Speratum Biopharma Inc.

Delivering **health**
through innovative cancer therapeutics

Corporate Presentation

Non-confidential overview

Speratum's Value Proposition is Driven by Multiple Therapeutic Innovations

Precision oncology based on improved RNAi Design and Drug Delivery

We have developed a proprietary RNA-based therapeutic for the treatment of cancer

We use cutting-edge nanotechnology to deliver specially engineered RNA silencing molecules to solid tumors, leading to destruction and to regulation of multiple cancer targets simultaneously.

Our innovations are backed by peer-reviewed science

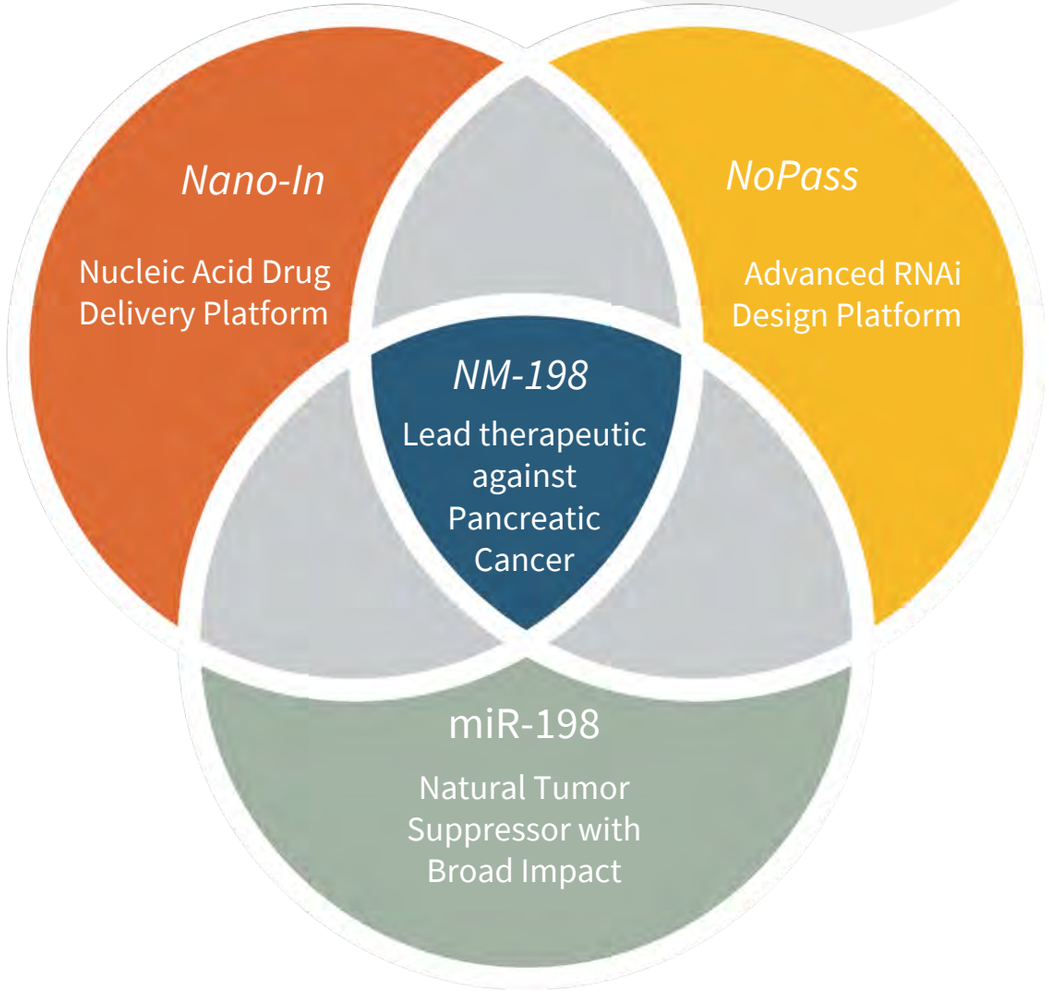
Robust preclinical data demonstrates potent therapeutic efficacy and clear safety across multiple types of cancer in animal studies, solving the main limitations that have prevented other RNA therapeutics from making an impact in oncology.

We are making rapid progress toward the Clinic

Completing IND-enabling studies to reach the clinic within 12 months, with a clear path towards trials and to commercialization

Team with strong technical background to drive programs

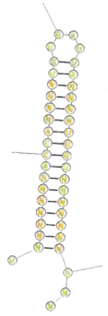
Led by an experienced team with expertise across clinical oncology, molecular oncology, transitional science, and operations, Speratum's mission is to improve oncology with RNA-based therapies tailored to kill tumors and to overcome drug resistance.

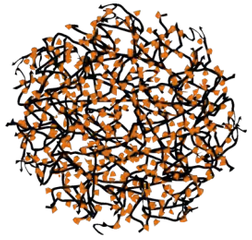


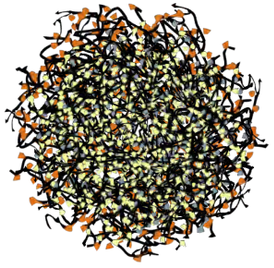
Speratum combines advanced delivery technology (*Nano-In*) with cutting-edge RNA interference design (*NoPass*) to create a first-in-class, engineered molecule based on the native miR-198 gene, **redefining precision cancer treatment**

Speratum's Novel Platforms Combine for Innovative Cancer Treatment

A promising lead target + **Precision design** + **Innovative delivery** ➡ **Combined into a novel therapeutic**







miR-198

miRNA-198 is a powerful tumor suppressor microRNA that can target drug-resistant cancer

NoPass Design

Our ***NoPass*** platform for designing RNA sequences leads to precision therapy with more efficacy and fewer side effects

Nano-in Delivery

Our breakthrough biocompatible delivery ***Nano-In*** system enables safe, effective nucleic acid drug transport

NM-198

Our therapeutic innovations converge into a breakthrough therapeutic ***NM-198*** to combat drug-resistant cancers

Our technologies target drug-resistant tumors, using specialized designs and advanced material science to improve outcomes and reduce to adverse effects.

Speratum's IP portfolio: cutting-edge innovations with market exclusivity

Speratum has built a robust intellectual property portfolio consisting of three patent families that ensure market exclusivity and provide a competitive edge in precision oncology. Speratum's proprietary platform technologies combine with a growing target pipeline to generate a strategic advantage to position for sustained innovation and growth in diverse research and therapeutic markets.

Nano-in Delivery

Exclusive worldwide license from Baylor College of Medicine

US11613609B2 *Patented*
Use of polylactic-co-glycolic acid (PLGA)-modified polyethylenimine (PEI) nanotechnology (LGA-PEI) conjugates and their use in forming self-assembling nanoparticles with high loading efficiency for DNA and RNA, ensuring effective nucleic acid delivery *in vitro* and *in vivo* with low cytotoxicity.

NoPass Design

Internally-developed intellectual property from Speratum

WO2022040594A1 *Patent pending*
Novel design for flexible RNA scaffolding that allows reprogrammable combinatorial RNA interference therapies for precision and versatility in targeting.

US20220145290A1 *Patent Pending*
Substrate sequence design workflow and methods for RNAi-mediated multi-site regulation of genomic and sub-genomic viral and non-viral RNAs

Therapeutic microRNAs

Exclusive worldwide licenses from Baylor College of Medicine

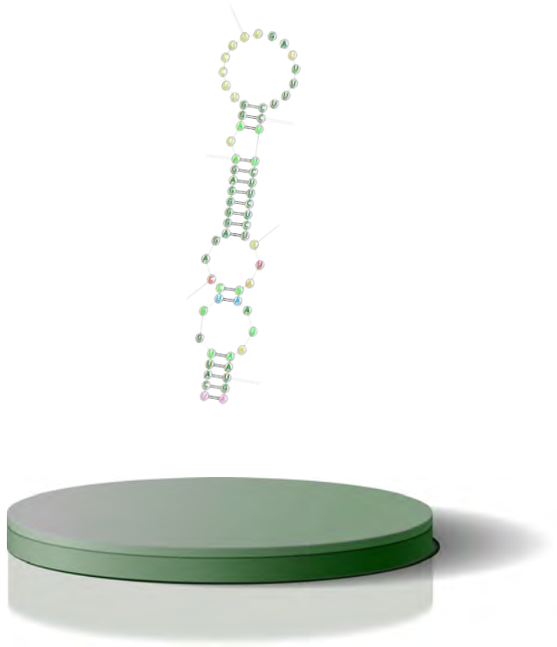
US20130121912A1 *Patented*
Therapeutic application for miR-198 as a tumor suppressor to target critical pathways involved in tumor growth, migration, and drug resistance in pancreatic breast, colon, lung, kidney, bone, ovarian, and gastric cancers.

WO2022040594A1 *Patented*
Therapeutic application for miR-520 as a tumor suppressor to target drug resistance by sensitizing ovarian and other tumors to platinum-based therapies.

Strong IP strategy and execution

Global patent filings in key markets, including USA, European Union, UK, Japan, South Korea, Canada, and Australia.
Additional related IP filings underway to increase breadth, coverage, and pipeline and secure long-term market protection.

Our Technologies



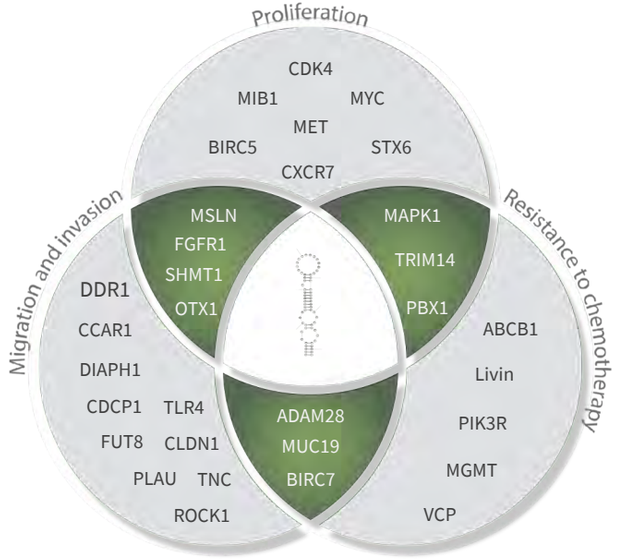
miR-198

A key tumor suppressor microRNA
downregulated in cancer

miR-198 is an Excellent Therapeutic Scaffold Targeting Pleiotropic Mechanisms

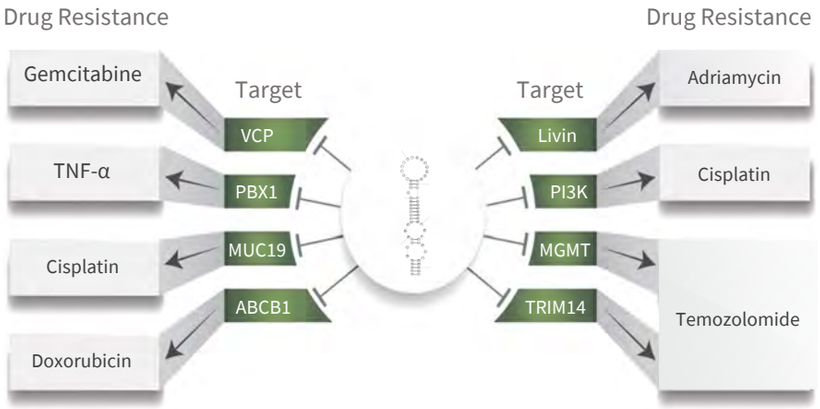
Broad Impact

miR-198 serves as a central control point across multiple types of cancer, regulating key processes to suppress tumor growth, to limit migration, and to overcome drug resistance



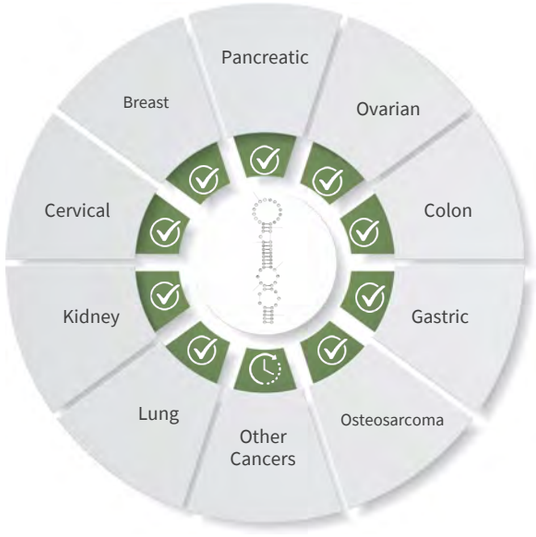
Synergy with existing drugs

miR-198 simultaneously targets factors involved in drug resistance, making it a powerful tool against cancer when cancers have become resistant to other therapies that have stopped working.



Strong Patent Coverage

Extensive patent protection for miR-198 in targeting multiple cancers, contributing to a robust intellectual property portfolio and market exclusivity.



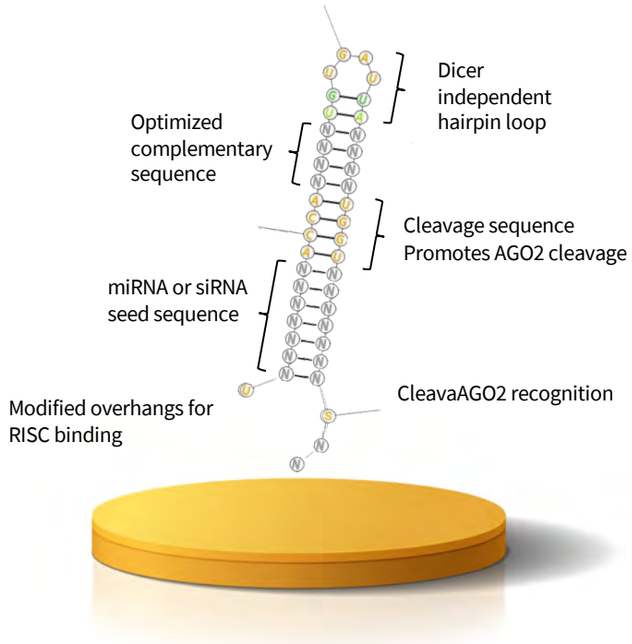
A Powerful Therapeutic Hypothesis

With Speratum's platform technologies,

the therapeutic utility of miR-198 can be unlocked to treat a broad array of cancers.

Marin-Müller et al. 2023. Pharmaceutics 15, 2038 Marin-Müller et al. 2013 Clin. Cancer Res. 19(21)

Our Technologies



NoPass Design

Re-engineering natural sequences for improved RNAi efficacy and administration

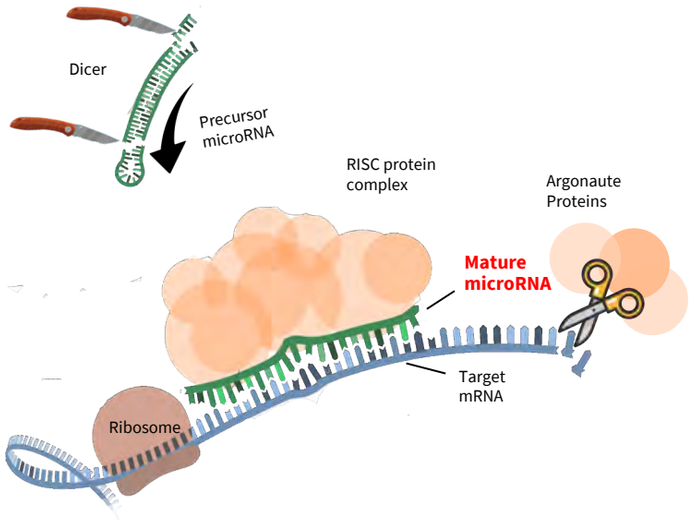
Marin-Müller et al. 2023. Pharmaceutics 15, 2038
Vega et al., in preparation

NoPass Design: A Breakthrough in RNA Interference Functionality

RNA interference (RNAi) is a natural process through which cells regulate gene expression. Small RNA molecules called **microRNAs (miRNAs)** are responsible for "silencing" or reducing the activity of genes in the cell by targeting messenger RNAs (mRNAs).

How the gene **silencing process** works.

1. Double-stranded "precursor" miRNAs are processed by Dicer and RISC proteins, unwinding them into single stranded "mature" miRNAs that recognize and bind to mRNA targets blocking translation (protein production).

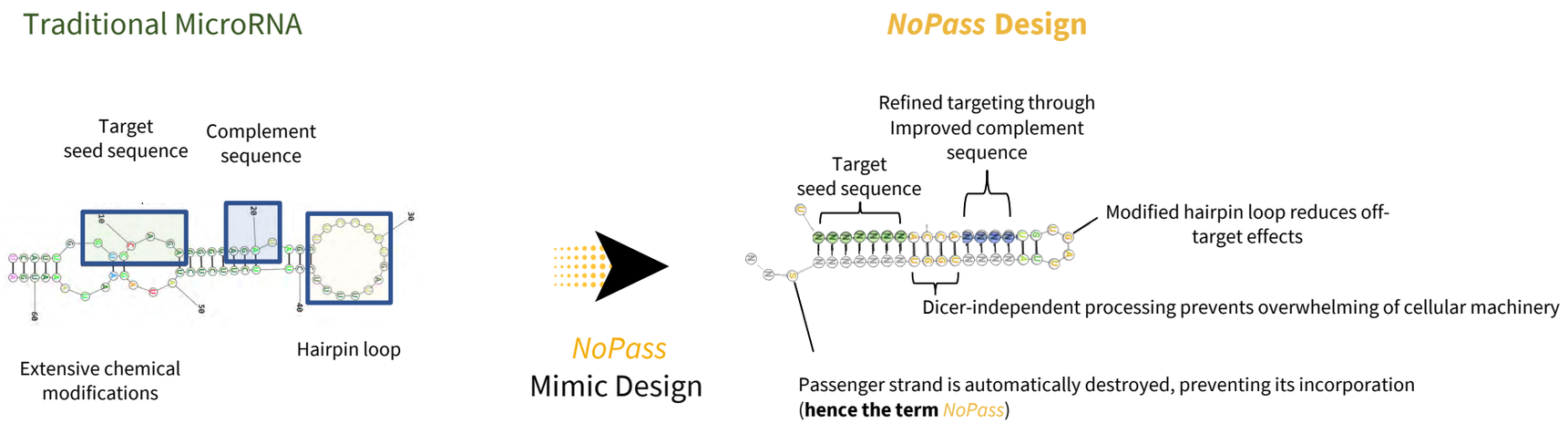


2. MiRNAs then recruit *argonaute* proteins that act like molecular scissors to destroy the mRNA messages before they can be translated into proteins.

NoPass will unlock the power of RNAi with **improved gene silencing** and unlimited applications.

Multiple Benefits of the *NoPass* Design

- **Biopharma designed-*NoPass* Mimics** are Speratum's answer to limitations associated with traditional designs for synthetic therapeutic small RNAs.
- Speratum can achieve safer and more effective gene silencing without the need for extensive chemical modifications



- ***NoPass*** Mimics have broad applicability—they can incorporate any siRNA or miRNA target sequence to silence any desired identified RNA target.
- The ***NoPass*** patent family includes a specialized algorithm that can transform any existing sequence into a ***NoPass*** Mimic.
- The ***NoPass*** algorithm can also generate novel target molecules based on data analysis of promising disease targets.

At Speratum, we have developed the technologies to finally **silence cancer.**

Speratum's *NoPass* Design Algorithm Generates Novel RNAi Targets for Improved Gene Silencing

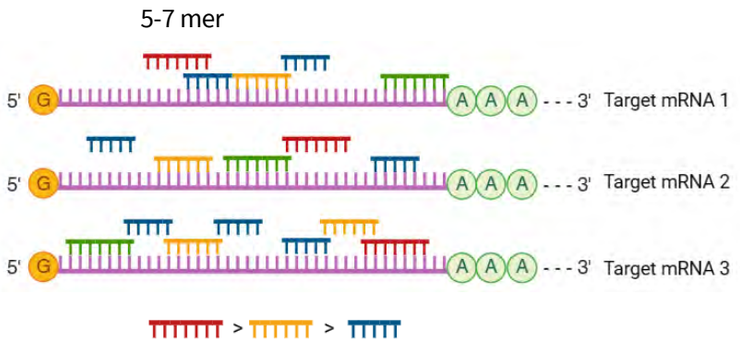
1

Molecular analysis of tumor or other disease state **or** any existing oligonucleotide sequence

NoPass™ Mimic Design

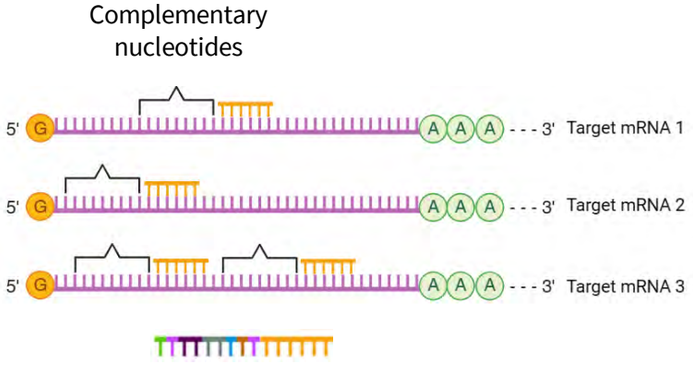
2

Algorithm **screens 5-7-mers** from target mRNAs
Scores based on nucleotides matched, total mRNA targets hit, total hits per target MRNA



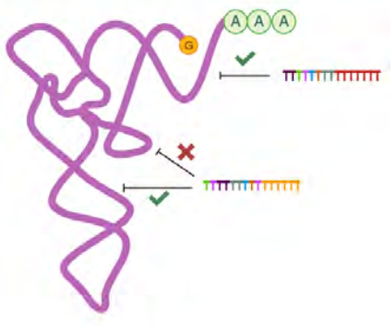
3

Expanded to **generate 15-mers**
5-7mer + most frequent complementary nucleotides to add stability and specificity



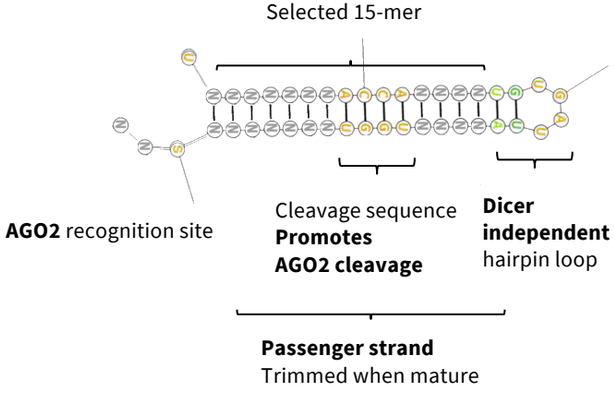
4

15-mers are **re-scored based on the most stable conformation** required for matching and probability of inhibitory **secondary structure**



5

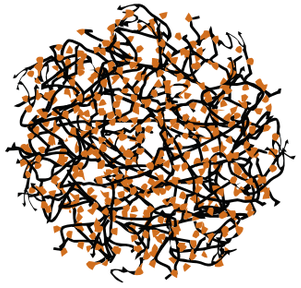
The final design product incorporates the selected 15-mer into our **flexible RNA scaffold for unique, non-canonical RNAi**



NoPass Results

- Design molecules that can target multiple mRNAs at different sites simultaneously, based on desired specific targets or existing miRNAs.
- Refine them, using energy efficiency to select the most promising candidates.
- Silence targets with improved efficacy, specificity, and safety.

Our Technologies



Nano-in Delivery

Revolutionary polymer for efficient and targeted delivery of nucleic acid therapeutics

Marin-Müller et al. 2023. Pharmaceutics 15, 2038

Liu, J. et al. 2021 .Therapeutic Nucleic Acids. 14(9) 841

Liu, J. et al. Nanomedicine 2016. 11, 1971–1991

Nano-in is a Novel, Proprietary Polymer Apt for Drug Delivery

A novel, proprietary biocompatible polymer with a limitless potential for nucleic acid drug delivery

Nano-in is formed from the combination of two existing polymers:

Nucleic acid

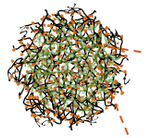
1 Polymer (PEI)

Polyethylenimine (PEI) is great at condensing with nucleic acids to form nanoparticles for efficient delivery, but can be toxic on its own due to a large number of positively charged amines.

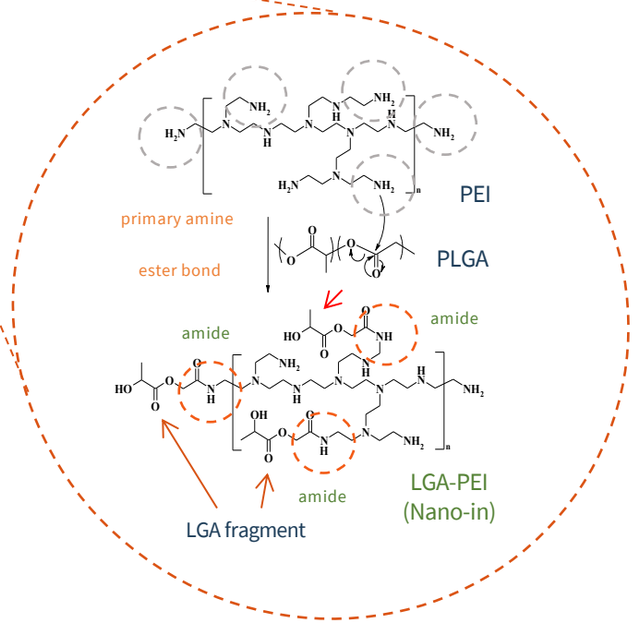
2 Polymer (PLGA)

Polylactic co-glycolic acid (PLGA) is non-toxic, and already FDA approved for human use.

However, its negative charge prevents it from interacting effectively with nucleic acids.



Nano-in



3 Through Speratum's proprietary chemical synthesis, PLGA is fragmented into smaller units that bond to and neutralize the toxic positive charges.

This synthesis creates a powerful new polymer that combines the efficacy of PEI and the low toxicity of PLGA to create a safe and effective nucleic acid delivery system.

Multiple Benefits of *Nano-in*

- **Broad Applicability:**
  Low-cost, scalable technology for delivering RNA/DNA across various therapeutic areas.
- ***In vivo* nucleic acid delivery without changing formulation**
  Deliver any sized DNA or RNA cargo intravenously, from miRNAs to large plasmids to artificial chromosomes.
- **Targeted Delivery**
  Proven success in delivering to key organs and tumors, with the ability to modify for precise receptor targeting.
- **Efficient and Safe**
  Transfects a wide range of cell types with low toxicity and can deliver miRNA molecules safely *in vivo*, outperforming existing technologies.
- **Practical Storage and transport**
  Stable at room temperature for at least 30 weeks, and suitable for even longer-term storage through lyophilization.

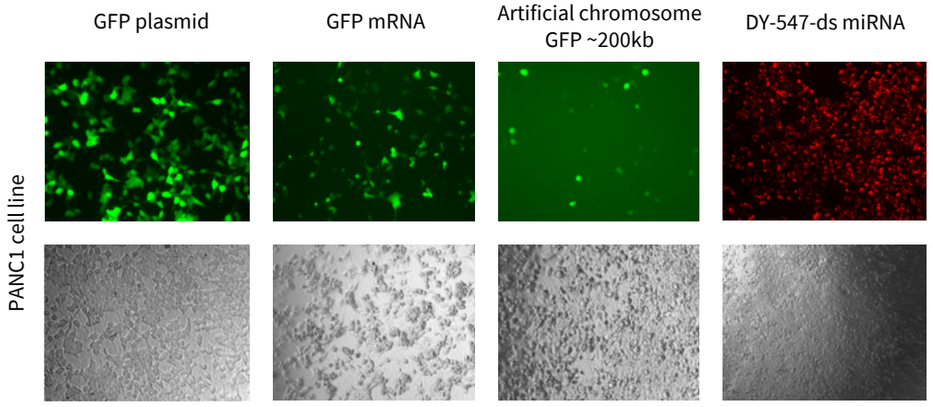
Speratum is poised to revolutionize nucleic acid drug delivery with *Nano-in*

Nano-in is a versatile polymer

Nano-in can deliver any sized DNA or RNA payload both ***in vitro*** and *in vivo*

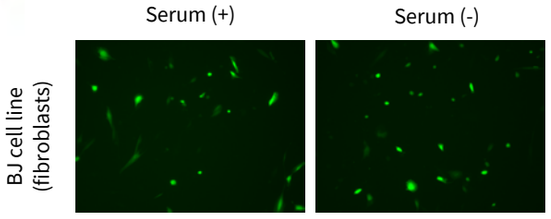
1

Nano-in can deliver any type and size of nucleic acid, including **small oligonucleotides**, **messenger RNA (mRNA), any sized DNA plasmids,** and even artificial chromosomes.



2

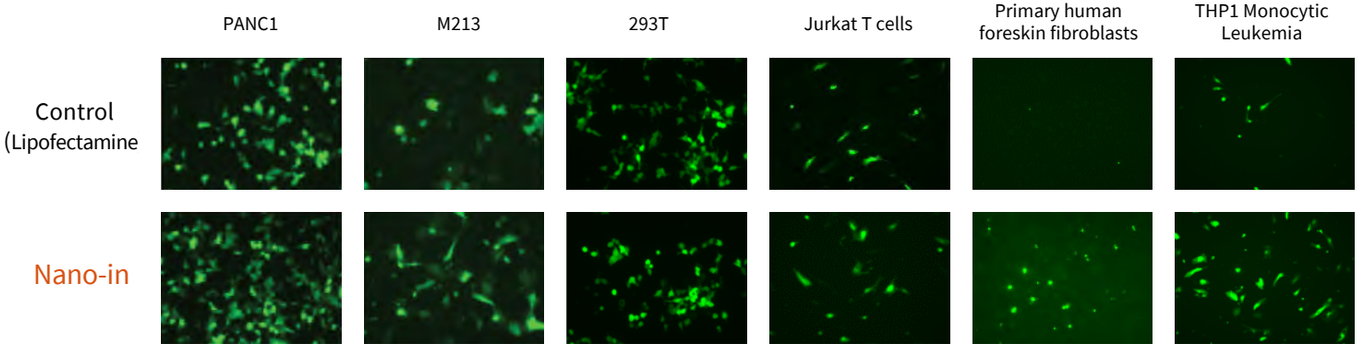
The presence of serum does not affect the performance of *Nano-in*.



Nano-in / GFP plasmid

3

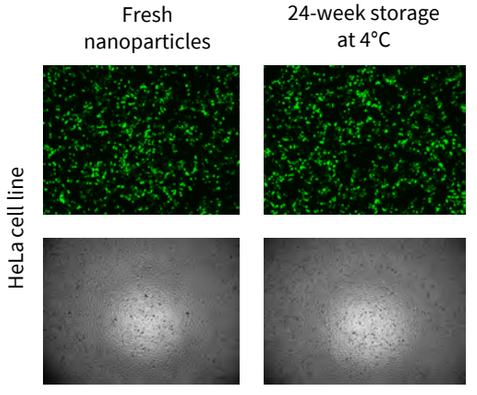
Nano-in can efficiently transfect a wide range of cell lines, with **comparable transfection efficacy** to the market-leading reagent—and **without the high toxicity.**



Selected examples of cell lines transfected with GFP expression plasmids

4

Both *Nano-in* polymer and nanoparticles are stable at practical temperatures (including RT) for at least 24 weeks



GFP plasmid
Long-term stability – Functional assay

Nano-in polymer
Long-term stability study
Maximum degradation profile

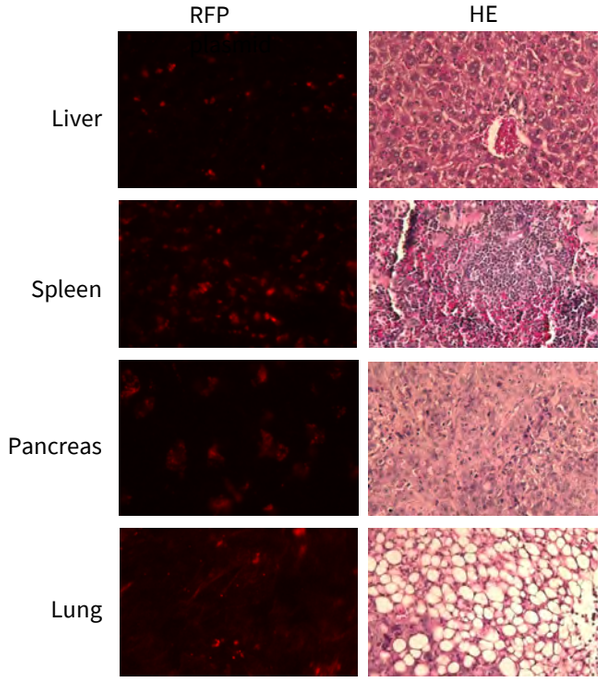
	T_{onset} (°C)	T_{max} (°C)	T_{endset} (°C)
Fresh Nano-in polymer	250±1	354±1	470±7
Nano-in polymer stored for 12 weeks at -20°C	0259±6	357±1	465±11

Nano-in is a versatile polymer

Standing apart from other transfection reagents on the market, *Nano-in* can be used for therapeutic delivery ***in vivo***, thanks to its favorable safety profile.

1

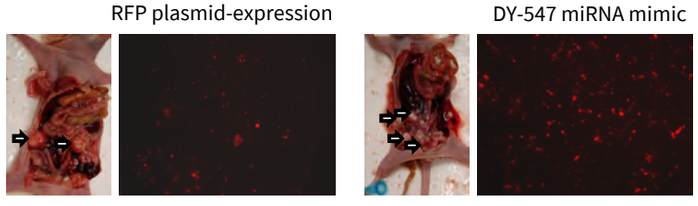
Nano-in can deliver nucleic acids effectively throughout the body following systemic intravenous administration, leading to efficient therapeutic accumulation and expression in key tissues.



Healthy CD1 mice - Biodistribution
Tail vein injection (2x/wk/1wk)

2

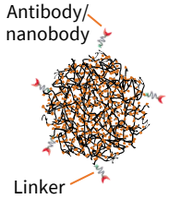
Systemic intravenous administration of *Nano-in* nanoparticles leads to accumulation of the therapeutic agent (DNA or RNA) in solid tumors, making it a promising tool in oncology applications.

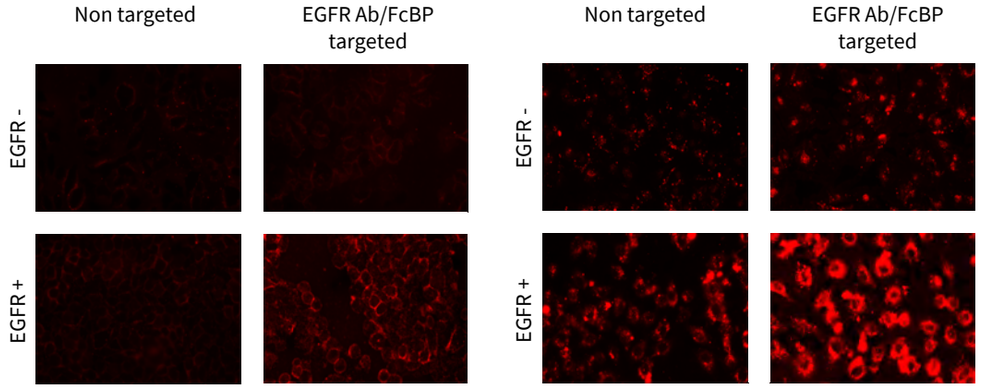


Ovarian cancer SKOV3 CDX mouse model
Intravenous injection (3x/wk/1wk)

3

Nano-in can be modified for enhanced delivery through single or dual targeting to cell receptors



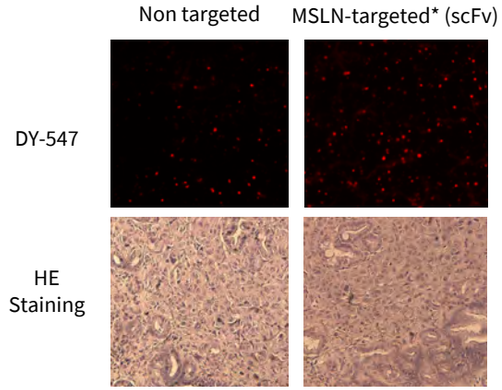


Nano-in / CY3 miRNA mimic
Binding assay – 2h at 4°C

Nano-in / CY3 miRNA mimic
Internalization assay – 2h at 4°C

4

Targeted *Nano-in* nanoparticles accumulate preferentially in tissues expressing specific receptors for improved accuracy and efficacy.

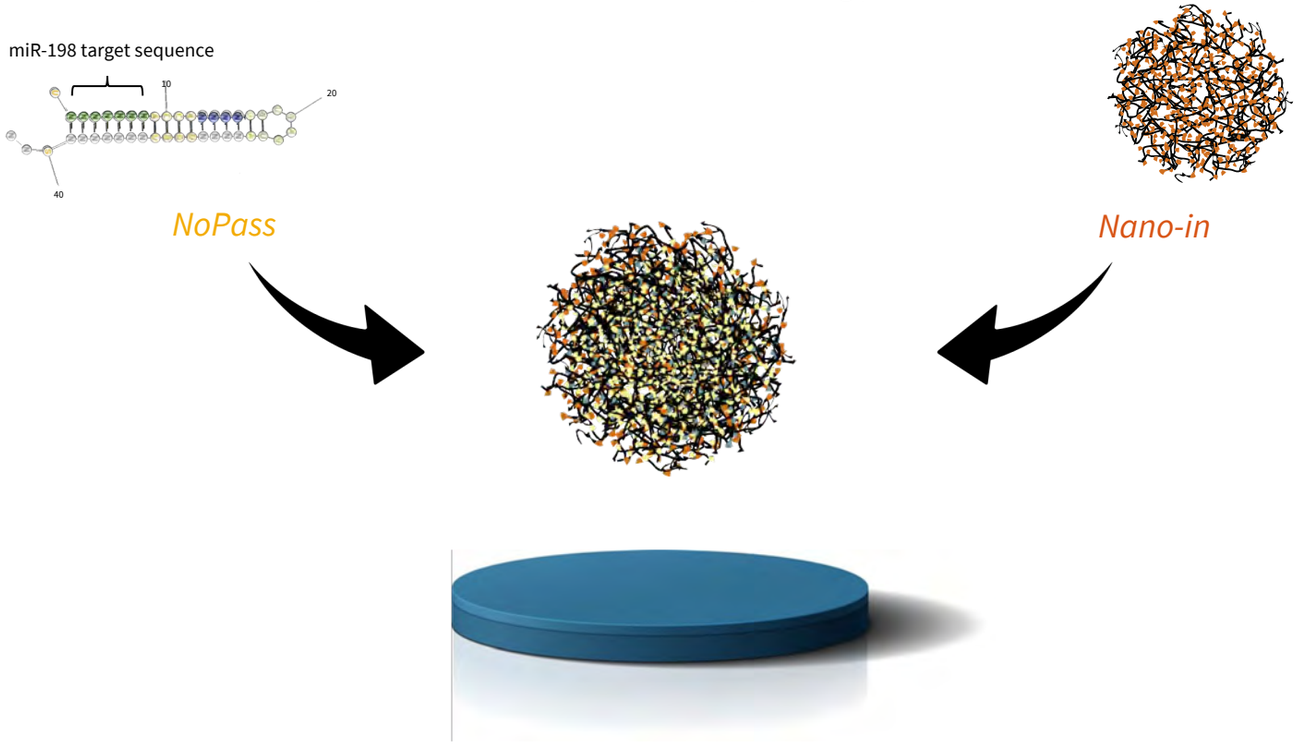


Pancreatic cancer – PDX mouse model
Intravenous injection (3x/wk/1wk)

* Mesothelin (MSLN) is a cell-surface glycoprotein overexpressed in over ~85% of pancreatic tumors

Our lead therapeutic candidate

NM-198 ^{TM} leverages the combination of our *NoPass* and *Nano-in* technology platforms to harness the tumor suppressing power of miR-198



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Liu, J. et al. 2021 .Therapeutic Nucleic Acids. 14(9) 841
Liu, J. et al. Nanomedicine 2016. 11, 1971–1991
Vega et al., 2024 submitted to Nanomedicine

NM-198

Novel RNAi therapeutic for precision oncology with broad applicability

NM-198 is highly effective at reducing tumor growth and aggressiveness across a broad range of aggressive solid tumors that share similar molecular signatures:

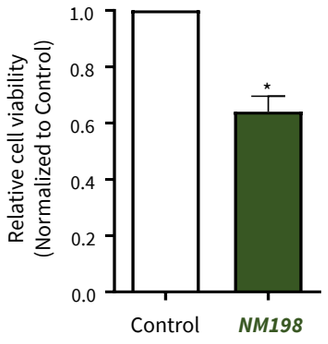
Our portfolio includes patented indications for the treatment of **colorectal, lung, pancreatic**, kidney, ovarian, breast, cervical, gastric, and bone cancers, with additional indications currently awaiting final approval.

NM-198 Efficacy Against Solid Tumors: Colorectal cancer

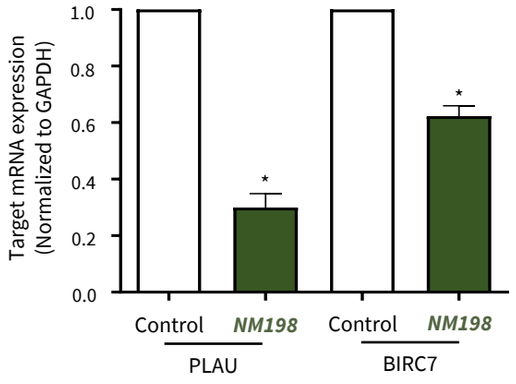
A

NM-198 reduces proliferation and viability of human colorectal cancer cells through direct repression of multiple factors associated with colorectal cancer pathogenesis, including Plau and BIRC7.

HCC2998- Colon cancer
MTS assay



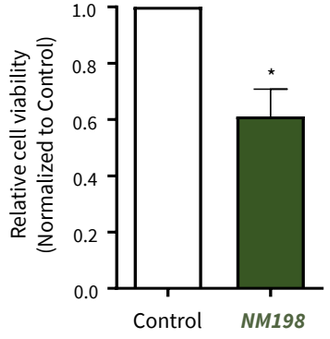
HCC2998-Colon cancer
RT qPCR



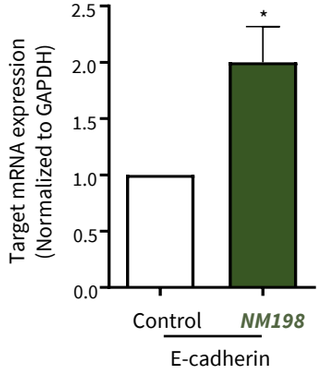
B

NM-198 inhibits synthesis of receptors and PIK3CA signal transducers, and inhibits the signal pathways induced by mitotic IGF-1R and Met, which in turn leads to high expression E-cadherin

MC38 - Colon cancer
MTS assay



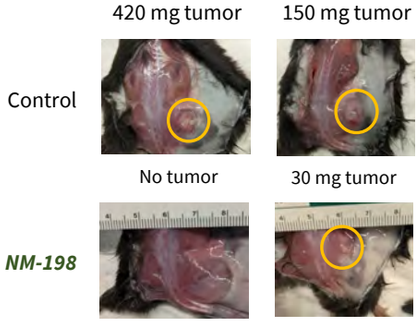
MC38 cell line
RT qPCR



C

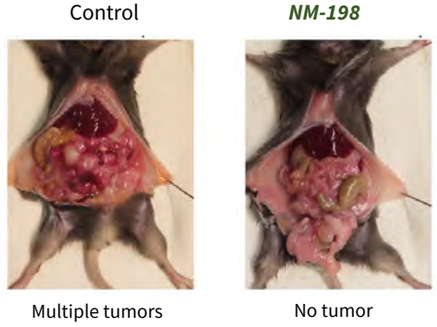
NM-198 is a promising tumor suppressor therapeutic for colorectal cancer.

Intravenous or intraperitoneal administration (3x/week) of ***NM-198*** as a monotherapy leads to a significant reduction in primary tumor volume and metastatic tumor spread.



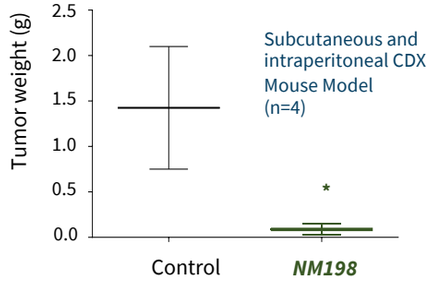
Flank Subcutaneous MC38 model

3x / week intravenous



Peritoneal metastases MC38 model

3 x / week intraperitoneal

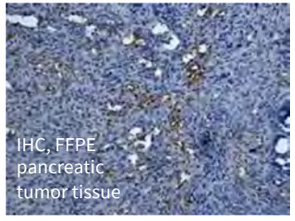


NM-198 Demonstrates Efficacy Against Solid Tumors: Pancreatic cancer

A

NM-198 is a powerful therapeutic that is uniquely poised to tackle drug-resistant pancreatic cancer

Pancreatic tumors are surrounded by a thick stroma, a fibrous tissue that prevents drugs from reaching the cancer



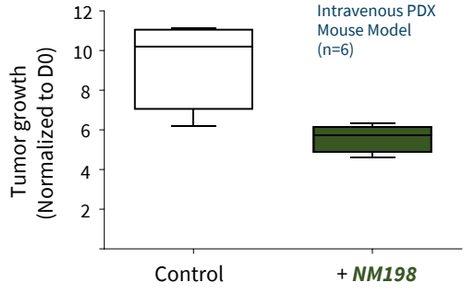
KPC Mouse Model

KPC mice develop pancreatic cancer naturally, with a full tumor microenvironment including a thick stroma

Brown staining indicates efficient delivery and expression in tumor tissue

Our nanoparticles **efficiently penetrate the tumor stroma** to reach pancreatic tumors

B



3 x / week intravenous

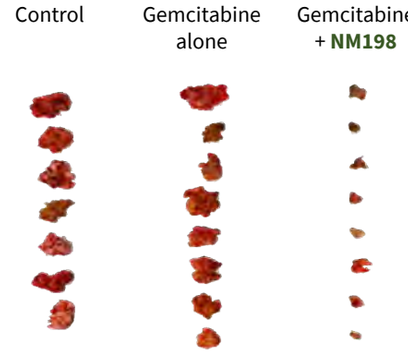
Patient-Derived Xenograft (PDX)

Human pancreatic tumors transplanted from a patient into a mouse respond to intravenous therapy with ***NM-198***

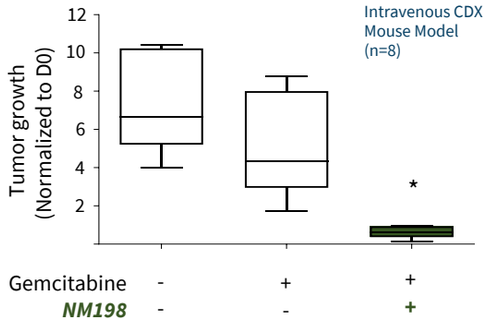
When ***NM-198*** is used as a monotherapy, **the result** is a significant reduction in tumor volume—**even in tumors from patients with advanced, refractory pancreatic cancer**

C

NM-198 **sensitizes resistant tumors** to gemcitabine, leading to a **synergistic effect**, reverting drug resistance and resulting in primary **tumors that are 90% smaller**.

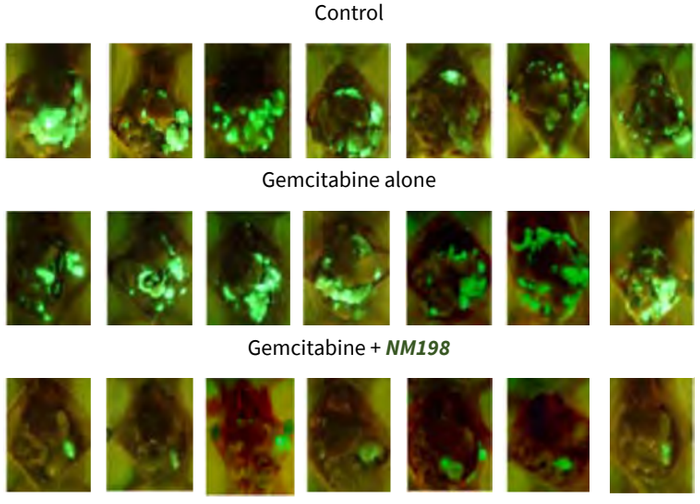


8 mice per group, tumors extracted after 4 weeks



3 x / week intravenous

D



Combination therapy with ***NM-198*** leads to a marked reduction in metastases and invasiveness, as shown by fluorescently labeled tumors.

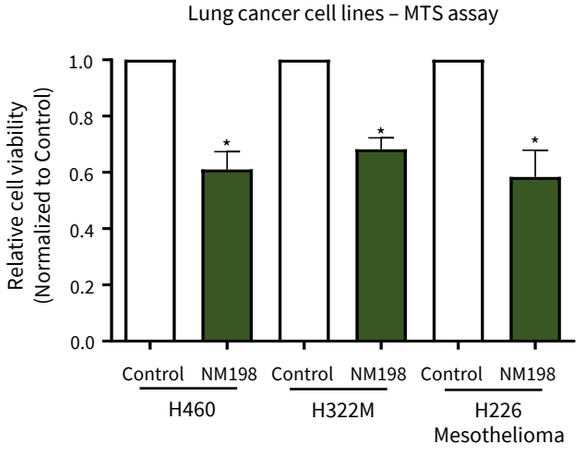
NM-198 Demonstrates Efficacy Against Solid Tumors: Lung Cancer and Others

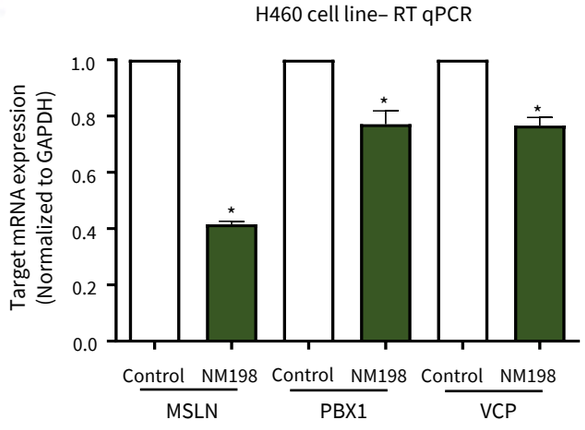
The tumor suppressing effects of **NM-198** are also visible in human non-small cell lung cancer (NSCLC),

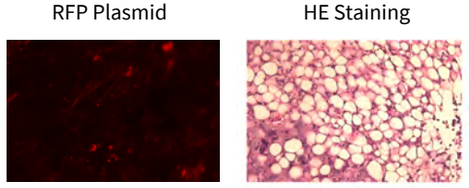
A. **NM-198** reduces viability across multiple cell line subtypes: large cell lung carcinoma, adenocarcinoma, and squamous cell carcinoma

B. **NM-198** directly downregulated multiple tumorigenic factors, including MSLN, PBX1, and VCP.

Lung Cancer







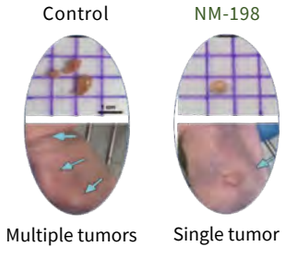
(2x/wk/1wk)

Using Nano-in, we can effectively deliver nucleic acids to the lung through intravenous administration.

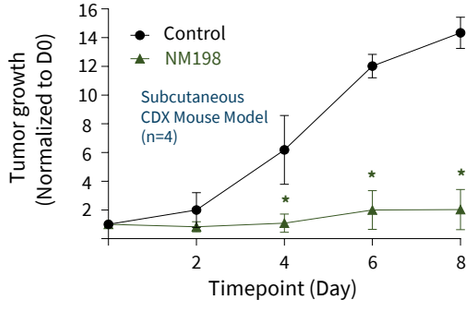
Upcoming experiments will study *in vivo* efficacy of **NM-198** in lung cancer.

NM-198 is highly effective at reducing tumor growth and aggressiveness when used as a monotherapy against a wide range of solid tumors

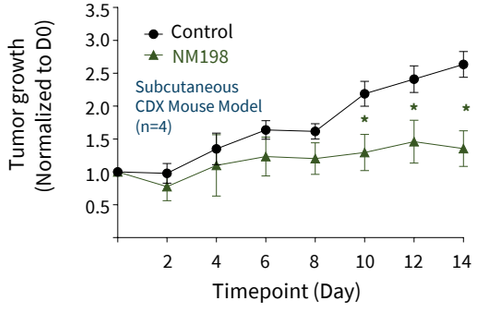
Ovarian Cancer



3 x / week intravenous

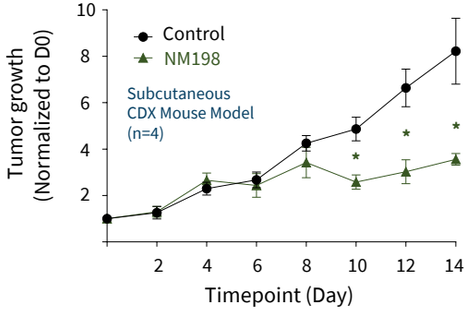


Kidney Cancer

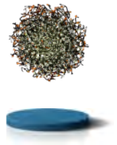


3 x / week intravenous

Breast Cancer



3 x / week intravenous



NM-198: Safety as a primary outcome

NM-198 has a very favorable safety profile—even when administered at high doses for prolonged periods of time, we see no alterations in danger or toxicity signals

- A combination of animal models (both mice and rats), *ex vivo* human blood, and advanced *in vitro* testing models both internally and through CROs have demonstrated strong indications of safety and a broad therapeutic index.

No Unwanted Immune Activation

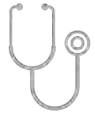
Does not activate human cytokines *ex vivo* (GM-CSF, IFNγ, IL-1β, IL-2, IL-4, IL-13, IL-5, IL-6, IL-8, IL-10, IL-12, IL-13, IL-17, IL-23, TNFα), even at increasing doses.

No Alterations to Organ Function:

At least 3 months of intravenous administration at 15x the dose used in efficacy studies results in **no abnormal liver/kidney function or alterations in any blood chemistries** in rodents,—indicating a favorable therapeutic index for prolonged treatment and no toxic accumulation over time.

No Increase In Unwanted Receptor Signals Typically Associated With miRNA Therapeutics

Advanced models for *In vitro* screening show **no activation of human Toll-like receptors** at different dose ranges (hTLR 2, 3, 4, 5, 7, 8, 9), demonstrating both the safety of *NM-198* and the *NoPass* mimic design as a platform.

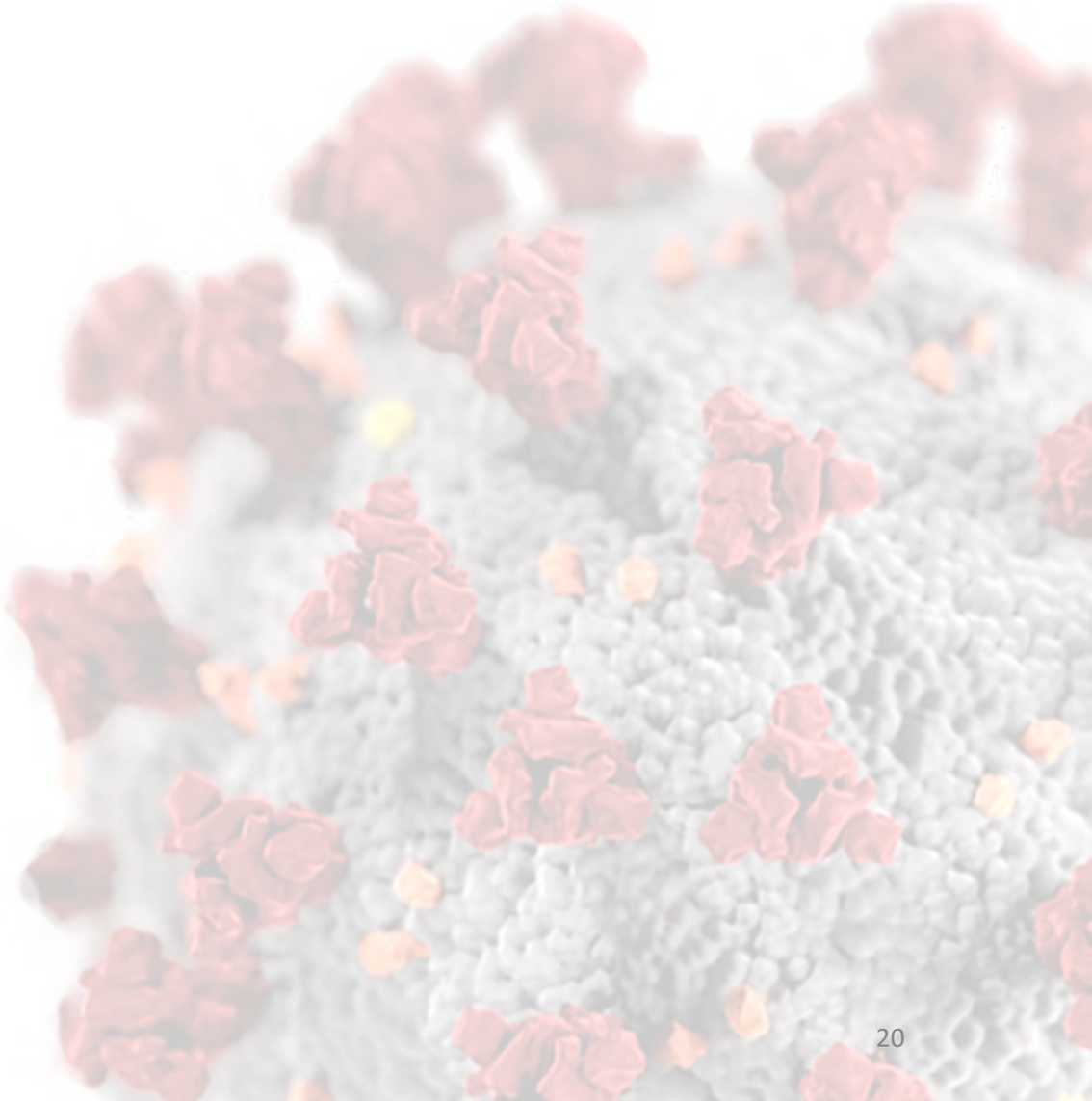


Upcoming Safety Studies In Preparation for the Clinic

We are currently preparing for Investigational New Drug (IND)-enabling studies following Good Laboratory Practice (GLP)

NM-198 testing has also validated the general safety of Speratum's technology platforms

Antiviral Applications



Speratum's *NoPass* Design Algorithm can Generate Novel RNAi Targets for Antiviral Applications

The versatility of the *NoPass* design platform has led Speratum to focus on the development of intellectual property in the antiviral space.

A

Targets and binding sites

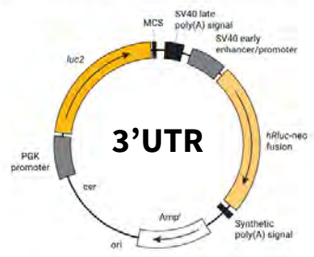
As a proof of concept, the *NoPass* algorithm and design was applied to target the genomic and sub-genomic mRNA of the SARS-CoV-2 (SC2) coronavirus. Four potential targeting sequences (A-D) were generated and tested.

Multiple sites were targeted simultaneously in different regions of the viral genome, including the segments encoding for S and N proteins as well as the 3' untranslated region.

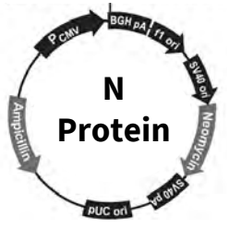
RNAi ID	Short ID	Target region				
		3'UTR	S protein	N protein	Other regions	Total
NPM-SC2-A	A	0	6	1	21	28
NPM-SC2-B	B	0	1	2	12	15
NPM-SC2-C	C	0	4	0	19	23
NPM-SC2-D	D	1	0	0	8	9
Negative control	NC	0	0	0	11	11
Positive control	DXR (Doxorubicin)	--	--	--	--	--

B

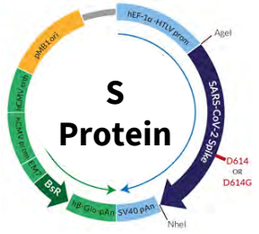
To validate the efficacy of targeting the various regions of the SC2 genome with the new *NoPass* siRNAs, multiple plasmids were constructed to express the three regions of the genome containing the main target sites: 3'UTR, N protein, and S protein mRNAs.



➢ **SARS-CoV-2 3'UTR**



➢ **SARS-CoV-2 N Protein**



➢ **SARS-CoV-2 S Protein**

(Accession: NC_045512.2)

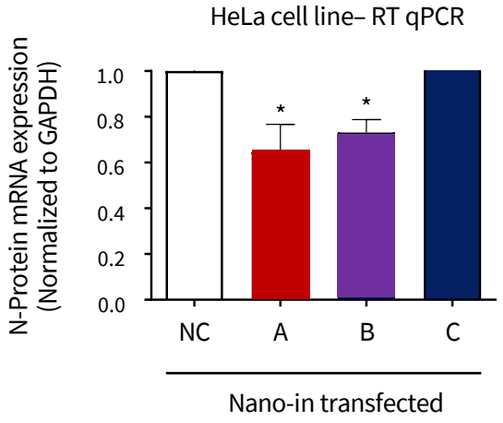
NoPass Antiviral Designs Target and Silence Viral N-and S-Protein Expression

NoPass antiviral siRNAs were designed to target regions in the S-protein, N-protein, and 3'UTR at multiple sites

RNAi ID	Short ID	Target region		
		3'UTR	S protein	N protein
NPM-SC2-A	A	0	6	1
NPM-SC2-B	B	0	1	2
NPM-SC2-C	C	0	4	0
NPM-SC2-D	D	1	0	0

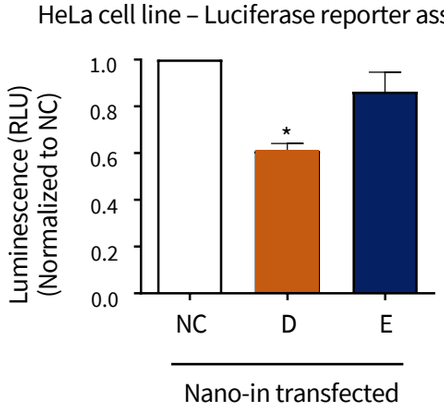
C

NoPass antivirals targeting N-protein mRNAs (A,B) reduce mRNA levels, while C, with no N-targets, has no effect (C).



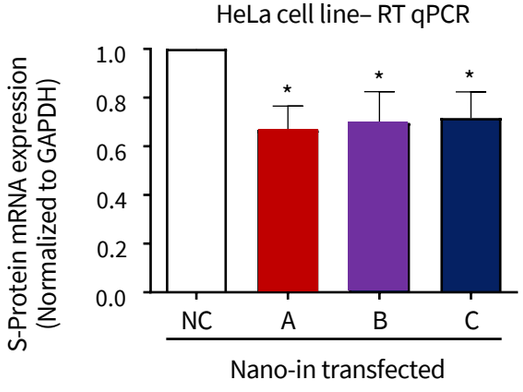
D

NoPass antivirals targeting viral 3'UTR (D) reduce mRNA levels of a luciferase reporter containing the target sequence.



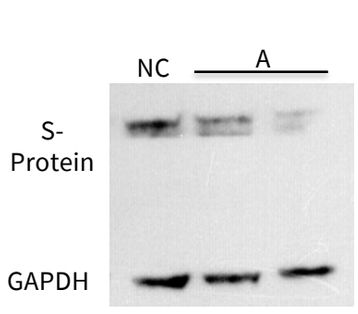
E

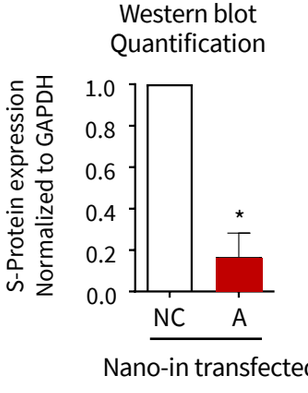
NoPass antiviral siRNAs A, B, and C target S-protein mRNAs, resulting in a reduction in mRNA levels.



F

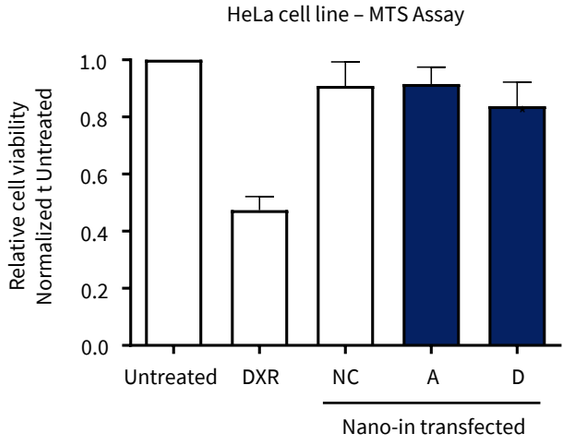
The result is a potent downregulation of S-protein expression.



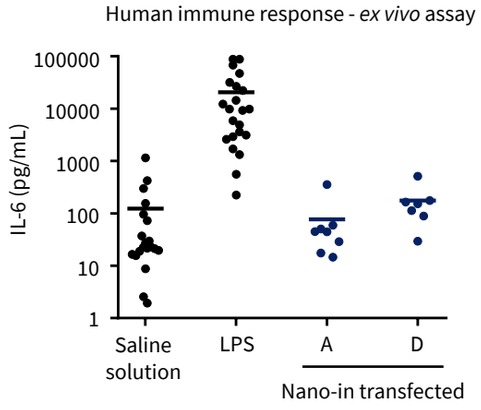


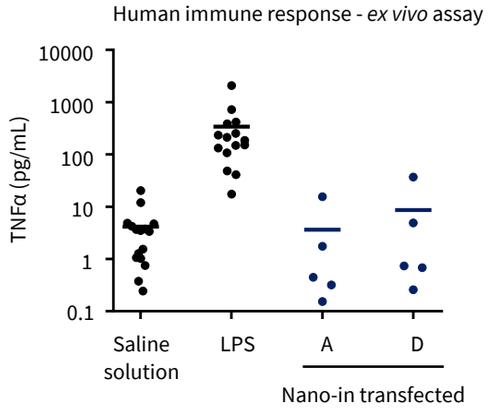
NoPass Antiviral Designs Indicate Specificity and Safety

A The specificity of the *NoPass* targets was examined through a cell viability assay, in which there was no effect on cell viability upon transfection with the new antiviral target sequences.



B Preliminary safety analyses to examine cytokine activation corroborate results for other *NoPass* designs: there was no observable activation of different cytokines generally associated with unwanted immunostimulatory responses.





Speratum's IP covers the use of its algorithm and design for generating substrate sequences for the RNAi-mediated regulation of genomic and sub-genomic RNAs for other **RNA viruses, including influenza, ebola, coronavirus, RSV and others**.

Furthermore, the *NoPass* technology lends itself for an **accelerated pivot and development process**, from targeting to testing to validation in a short timeframe.

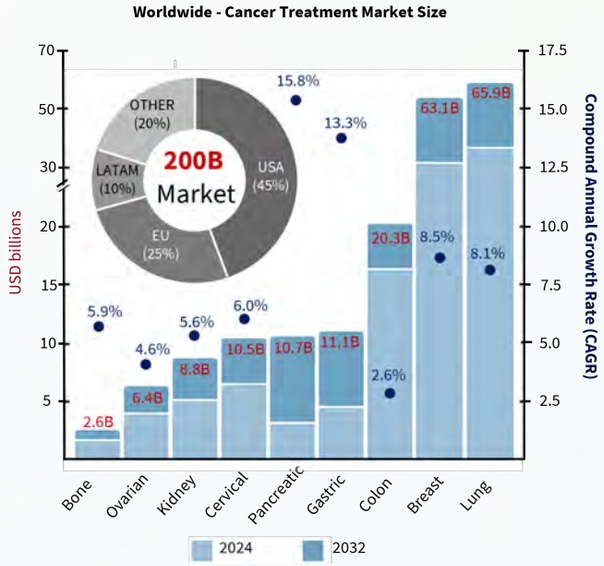
Speratum is currently looking for partners interested in advancing antiviral development.

Corporate and Financial Information

Promising Product Pipeline with Large Addressable Markets

Speratum can make a major impact in the global oncology market, thanks to the wide range of proprietary indications for NM-198 against solid tumors.

Speratum is also diversifying its pipeline through the acquisition and internal development of other specific oncology targets, as well as targets beyond oncology.



Therapeutic Candidates

Program	Indication	Discovery	Preclinical	Phase I
NM-198	Chemoresistant solid tumors			
NM-520	Undisclosed Oncology Indication			
NM-V1	Undisclosed Antiviral Indication			

Technology Platform Development Opportunities

Platform	Application
NoPass Design	Development of miRNA and siRNA-based therapeutics
Nano-in	Transfection and drug delivery reagent for *in vitro* and *in vivo* applications

Market Opportunity
Oncology

Oncology Prevalence and Market Size
1.9 Million Annual U.S. Cancer Cases, Global Rise Anticipated

Metastasis and Survival Rates
90% of Cancer Deaths Due to Metastasis, Low Survival Rates (despite existing therapies)

Global Oncology Market Size
Global Oncology Market Estimated at $200 Billion by 2032

Financial Opportunity in Cancer Treatments
U.S. Cancer Spending at $190B, Growing 10% Annually

Market Opportunity
Beyond Oncology

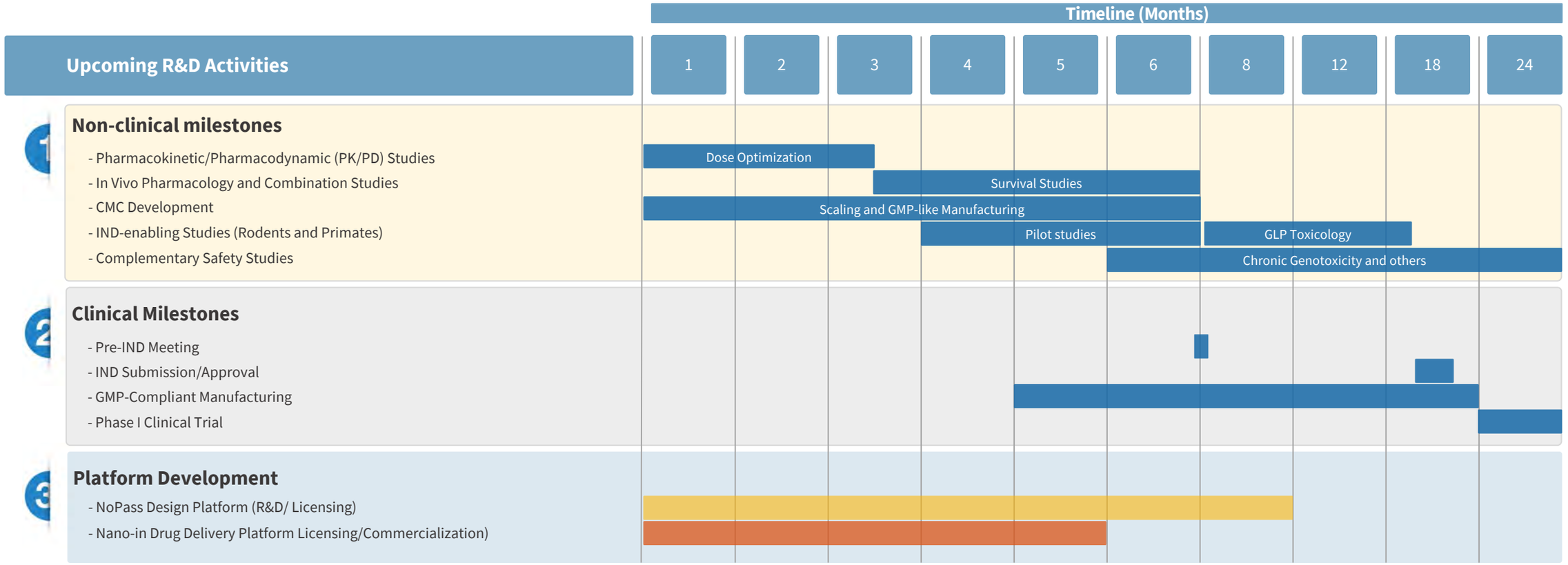
With its platform technologies, Speratum has the potential to disrupt two major research and therapeutic markets. Both Nano-in ™ and NoPass ™ have broad applicability as research-grade technologies as well as novel therapeutics.

RNAi Therapeutics Market
RNAi therapeutics market has been experiencing significant growth in recent years. Valued at $1.11 Billion in 2023, projected to reach 4.28 Billion by 2033, with a CAGR of 14.9%.

Nucleic Acid Drug Delivery Market
Valued at $4.1 Billion in 2021, projected to reach $12.2 Billion by 2031 with a CAGR of 11.6%.

Speratum's Strategic Plan and Use of Funds

Focus on Research Activities and Regulatory Compliance Studies



Use of Funds

Category	Cost Estimate
-R&D and Manufacturing	$8M
- Staffing (Next 18 Months)	$1.7M
- Administrative	$0.3M
- Total Estimated Cost	**$10M**

Milestone 1	Milestone 2	Milestone 3	Milestone 4
Completion of Dose Optimization $0.5M	Completion of Scaling & Manufacturing $1.5M	Completion of Tox. & IND $2.5	Completion of Ph 1 $5.5M

Total: $10M
Total Estimated Cost (by milestones)
To completion of Phase I Trial

*Timelines and costs are current best estimates and subject to change

Speratum's Leadership Team

Our team has decades of well-rounded experience innovating from bench to bedside

Christian Marin-Müller, MS, PhD

Founder, Director and CEO

Co-inventor of our technologies
15+ years of experience in oligonucleotide therapeutics and drug delivery
PhD in Molecular Virology and Microbiology
Baylor College of Medicine
MS Entrepreneurship, Case Western

Osvaldo Vega-Martínez, MS

Chief Science Officer

Co-inventor of our technologies
9+ years of experience leading multidisciplinary research team in translational RNA therapies and nanotechnology
MS in Biotech and Human Genomics
University of Costa Rica

Fadi Abdel, MD

Chief Development and Operations Officer

25+ years of biopharmaceutical industry experience in R&D and clinical trial operations, in different modalities and therapeutic indications including oncology and neuroscience
MD from Vanderbilt University School of Medicine

Allan Boruchowicz, BS

Founder, Director and CFO

Founder and Managing Director of Latin American investment firm Carao Ventures, with 15+ years of experience managing private equity investments
BS in business from Babson College

Board of Directors

Matthias Schroff, PhD

CEO **Inceptor Bio**
Extensive biopharmaceutical leadership experience building companies and developing new medicines in immuno-oncology, inflammatory diseases, and genetic disorders

Kyle Jenne, MBA

CCO **Ionis Pharmaceuticals**
Former CEO of Elise Biotechnology
25+ years of experience in biotechnology and specifically in RNA therapeutics as executive, director, or advisor

Peter Heeckt, MD, PhD

Former CMO, **Bioventus**, Smith+Nephew
Adjunct Professor of Surgery, Ulm University
Surgeon with 25+ years of diverse industry leadership in pancreatic cancer, medical devices & biotechnology

Andy Weymann, MD, MBA

CEO **Gelmetix**
Investor, executive, director, and advisor
Former CMO of Smith+Nephew
25+ years of experience in medical device and biotechnology companies

Scientific Advisory Board

Changyi Chen, MD, PhD

Co-inventor of Speratum's technologies
Director, Molecular Surgeon Center
Baylor College of Medicine
Senior Member, Nat. Academy of Inventors
Over 200+ publications

Qizhi Yao, MD, PhD

Co-inventor of Speratum's technologies
Professor, Virology & Microbiology
Baylor College of Medicine
RNAi-based therapeutics and HIV vaccine development. Over 150+ publications

Jian-Ming Lu, MS, PhD

Co-inventor of Speratum's technologies
Assistant Professor of Surgery
Baylor College of Medicine
20+ years experience in translational development projects in clinical diseases

Petra Molan, PharmD, MSc

CCO **Mundipharma**
Executive, director, and advisor in Pharma and Biotech industries.
Former Bayer, Shire, Takeda executive with long commercialization track record

Wen Wee Ma, MBBS

Professor of Oncology
Director, Novel Cancer Therapeutics Institute,
Cleveland Clinic
Principal investigator in clinical trials for first-in-human agents in pancreatic cancer

Jose Vega-Baudritt, PhD

Director of the **National Laboratory for Nanotechnology** (LANOTEC) of Costa Rica. PhD in nanotechnology, MS in chemical engineering of polymers
150+ scientific articles, multiple patents

Anthony J.M. Bauer, PhD

Associate Professor of Physiology & Pharmacology
Liberty University College of Medicine
Associate Professor of Medicine
Over 200+ publications

Michael Schoenberg, MD, PhD

Former Chairman and Medical Director Department of Surgery,
Red Cross Teaching Hospital
Adjunct Professor of Surgery,
Ludwig-Maximilians University

Patents

Publications

Speratum Biopharma Inc.

Delivering health through innovative cancer therapeutics

Contact

Christian Marin-Müller, MS, PhD
Founder, Co-inventor, and CEO
christian@speratum.com

In-house animal work was conducted through our AAALAC accredited program

Website

www.speratum.com

Background Publication Information

Built on Decades of Expertise in Clinical Oncology & Precision Medicine

Recent seminal papers published in conjunction with experts from Baylor College of Medicine and MD Anderson Cancer Center have established a novel therapeutic platform that unlocks the potential of microRNA- and siRNA-based medicines.

MDPI (2023) (2021)

Journal of Clinical Oncology — An American Society of Clinical Oncology Journal (2022)

ASCO — American Society of Clinical Oncology (2022)

Gastroenterology (2022)

Nanomedicine (2016)

Clinical Cancer Research (2013)

Carcinogenesis — Integrative Cancer Research (2011)

Molecular Cancer (2011)

Expert Review of Molecular Diagnostics (2009)

World Journal of Surgery (2009)

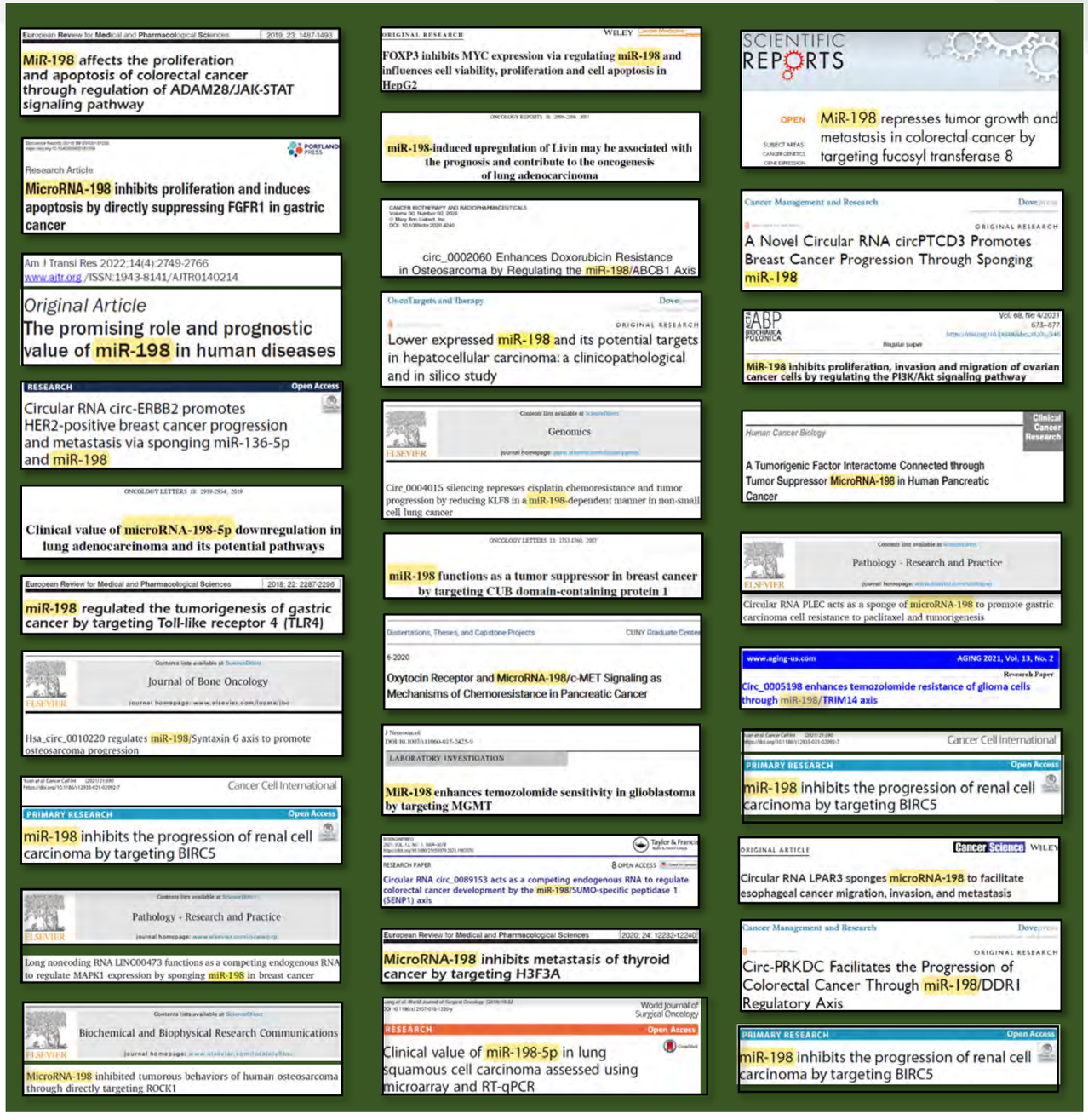
The science

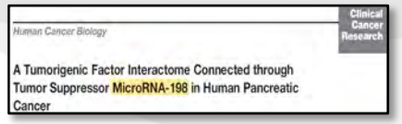
Over 3 dozen publications, including several of our own, have elucidated the **critical role the microRNA miR-198 plays as a tumor suppressor in many types of solid tumors.**

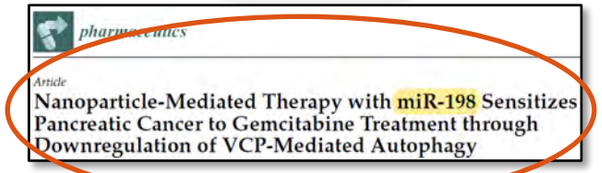
MiR-198 is present at high levels in normal tissues, but is downregulated in cancer.

Restoring miR-198 back to normal levels in tumors using synthetic “mimics” leads to downregulation of dozens of factors that control **tumor growth, migration**, and **drug resistance** across **multiple types of cancer.**

We are translating decades of science on miR-198 into a clinically applicable therapeutic platform







Our Solution

1. At **Speratum Biopharma**, we are harnessing the potential of **miR-198** through the application of our platform technologies.
2. With our *NoPass* design we generate a specially engineered synthetic mimic of miR-198.
3. With our *Nano-in* delivery system we enable nanoparticle-mediated treatment of aggressive tumors

Our *NM-198* therapeutic converts the power of miR-198 into a new hope for patients