

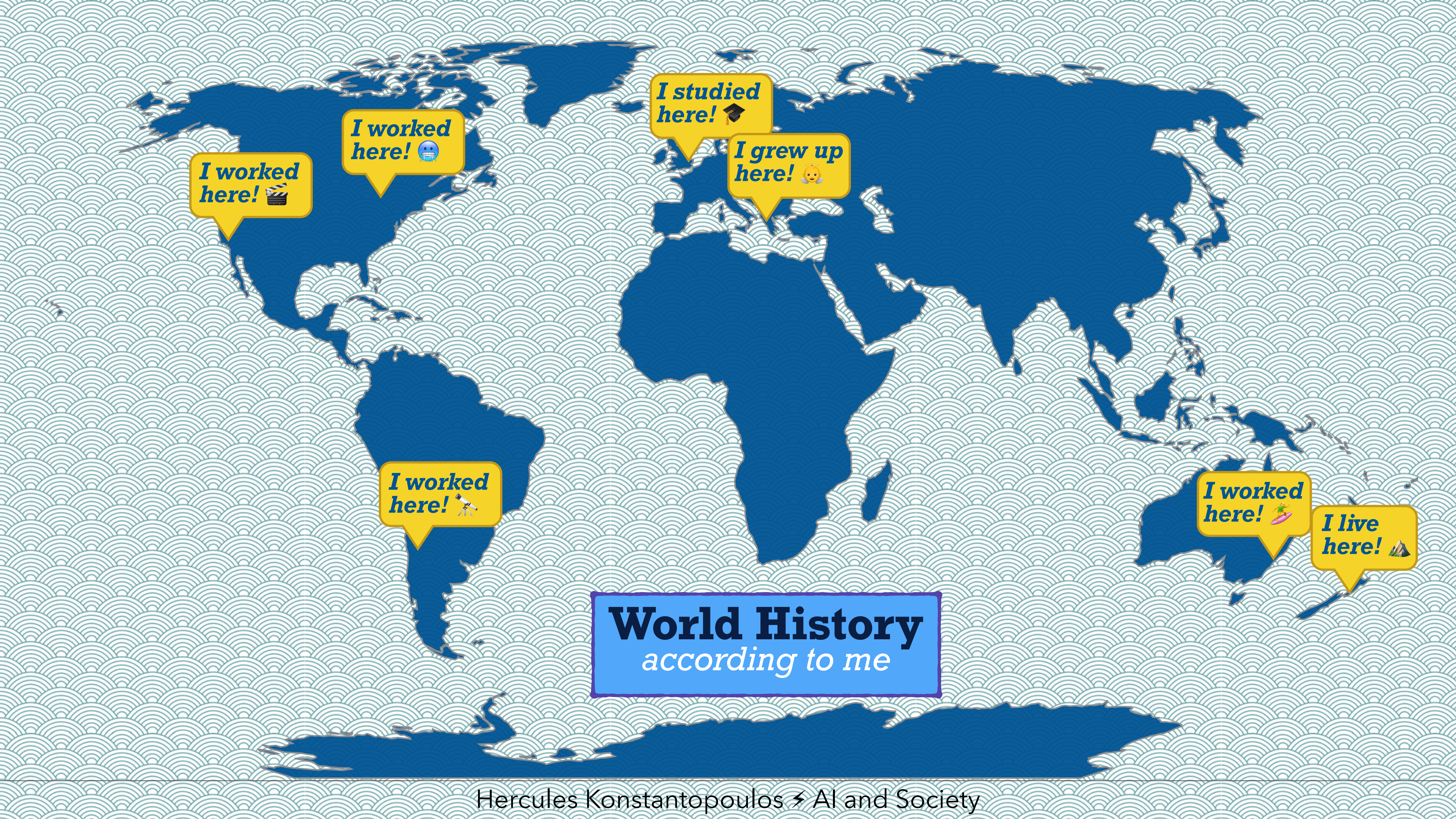


All the time in the world

AI-driven computation hones lab work and
frees our hands and brains for creative work

Hercules Konstantopoulos, PhD | **AI and Society - VUW**

(Data) Scientist and techie | 11 September 2026



I worked here! 🎬

I worked here! 💦

I studied here! 🎓

I grew up here! 🍼

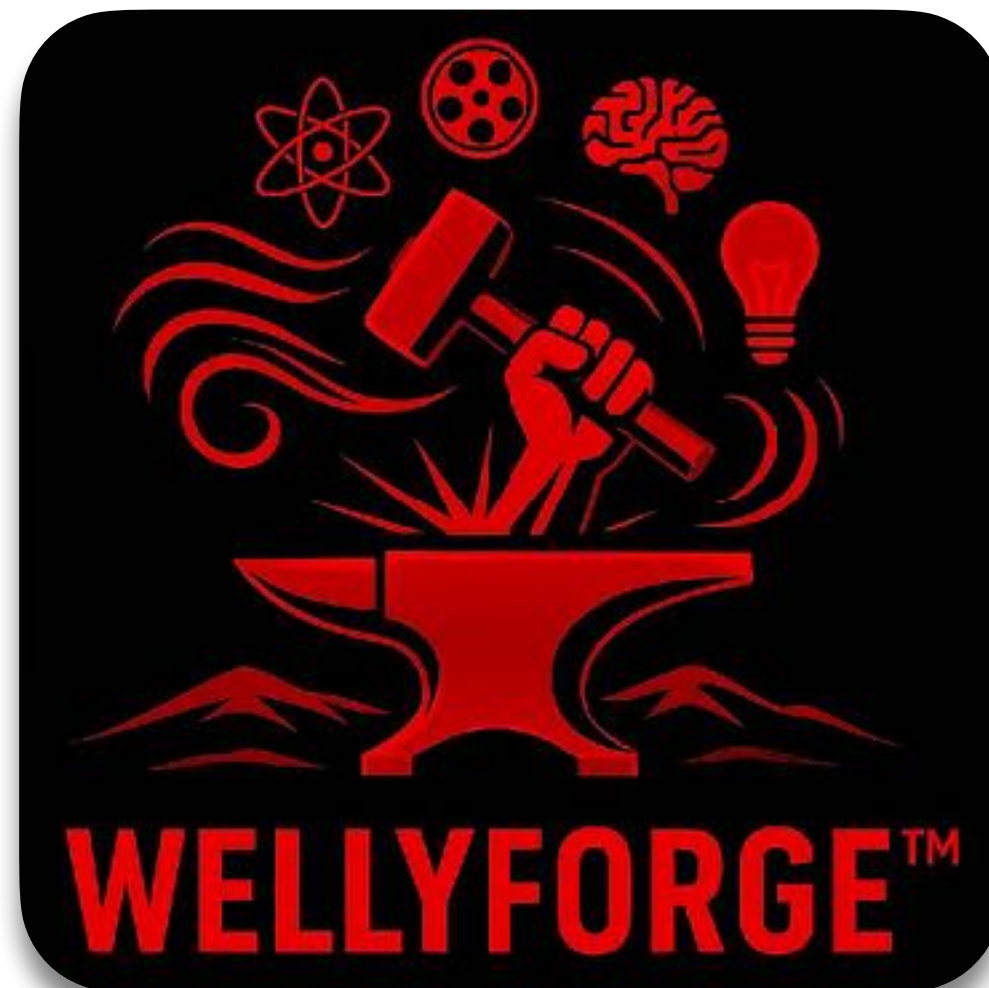
I worked here! 🏄

I worked here! 🏄

I live here! 🏕️

World History *according to me*

I wear many hats!



**Newsletter editor,
Meetup MC,
Wellington cheerleader.**

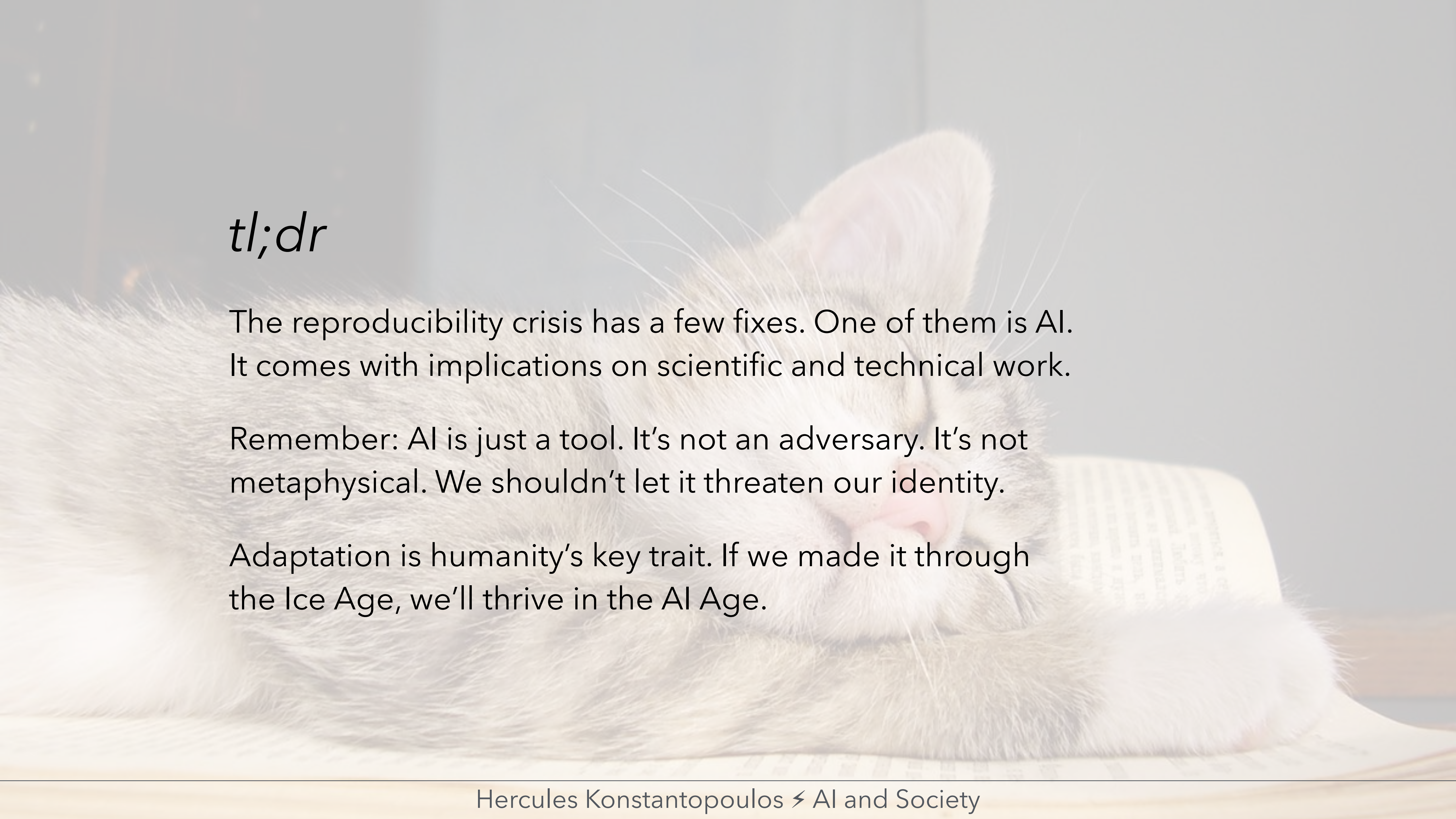
→ wellyforge.nz



**Head of Data Science,
Computational Science,
Team/function builder.**

→ donate.malaghan.org.nz

**Views are
my own!**



tl;dr

The reproducibility crisis has a few fixes. One of them is AI. It comes with implications on scientific and technical work.

Remember: AI is just a tool. It's not an adversary. It's not metaphysical. We shouldn't let it threaten our identity.

Adaptation is humanity's key trait. If we made it through the Ice Age, we'll thrive in the AI Age.

Act 1

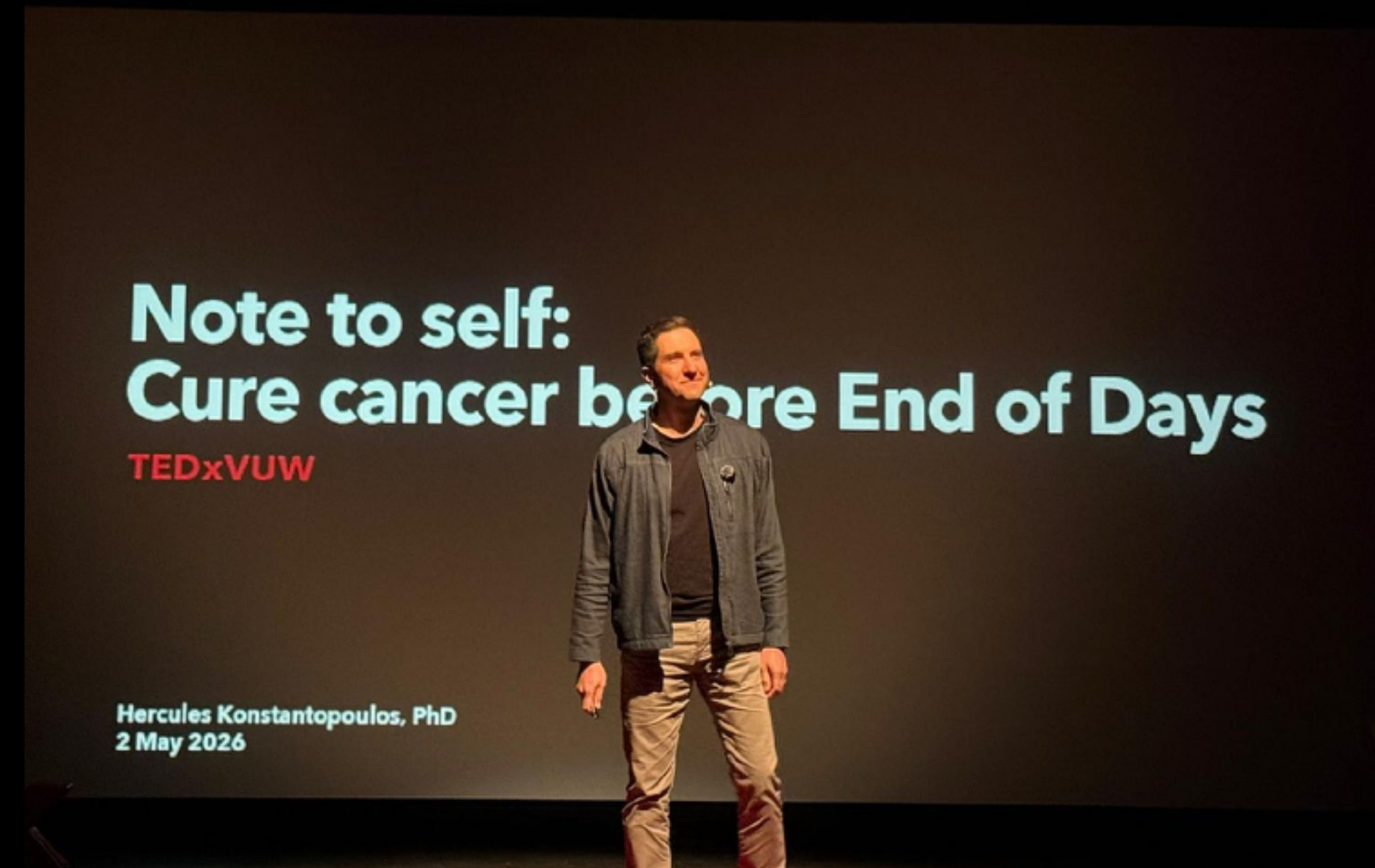
Major advances and massive promise

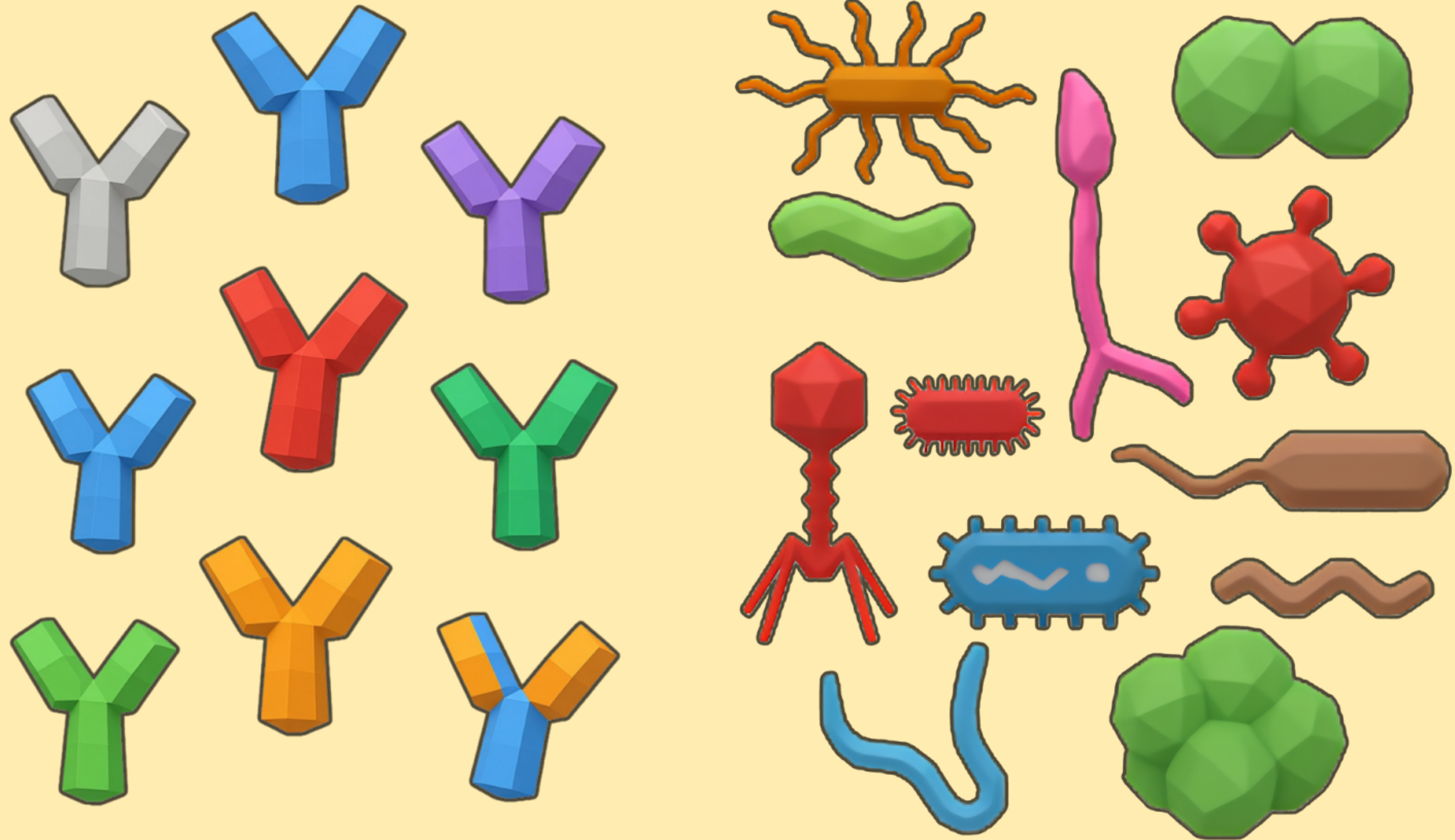
This section sounds familiar...

**For the brief, inspiring version,
see my TEDxVUW talk from May**

→ tinyurl.com/herc-tedx

→ or search for "TEDxVUW Hercules"





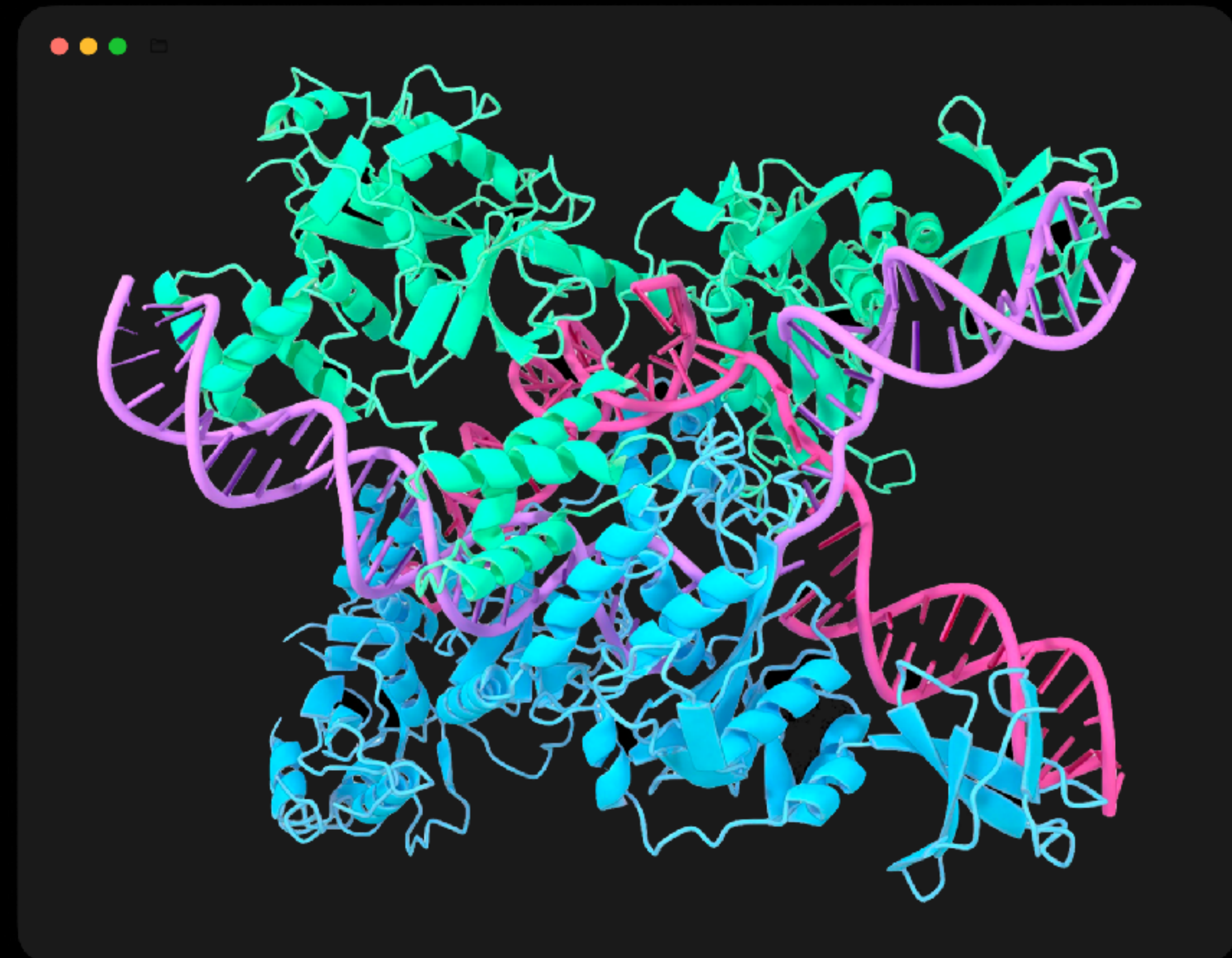
created with
BioRender
and Canva

1976

2021



New York State OGS Lab



Google DeepMind

Claude Science

Beta

← Cross-species Samosa

+ New

Customize

Files

Today

- Samosa Manuscript
- Samosa Editorial Review
- Samosa Model Training
- Samosa Benchmarking

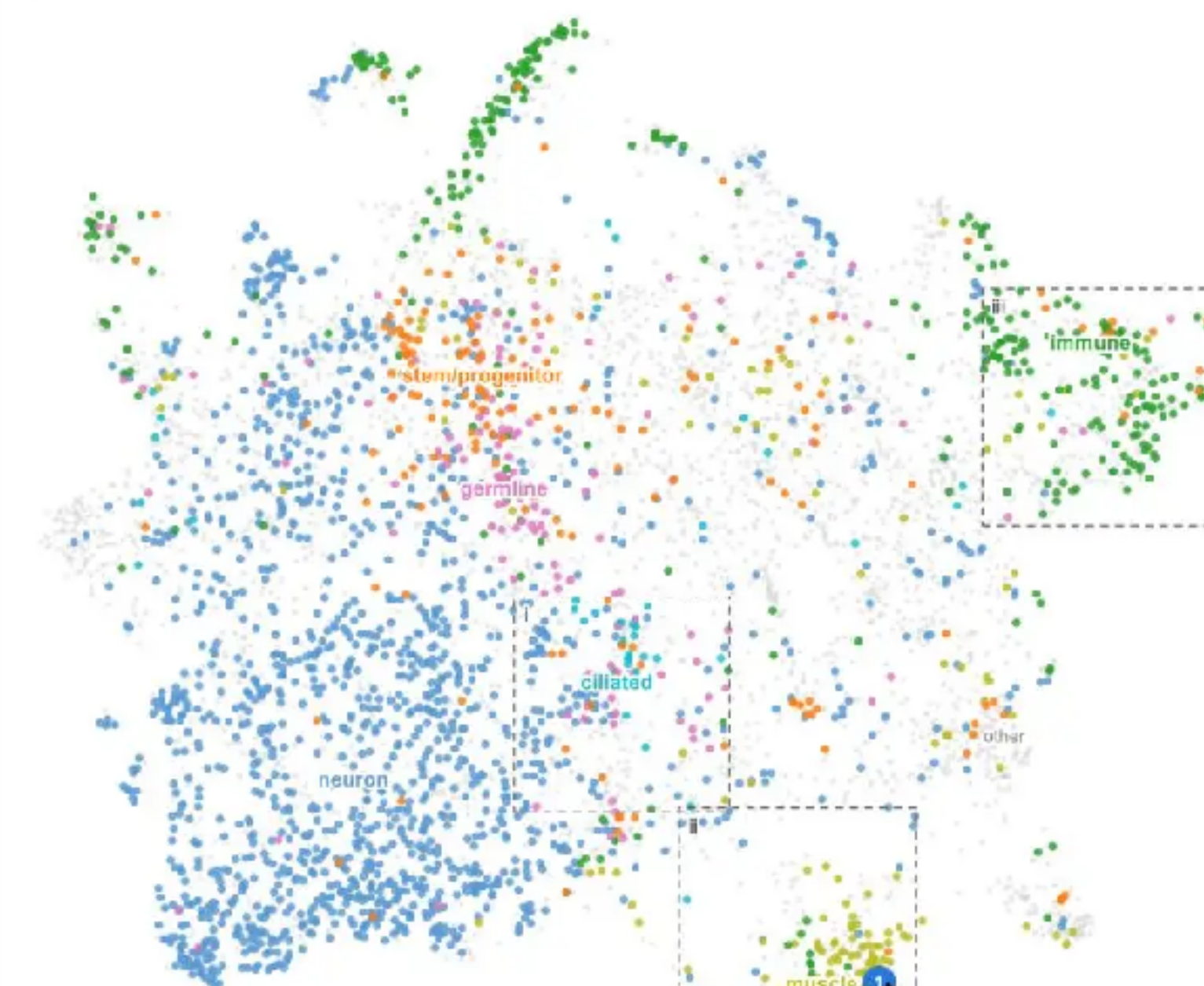


samosa_fig1a.png

samosa_fig1a.png

a

138 species · 5,672 cell types · one shared embedding



cell-type family

neuron

muscle

immune

ciliated

these labels are hard to see

Send

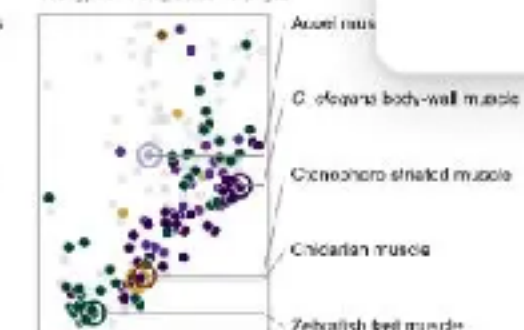
i ciliated cells

27 types · 18 species · 6 phyla



ii striated muscle

119 types · 70 species · 7 phyla



samosa_fig1a.png

< v2 >

Download

Code

Execution Log

Messages

Environment

Review

Download script

Inputs

fig4_atlas_callouts.csv

fig4_atlas_centroids_m138ea.csv

```

54
55 apply_nature_style()
56 mpl.rcParams['savefig.bbox'] = None
57 mpl.rcParams['font.sans-serif'] = ['Arial']
58 mpl.rcParams['font.family'] = 'sans-serif'
59
60 centroids = pd.read_csv(" fig4_atlas_centroids_m138ea.csv ")
61 boxes_df = pd.read_csv(" fig4_atlas_inset_boxes.csv ")
62 callouts = pd.read_csv(" fig4_atlas_callouts.csv ")
63
64 HERD = {"neuron": "#5b9bd5", "muscle": "#bcbdd2", "immune": "#2ca02c",
65         "ciliated": "#17becf", "germline": "#e377c2", "stem/progenitor": "#7f7f7f"}
66 PHYL_PAL2 = {"Ctenophora": "#7f3b08", "Porifera": "#b15928", "Placoderm": "#3182bd",
67              "Xenacoelomorpha": "#b2abd2", "Chaetognatha": "#60738b",
68              "Ambulacraria": "#35978f", "Cephalochordata": "#4ac015"}
69 TAG_ROMAN = {'a': 'i', 'b': 'ii', 'c': 'iii'}
70 INSET_NAMES = {'a': 'ciliated cells', 'b': 'striated muscle', 'c': 'immune cells'}
71 ITALIC_SPLIT = {'Xenoturbella ciliated': ('Xenoturbella', ' cilia'),
72                'C. elegans body-wall muscle': ('C. elegans', ' body-wall muscle')}
73 TAG_COL = '#2B2B2B'
74 halo = [pe.withStroke(linewidth=2.2, foreground='white')]
75 halo_thin = [pe.withStroke(linewidth=2.0, foreground='white')]
76
77 inset_info = {}
78 for _, row in boxes_df.iterrows():
79     tag = row.tag; fam = row.family; x0, y0, w, h = row.x0, row.y0, row.w, row.h
80     inbox = centroids[(centroids.umap_x >= x0) & (centroids.umap_x <= x0 + w)]
81     target = inbox[inbox.family == fam]
82     tx0, tx1 = target.umap_x.min(), target.umap_x.max(); ty0, ty1 = target.umap_y.min(), target.umap_y.max()
83     mx, my = 0.05 * (tx1 - tx0), 0.05 * (ty1 - ty0)
84     inset_info[tag] = dict(fam=fam, xlim=(tx0 - mx, tx1 + mx), ylim=(ty0 - my, ty1 + my))
85     n_types = row.n_types, n_species = row.n_species
86

```

AUTONOMOUS LABS

Build your own autonomous lab

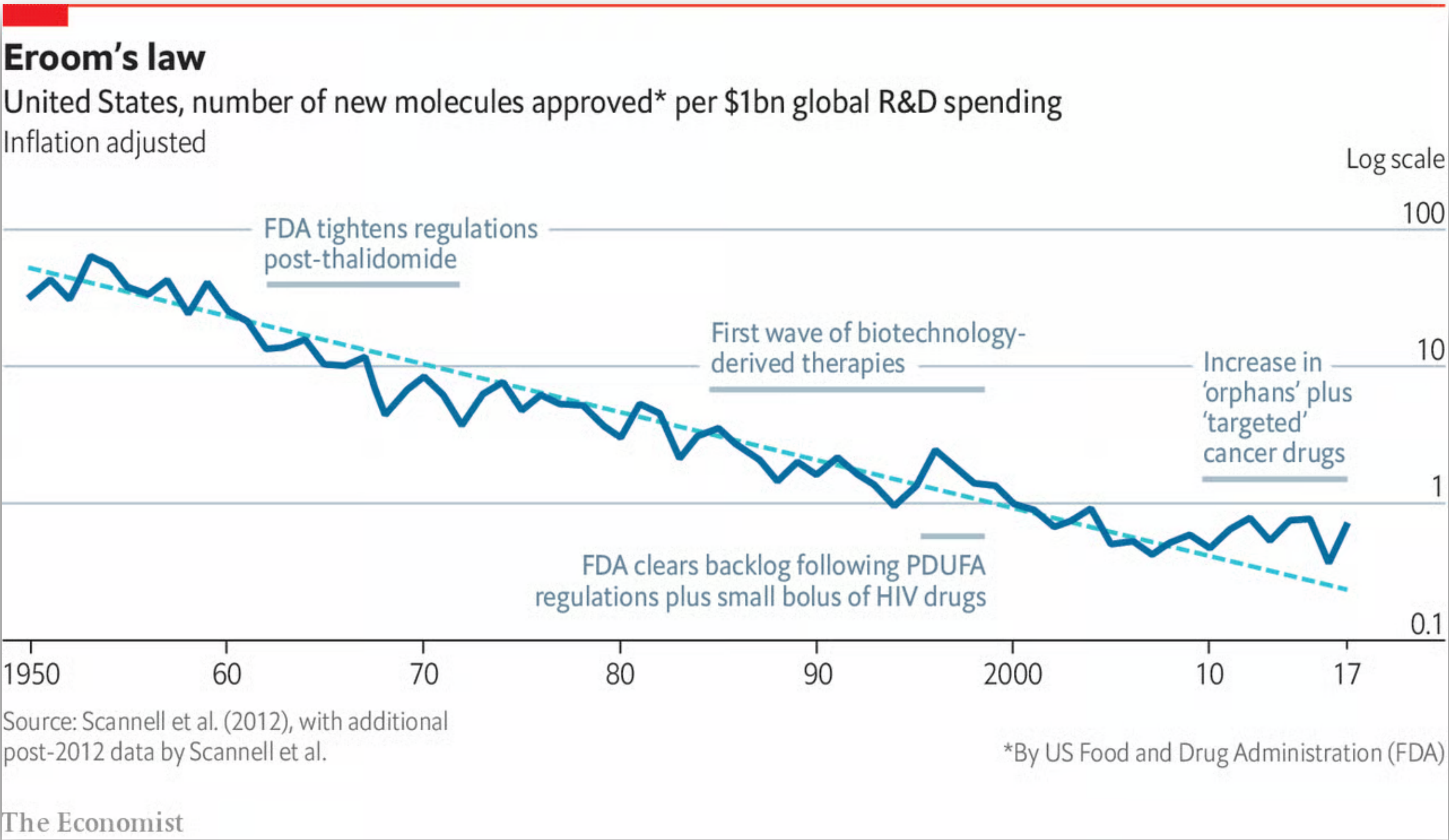
Autonomous labs aren't science fiction—
they're already here

We built one in our Boston HQ, now you can too.

[Learn more >](#)[Book a meeting >](#)

AI as a system fix

The Economist Technology Quarterly (2020):
New drugs are costly and unmet need is growing



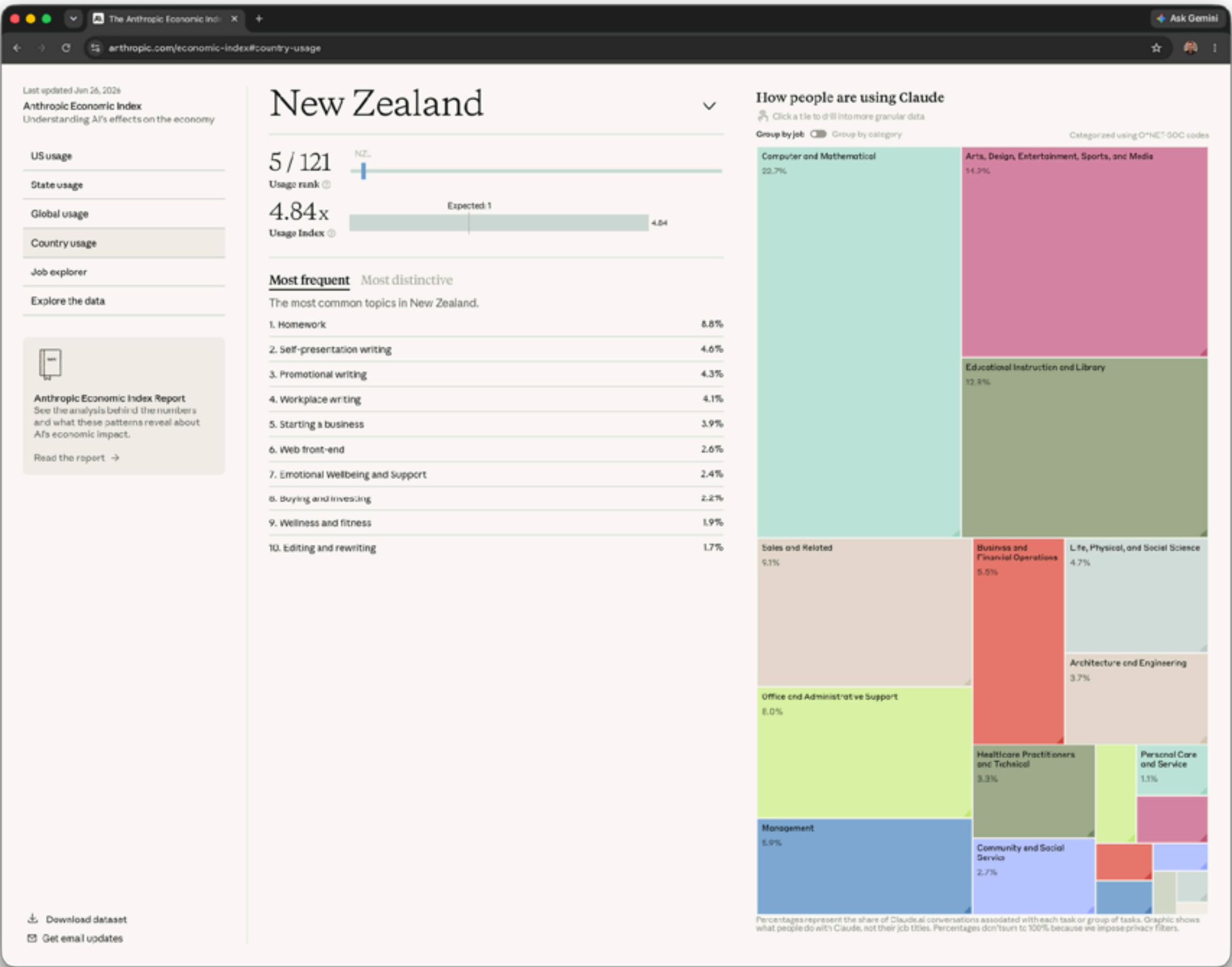


Act 2

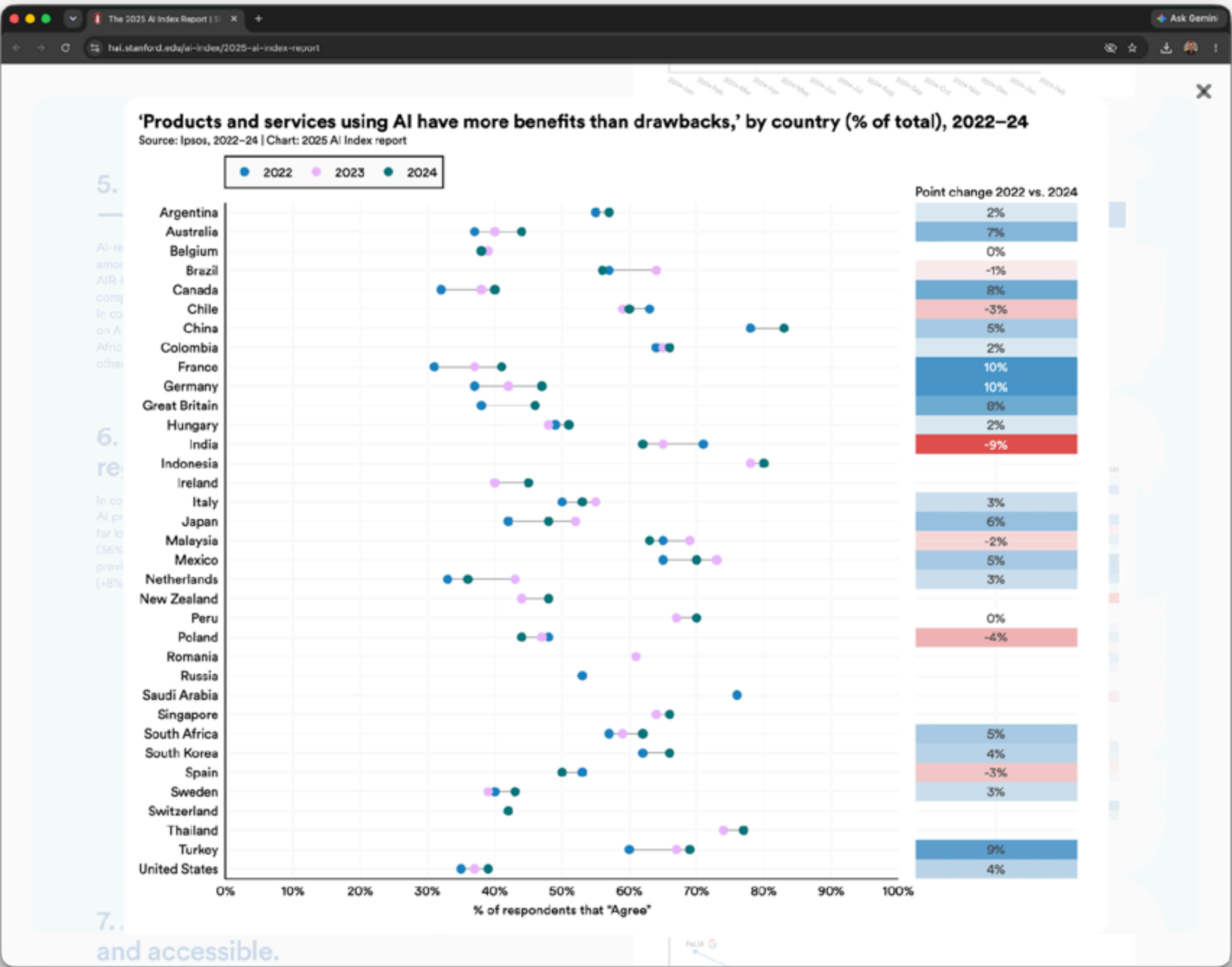
NZ is sleepwalking into a bad future

NZ is a paradox of AI adoption

Among the biggest users... and among the most fearful.



Anthropic Index



Stanford HAI

The proverbial fork in the road

THE PRIZE, ON CONDITIONS

DATA.COM

Five identities to choose from — and one we drift into if we don't choose

01 Applied-AI lab 5/5

Farming, health, engineering, te reo — AI applied to what we already do well.

02 Trusted operator 5/5

Running and securing the world's AI for sectors that cannot afford to get it wrong.

03 Talent nation 5/5

Experts fluent in their own field and in AI — not frontier researchers.

04 Rule-maker 3/5

A middle power shaping the standards small countries live by.

05 Compute exporter 2/5

Electrons into data centres for someone else's AI.

06 Passive customer: the drift 1/5

Import everything, decide nothing.

Ranked by how much of the value stays in New Zealand — scored 1-5, author judgement.

- Recommended: A trusted applied-AI nation — anchored on 1 and 2, supported by 3 underneath. Compute proceeds only under the conditions just established.
- The drift has already begun: 68% of New Zealand small businesses have no intention of investing in AI, compared with 38% across the Tasman.

This is the conversation we cannot avoid

© Data.com

Aotearoa AI Summit

AI F

Aotearoa AI Summit

Hercules Konstantopoulos ✦ AI and Society

Sometimes we are very good at saying no



The right to opt out



How does it feel to live without a smartphone? ‘Almost spiritual’

For most, giving up a smartphone in 2023 would be an almost inconceivable inconvenience. But those who’ve done it say they found delight with dumber devices

● [Get our weekend culture and lifestyle email](#)



📷 Although smartphone sales continue to rise globally, an increasing number of people are trading in their smartphones for simpler, more basic models. Photograph: Brais Seara/Getty Images

[BLOG](#)

How to Quit Social Media: A Practical Guide to Digital Freedom

[TRACI](#)

[3 COMMENTS](#)

Digital detox: how to switch off without paying the price – new research

Published: December 18, 2025 1.41am NZDT

Jacob Lund/Alamy



Switching off can be surprisingly expensive. Much like the smoking cessation boom of the 1990s, the digital detox business – spanning hardware, apps, telecoms, workplace wellness providers, digital “wellbeing suites” and tourism – is now a global industry in its own right.

There is no way to opt out of AI

It would be like opting out of electricity.



Telcos and ISPs

Web browsers

Banking systems

Essential services

Government

Small businesses

There is no way to opt out of AI

It would be like opting out of electricity.



We can choose not to engage and participate passively in the development of this tech, or...

Act 3

Humanity's best skill is adaptation

This may be the best time to be a scientist



"Newton: A mind forever voyaging through strange seas of thought alone" is the copy around the very first Apple logo, drawn by Ron Wayne in 1976.

50 years later computers can live up to that name. Protein folding, Navier-Stokes, the Erdős unit distance conjecture... the list is already long.

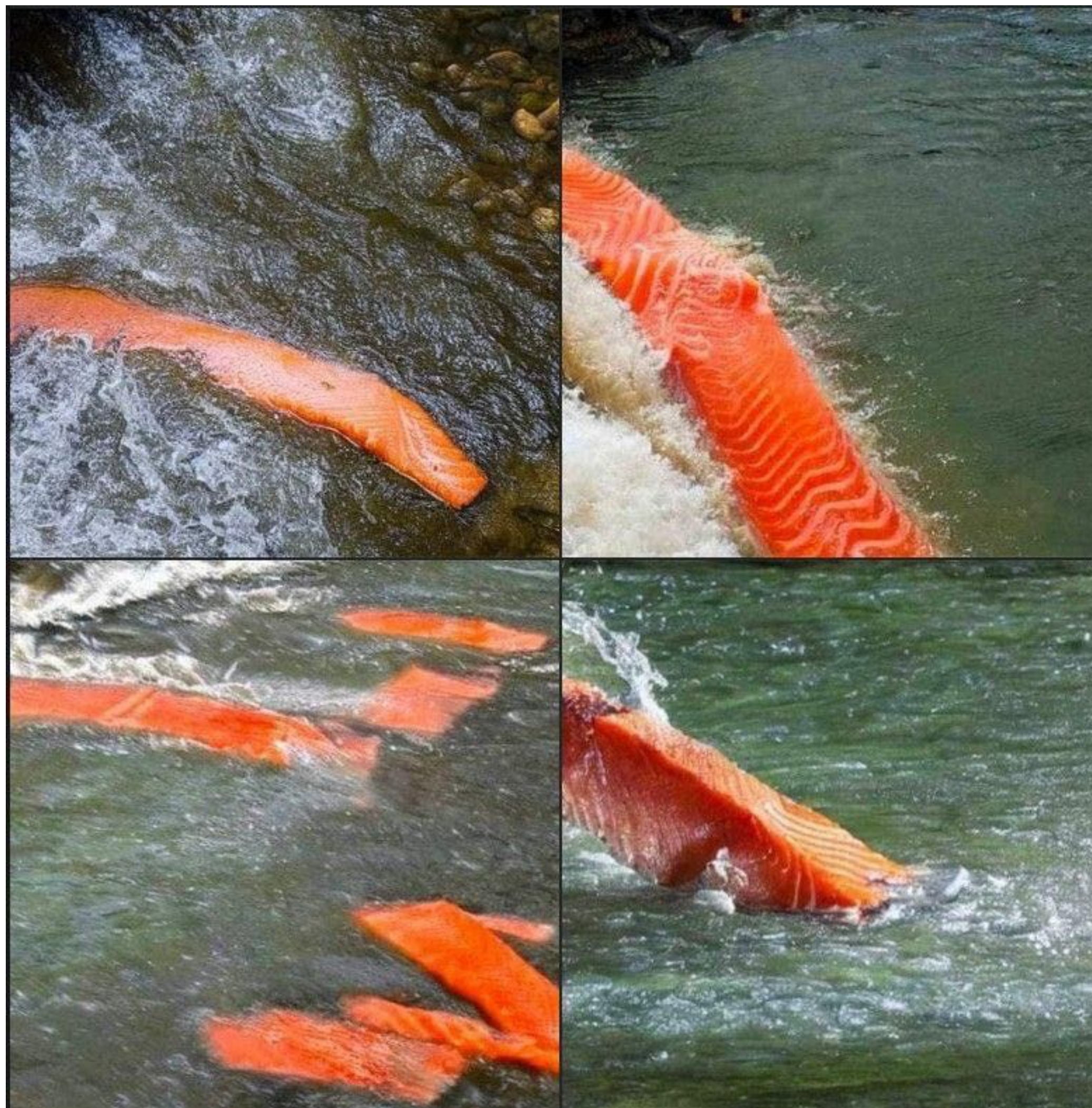
Alfréd Rényi jokingly defined a mathematician of the Erdős style as a machine that converts coffee into theorems.

We no longer need to catalyse science with coffee. (Or amphetamines).

Science can increasingly be the product of human thought coupled with reliable, methodical machine computation.

Any critical thinker can train as a scientist. Imagine the parts of the talent pipeline we dropped coming back into the fold.

It works if ideas are your favourite part of science



LLMs are not allowed to think outside the box.

An early issue of LLMs was hallucination. Training data for "salmon" are biased toward the kitchen, not the wild, so *salmon swimming upstream* was a tough prompt for a while!

AI labs spend tons of effort to avoid this issue at the *foundation* (cross-entropy loss), *alignment* (RLHF), and *application* (temperature, RAG) layers.

We tune and train models and apps for reliability, at the cost of novelty. **Creativity is not an option for our pal Claude.**

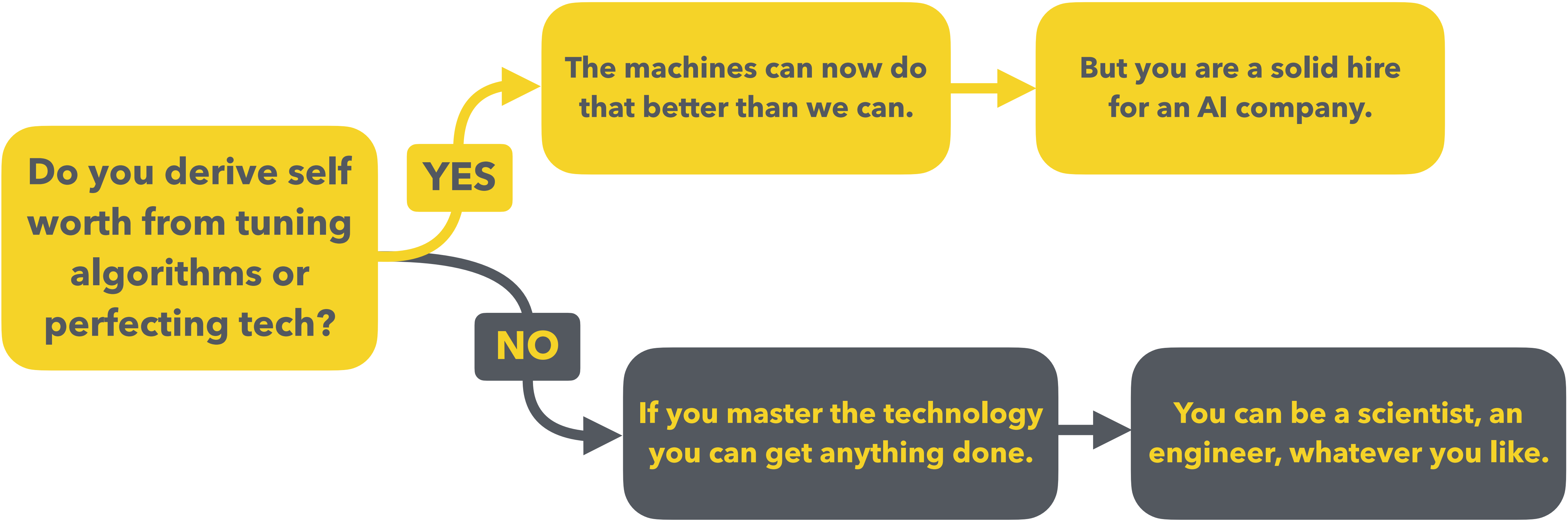
With our beautiful meat brains we can step out of the box and create new parameter space. That's the creative part.

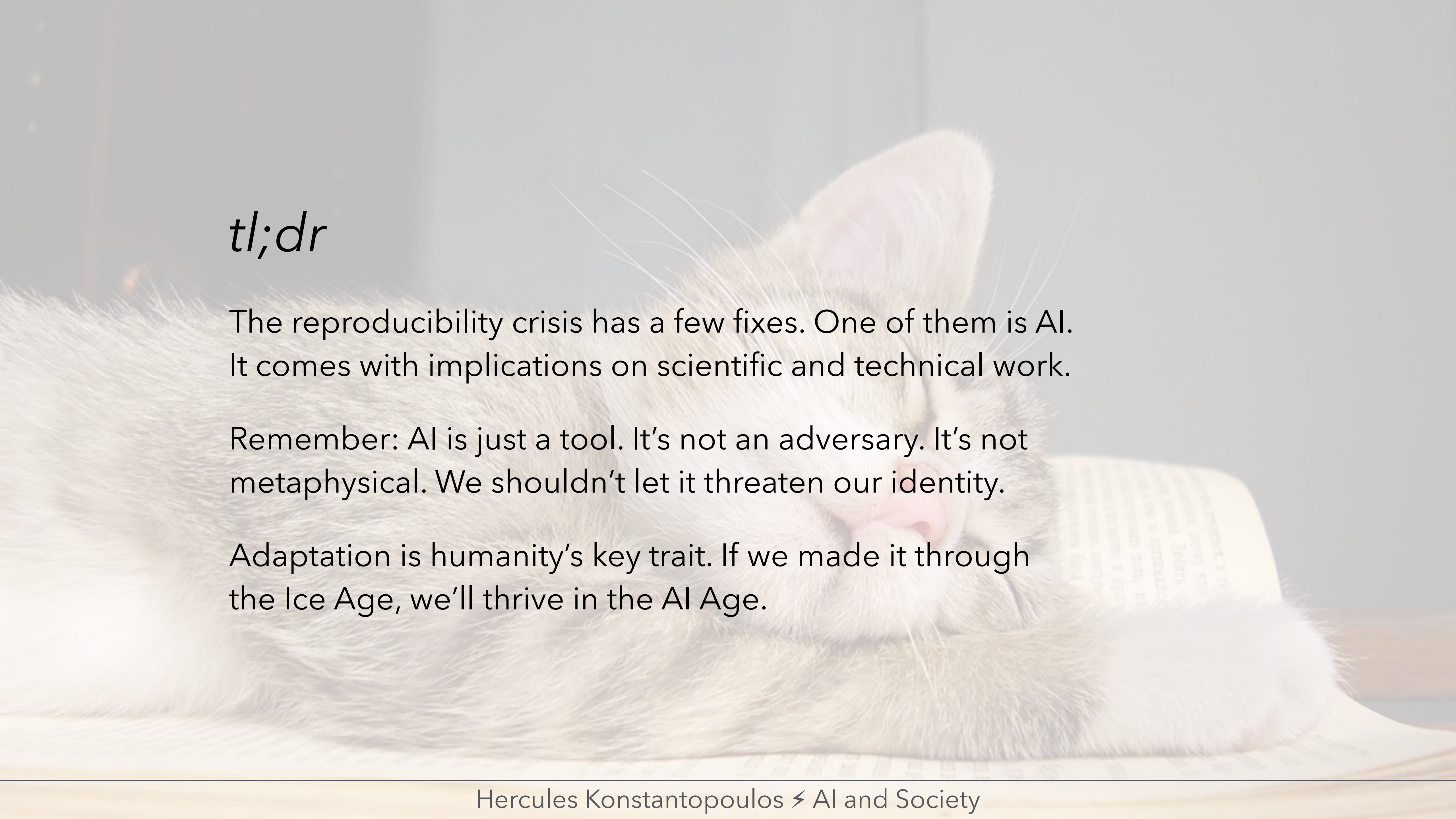
If you are able to adapt your identity to be problem solver, your job is much more likely to be safe.

reddit.com/r/Damnthatinteresting/comments/yijd3c

linkedin.com/pulse/what-ai-just-wants-paint-dr-hercules-konstantopoulos-2jbkf/

But not if the equations are your favourite part





tl;dr

The reproducibility crisis has a few fixes. One of them is AI. It comes with implications on scientific and technical work.

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Adaptation is humanity's key trait. If we made it through the Ice Age, we'll thrive in the AI Age.



Thank you for your time

Let's discuss!

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