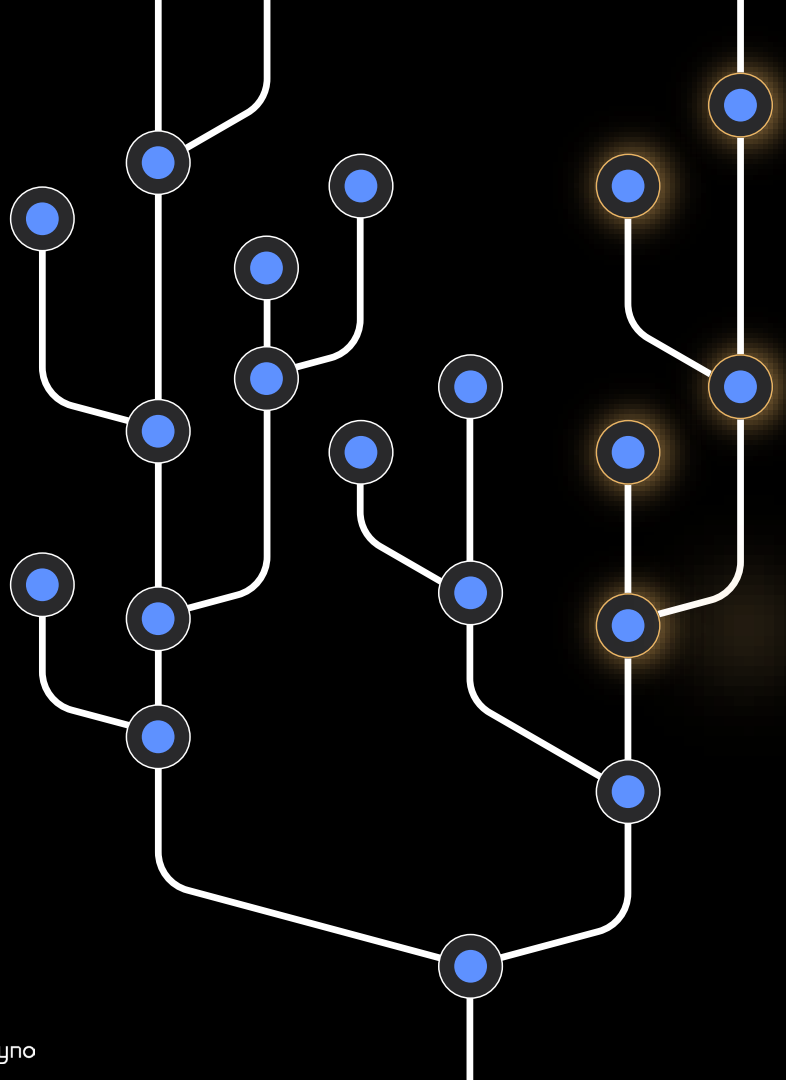
AI powers the coming age of genetic agency

Sam Sinai
Co-founder, Head of ML

11.18.2025

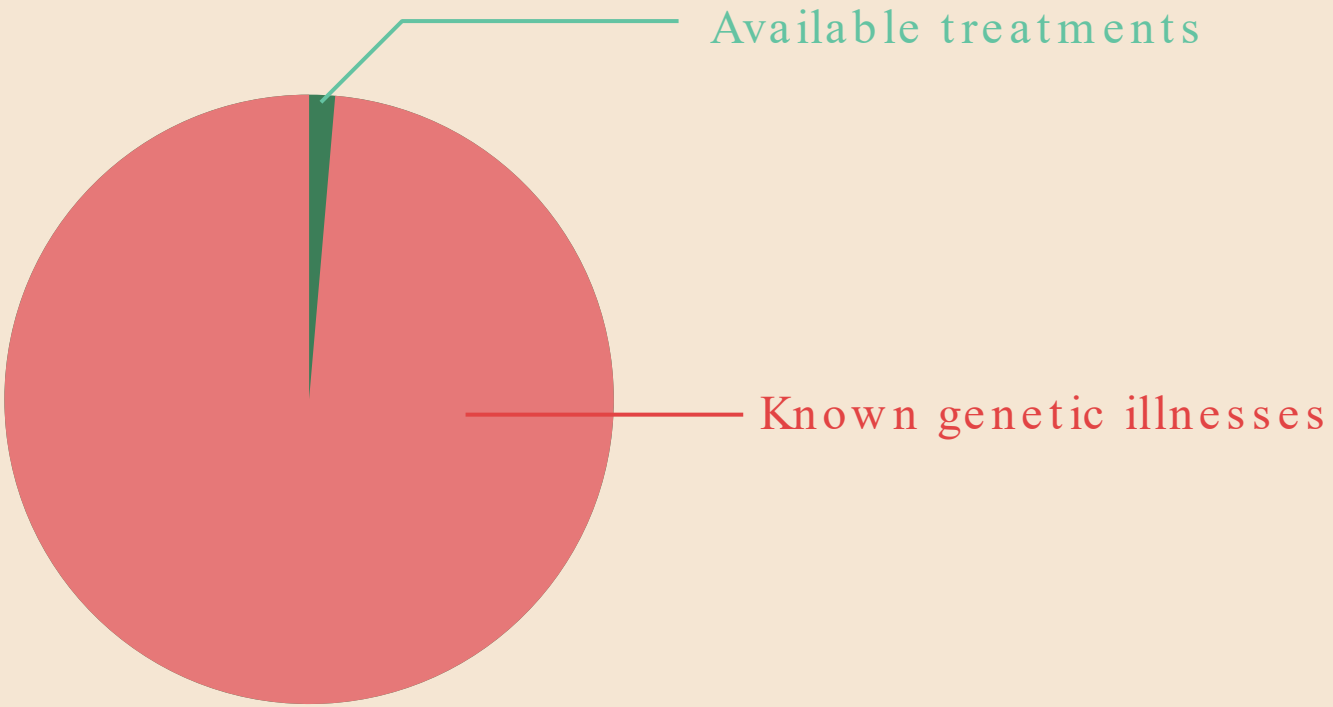


Genetic Agency

An individual's ability take action at the genetic level to live a healthier life

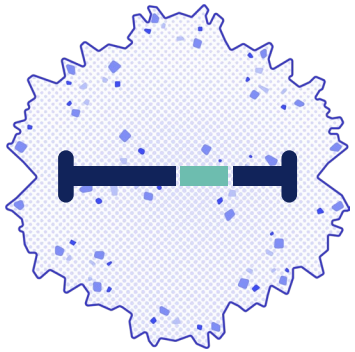
dyno

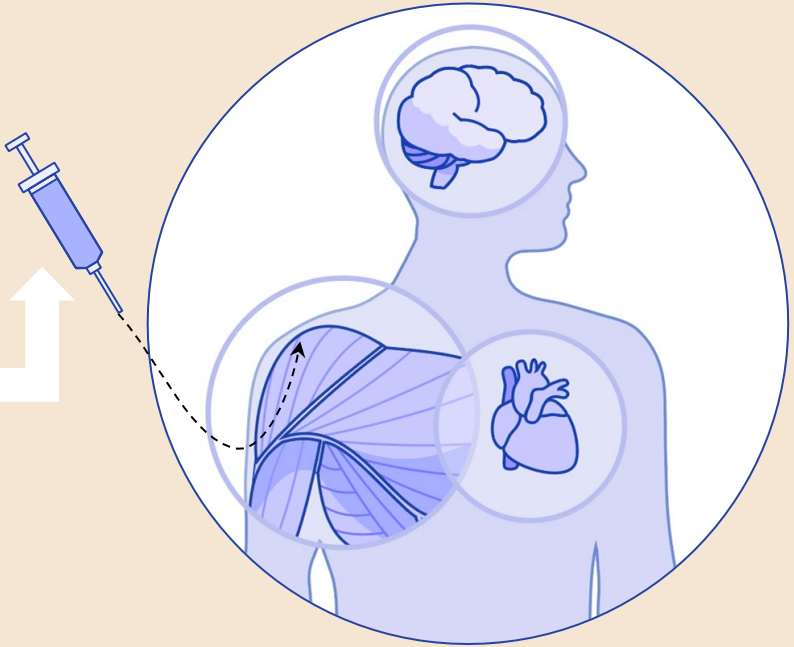
Why so few treatments for genetic illnesses?



Gene therapy is a promising but developing technology

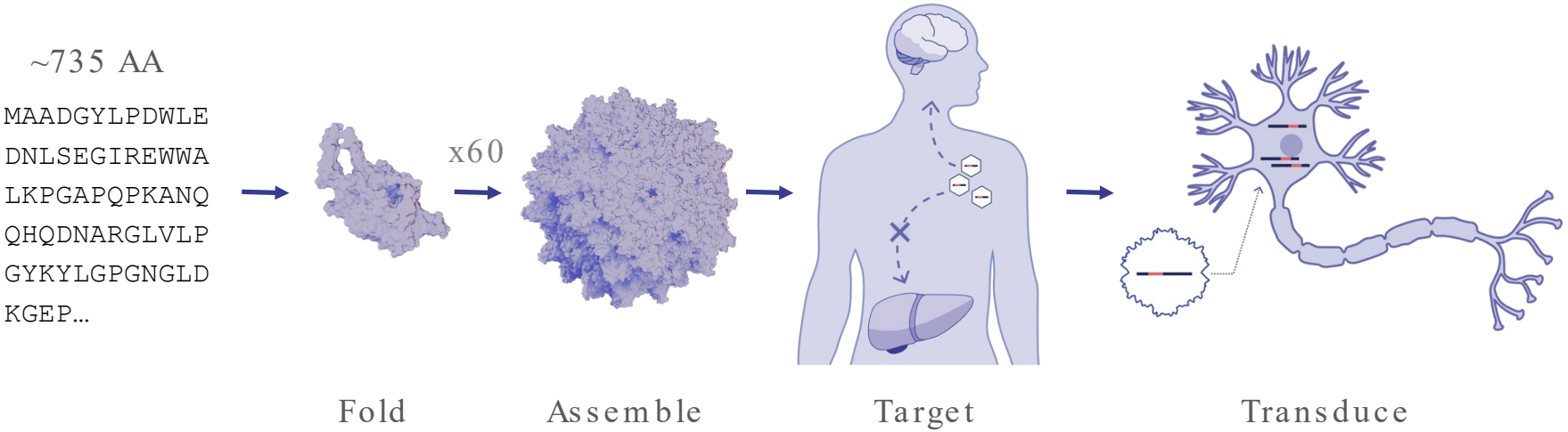
Elevidys for DMD





At Dyno, we are 100% focused on building technologies to enable genetic agency

Case study: AAV transduction requires completion of multiple complex steps



Our AI efforts in the past 10 years

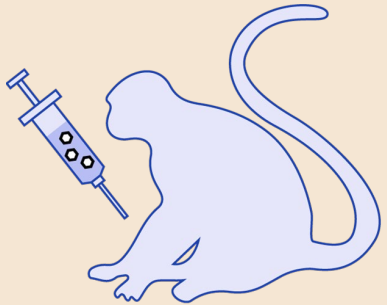
Black-box models of billions of in vivo capsid measurements

Mechanistic-driven design with generative models for capsids and payloads

AI agents as co-scientists that can make use of Dyno's tools

Learning sequence models from in vivo data

MAADGYLPDWLED
NLSEGIREWWALK
PGAPQPKANQQHQ
DNARGLVLPGYKY
LGPGNGLDKGEP…

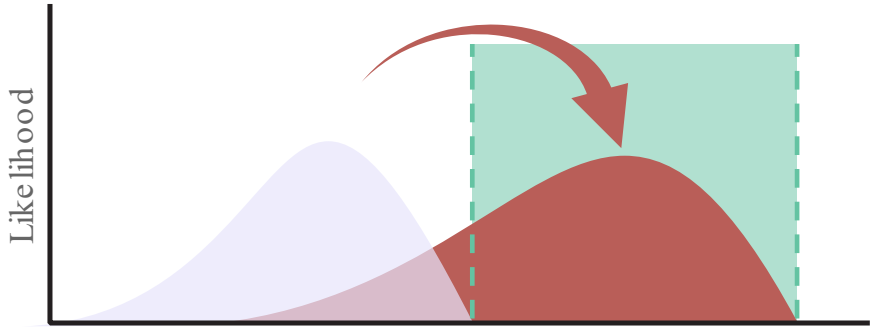


dyno

LEAP

High performance in vivo blackbox design

LEAP's high fidelity enables us to replace an in vivo experiment with compute, saving a year of experiments and >$1M in expenses.



dyno

LEAP

High performance in vivo blackbox design

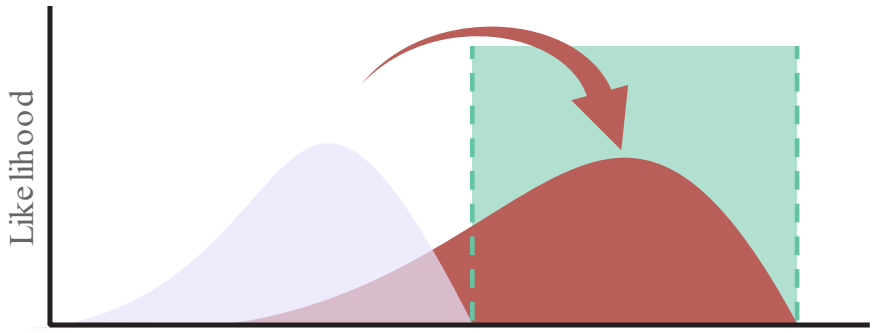
LEAP's high fidelity enables us to replace an in vivo experiment with compute, saving a year of experiments and >$1M in expenses.

Head-to-head comparison

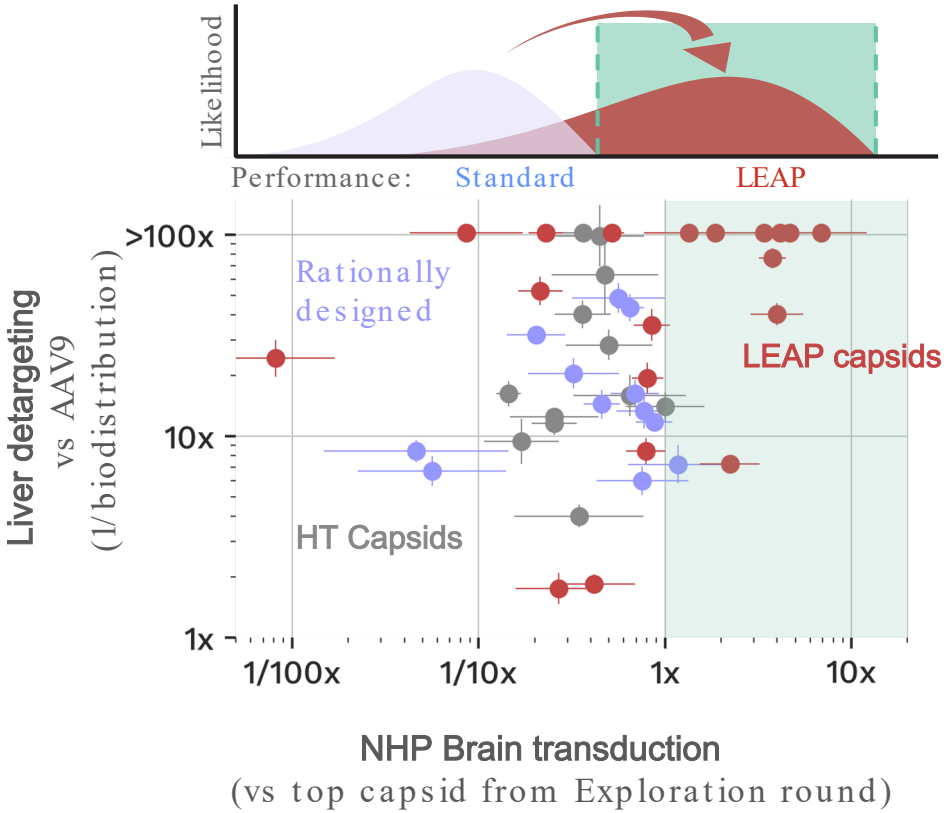
- 11 top variants from training data
- 12 new capsids, rationally designed
- 19 new capsids, designed using LEAP

Pooled validation design

- IV co-injection
- 2 adult Cyno NHPs
- 28 day in-life period
- 1.5e13 vg/kg dose for total pool



With LEAP we replaced in vivo experiments with ML



90%

17 **packaged** effectively

47%

9 performed **better than anything we had observed before**

6x

Top capsid performed up to **6x better** than the best known capsid before

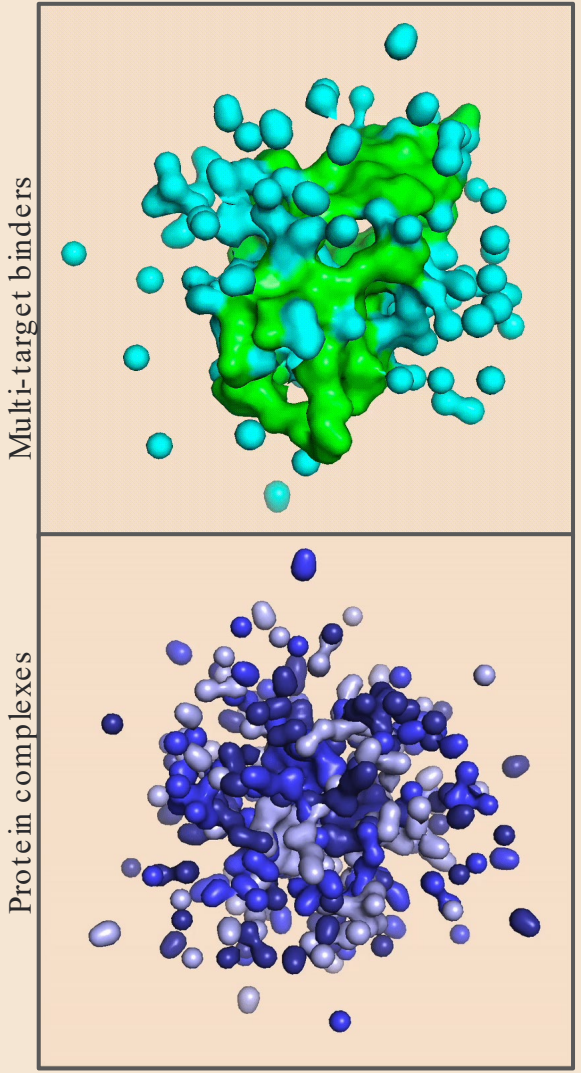
Connecting sequence to mechanism

dyno

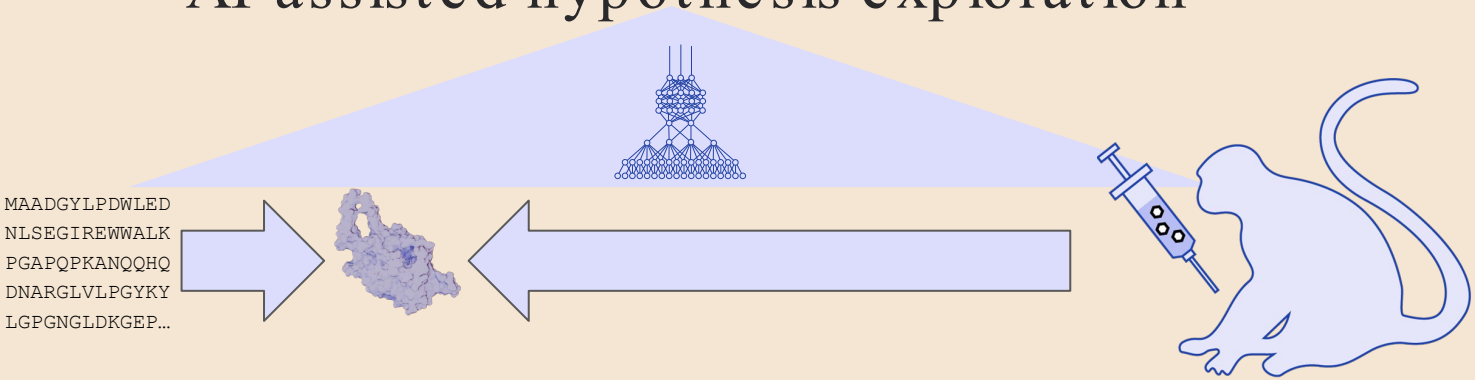
Dyno Psi-1

Controllable design of every component of a gene therapy

Dyno Psi-1 is a structure-based foundation model capable of designing delivery or payload proteins with high efficiency, scale and fidelity.

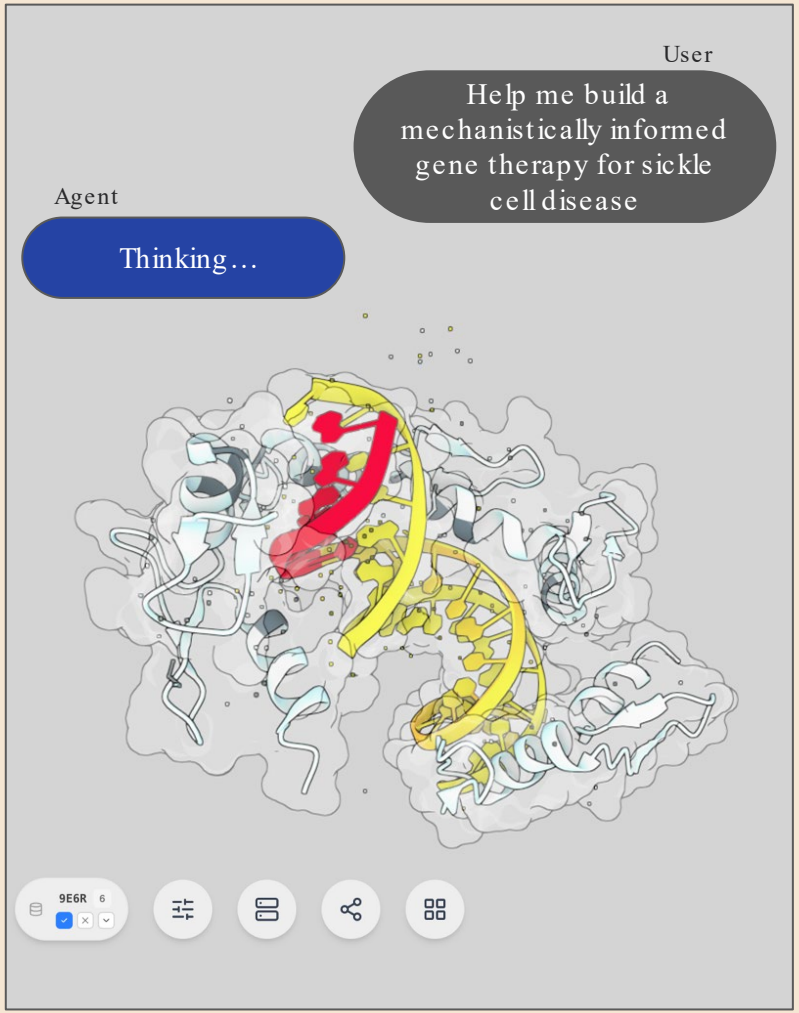


AI-assisted hypothesis exploration



dyno

Link to view >

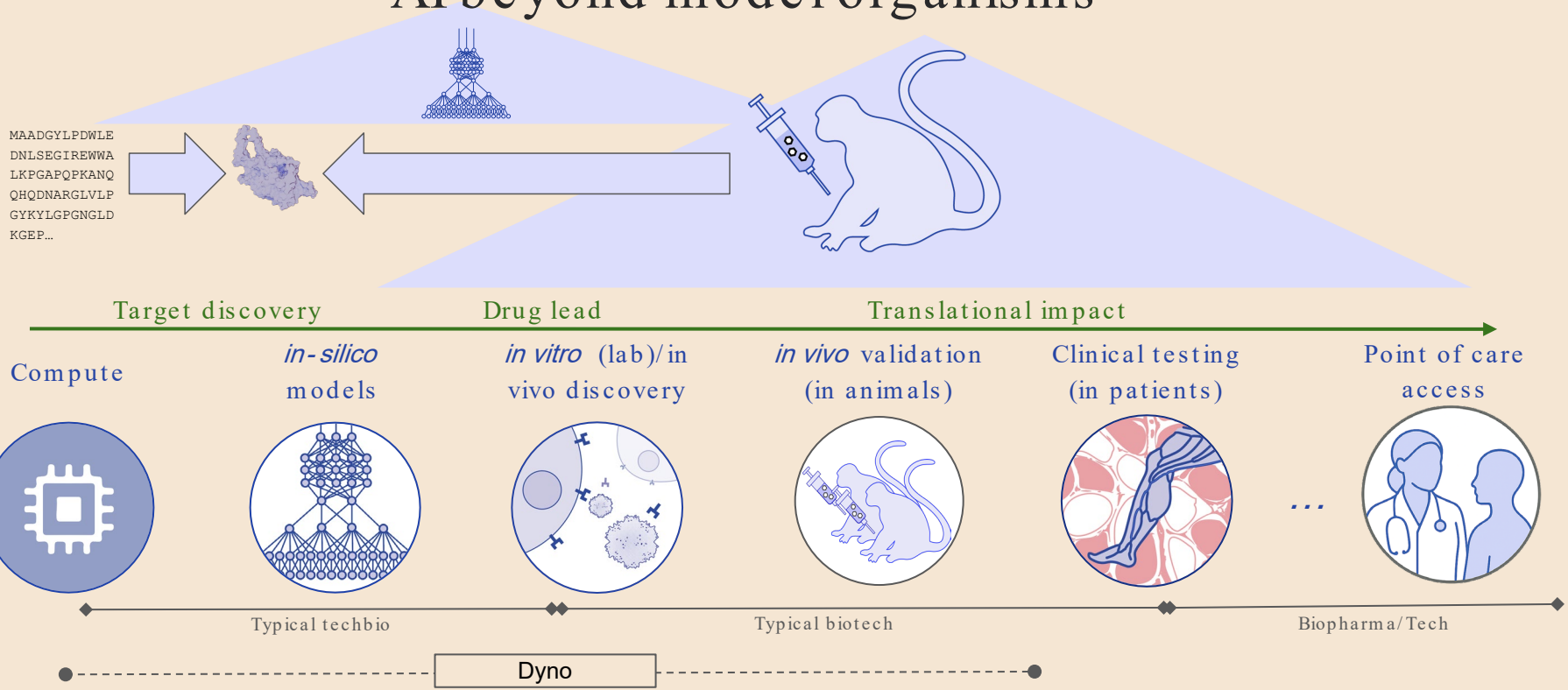


p0

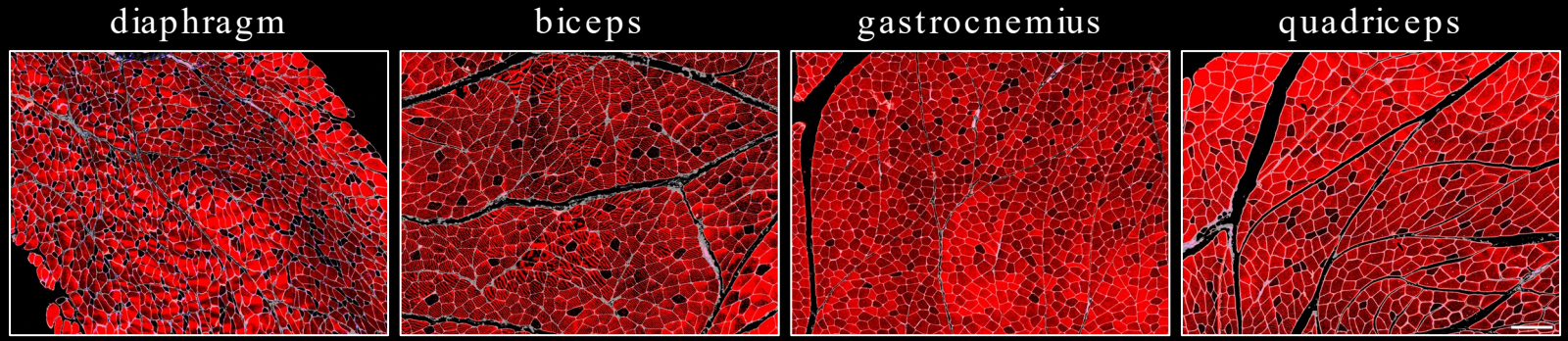
Reducing cost and time from idea to therapeutic design

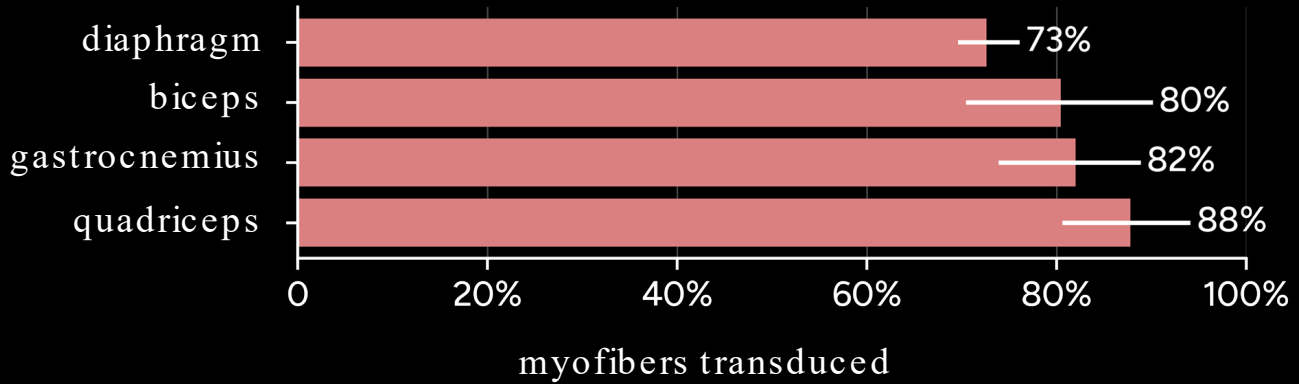
Agents integrate information and tooling for informed and efficient decision making, reducing the expertise, risk, and time needed to generate effective therapies.

Connecting technology to patient impact requires deploying AI beyond model organisms

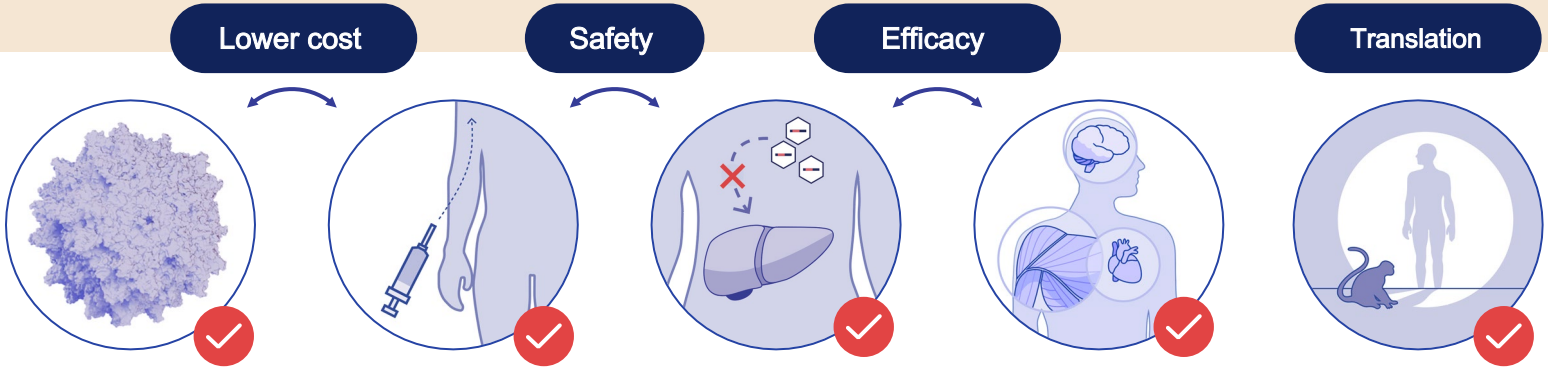


At 5.2e12 vg/kg, Dyno-bn8 evenly transduces the vast majority of skeletal myofibers in all tested tissues





Dyno-bn8 achieves therapeutic delivery to muscle at significantly lower doses* and with improved liver detargeting



Efficient production	Efficient at low doses	Detargeted from liver	Efficient delivery to target organs	Predict performance in humans
similar production vs AAV9	1.6e13 vg/kg 5.2e12 vg/kg	34 vg/dg liver at 5.2e12 vg/kg	81% avg muscle at 5.2e12 vg/kg 40% avg heart at 1.6e13 vg/kg	Conserved receptor in NHP and humans

*25x lower than Elevidys (1.33e14 vg/kg)

Final thoughts

- I've shown you today that we have rapidly accelerated how well we can model therapeutics for non-human primates with AI.
- Translation to patients **requires grounding in human data** .
- We are motivated to treat real patients, **many of whom have no options today** .
- U.S. leading position in biotech is impacted by how much we invest and accelerate it right now (through a forward looking policy).