

1729

Lecture 11: Transhumanism

Transcending human limits through technology.

Transhumanism

1. What is it?
2. What's the frontier?
3. What's blocking it?

Transhumanism

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2. What's the frontier?
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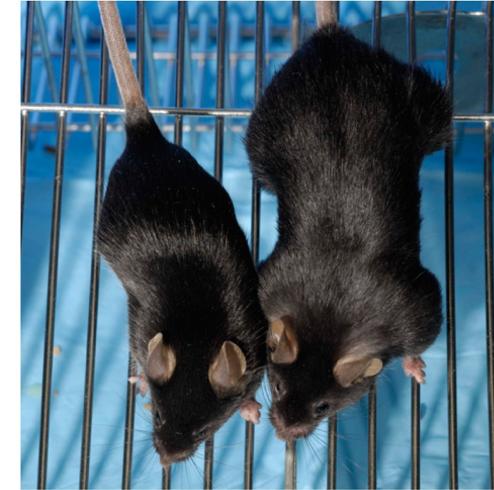
What is transhumanism?

Transcending human limitations through technology.

- [Eybrog \(2012\)](#)
- [Bostrom \(2005\)](#)



wild type
Mstn^{-/-}
F66



What does it entail?

- Longevity
- Bionics
- Genetics
- Augmented Reality
- Nootropics
- and more



Transhumanism vs Anarcho-primitivism

It may be the final political axis.

Do we destroy civilization and return to a primitive hunter-gatherer lifestyle, or ascend to the stars? (1, 2, Zoltan vs Zerzan (2014))



Balaji Srinivasan @balajis

...

Replies to [@bariweiss](#)

Transhumanism vs anarcho-primitivism may be the final political axis after the ongoing realignment.

Do we transform ourselves and reach for the stars? Or do we envisage some great rejection of technology, some regression to primitivism?



Balaji Srinivasan @balajis · Aug 29, 2020

Replies to [@whitemansaywhat](#)

I think the transhumanism vs anarcho-primitivism axis, while weird seeming, actually surfaces deep underlying differences that are usually unarticulated. For example, is technological civilization on balance good or bad?

5:18 AM · Dec 17, 2020 · Twitter Web App

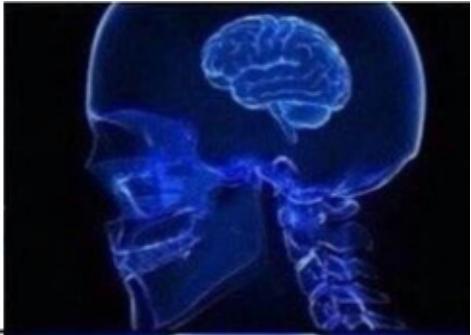
2 Retweets 3 Quote Tweets 22 Likes

Transhumanism vs Anarcho-primitivism

This is about 2-3 iterations out.

Ultimately this is going to be about whether technology is good or bad. Acceleration will polarize.

**DEMOCRAT
VS REPUBLICAN**



**CENTRALIST
VS
DECENTRALIST**



**TECHNOLOGICAL
CONSERVATIVE
VS TECHNOLOGICAL
PROGRESSIVE**



**TRANSHUMANISM
VS
ANARCHO-PRIMITIVISM**



Why does acceleration polarize?

Think about Tesla's insanity mode.



Why does acceleration polarize?

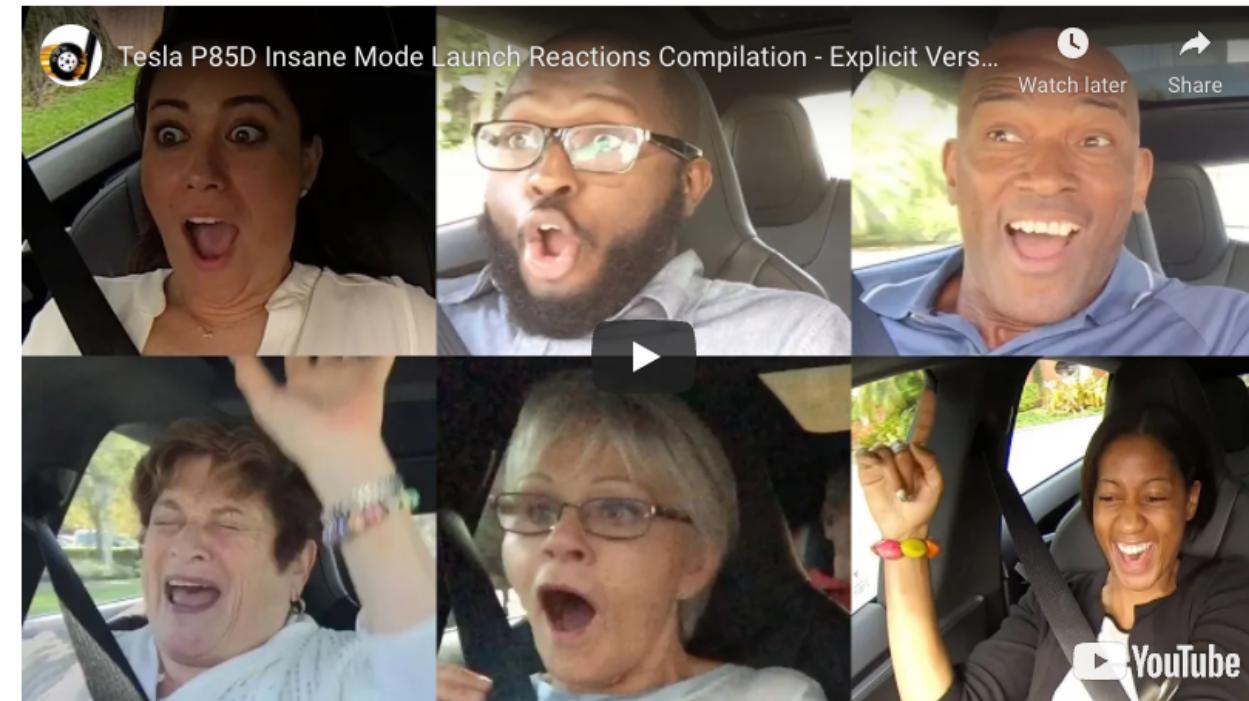
Some people love it, and quickly get used to it. Others want to get off, can't handle it.

Watch people lose their minds when subjected to the Tesla P85D's 'insane' mode

By Rich McCormick | Jan 28, 2015, 3:01am EST

Source [Drag Times \(YouTube\)](#) | Via [Elon Musk \(Twitter\)](#)

f t SHARE



123 ▶

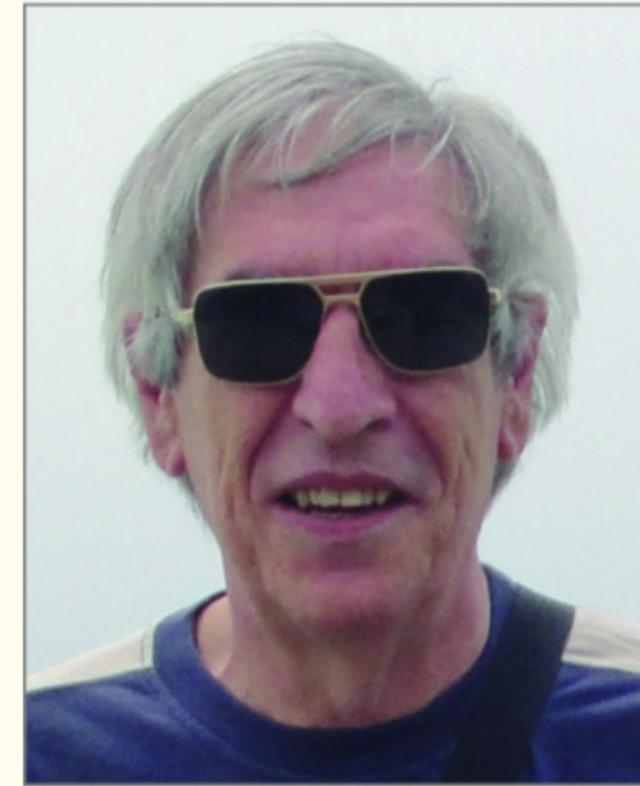
Transhumanism

1. What is it?
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1. Longevity

- There are empirical results here!
For example, remission of **gray hair**, **cell rejuvenation**, and **doubling mouse lifespan**
- **Deming**
- **Nintil**
- **Sinclair**
- **VitaDAO**
- **Sinclair regimen**

A Patient image pretreatment



B Patient image posttreatment



[Open in a separate window](#)

Figure 1.

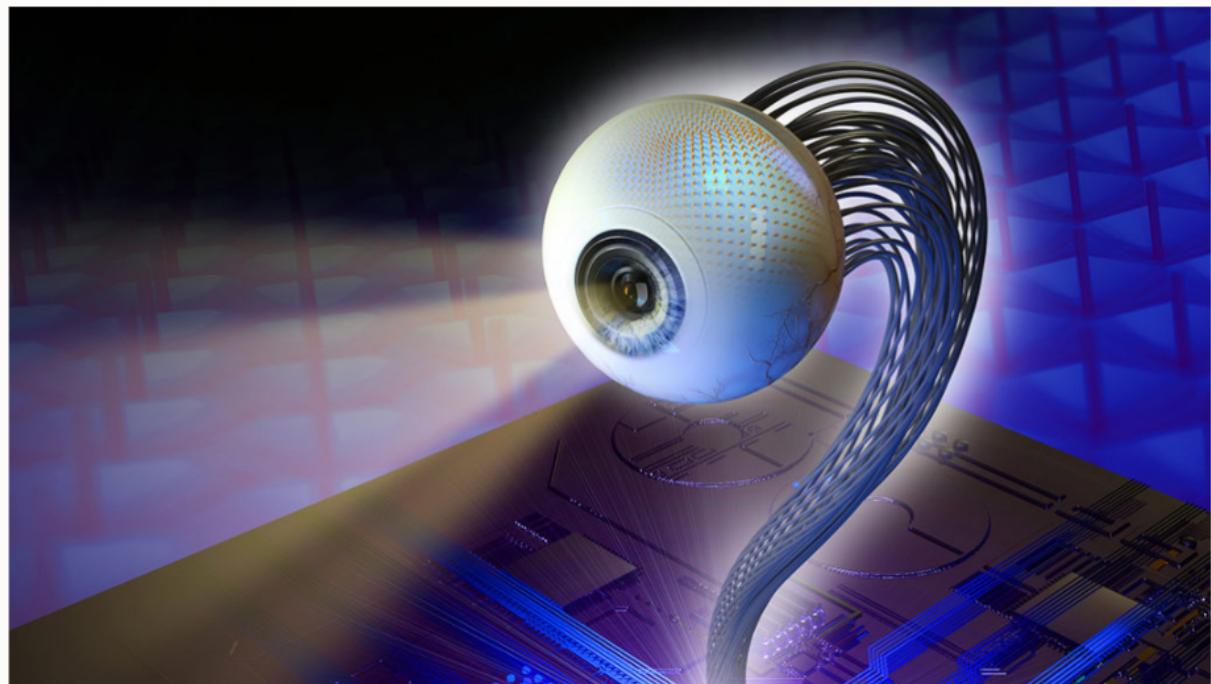
Hair Repigmentation in Patient Number 5

A, Picture provided by the patient from before starting therapy. B, Picture taken during the follow up with a clear repigmentation.

NEWS TECH

A new artificial eye mimics and may outperform human eyes

The high-tech device boasts a field of view and reaction time similar to that of real eyes



A new design for an artificial eyeball (illustrated) could someday give keen eyesight to androids, or be used as a high-tech prosthetic.
YAYING XU, © OFANTASTIC COLOR ANIMATION TECHNOLOGY CO., LTD.

2. Bionics (Implants)

- Restoring sight (optical implants)
- Restoring hearing (cochlear implants)
- Restoring limbs (bionic limbs)

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3. Bionics (Suits)

- Jetpacks: gravity.co
- Exoskeletons: sarcos.com
- Neural Helmets: kernel.com



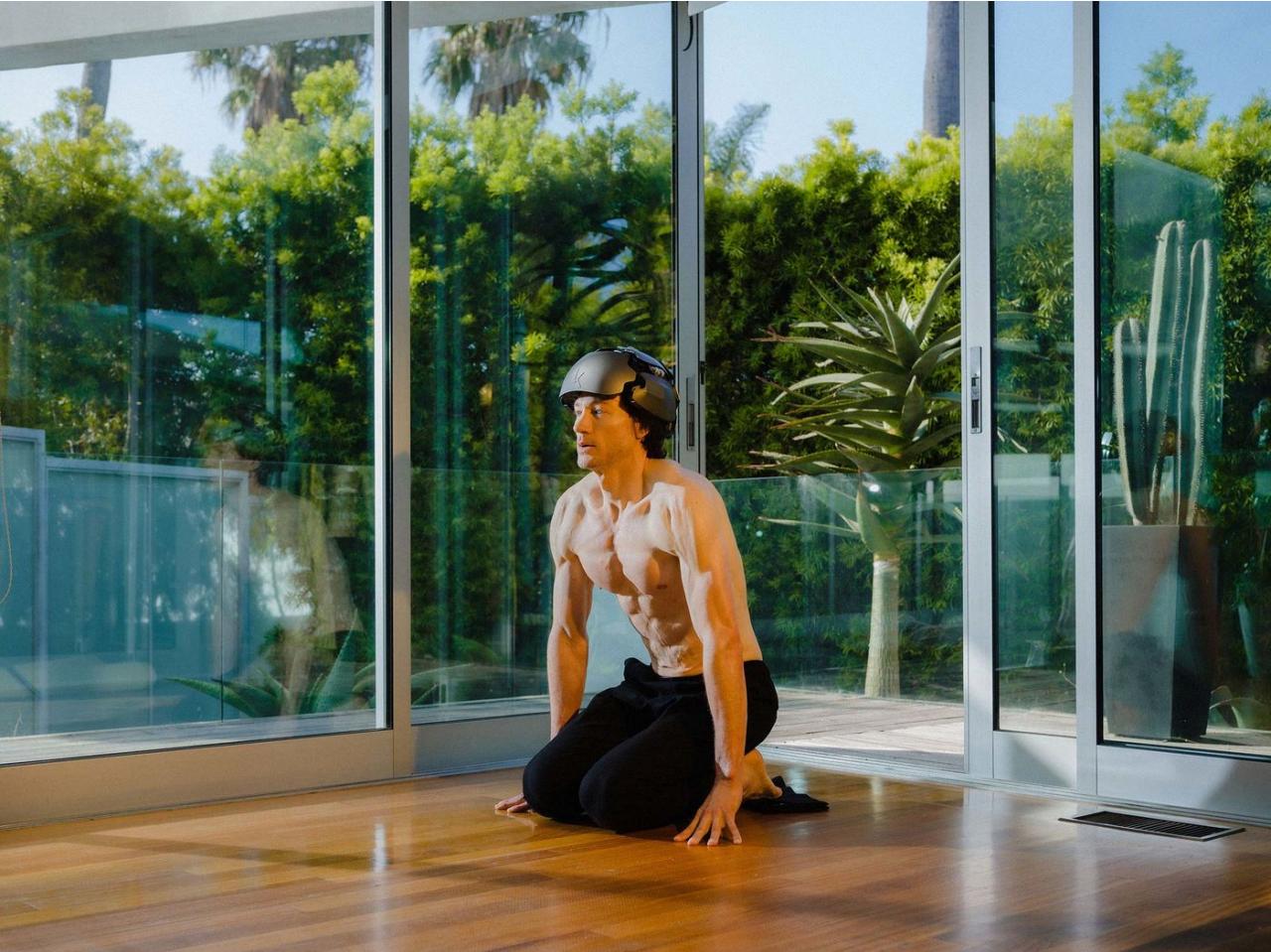
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4. Regenerative Medicine

- Regenerating hearing (RNAi)
- Regenerating organs (stem cells)
- Artificial wombs for preemies
- Regenerating limbs
- Wound healing (bioelectricity)

RNA Injection Restores Hearing in Guinea Pigs

Researchers deliver small interfering RNAs loaded into nanoparticles into the ears of adult guinea pigs to regenerate hair cells damaged by noise.



Abby Olena
Apr 18, 2018



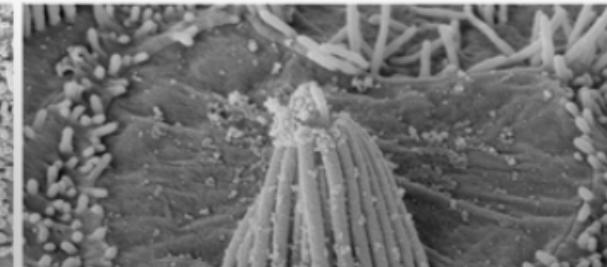
16

***siHes1* NP-treated cochleae**

3-4 weeks

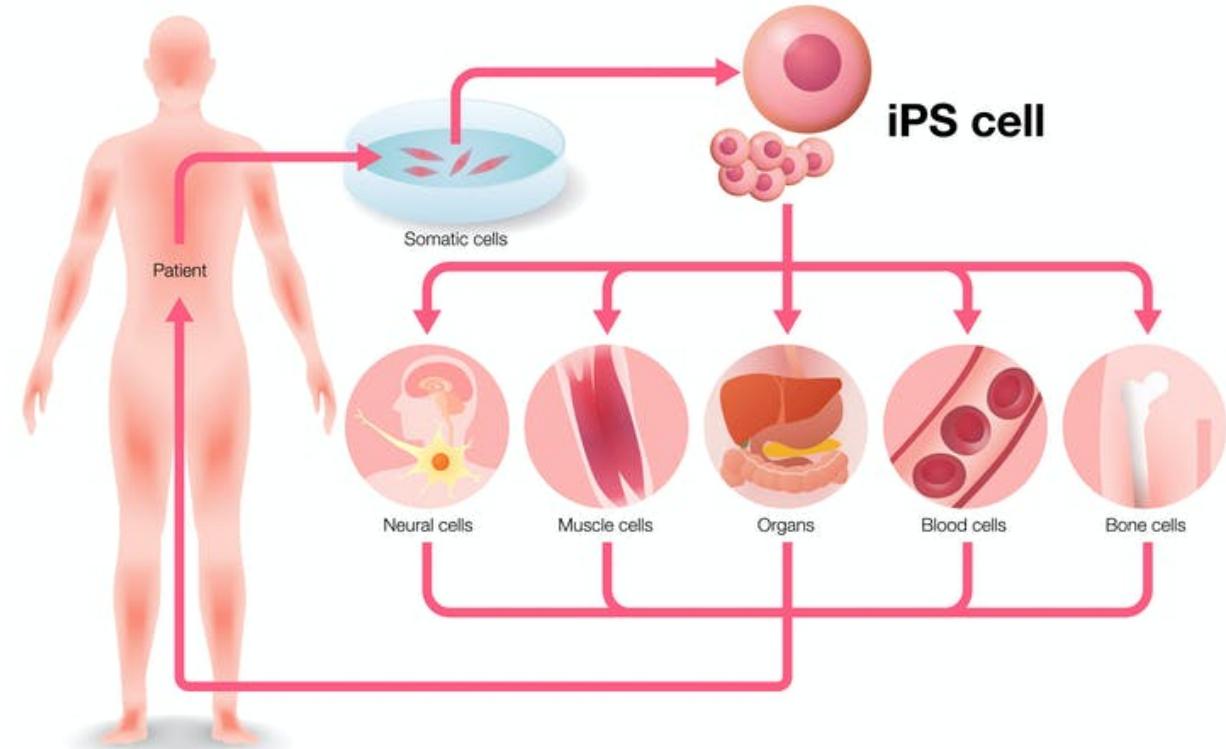


9 weeks



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Recreating the Womb: New Hope for Premature Babies



In the United States, the number of infants born significantly premature (sometimes called micro preemies) has increased over the past two to three decades. Born at a critically low birth weight, the first challenge these very preterm babies face is surviving. Those who do survive face very serious challenges as they grow and develop.

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Scientists Are Cracking the Mysteries Behind Limb Regeneration

healthcare | scientific discoveries

Humans tend to forget they are animals. As *Homo sapiens*, we are — along with chimps and gorillas — members of the hominid family, a branch of the animal kingdom.

It makes sense, then, that advances in the regrowth of animal limbs are spurring talk of limb regeneration in humans. That's right. An adult frog growing new legs could improve the chances of successful human regeneration.

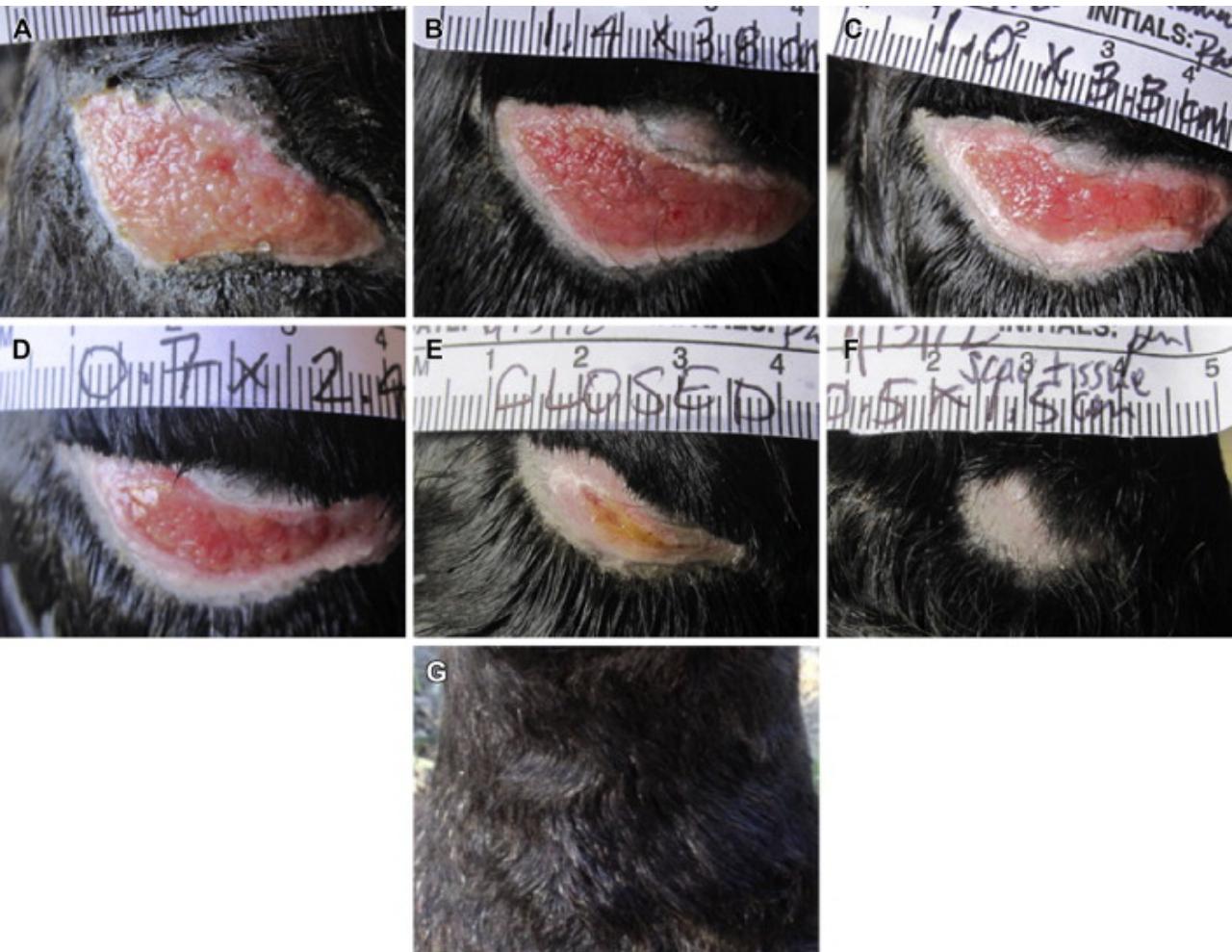
Several regeneration studies with frogs, worms and other animals have some scientists believing they're in the early stages of creating a DNA roadmap that could give human amputees real hope of again having a limb that's not prosthetic or computerized but naturally grown. No one's rushing to suggest the regrowth of human limbs is around the corner, but science can sometimes lead to wonderfully unexpected places.

A Control Gene Might Dictate Regeneration

A flurry of separate studies on various organisms have ignited speculation that what works for frogs and fish could similarly work for humans.

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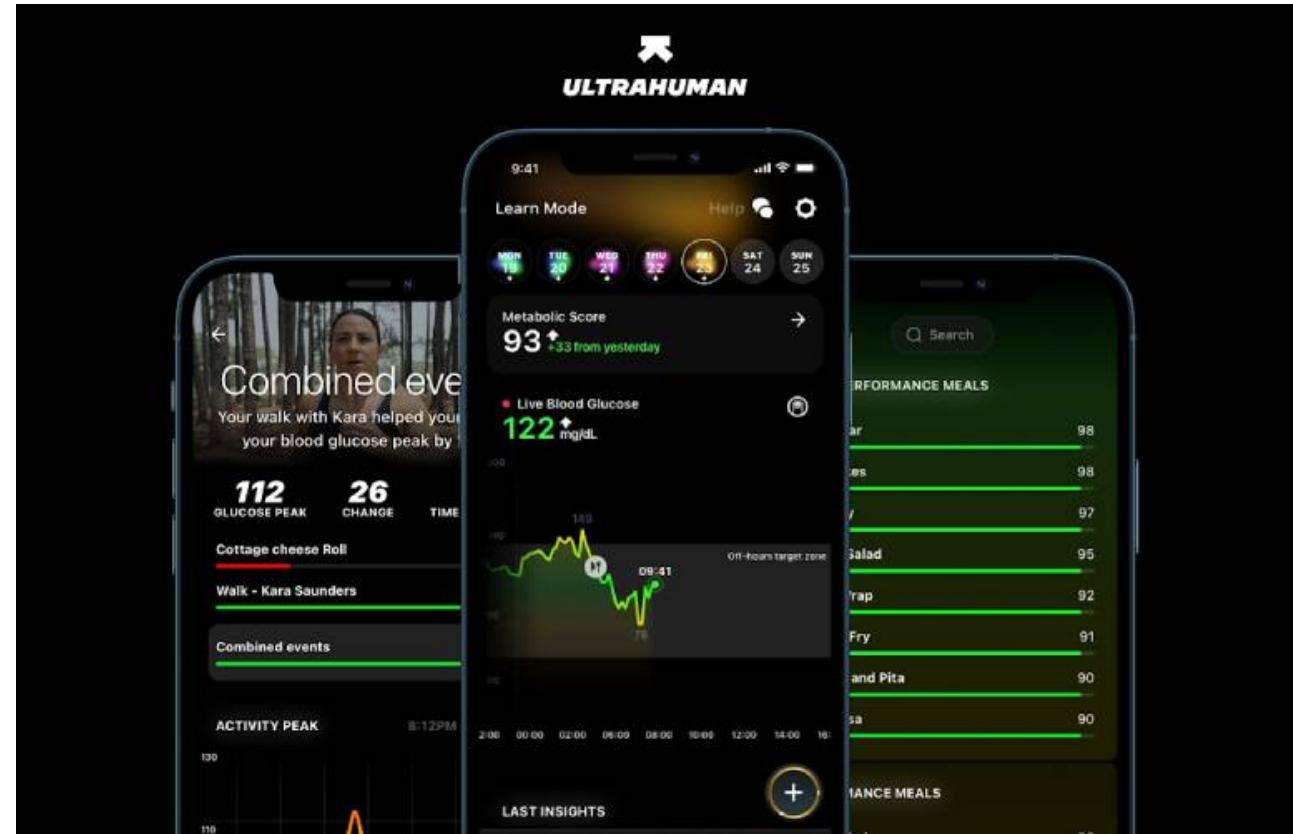
5. Quantified Self

- Fitness Trackers
- Continuous Glucose Monitors
- Personal Genomics
- Ancestry Testing
- Biohacking survey (2018)



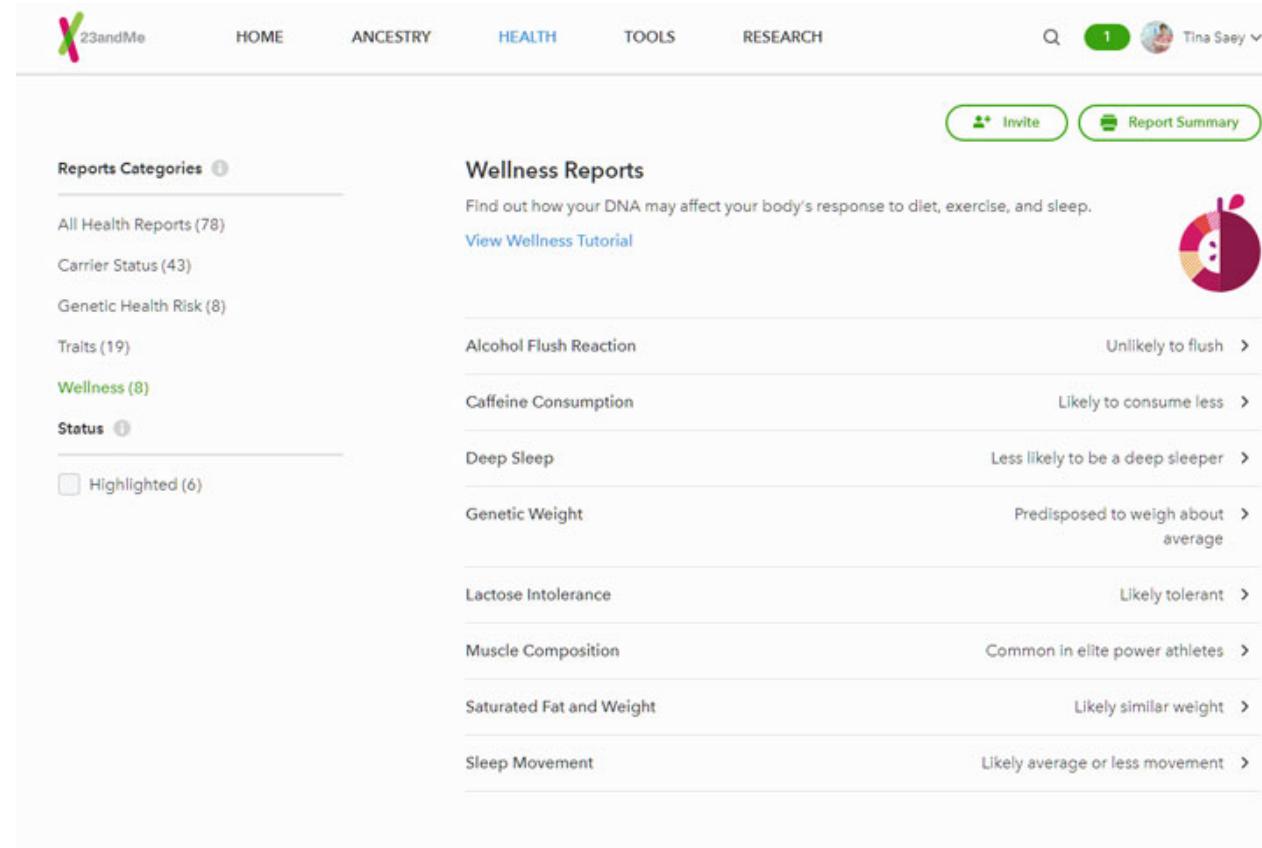
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The screenshot shows the 23andMe website interface. At the top, there's a navigation bar with links for HOME, ANCESTRY, HEALTH (which is currently selected), TOOLS, and RESEARCH. On the far right, there's a search bar, a notification badge with the number '1', and a user profile for 'Tina Saey'. Below the navigation, there are two main sections: 'Reports Categories' on the left and 'Wellness Reports' on the right.

Reports Categories

- All Health Reports (78)
- Carrier Status (43)
- Genetic Health Risk (8)
- Traits (19)
- Wellness (8)**
- Status ⓘ

Highlighted (6)

Wellness Reports

Find out how your DNA may affect your body's response to diet, exercise, and sleep. [View Wellness Tutorial](#)

Alcohol Flush Reaction	Unlikely to flush >
Caffeine Consumption	Likely to consume less >
Deep Sleep	Less likely to be a deep sleeper >
Genetic Weight	Predisposed to weigh about average
Lactose Intolerance	Likely tolerant >
Muscle Composition	Common in elite power athletes >
Saturated Fat and Weight	Likely similar weight >
Sleep Movement	Likely average or less movement >

Biohacking Startup Landscape

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TREATMENTS

First sickle cell patient treated with CRISPR gene-editing still thriving

December 31, 2021 · 5:05 AM ET

Heard on [Morning Edition](#)



 4-Minute Listen

 PLAYLIST   

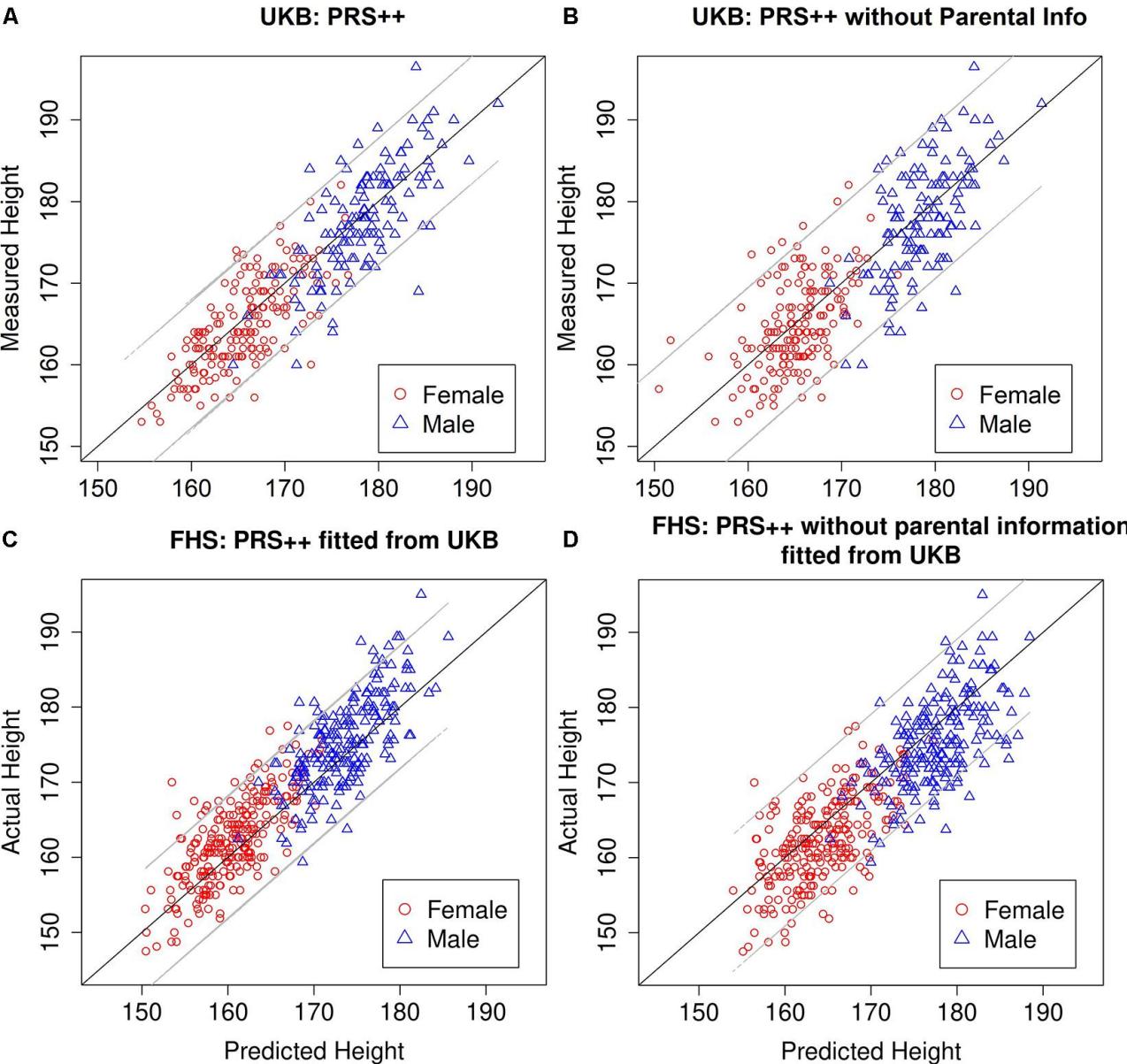


6. Gene Editing, PGS, PGD

- CRISPR gene therapy
- Polygenic risk scores
- The Genetic Lottery (book)
- IVF/PGD selection

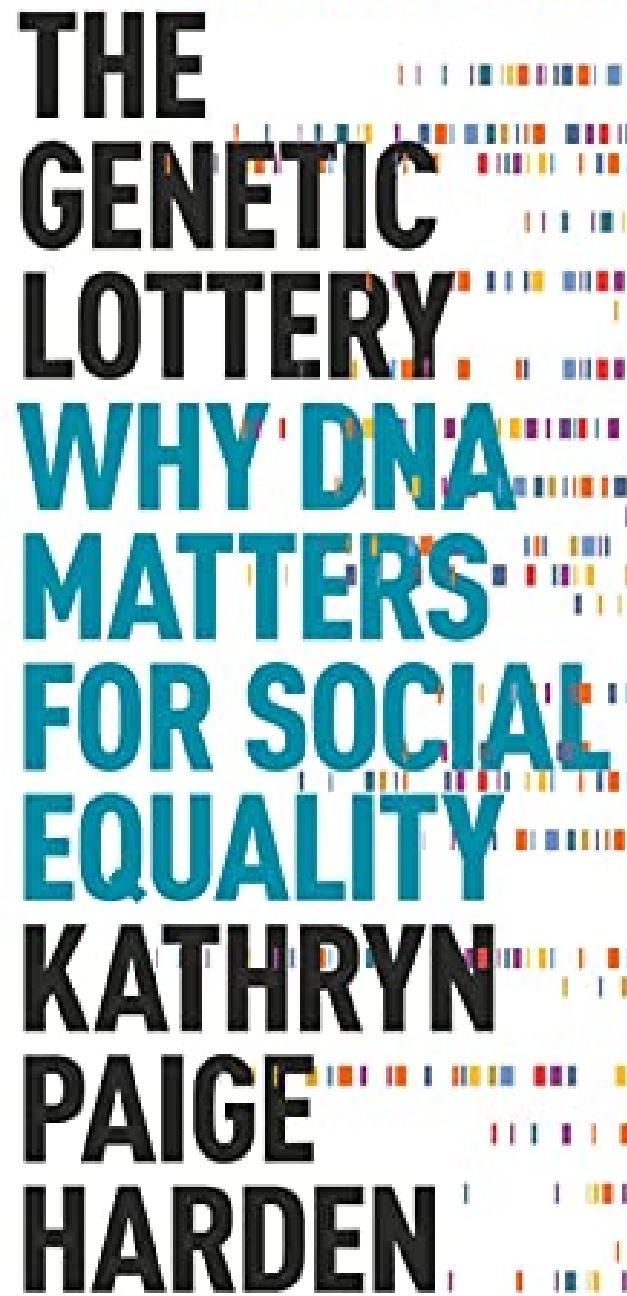
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7. Augmented Reality

- Snapchat Spectacles +
- Facebook Oculus Quest 2 +
- Apple ARKit =
- AR glasses



NOOTROPICS

8. Nootropics

- [Gwern review](#)
- [Limitless \(2011\)](#)

nd my experiments

iments, | predictions, | statistics, | DNB, | shell, | Haskell, | R, | power-anal

rogress · | certainty: likely · | importance: 7 · | backlinks / | bibli



RECORD OF NOOTROPICS

thoughts about which ones w

for me. These anecdotes shou

anecdotes, and one's efforts wi

put only limited amounts of time into due

drugs as a force-multiplier compared to oth

ming¹; for an ironic counterpoint, I suggest

[video](#) of Jonathan Coulton's “I Feel Fanta

9. Brain Machine Interface

- Nicolelis video (2020)
- Nicolelis review (2017)
- Shenoy lab
- Neuralink review

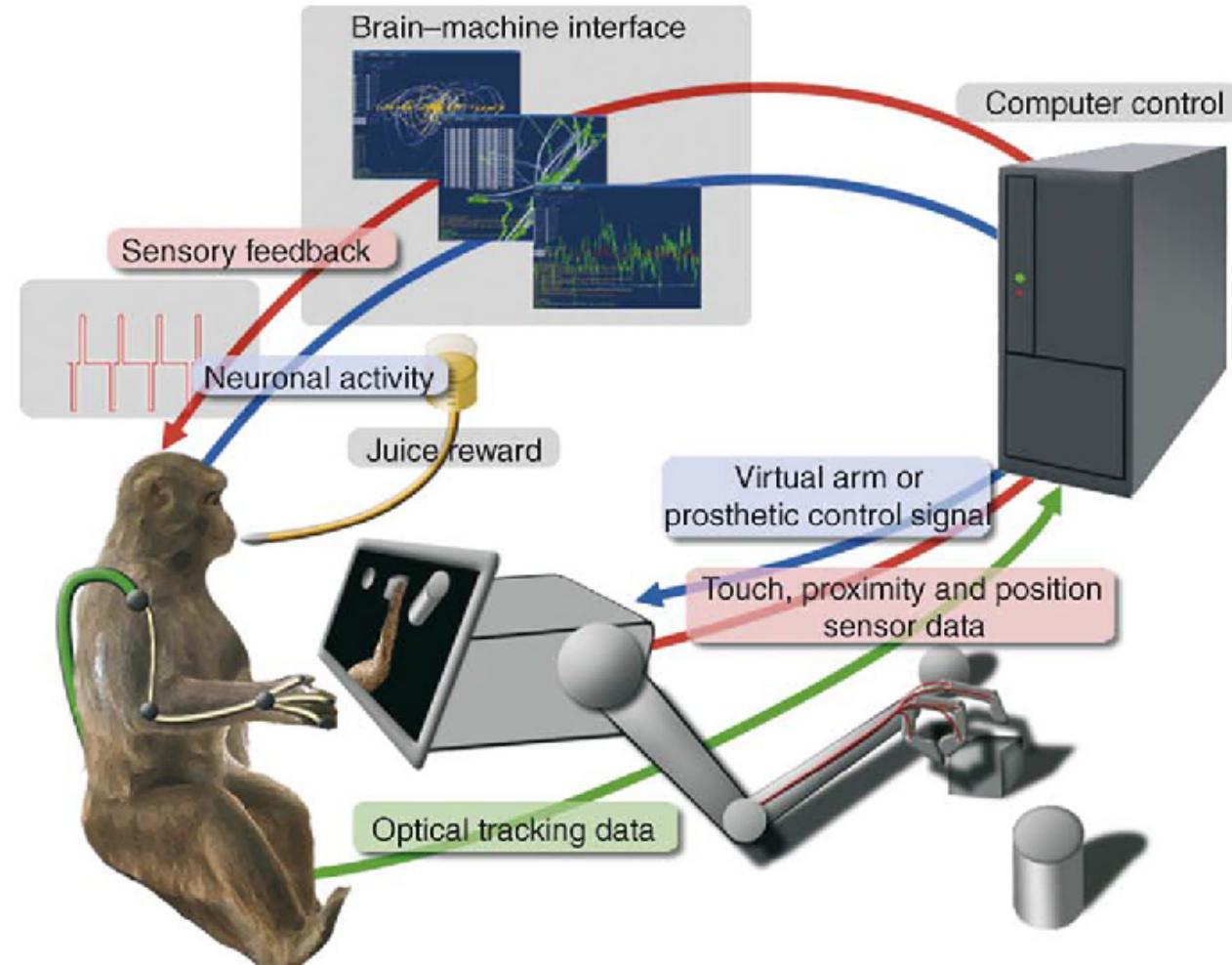
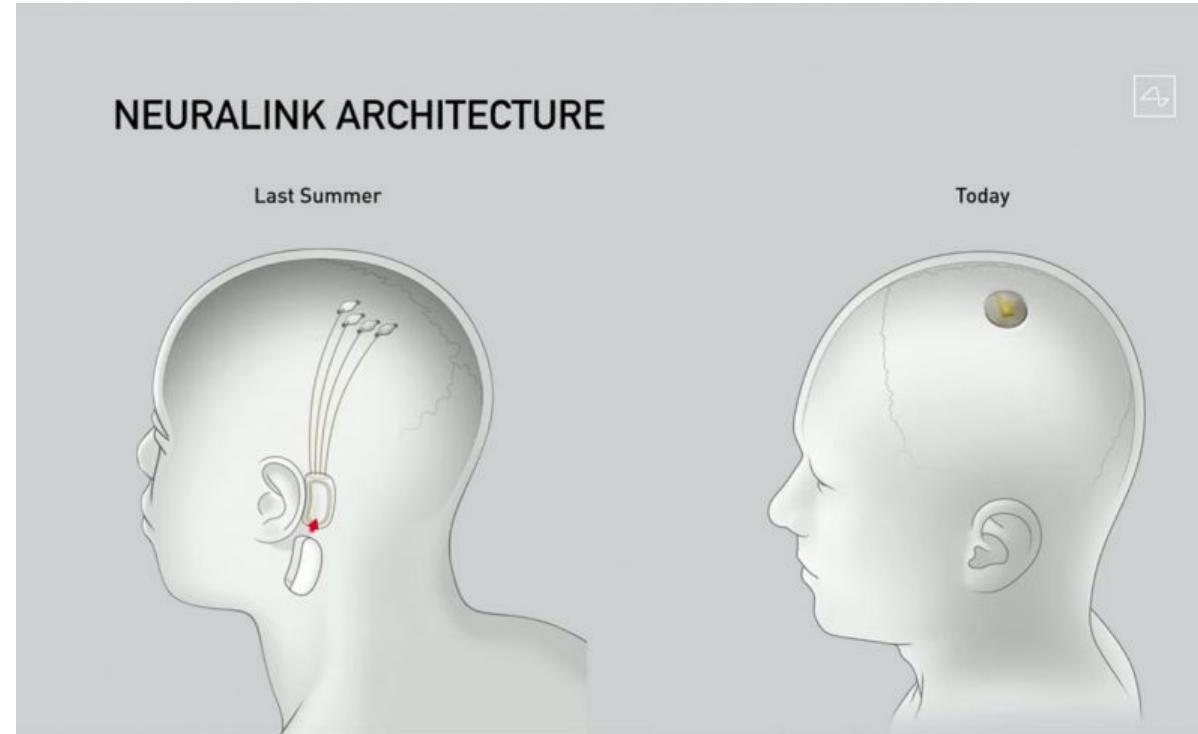


FIGURE 4 A basic machine interface for a monkey

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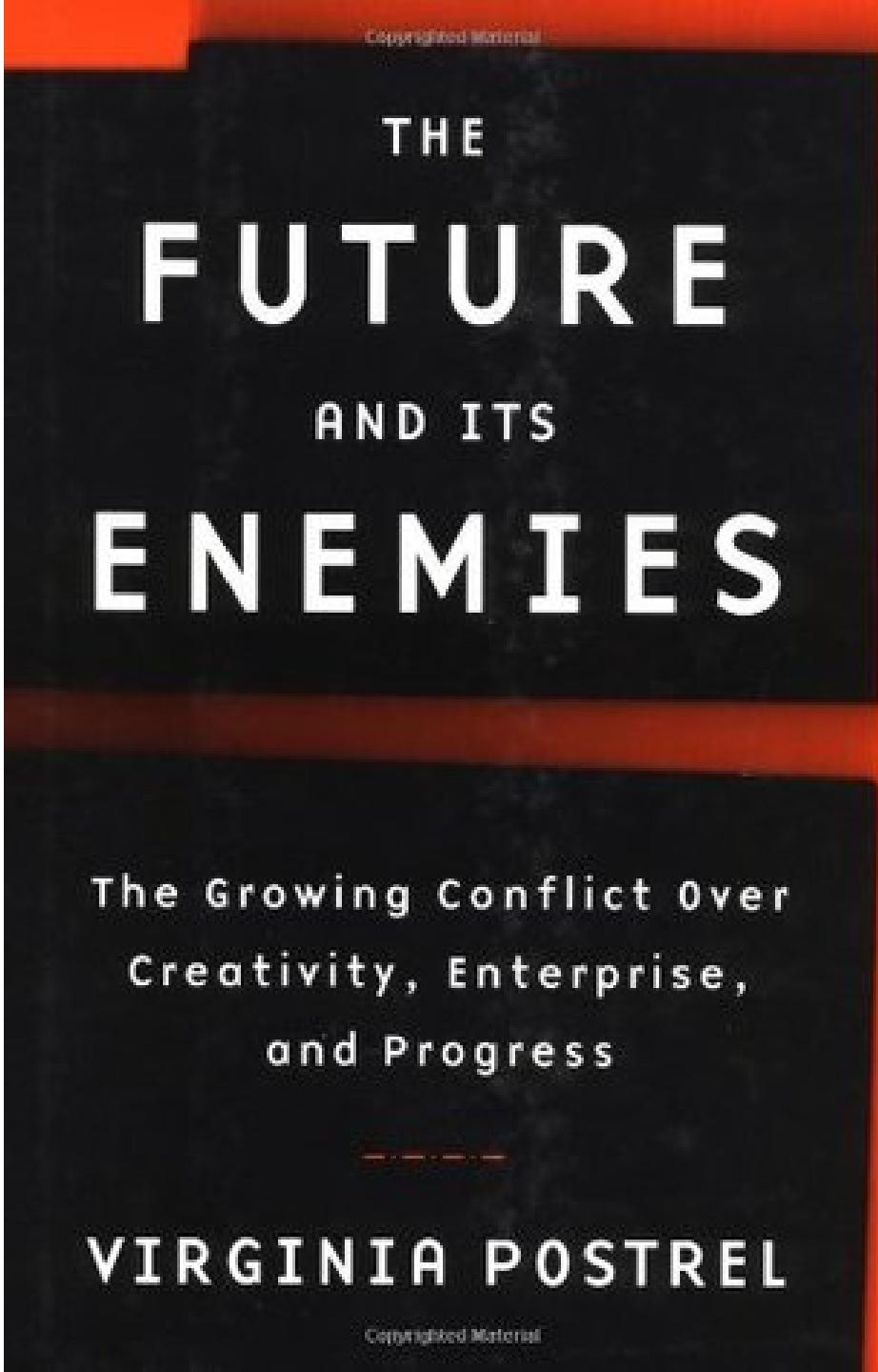
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The Future and its Enemies

So, if the technology is there, what's
[holding back](#) transhumanism?

- Regulation
- Reimbursement
- Regressiveness



The Regulatory State

Problem: Regulation won't permit it.

Solution: See [regulation lecture](#).

The collage consists of three screenshots:

- U.S. Code § 8325 - International harmonization**: A screenshot from the U.S. Code website showing the text of section 8325 of Title 15, which discusses international harmonization of swaps.
- Federal Aviation Administration (FAA) NextGen Implementation**: A screenshot of the FAA website under the NextGen section, specifically the NextGen Implementation page, which discusses international harmonization in aircraft operations.
- U.S. Food and Drug Administration (FDA) Vaccines, Blood & Biologics**: A screenshot of the FDA website under the Vaccines, Blood & Biologics section, specifically the International Activities page, which discusses regulatory harmonization in vaccine development and distribution.

Reimbursement

Problem: Insurance, AMA, CPT won't pay for it

Solution: [crypto](#), [cash payment](#), and [fitness](#) > [insurance and medicine](#)

Balaji Srinivasan: It's like the Rumsfeld quip: there are known unknowns. Ultimately we think most people miss the key secrets in health industry because they are so caught up in the status quo that they actually can't think their way to good solutions. Contrast the healthcare industry with the fitness industry. Ultimately, your fitness is your responsibility. You can join good gyms or get personal trainers. All that's great. But the buck stops with you—you have to take the initiative. But consider how that initiative plays out in healthcare. If you come to a doctor's appointment wanting to talk about something you've researched, doctors get pissed. You are either undermining their authority or you're an idiot. But that's odd; you are with your body for a lifetime, whereas the doctor is with you for 20 minutes each year. The one area of medicine that works—fitness—operates orthogonally to the rest of medicine in practice.

When these systems get build up, it's very hard to clear away the overhang. People have thought themselves out of thinking about non status quo solutions. Stuff that actually works is perceived as crazy.

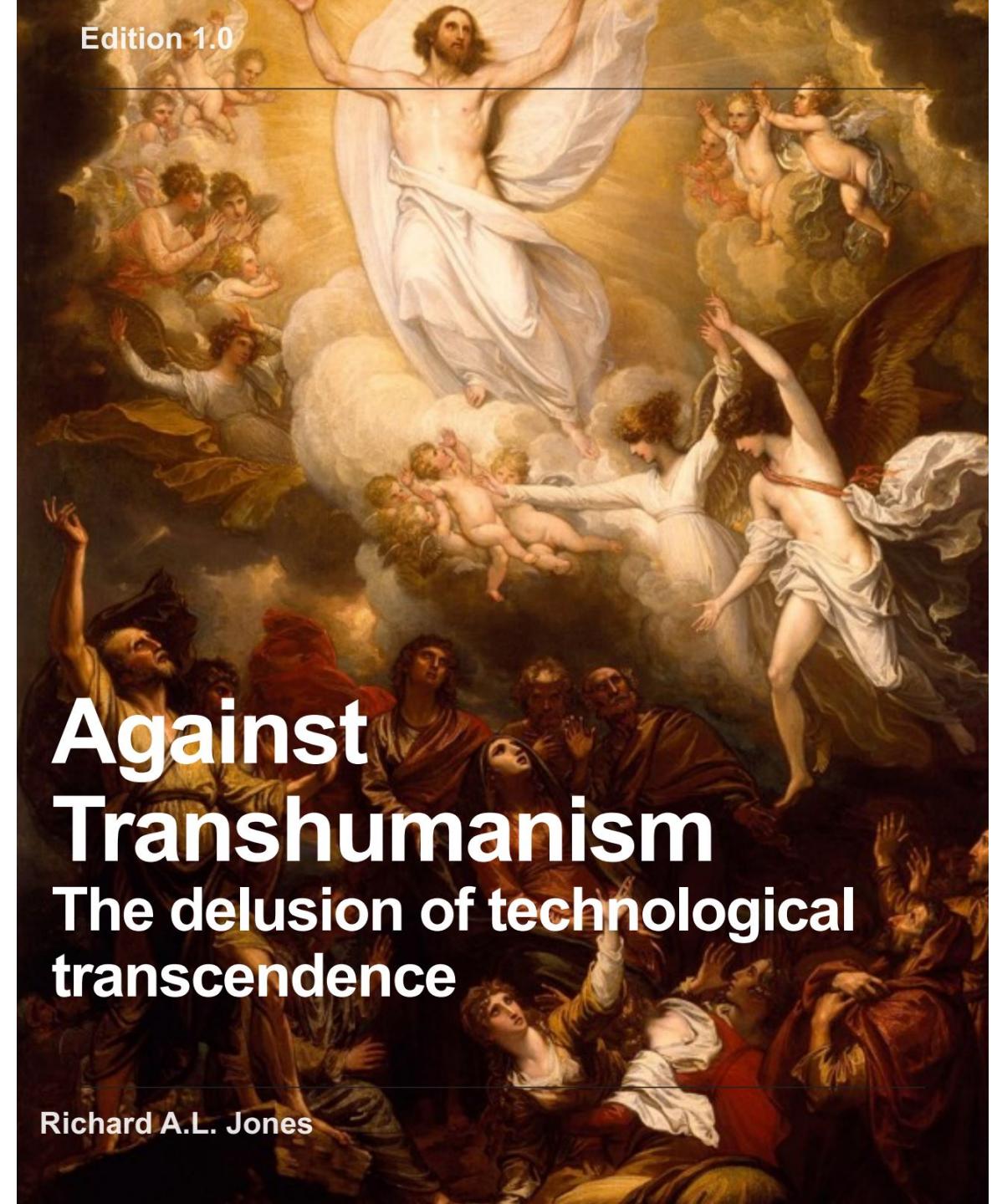
Regressiveness

Problem: Society will fight it.

Solution: media, films, DAOs, exit, activism.

Against Transhumanism The delusion of technological transcendence

Richard A.L. Jones



In Vitro Fertilization Was Once As Controversial As Gene Editing is Today

The scientists who pioneered it were regarded as pariahs, even within their own universities

Kat Eschner

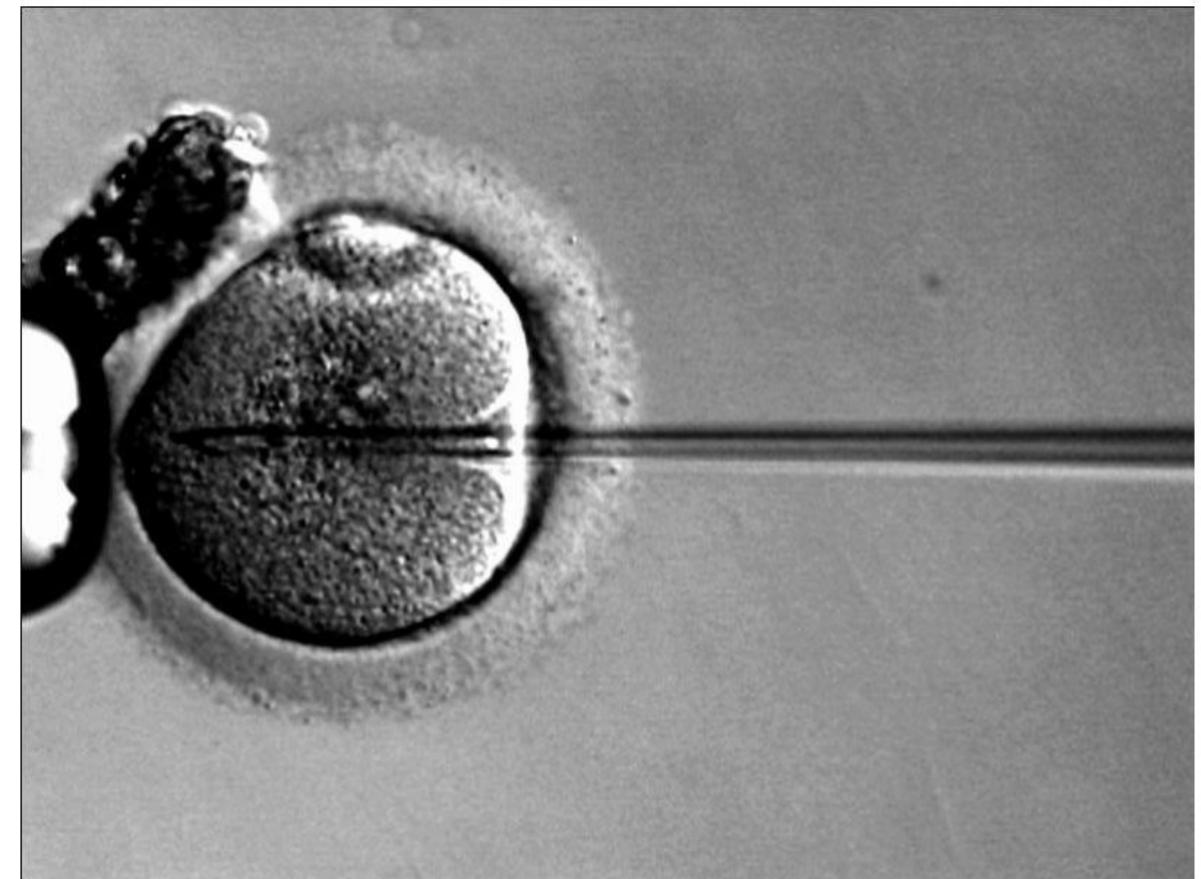
September 27, 2017

But we can push back.

We can [counterargue](#).

We just need one jurisdiction that agrees with us, the El Salvador of transhumanism.

And thus, the network state.



Intracytoplasmic sperm injection (ICSI) is a more modern form of IVF. [Wikimedia Commons](#)

Summary

1. Transhumanism is technological ascendance beyond our limits
2. Technology isn't the true limiting factor
3. It's regulation, reimbursement, regressiveness
4. The solution involves many parts
5. In its full flowering, it is the network state

Next Steps

Please fill out the feedback form.

To contribute figures and copy edits, go to github.com/1729/content/issues.