



2026 Europe Interchange

THE FUTURE IS CONNECTED: STANDARDS AND AI POWERING DIGITAL TRANSFORMATION



MILAN, ITALY | MAIN CONFERENCE: 20-21 MAY | TRAININGS & WORKSHOPS: 18, 19, & 22 MAY

Saving and improving lives by repurposing drugs

Lee Lancashire PhD, Head of Data Science, Every Cure.



Agenda

1. A personal story
2. The Every Cure Approach
3. How you can help



A Personal Story

12 years ago, a baby was born and he came with instructions

- These instructions were not a temporary measure
 - They were the answer
 - And still are to this day
 - This baby is my son
 - His name is Alfie!

- Treat the baby as "normally" as possible
- Skin biopsy is not necessary.
- Encourage oral feeding
- Use analgesics and antibiotics as clinically indicated. May not be required. It is reasonable to continue what you have started perhaps for 48 hours.
- Remove UVC when possible, to facilitate skin care.
- Keep the baby greased with 50/50 LP/SWP or emulsifying ointment.
- Bathe (or cleanse) the baby daily with an antiseptic emollient bath eg Oilatum Plus or Dermol 600. Use Dermol 500 as skin cleanser. If it gets smelly either potassium permanganate or chlorhexidine solution (Hibiscrub) are well tolerated.
- Apply tubifast bandages (as for wet wraps in eczema). Use 2 layers, so the baby can be regreased by peeling back just the top layer. Don't let the skin dry out.
- Apply simple eye ointment to the everted eyelids, and to the eye when it starts to appear. Request ophthalmology opinion.
- The baby can have clothes over the bandages and parents encouraged to hold him.
- Nurse in cot rather than incubator (they tend to get pseudomonas in incubator).
- Ongoing management after the neonatal period is similar.
- Useful advice can be found at www.ichthyosis.org.uk The Ichthyosis Support Group is extremely helpful and has a telephone advice line. They can also put families in touch with British and Asian advisors who are parents of harlequin children.





What no treatment looks like



2+ hours

Daily wound care before school starts



The load

Clinical, school, emotional...
Every Day



The gap

Doctors doing their best with
almost nothing

*The relentlessness
of care without
hope*



*It's not the care itself, it's caring
without hope of it ending- That is
the thing you can't quite prepare*

*The treatments might be out there,
but nobody is looking*

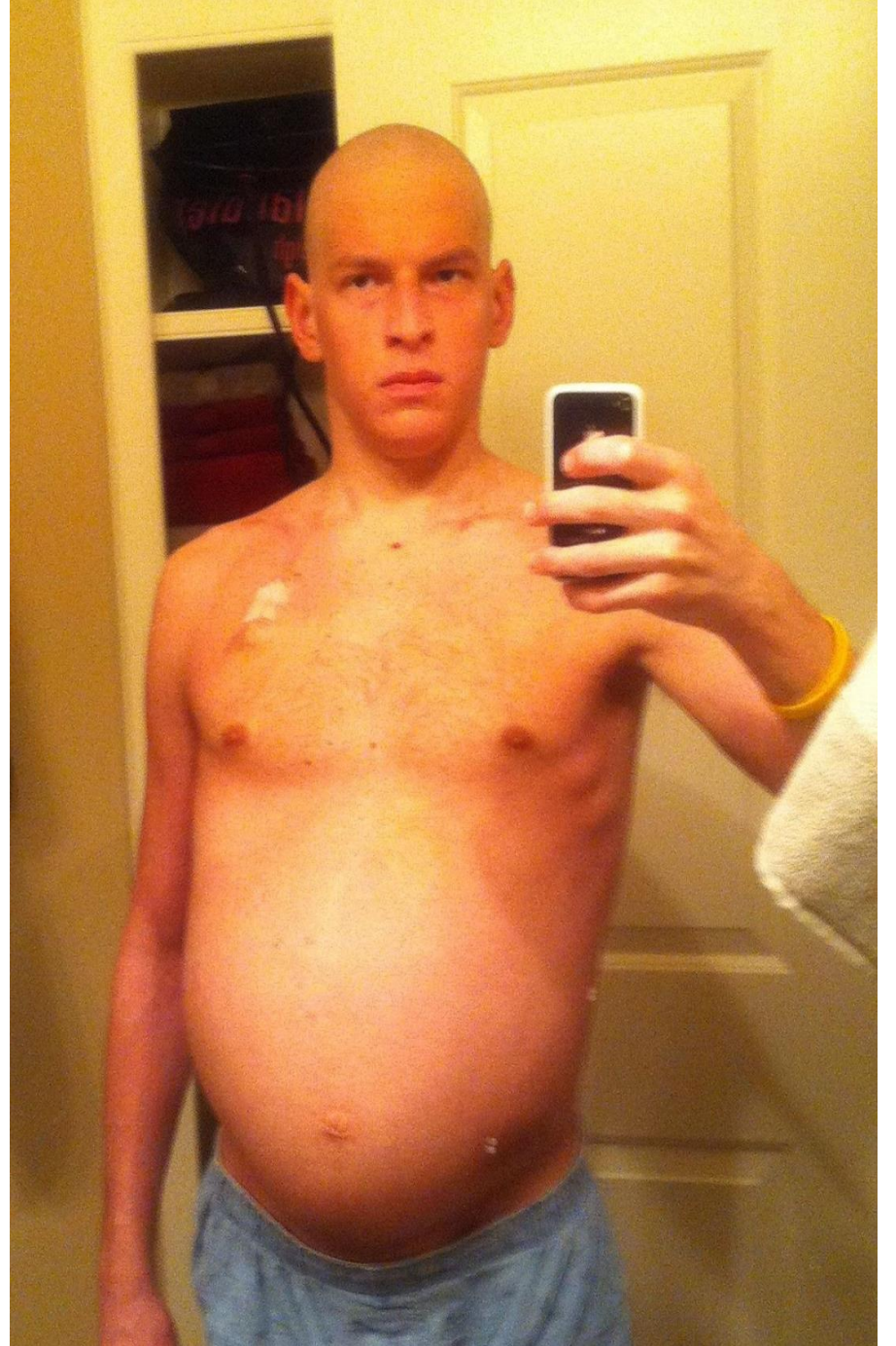




Well, almost nobody



Image used with
permission



Images used with permission





The Every Cure Approach

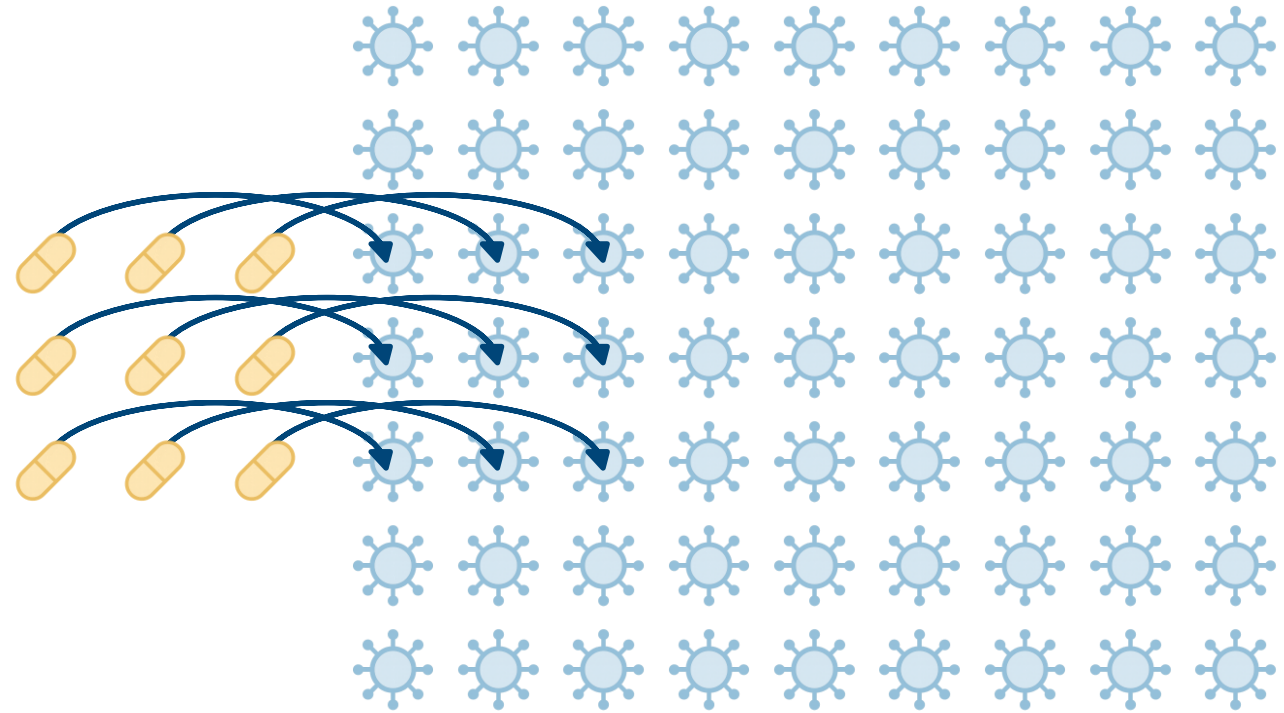
Every Cure' mission

- To save and improve lives by repurposing drugs



The Problem

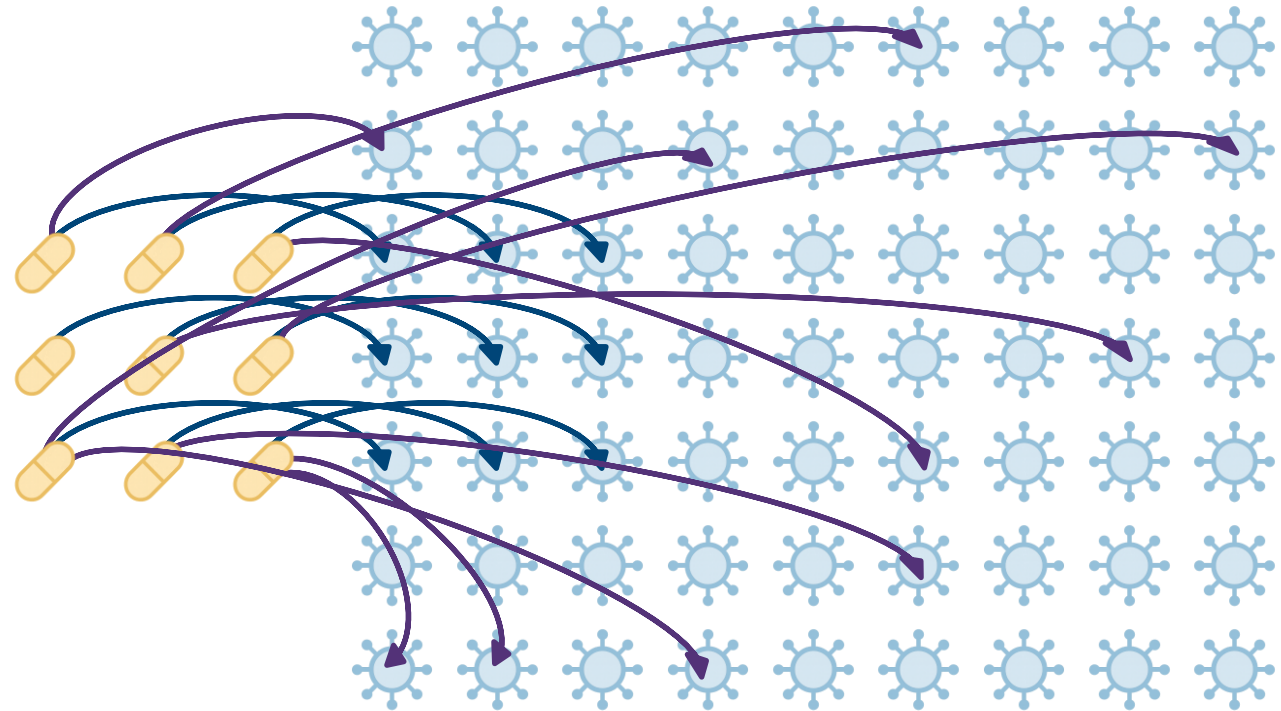
While **~4,000** medicines are approved for **~4,000** diseases, there are **14,000+** diseases that lack a single approved therapy.



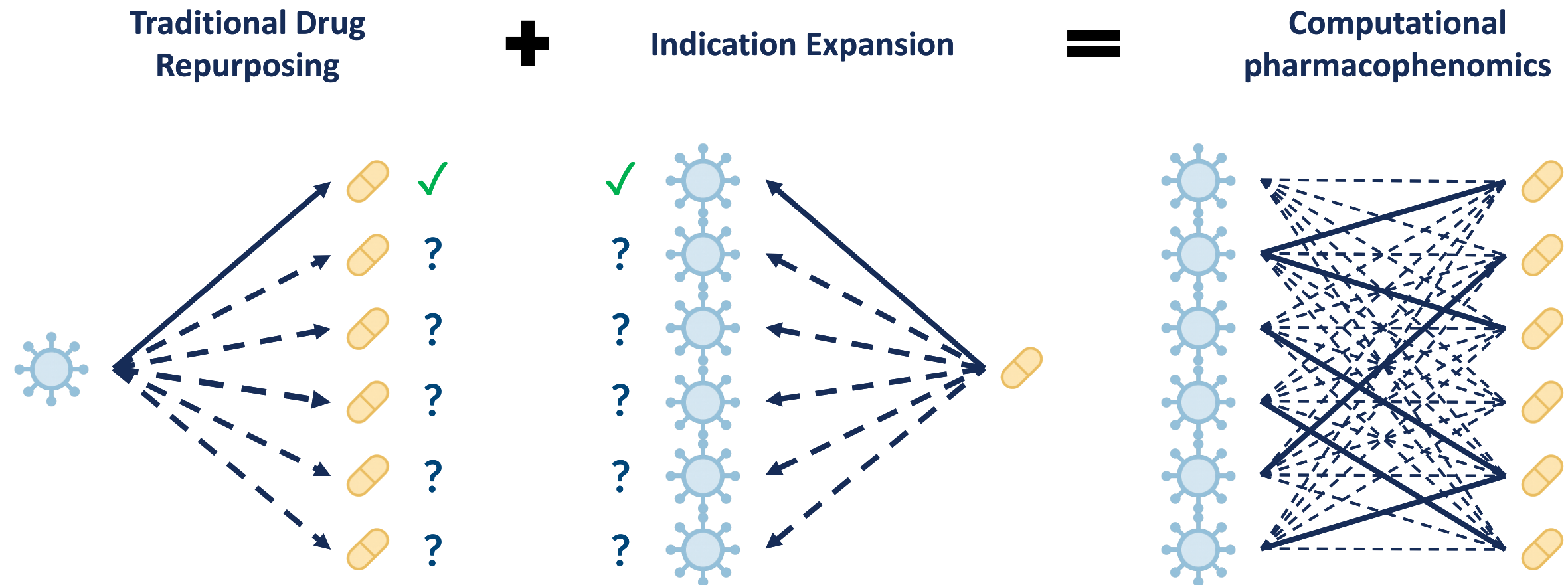
More than 300 million people battle a disease without an approved treatment. Millions more are **under-treated**.

The Solution

Repurposing existing drugs is the fastest and most efficient way to treat conditions with the **highest return on investment for saving lives.**

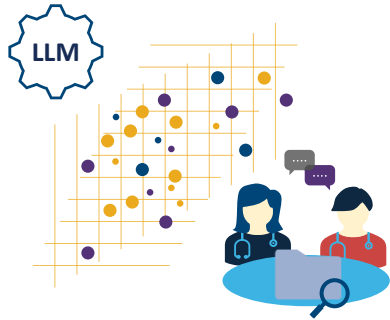


We look at all drugs, versus all diseases



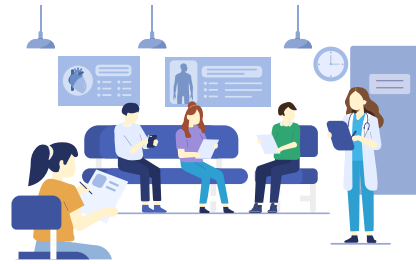
We are end to end

Discover



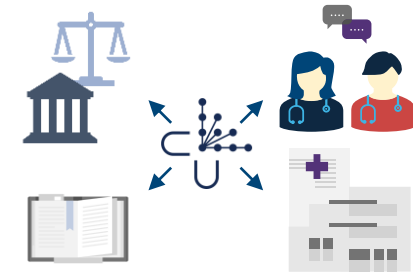
Utilize an AI-powered platform and team of medical experts to **discover the most promising repurposing opportunities** across all drugs and diseases

Evaluate



Perform lab and/or clinical studies to **evaluate the safety and efficacy** of promising repurposed treatments in new diseases

Advance

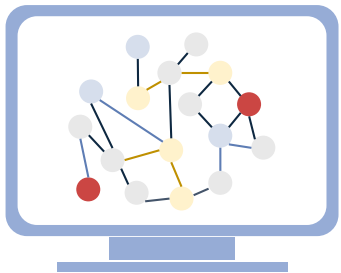


Engage patients, physicians, payers, and regulators to ensure treatments **reach every patient** who can benefit from them

Our first step looks across as many drugs and diseases as possible to identify high-potential repurposing opportunities

Discover

Deploy AI to rank successful repurposing opportunities across **all drugs and diseases**



Model the biological intrinsic

Knowledge Graph
based models

Classifiers, GNNs,
Transformers

Patient journey RWE-based
models

Foundation Models,
LLMs

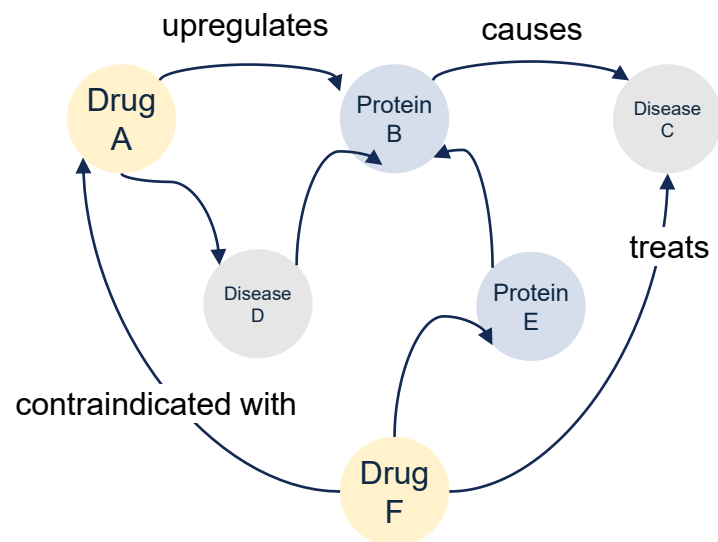
Model the human reviewers

Develop heuristics to filter out
opportunities that are
strategically weak (e.g.,
chemotherapies for cancers)

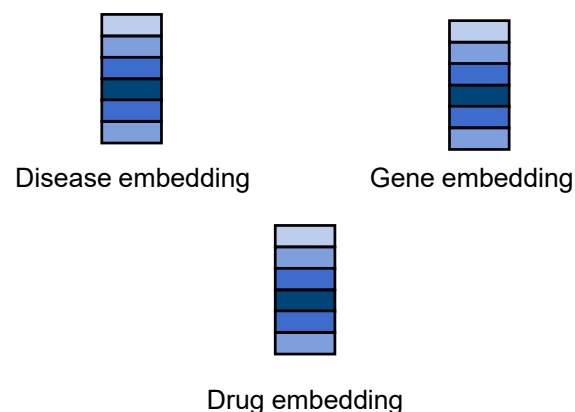
Re-rank opportunities based on
existing clinical literature

Flag when preclinical
studies have been
replicated by 2+ labs

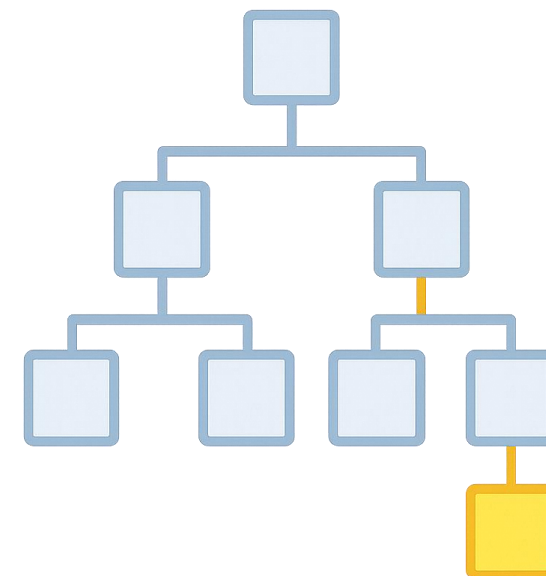
Graph-Based modelling allows us to find and evaluate unknown connections



Knowledge graphs represent interrelated human knowledge in machine readable formats



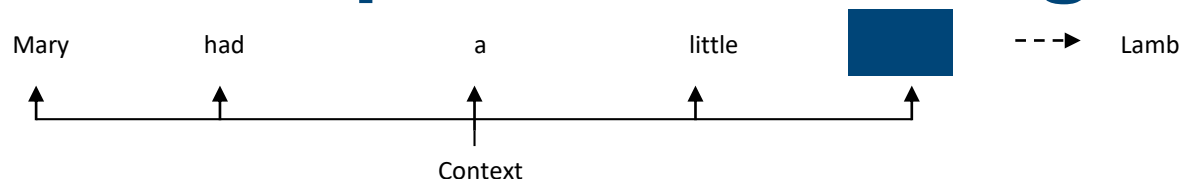
Embeddings enrich representations with further contextual knowledge



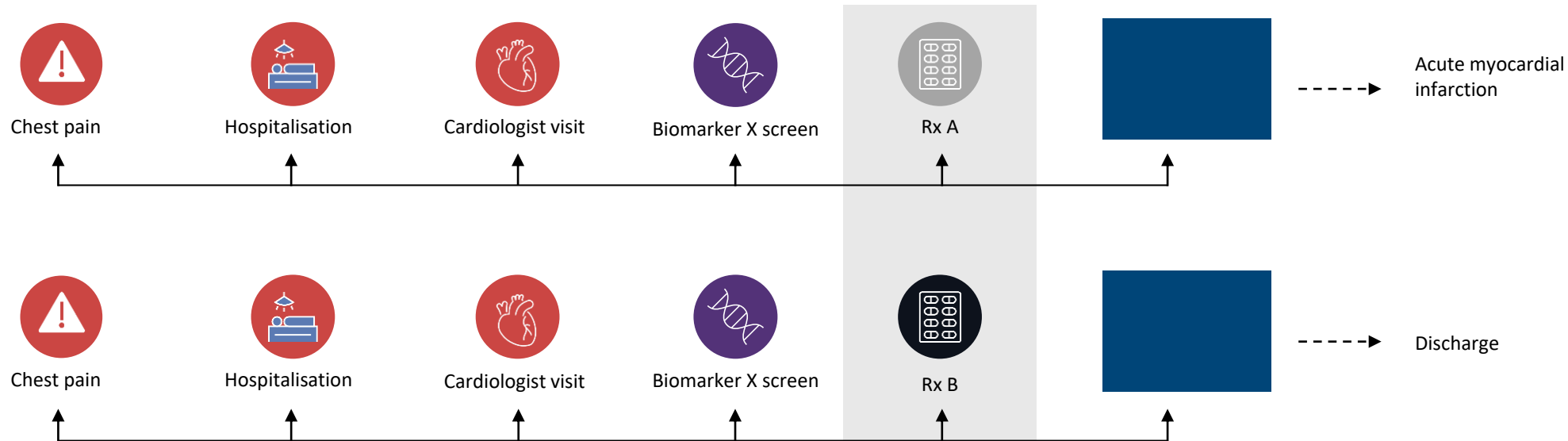
Classifier models predict the likelihood of a true 'treats' relationship existing

We model the biological intrinsic to infer potential treatment relationships from existing data

Foundational
Large Language
models



Patient journey
foundational
model



Hypothesis identified: Rx B can be repurposed to treat acute myocardial infarction in patients and reduce hospitalization rate

Further model training and fine-tuning on multi-omics using modality-relevant LLMs



Genomics



Epigenetics



Transcriptomics



Proteomics



Metabolomics

We also rely on RWE to evaluate our programs

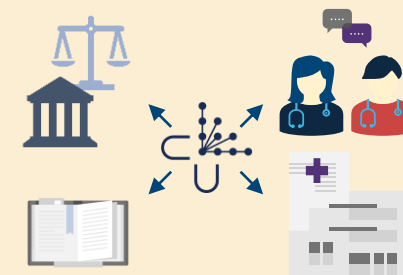
Discover



Evaluate



Advance



Utilisation and treatment landscape

Is this drug already being used in practice in this disease?

Effectiveness studies

Does this drug show real world benefit in patients?

Trial design support

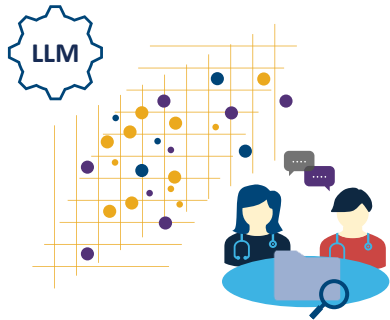
What patient population should be targeted in our upcoming trial? Can we create synthetic control arms?

Regulatory submission

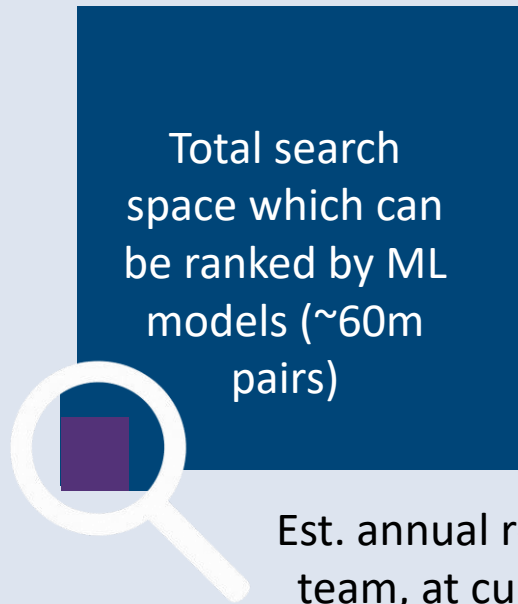
How does the disease progress without intervention? What is the economic burden?

We use AI tools to accelerate human review

Review and select highly ranked opportunities with AI tools and human experts



Further reduce the search space for the medical team



Accelerate the speed and quality of medical team reviews



Est. annual reviews by Medical team, at current pace (~20k)

Our Progress: 10 active drug repurposing programs and consider > 1000 opportunities per month

Discover



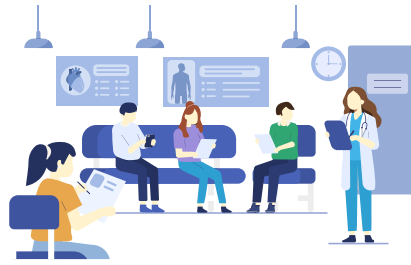
Utilize an AI-powered platform and team of medical experts to **discover the most promising repurposing opportunities** across all drugs and diseases

14,000

opportunities reviewed in
2025-26



Evaluate

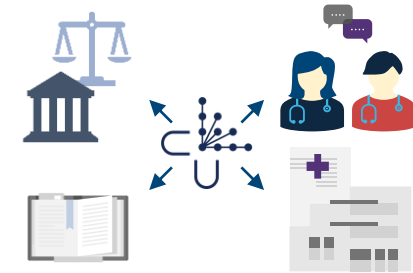


Perform lab and/or clinical studies to **evaluate the safety and efficacy** of promising repurposed treatments in new diseases

4

opportunities in
experiments or trials

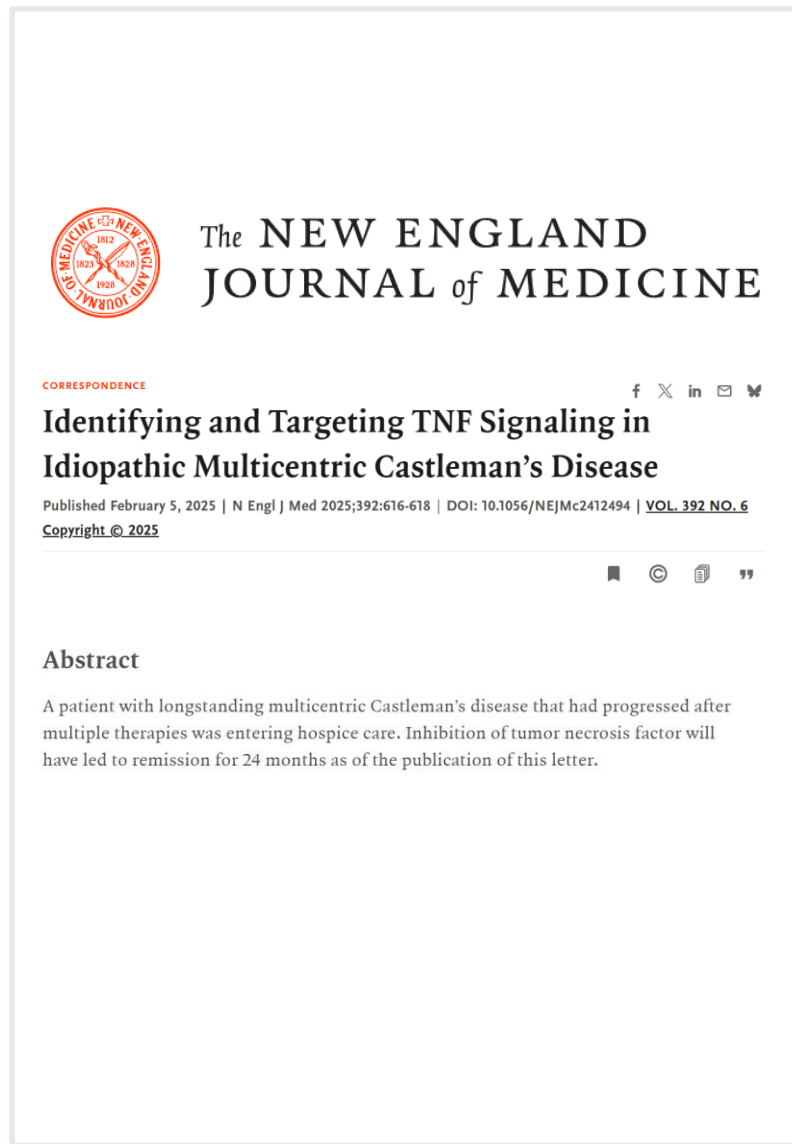
Advance



Engage patients, physicians, payers, and regulators to ensure treatments **reach every patient** who can benefit from them

6

opportunities with
dissemination plans being built



*The first patient
treated with a top-
scoring drug from
our platform has
been in remission
for over two years*



Our team can only have impact by working with amazing partners

ARPA H



AI

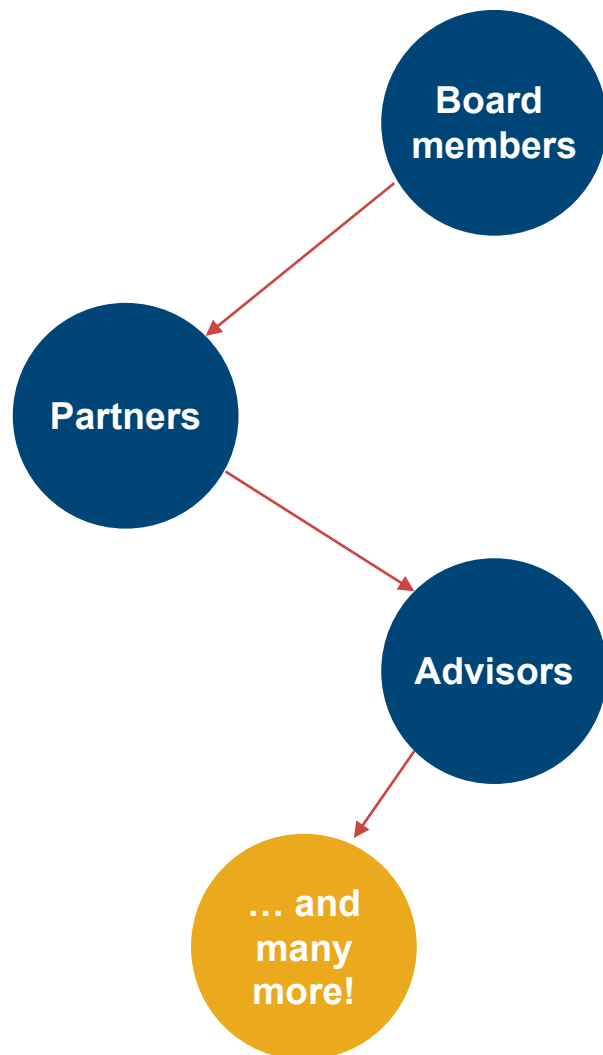
Google

komodo®

ATROPOS
HEALTH

Worldwide
Clinical Trials

Chan
Zuckerberg
Initiative



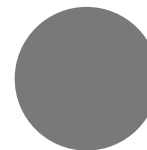
Bob McDonald



Freda Lewis-Hall



Janet Woodcock



Julian Baker



Tania Simoncelli



Eric Horvitz



Grant Mitchell



Marinka
Zitnik



Melissa
Haendel



Russ B
Altman



Alex
Tropsha



David Koslicki



Matt Might



Luke Chen



Chris Bizon



How You Can Help

Donate your time, your data, your insights!

- Suggest repurposing opportunities for our team to review
- Volunteer as an expert to help us review opportunities
- Got an idea about how we should use data or AI? Tell us!



<https://everycure.org/ideas/>

Back to Alfie....

- Alfie is almost 13
 - He is doing well
 - He is pragmatic about it in the way children with rare diseases are
 - He updates his own instruction manual nowadays
 - Let's build towards it having one more section
 - It says...





*There is a treatment, we found
it!*





Thank You!

