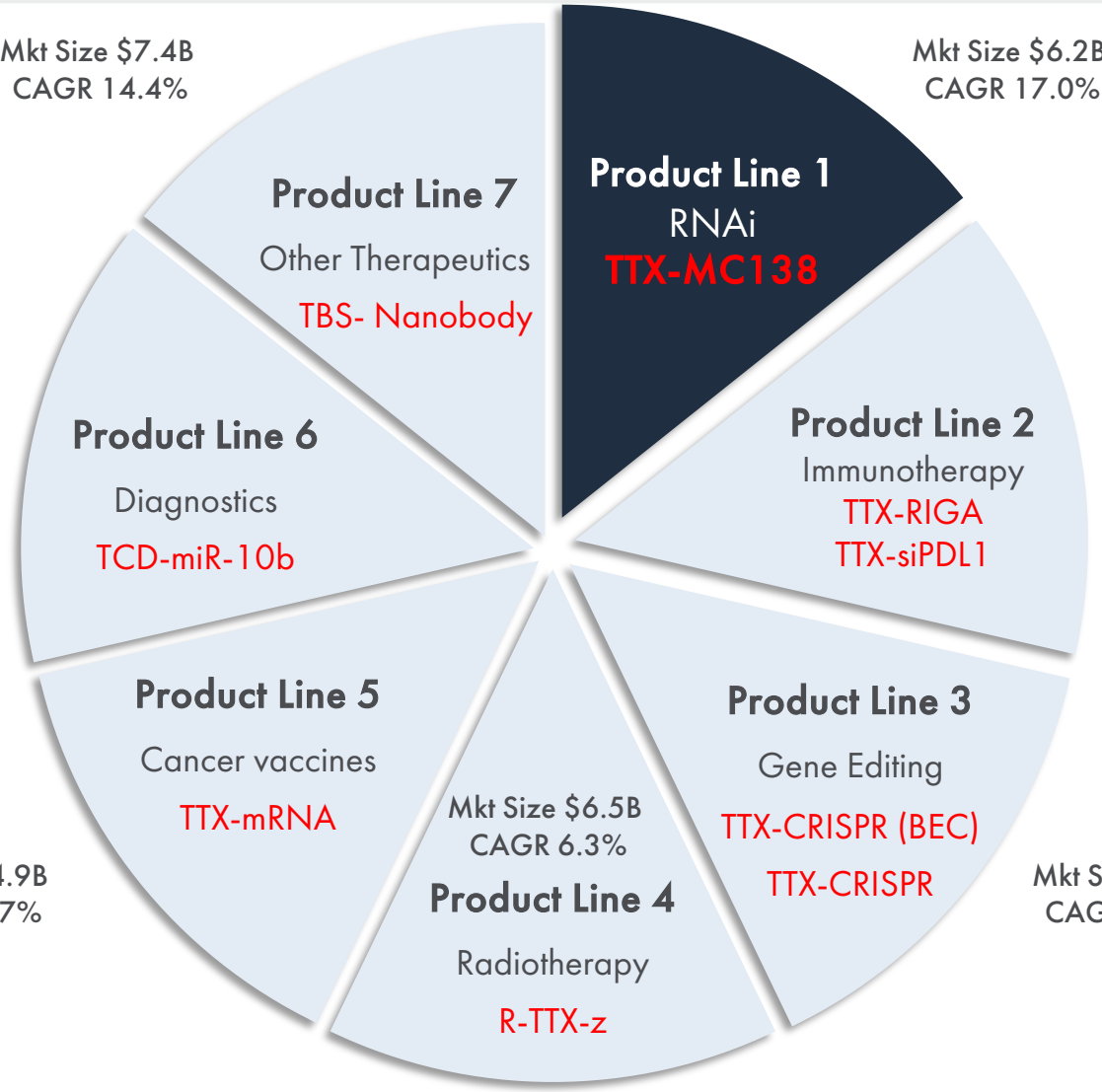
External partner development

External Partnership Development

Out-licensing/Partnering Opportunities

R&D Pipeline Market Opportunity

Total Current Pipeline Market Opportunity $289.8 Billion



Primary In-house Focus

Primary Partnering Opportunities

TBS - Target Binding Scaffold

14 patents in 7 patent families

Growth Market Reports January 2023; Emergen Research 2021; KD Markets Insight 2023; Allied Market Research 2023; Research Reports World 2023; Coherent market insights 2023; Research and Markets 2023

Company	Product	Opportunity	Expected Timing	POC Study to be Funded
Akribion Genomics	TTX-BEC	Joint venture; TTX License	Q1 in vivo study	TBD
Company A	Targeted TTX-mRNA	POC > TTX License	H1 2024	Yes
Company B	TTX-CRISPR	POC > TTX License	H1 2024	Yes
Company C	TTX-RIGA	POC	TBD	TBD
Company D	TTX-siRNA	POC > TTX License	H1 2024	TBD
Company E	TTX-mRNA	POC > TTX License	H1 2024	TBD

POC – Proof of Concept

In Summary

Milestones Achieved in 2023

Value Creating Milestones Opportunities

Milestone Achievements - 2023

- Exploratory Investigative New Drug (eIND) application approved by FDA (3,800 pages)
- Joint venture with Akribion Genomics to develop a CRISPR-derived technology platform for cancer-agnostic treatment
- IRB approval for FIH clinical trial
- Dosed 1st Subject in Ph 0 Clinical Trial
- Completed GMP manufacturing of TTX-MC138 for Ph I trial
- Completed fill/finish of TTX-MC138 for Ph I trial
- Completed IND enabling Tox studies for Ph 1 clinical trial
- Orphan Drug Designation status received for TTX-MC138 in pancreatic cancer
- Filed new patent to expand delivery platform to CRISPR/mRNA and Protein delivery
- Demonstrated prolonged survival in murine models with Glioblastoma treated with TTX-MC138
- Raised $18.5M in additional capital

Potential Value Creating Milestones 2024-2025

Value-Generating Milestones

Potential to Create Multiple Liquidity Opportunities

2024

TTX-MC138

- Phase 0 clinical trial topline results (in process)
- File IND for Ph I/II
- FDA approval of IND
- IRB Approval – Ph I/II
- Commence Multicenter Ph I
- Topline results Ph I
- File for European ODD status
- Finalize diagnostic test for miR-10b for use in clinical trials

Partnerships

- Multiple POC collaborations pending

2025

TTX-MC138

- Potential for expansion to Ph II or;
- Potential to Commercialize or commence Ph III

Partnerships

- TBD

Potential to Transform the Way Cancer is Treated

Value Proposition	• Clinical stage oncology company with a focus on treating metastatic disease • Proprietary delivery platform designed to overcome the challenges of therapeutic delivery to tumors & metastases • Potential for broad applicability across multiple targets and cancer indications • Complete regression of established metastases in preclinical studies in tumor models using TTX-MC138 • Proof of concept demonstrating successful intracellular delivery using multiple therapeutic payloads • Extensive patent portfolio covering delivery system and targeted therapeutics
Delivery System Differentiating Features	✓ **Enables cytosolic delivery due to efficient endosomal release via the proton sponge effect** ✓ Tunable chemistry optimized for functionalization against relevant documented oncology targets ✓ Size and charge optimized for stability, long circulation, and optimal PK and tissue distribution ✓ Repurposed nanoparticles used in cancer imaging & treatment of iron deficiency anemia as delivery system ✓ Delivery platform is image-capable via MRI – potential for visual confirmation and quantification of delivery
Unmet Need	• 9.9 million people died of cancer in 2020 and over 90% of those cancer deaths are attributable to metastasis • Virtually no treatment options for cancer patients in advanced stages of disease
Market Opportunity	• Metastatic cancer market to reach $136.9 billion by 2032** • Undervalued therapeutic assets with potential for significant return on investment

*Source: CA Cancer Journal, Global Cancer Statistics 2020; H. Sung et al, May 2021; **July 6, 2023 /PRNewswire/ Allied Market Research published a report, titled, "Metastatic Cancer Drugs Market ; ***Pitchbook, Torrey Biotech Publication July 2022