

Meet Chain of Custody



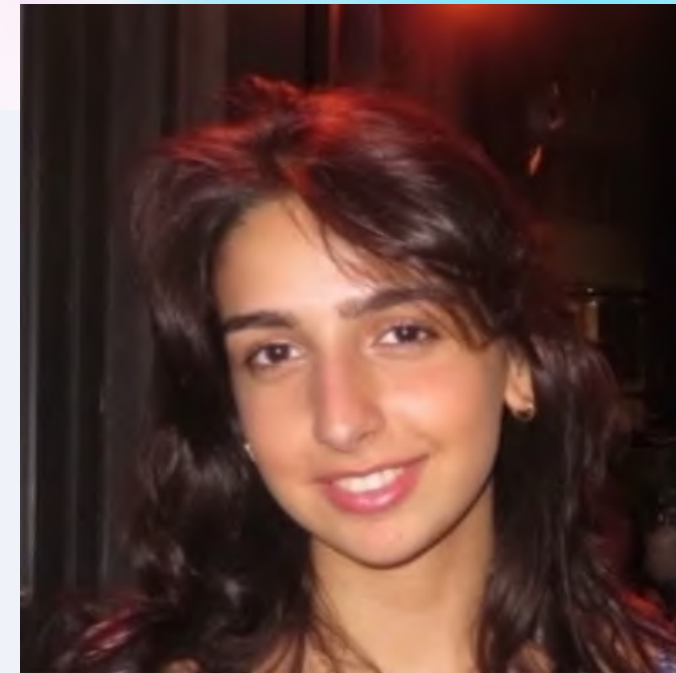
Dr. Andrew Newman
NEURONAL GENOMICS



Nico Trummer
**BIOINFORMATICS
ONCOLOGY**



Filippo Conforto
**PH.D. CANDIDATE
BIOPHYSICS**

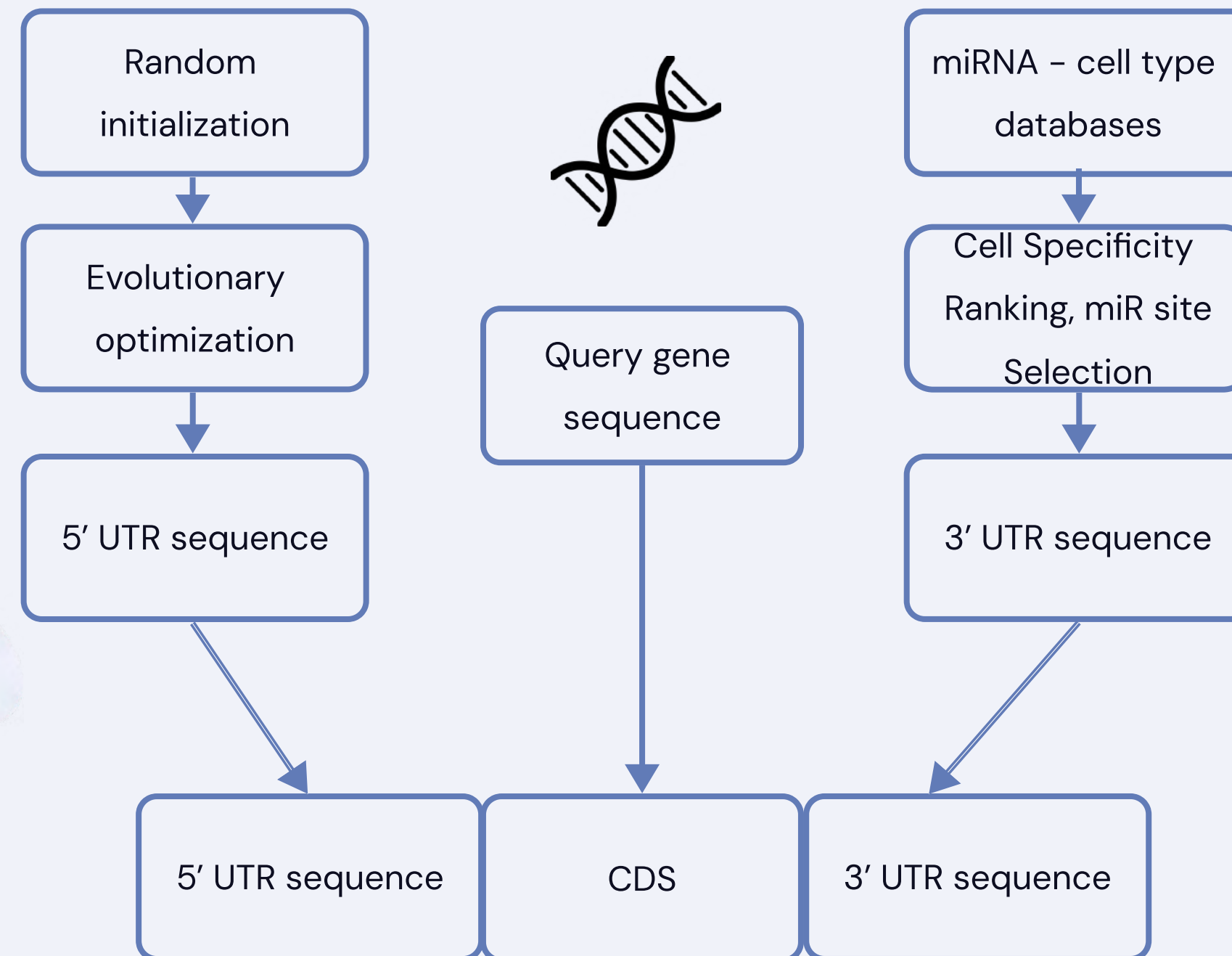


Selin Abdullazade
SOFTWARE



Dr. Frida Arrey
IMMUNOLOGIST

Technical Overview



How it works: Dashboard

adjust menu

then visualise...

Cell type selection

Targets

Off-targets

Search cell types...

196 cell types

Clear targets

Adipocyte

Amniotic epithelial cell

Annulus fibrosus cell

Astrocyte

B cell germinal center

B cell naive

B cell pre germinal center

B lymphocyte

Design parameters

5' UTR MODE

Manual

Optimise

Run 5' UTR Optimisation

Uses a Genetic Algorithm (NSGA-III) to evolve a 5'UTR that maximizes Translation Efficiency while maintaining stability.

CODING SEQUENCE

Gene Symbol

e.g. POU5F1

Fetch CDS

Fetch canonical CDS from Ensembl

CDS (Coding Sequence)

e.g. AUG...

The protein-coding region

3' UTR ALGORITHM

Target silence threshold

< 10 RPM

Max mean RPM in target cells for a miRNA to be a candidate

Off-target coverage threshold

≥ 1000 RPM

Min mean RPM in an off-target cell to count it as covered

Max miRNAs to select

20

Algorithm stops after this many miRNAs regardless of coverage

Sponge target expression across cell types

Linear

Log

Mean expression (RPM)

Target cells

Annulus fibrosus cell

CD8 lymphocyte

CD19 lymphocyte

CD19 epithelial cell

Melanocyte

progenitor derived

Natural killer cell

CD15 cell

CD56 cell

CD4 lymphocyte

B lymphocyte

epithelial cell fetal

Myotube

cell germinal center

Plasma cell

endothelial cell

nuclear immune cell

CD27 IgG cell

CD27 IgA cell

CD14 cell

Macrophage

Mast cell

CD4 CD8

CD27- IgD cell

T lymphocyte

Biliosphere

CD27 IgD cell

cell progenitor cell

Neutrophil

ad isomeric stem cell

Platelet

Nasal epithelial cell

Lymphocyte

macrophage derived

Dendritic cell

CD34 cell

hsa-miR-103b

hsa-miR-1-3p

hsa-miR-204-5p

hsa-miR-141-3p

hsa-miR-142-5p

hsa-miR-424-5p

hsa-miR-146a-5p

hsa-miR-148b-3p

Selected sponge targets

Partial coverage — 182/195 off-targets covered (93.3%)

8 miRNAs selected

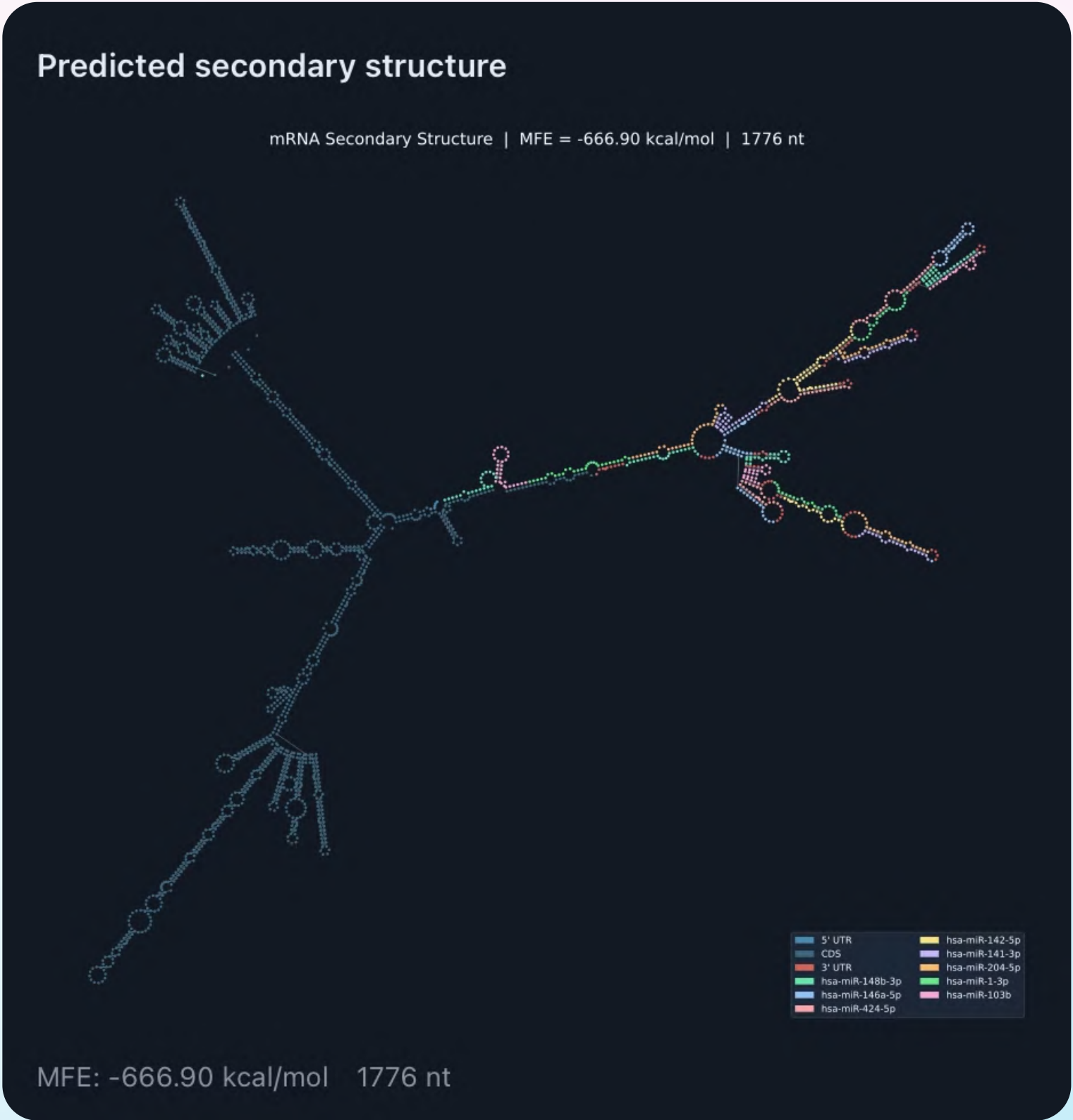
Protecting Annulus fibrosus cell

► 13 uncovered off-targets

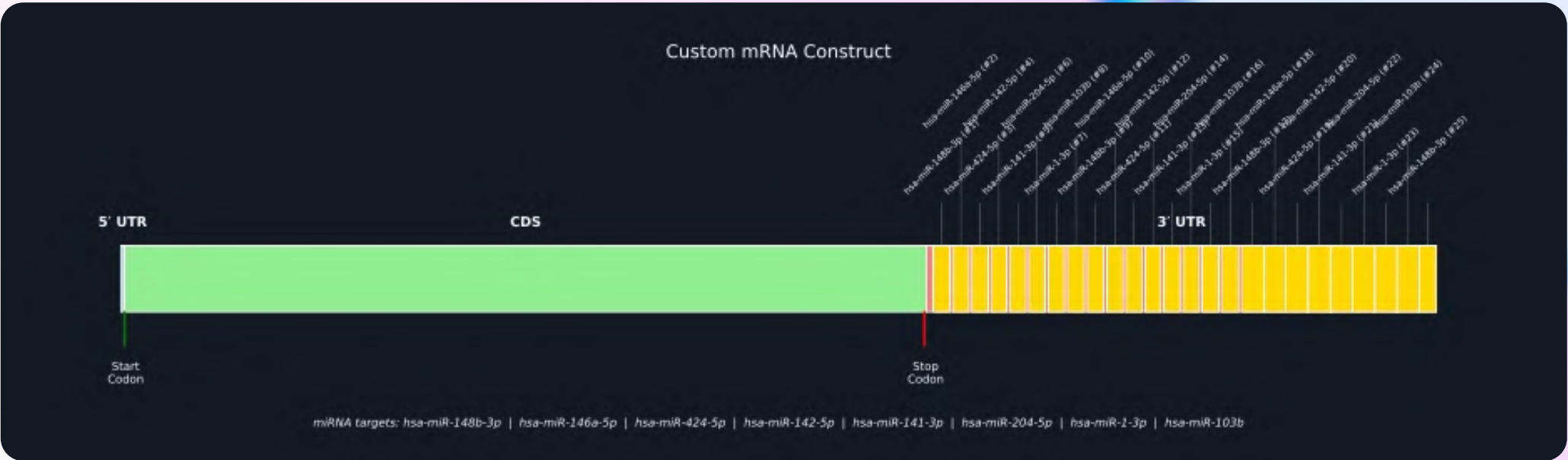
#	MiRBase ID	Seed	Target RPM (avg)	Newly covered	Mature sequence
1	hsa-miR-148b-3p	CAGUGCA	0.0	132	UCAGUGCAUCACAGAACUUUGU

Try Pitch

How it works: Results



Secondary structure



Linear binding site map



Complete mRNA sequence

Precision Gene Delivery

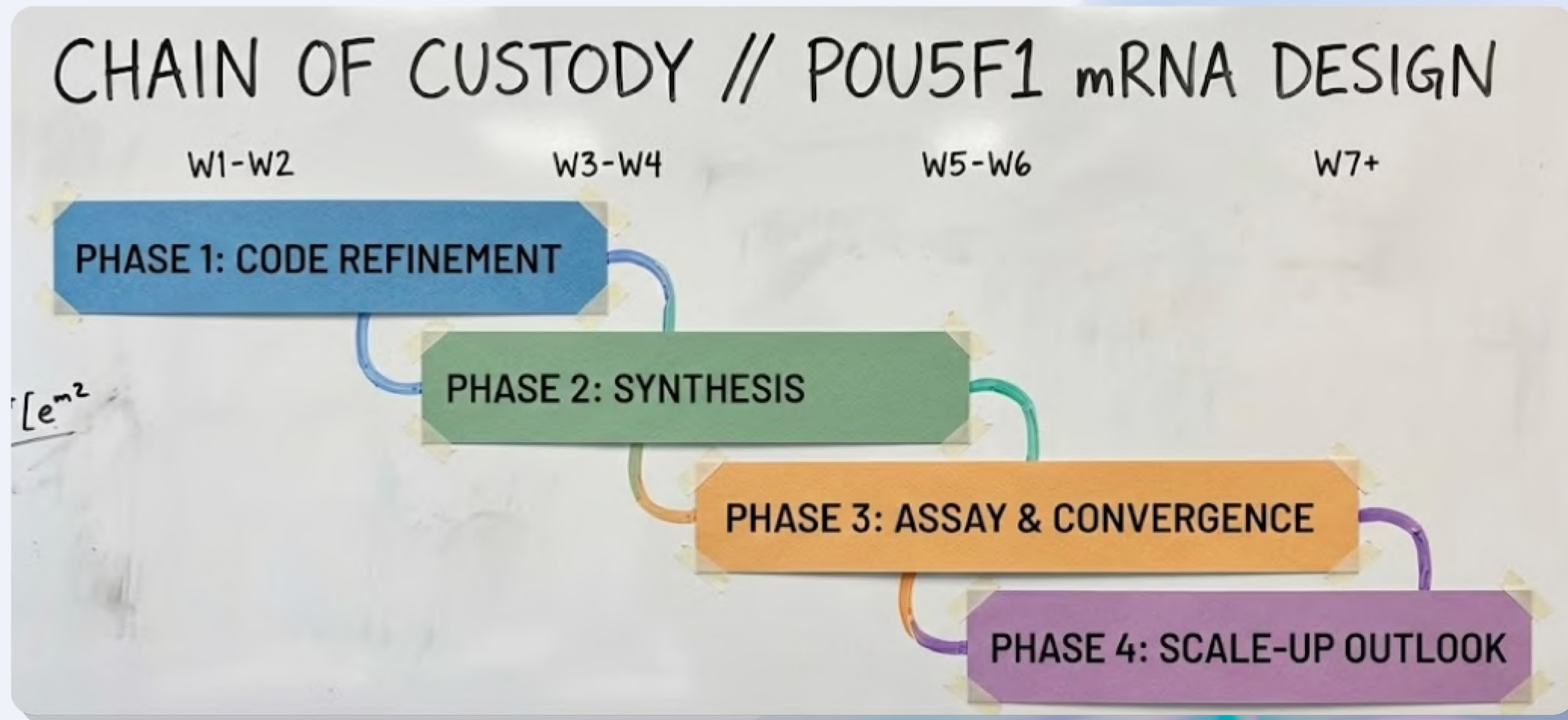
LEVERAGING MULTIPLEX MIRNA LOGIC

- Our platform can generate mRNAs for cell-type specific translation with minimal off-target effects enabling:
 - 1) **Multiplex Gene therapies:** one shot targeting of multiple genes across multiple celltypes.
 - 2) **Dosage control:** partial (age) reprogramming using OSKM* rejuvenates cell types with differing efficiency. Tissue specific translation enables optimization of reprogramming rates by tissue type, abolishing the risk of tumorigenesis.

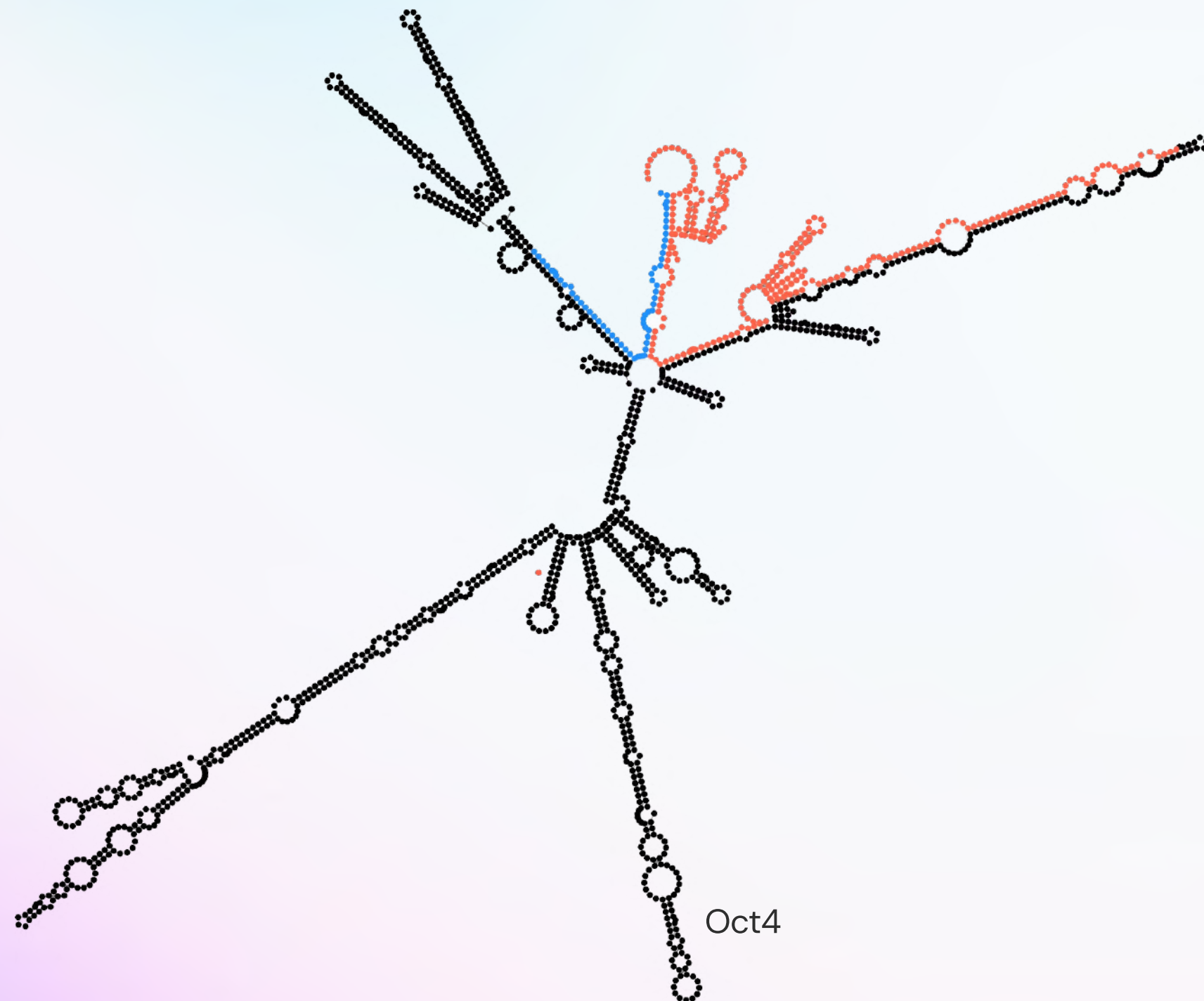
Longevity tech industry...



Potential to scale



References



1 Kozomara A et al, 2019, *Nucleic Acids Res*

2 Arun H Patil et al, A curated human cellular microRNAome based on 196 primary cell types, 2022, *GigaScience*

3 McGeary SE et al, The biochemical basis of microRNA targeting efficacy, 2019, *Science*

*Singh & Newman 2019, *Epigenetics & Chromatin*
Browder et al., 2022, *Nature Aging*



Want to make a presentation like this one?

Start with a fully customizable template, create a beautiful deck in minutes, then easily share it with anyone.

Create a presentation (It's free)