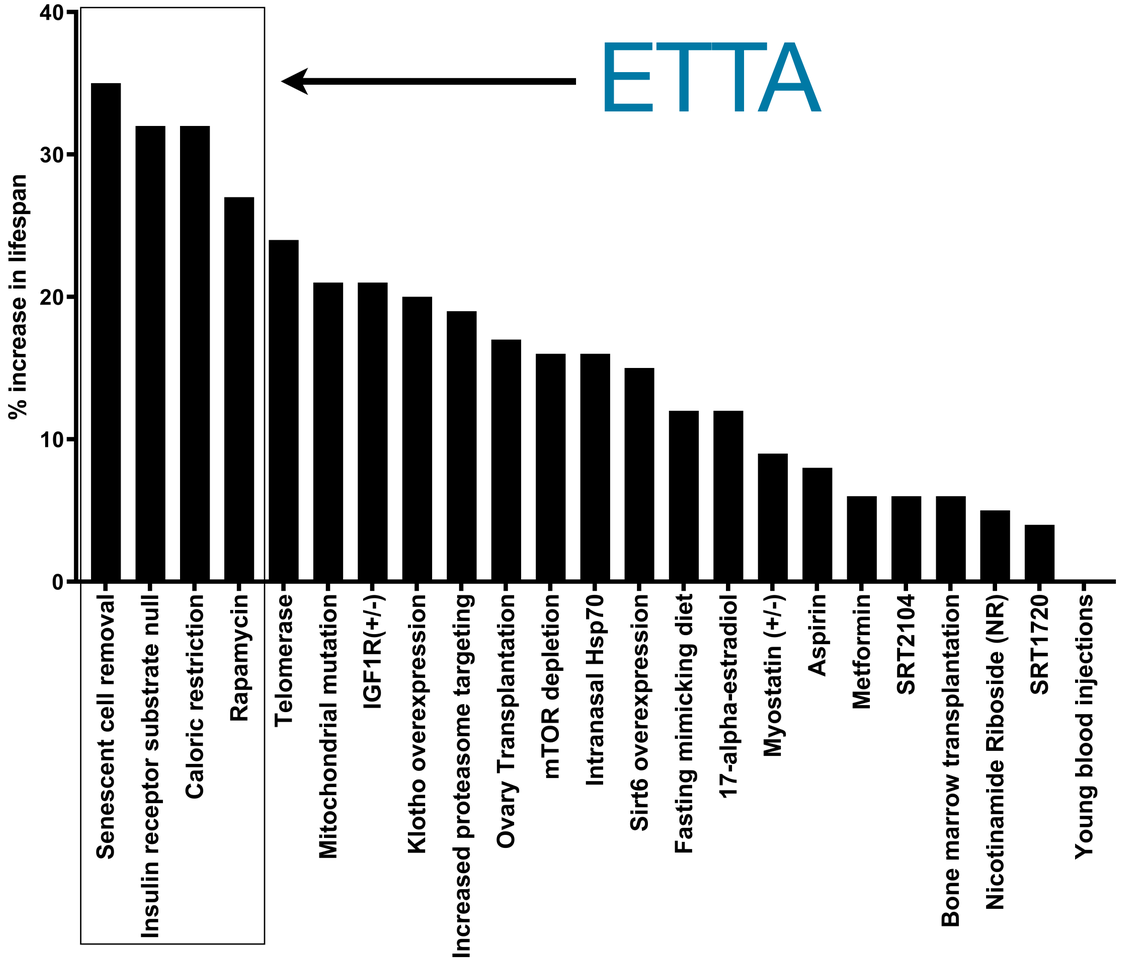
Evidence-based Treatments Targeting Aging

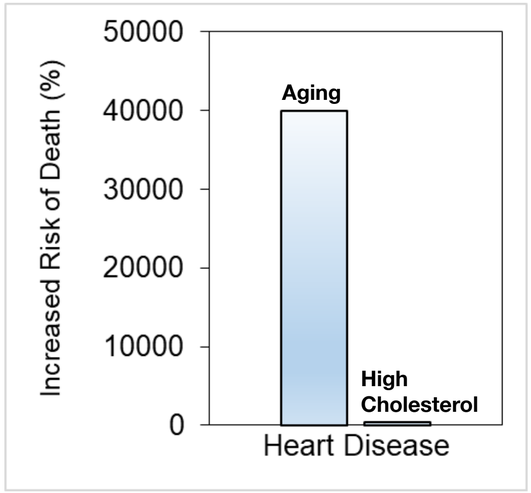
ETTA Makes the Most Powerful Aging Interventions



- **1 year**
- **40+ people dosed**
- **90%+ efficacy in tests and case studies**

100×

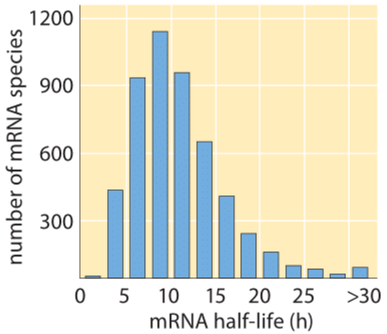
Larger effect sizes over traditional approaches by targeting aging.



1 Day to 10 Year

Gene Therapy Platform

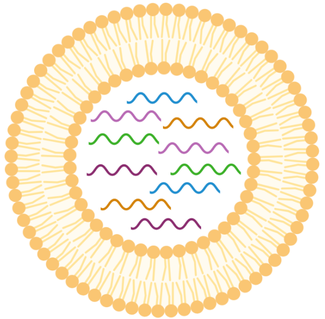
The versatility of mRNA without the short half-life.



200+ Cell Types

Nanoparticle Platform

Developing the ability to target all cells, not just a few.



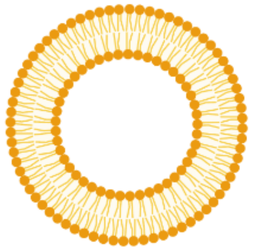
Founder: Kyle Brewer

- Designed and developed >100 preclinical mRNA and DNA therapies.
- Second scientist at Rejuvenation Technologies, a Stanford mRNA startup.
- Postdoc at Stanford in the Wyss-Coray lab (young blood factors for brain rejuvenation).
- 2 patents filed for ETTA Biotechnology (oral and topical fisetin nanoparticles).

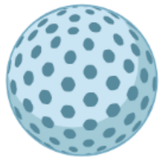
ETTA's Nanoparticle Platform

1. Nanoparticle

Metal Core



Lipid Encapsulating



Mesoporous

And More

Iron Oxide
Copper
Gold
Platinum
Titanium Dioxide
Silica
Polymer
Hydrogels
Micelles
Coatings
Thermal Release

2. Cargo

Small Molecules

RNA

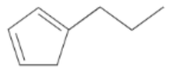
Peptides

Proteins
DNA
Antibodies
Aptamers
Lipids

3. Targeting Molecule

Antibodies

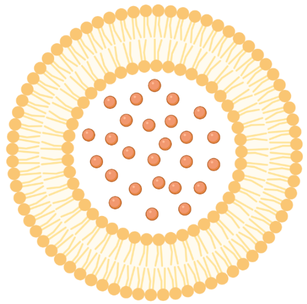
Cytokines



Chemical Ligands

Aptamers
Peptides
Lipids

Our Nanoparticles

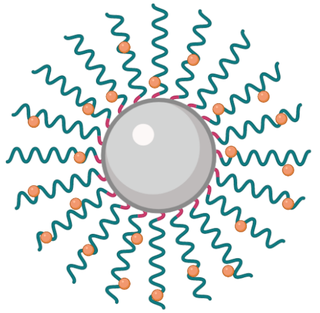


ET-001

Oral Fisetin Nanoparticle

Remove the Bad Cells
(+35% Lifespan)

IP Filed

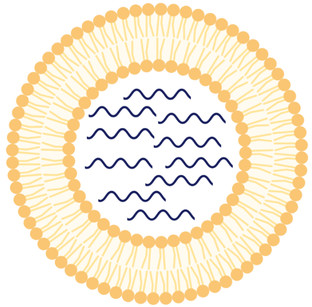


ET-002

Topical Fisetin Nanoparticle

De-Age the Skin

IP Filed

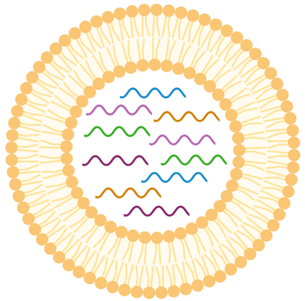


ET-003

Gene X Nanoparticle

Provide Exceptional Longevity
(+40% Lifespan)

Designed



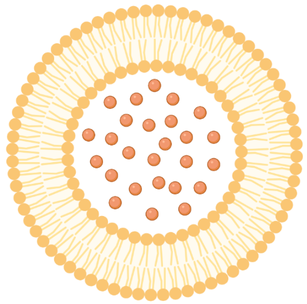
ET-004

mRNA Reprogramming Nanoparticle

Restore the Good Cells
(+15% Lifespan?)

Planned

Our Nanoparticles



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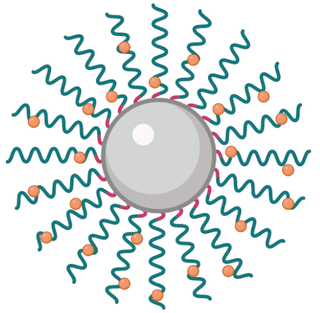

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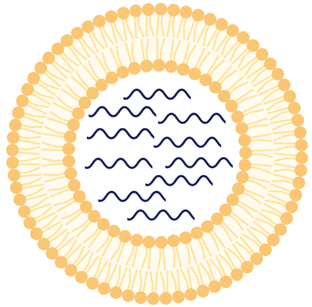

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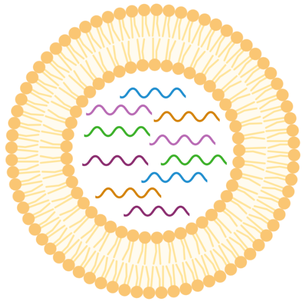

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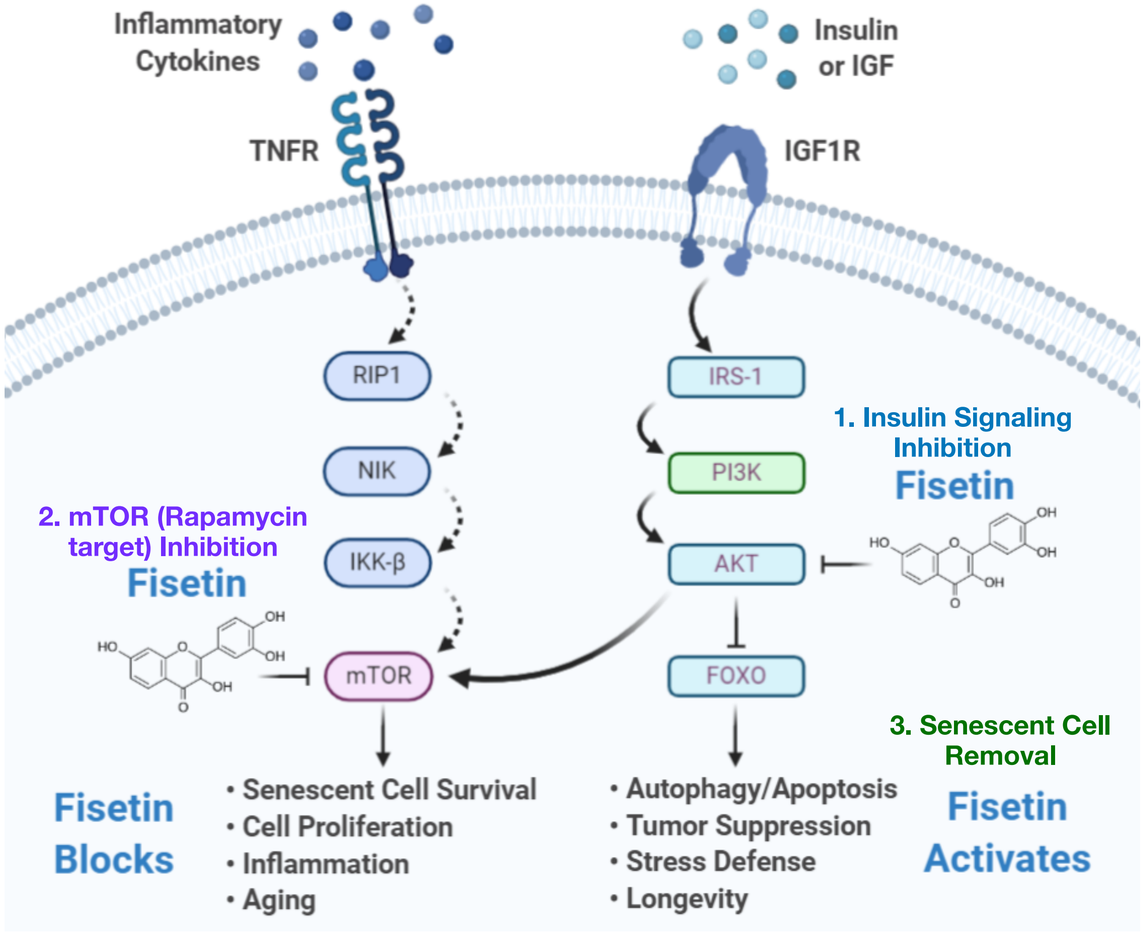
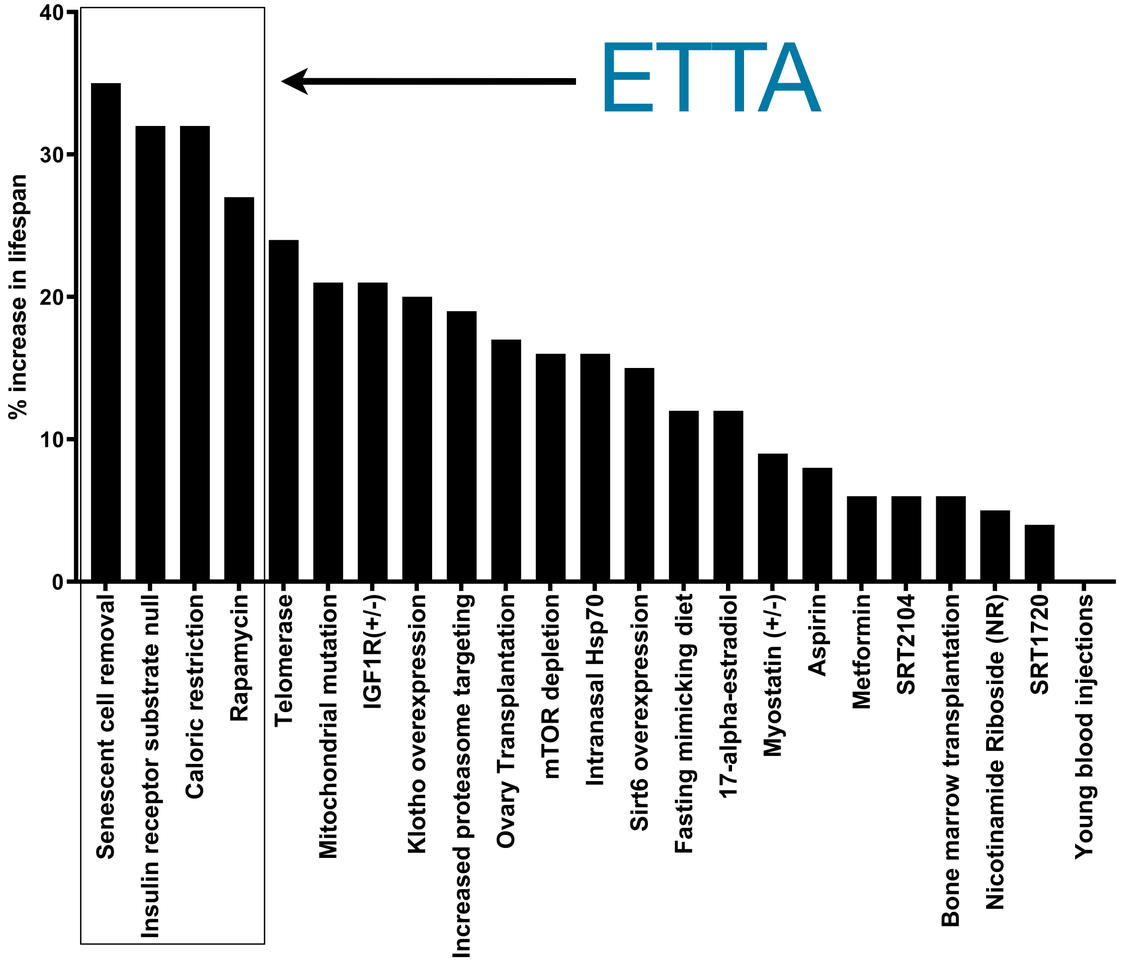
Fisetin as a Therapeutic for Aging



Kyle Brewer - ETTA Biotechnology
Matthew J Yousefzadeh et al, 2018 EBioMedicine
Vaqar Mustafa Adhami et al, 2012 Biochem Pharmacol

ETTA Makes the Most Powerful Aging Interventions



- **1 year**
- **40+ people dosed**
- **90%+ efficacy in tests and case studies**

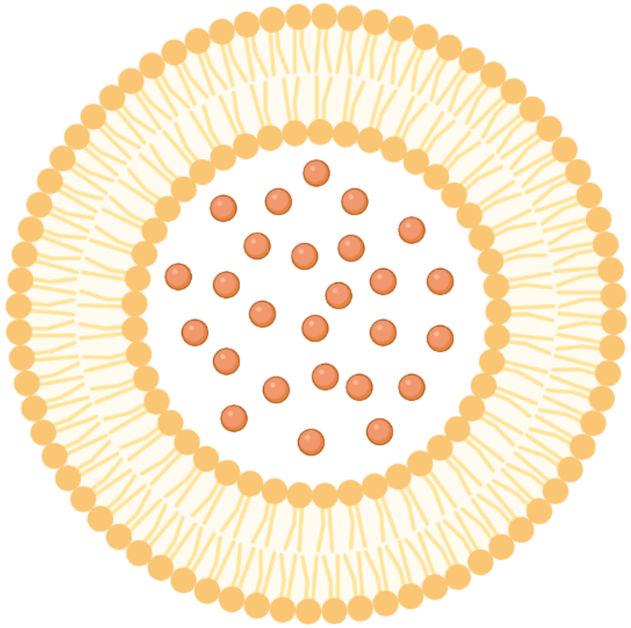
Emerging Evidence for Benefits of Fisetin In:

Crohn's Disease and Colitis, Poor Digestion
Psoriasis, Dermatitis, Scarring
Alzheimer's, Parkinson's, Huntington's, Multiple Sclerosis, Dementia, Neurodegeneration, Poor Sleep, Headaches
Heart Disease, Atherosclerosis, Stroke, Hypertension, Heart Failure, Cardiomyopathy, Vascular Disease, Calcification
Chronic Obstructive Pulmonary Disease (COPD), Pulmonary Fibrosis, Tobacco/Vaping (Smokers Lung)
Fatty Liver Disease, Liver Cirrhosis, Kidney Disease, Renal Failure
Cancer (Colon, Lung, Brain, Skin, Gastric, Kidney, Liver, Pancreas, Lymphoma, Melanoma)
Osteoporosis. Osteoarthritis, Sarcopenia, Frailty
Progeria, Cockayne Syndrome, Werner Syndrome
Macular Degeneration, Cataracts, Glaucoma
Organ Transplantation Failure
Prostate Hypertrophy
Diabetes, Obesity
Hay Fever, Asthma
Inflammation, Lupus
COVID-19, Influenza, Infections, Wound Healing
Lifespan, Healthspan, Fertility

***However, fisetin has poor solubility (0.01 mg/mL) and short half-life (5 minutes)**

Harish C. Pal et al., 2016 Adv Exp Med Biol
Muhammad Imran et al., 2020 Food Sci Nutr
Grzegorz Grynkiewicz and Oleg M. Demchuk, 2019 Front Chem
Naghma Khan et al., 2013 Antioxid Redox Signal

ET-001: Our Proprietary Oral Fisetin Nanoparticles for Aging



ET-001 Fisetin
Lipid Nanoparticle

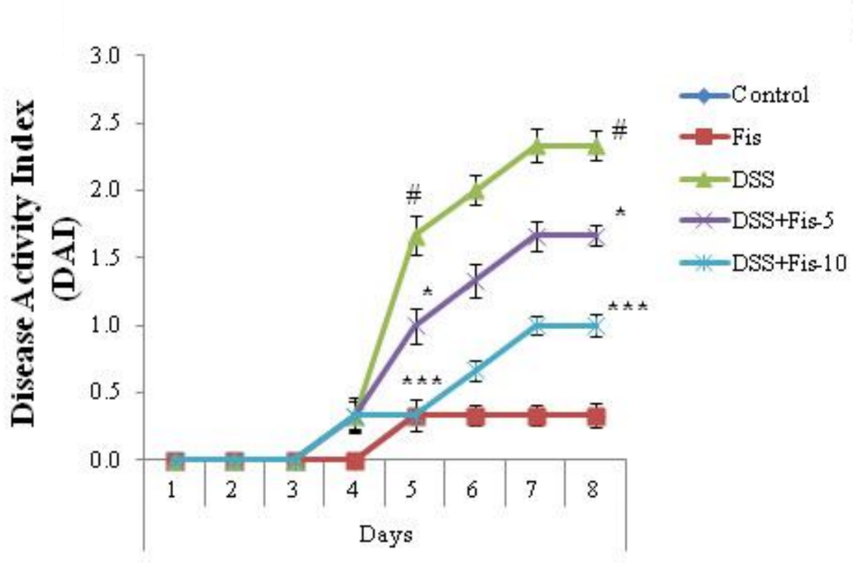
3 People Dosed During Preliminary Safety Study:
No Negative Side Effects Observed or Reported at Highest Dose

Unexpected Early Results:
1. Improved Digestion
2. Chronic Joint Pain Permanently Relieved
3. Blood Sugar Level Lowered to Normal Level (7.3 mmol/L to 5.1 mmol/L)
4. Slight Weight Loss (0-2 kg - All Normal Weight Volunteers)
5. Brain Clarity
6. Faster Wound Healing (2x faster)
7. Reduced Headaches
8. Improved Sleep Quality

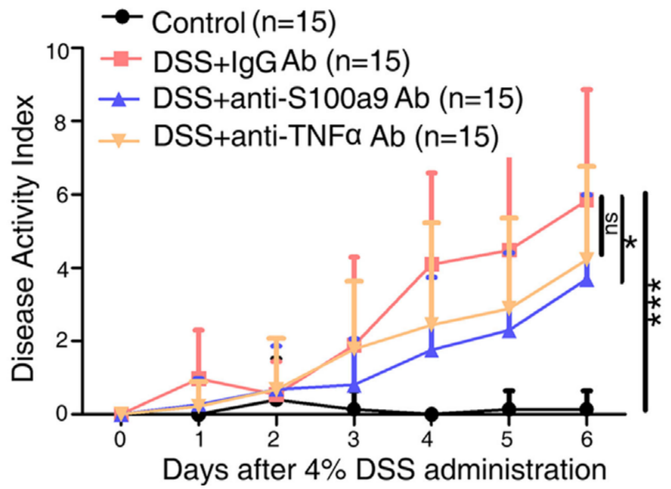
IP Filed

Fisetin: Inflammatory Bowel Disease (IBD)

IBD - $20 Billion per Year Market
1,600,000 Million Patients in the US



Disease Index After Fisetin



Disease Index After Standard of Care Treatment (anti-TNFα - Humira)

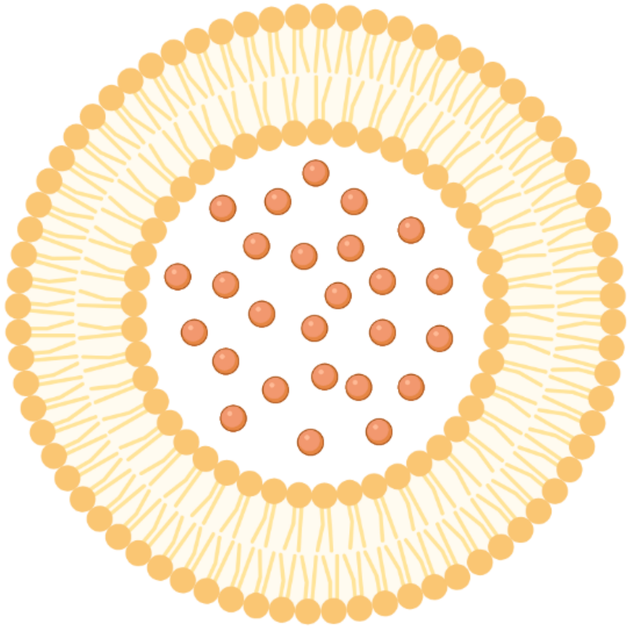
Bidya Dhar Sahu et al., 2015 JNB

Use of Funds

1. Fisetin Nanoparticle Efficacy and Preliminary Toxicity Study: **$250K**
2. Fisetin Nanoparticle Initial GMP Manufacturing: **$300K**
3. Fisetin Nanoparticle Preclinical Toxicity Study: **$1M**
4. Gene X Nanoparticle Production, Efficacy, and Preliminary Toxicity Study: **$500K**
5. Operating Buffer - **$250K**

Total: **$2.3M**

Market Estimate for ET-001



ET-001 Fisetin
Lipid Nanoparticle

Cost of production

$5 per dose (60 doses taken per year)

US, Europe, and China

1.25 billion people x $12000 profit per year = $15 trillion profit per year

Market Capitalization

$300 Trillion

*Note: Humira costs $84,000 per year

Economists: Increasing Life Expectancy Is Worth $367 Trillion

ANALYSIS
https://doi.org/10.1038/s43587-021-00080-0
nature aging

OPEN

The economic value of targeting aging

Andrew J. Scott[1]✉, Martin Ellison[2] and David A. Sinclair[3]

Developments in life expectancy and the growing emphasis on biological and 'healthy' aging raise a number of important questions for health scientists and economists alike. Is it preferable to make lives healthier by compressing morbidity, or longer by extending life? What are the gains from targeting aging itself compared to efforts to eradicate specific diseases? Here we analyze existing data to evaluate the economic value of increases in life expectancy, improvements in health and treatments that target aging. We show that a compression of morbidity that improves health is more valuable than further increases in life expectancy, and that targeting aging offers potentially larger economic gains than eradicating individual diseases. We show that a slowdown in aging that increases life expectancy by 1 year is worth US$38 trillion, and by 10 years, US$367 trillion. Ultimately, the more progress that is made in improving how we age, the greater the value of further improvements.

Team

Kyle Brewer, PhD

15 years experience with nanoparticles, including for drug delivery, mRNA delivery, DNA delivery, tissue targeting, and aging

Lulu Lorien, MSFA

5 years experience in cosmeceutical and nanotechnology industries

Biao Zhang, PhD

30 years experience as a serial entrepreneur in nanotechnology with multiple successful exits

- Reflectivity, Inc acquired by Texas Instruments in 2008
- True Material acquired by Affymetrix in 2011

Matt Yousefzadeh, PhD

Assistant Professor - U. of Minnesota
Discovered Fisetin is a Senotherapeutic and Extends Lifespan

Jean Chamcheu, PhD

Assistant Professor - U. of Louisiana Monroe
Dermatology of Fisetin Topicals

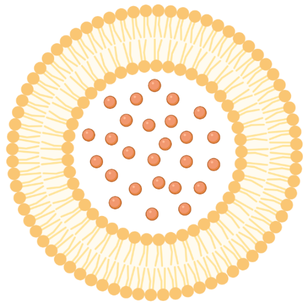
Khalid El Sayed, PhD

Professor - U. of Louisiana Monroe
Pharmacology of Fisetin

Kyle Brewer
ETTA Biotechnology
M: +1.704.806.6760
kyle@ettabiotechnology.com

Additional Nanoparticle Information

Our Nanoparticles



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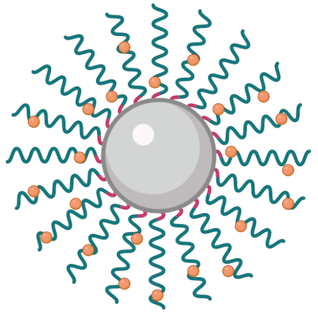
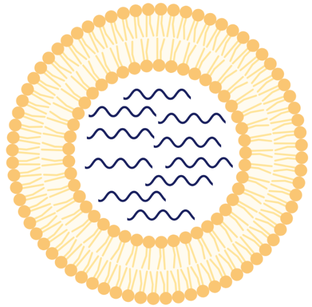


ET-002

Topical Fisetin Nanoparticle

De-Age the Skin

IP Filed



ET-003

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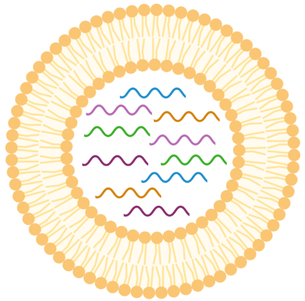
Designed



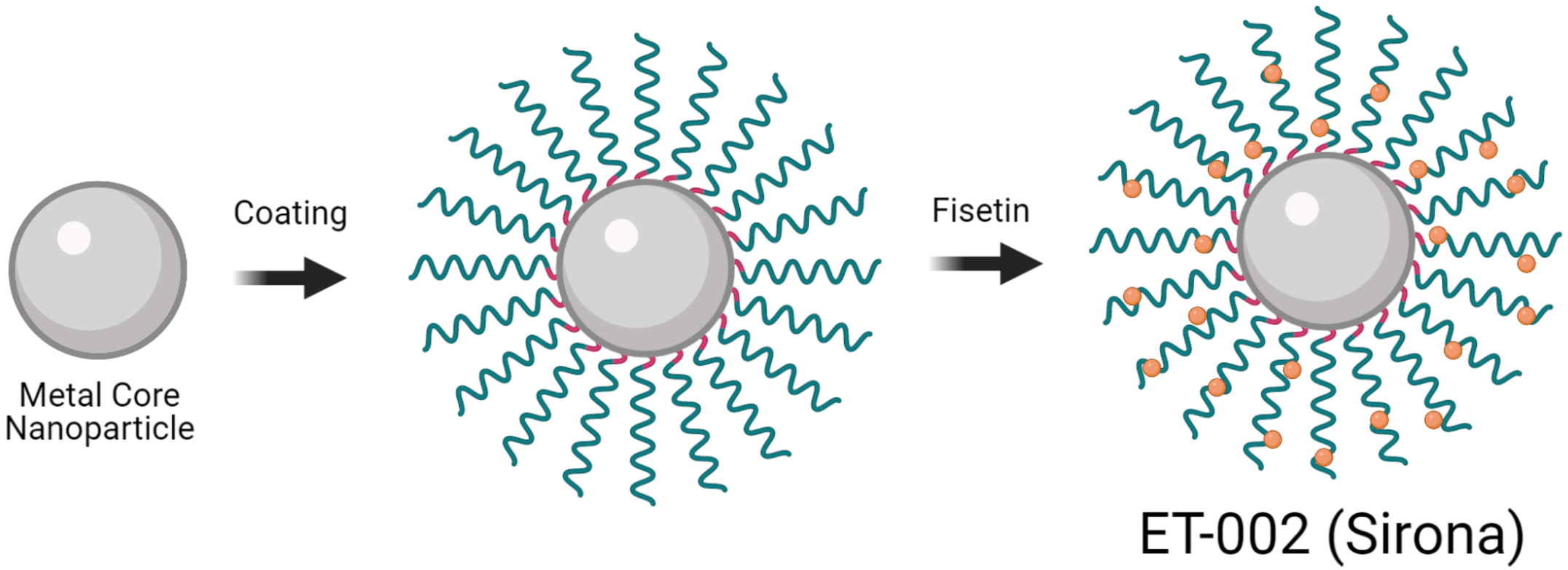
ET-004

mRNA Reprogramming Nanoparticle

Restore the Good Cells
(+15% Lifespan?)

Planned

ET-002 (Sirona): Our Proprietary Topical Skin Nanoparticles



IP Filed

Case Study of Psoriasis Using ET-002

Day 0

Day 7

Day 0

Day 7

- Completed: Irritation test of 25 healthy volunteers - no irritation and reports of improved skin appearance.
- More information: Reduced acne and wrinkles in collaboration with a large cosmeceutical distributor.

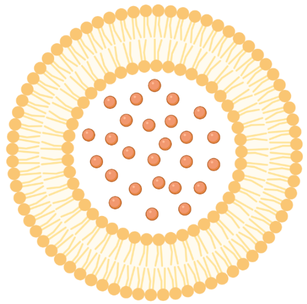
Case Study of Scar Prevention Using ET-002

Day 0

Day 60

- Patient presented with fingernail and chunk of flesh missing.
- Attending physician noted injury would definitely leave a scar.

Our Nanoparticles



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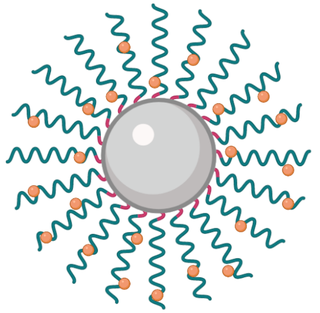
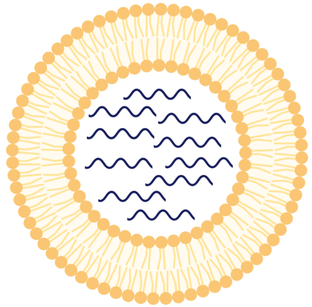


ET-002

Topical Fisetin Nanoparticle

De-Age the Skin

IP Filed



ET-003

Gene X Nanoparticle

Provide Exceptional Longevity
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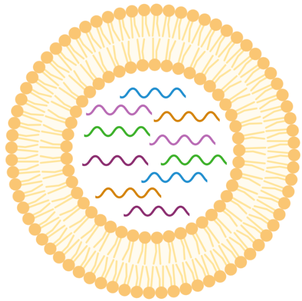


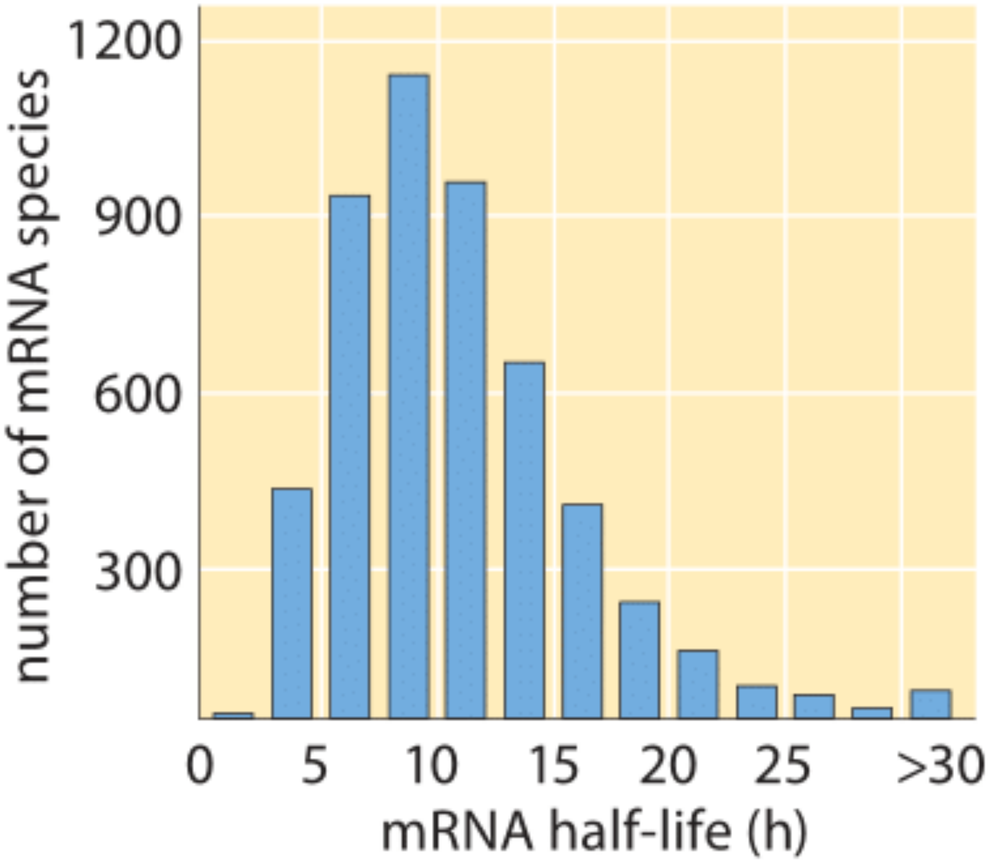
ET-004

mRNA Reprogramming Nanoparticle

Restore the Good Cells
(+15% Lifespan?)

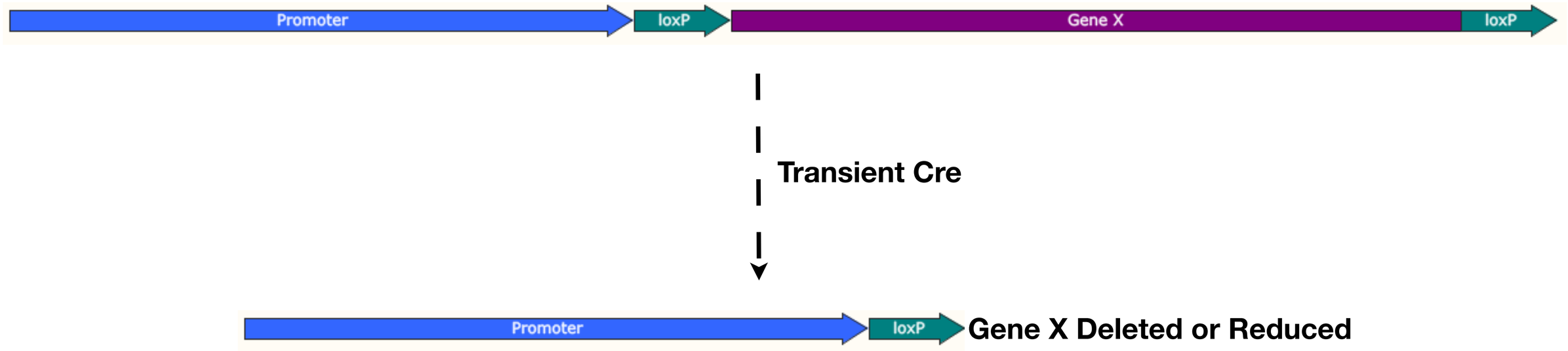
Planned

Short mRNA Half-Life Is Often a Major Drawback



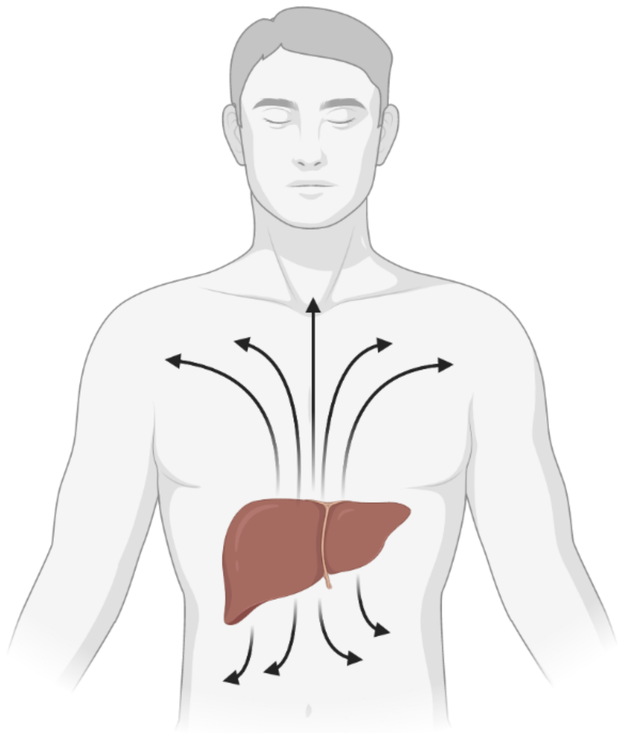
adapted from Jonathan A Bernstein et al, 2002 PNAS

Our Tunable, Reversible, Controllable Gene Therapy Platform



Reversible DNA gene delivery overcomes the short half-life limitation of mRNA

Gene X Nanoparticle: Treatment for High Cholesterol and Lifespan



Gene X

High Cholesterol - $22.6 Billion per Year Market
94,000,000 Million Patients in the US

One Injection: 5-10 Year Treatment for High Cholesterol

Possibility of Increasing Healthy Lifespan by 30 Years

Gene X Analog Clinical Trial

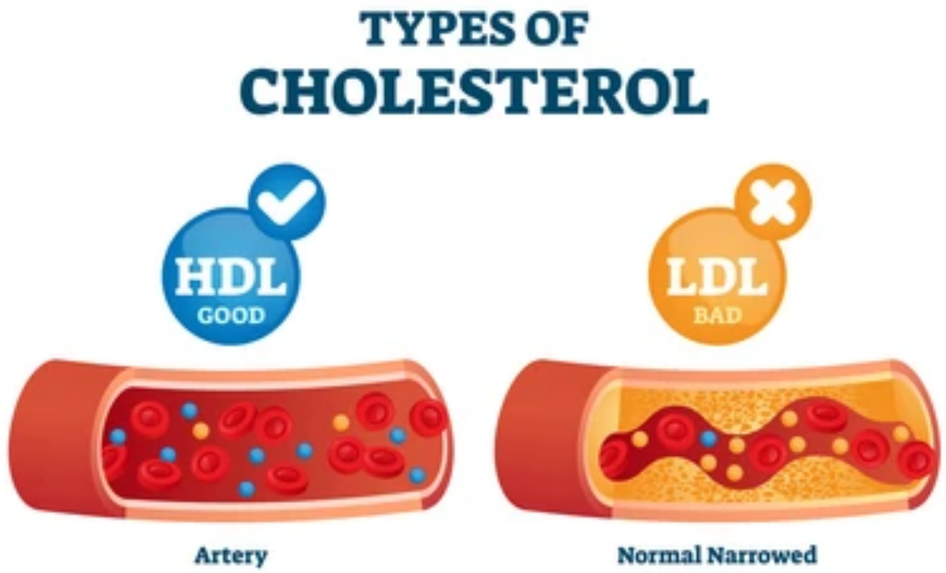
In 1 to 3 weeks:

Total Cholesterol ↓17%

Triglycerides ↓36%

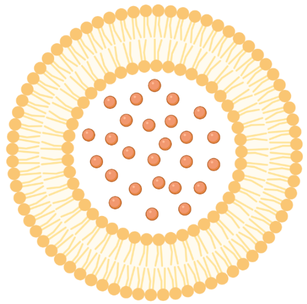
HDL ↑17%

LDL ↓25%



These results indicate our delivery of Gene X will be highly effective for high cholesterol in clinical trials.

Our Nanoparticles



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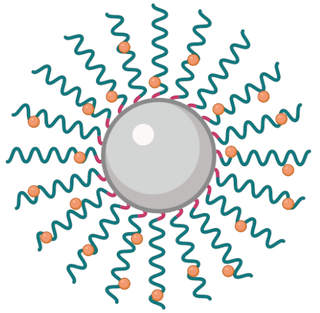

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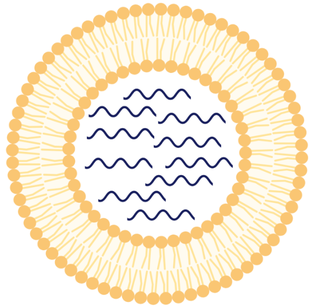

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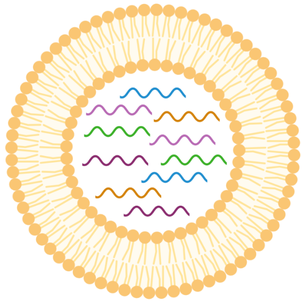


ET-004

mRNA Reprogramming Nanoparticle

Restore the Good Cells
(+15% Lifespan?)

Planned

mRNA Is Still in the Medieval Period

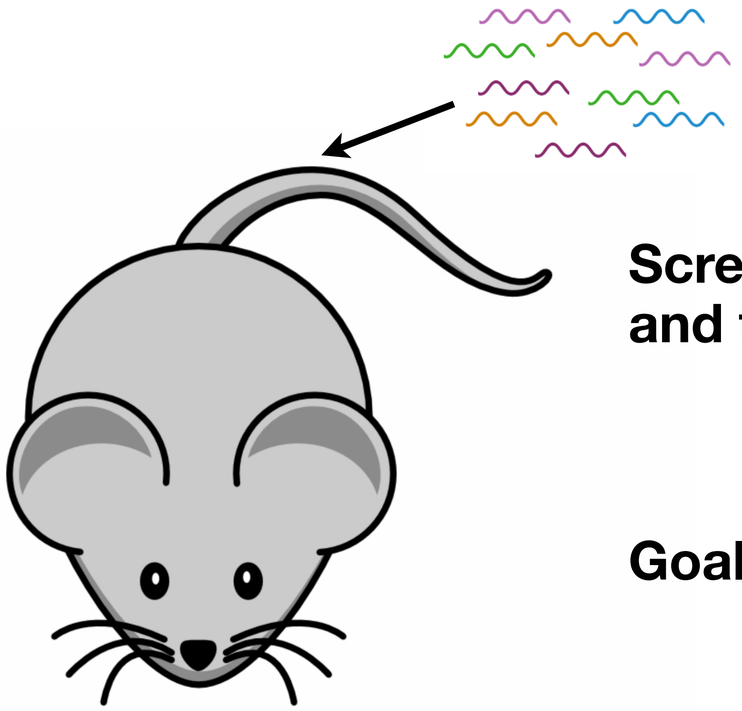
November 15, 2021 11:17 AM EST *Updated 03:52 PM* | R&D, Cell/Gene Tx

AstraZeneca, Moderna start to raise the curtain on a new mRNA heart drug — but efficacy will have to wait

Amber Tong
Senior Editor

Can injecting messenger RNA directly into the heart of patients who've experienced heart failure help repair the organ? More than three years after AstraZeneca and Moderna launched a first-of-its-kind Phase II trial to test the idea, the pair has now shown the procedure is at least safe.

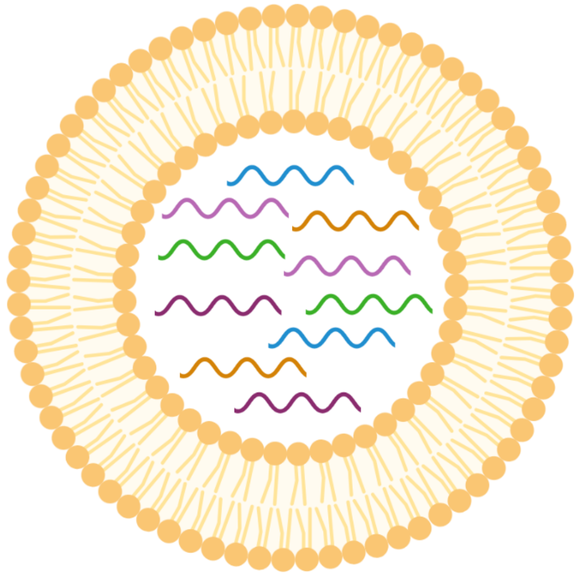
Targeted Nanoparticles: mRNA/DNA Delivery Platform



Screen 10^{14}-10^{16} targeting molecules *in vivo* to determine cell and tissue specificity.

Goal: 200+ targeted nanoparticles to every cell and tissue type.

mRNA Reprogramming Nanoparticle



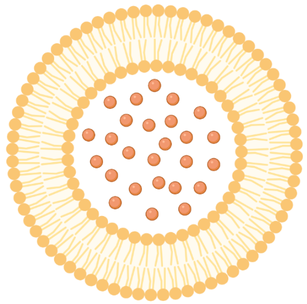
Improved Reprogramming

Create iPSCs to restore a youthful, stem cell nice to compliment other therapies

Will deliver to specific cells and tissues with our targeting tech.

Tapash Jay Sarkar et al, 2020 Nat Commun

Our Nanoparticles

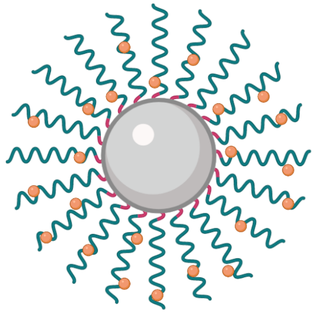


ET-001

Oral Fisetin Nanoparticle

Remove the Bad Cells
(+35% Lifespan)

IP Filed

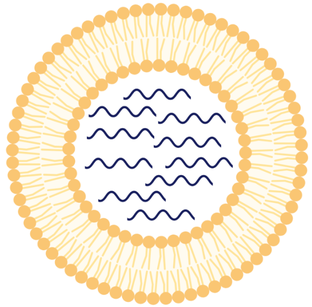


ET-002

Topical Fisetin Nanoparticle

De-Age the Skin

IP Filed

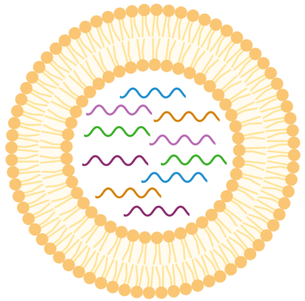


ET-003

Gene X Nanoparticle

Provide Exceptional Longevity
(+40% Lifespan)

Designed



ET-004

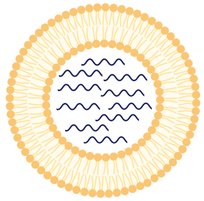
mRNA Reprogramming Nanoparticle

Restore the Good Cells
(+15% Lifespan?)

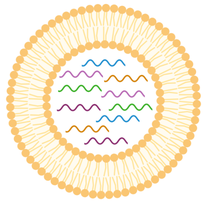
Planned

Immediate and Long-Term Strategy

1. Create the safest and most effective aging therapeutics currently possible.



2. Develop nanoparticle platform to target specific cells for licensing and reprogramming therapies.



3. Determine therapy synergy with machine learning (ML) models of aging for an unmatchable suite of treatments.