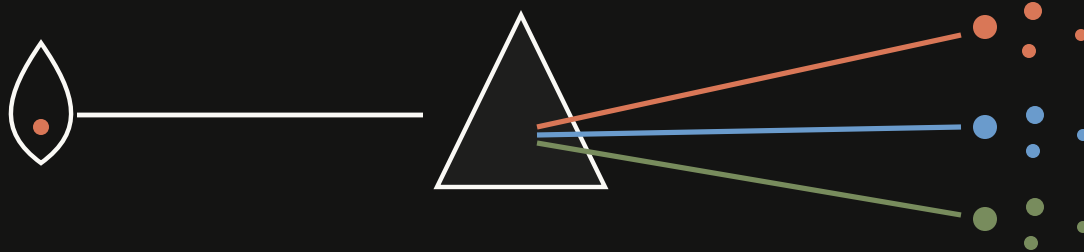


INFLECTION.

THE WEEKLY MAGAZINE OF INNOVATION

ISSUE 02 · FRIDAY, JULY 17, 2026 · DEEP DIVE — IN VITRO GAMETOGENESIS



DEEP DIVE · REPRODUCTIVE ENGINEERING

Life, Grown From a *Vial* of Blood

A Berkeley company says it has coaxed a routine blood draw into the first human eggs ever grown from stem cells. The clinic is still a decade out. The supply curve is not — and that is the number nobody is pricing.

AGAINST THE GRAIN

The egg was never the product. Why a fertility headline is really a supply story.

SIGNALS

A chip that writes DNA · fusion's 400-megawatt paper · AI finds two superconductors.

BY THE NUMBERS

17.5%, the vanishing dozen, and a fab that grows ovaries by the thousand.

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DISPATCH · EDITOR'S NOTE

The bottleneck never disappears. It moves.

Every technology of abundance plays the same trick. It makes something once scarce nearly free — and then quietly relocates the constraint to somewhere you weren't watching. Cheap compute didn't end scarcity; it moved the bottleneck to data, then to talent, then to electricity.

This week a company called Conception said it had grown the first human eggs from stem cells, starting — improbably — from a vial of blood. Read as a fertility story, it is hopeful and distant: a gentler IVF, someday. Read as a supply story, it is stranger. The egg has been the rate-limiting reagent of human reproduction since there were humans. Conception says it already grows the precursors by the million.

When a reagent goes from a painful dozen to effectively unlimited, the live question stops being "can we make one?" and becomes "which one do we keep?" That is why a fertility headline sits, this week, on a page beside fusion and superconductors. Hold the thesis lightly — but hold it.

INFLECTION — Researched, written & designed with Claude. Typeset in Poppins & Lora on the Anthropic palette. A weekly deep dive into the moment a technology bends from curiosity to consequence.

IN VITRO GAMETOGENESIS

The Vanishing Dozen

Conception says it has grown the first human eggs from stem cells. The science is early and the caveats are enormous. The consequence that matters is the one nobody is pricing: reproduction may be about to lose its supply constraint.

BY THE EDITORS OF INFLECTION

For as long as there has been medicine, the human egg has been the scarcest thing in the room. A woman is born with her entire lifetime supply — a stock that only ever falls. A punishing round of IVF, weeks of hormone injections capped by an anesthetized retrieval, yields on a good day eight to fourteen. Every downstream hope, from a single pregnancy to the most ambitious genetic screen, has been rationed by that number. On the last day of June, a Berkeley company said the number might no longer be fixed.

Conception — founded in 2018 as Ovid Research and run by Matt Krisiloff, a member of OpenAI's founding team before he turned to biology — announced that it had generated the first early human egg cells, or "primary oocytes," from stem cells. The recipe reads like science fiction written by a plumber: draw blood, reprogram the blood cells into induced pluripotent stem cells, then coax those into the two cell types a developing ovary needs — the germ cells that become eggs, and the "helper" cells that nurse them.

Grown together, the cells self-assemble into "mini-ovaries," three-dimensional balls of tissue that mimic the real organ. Inside, early eggs appear. It is, on its face, one of the strangest sentences in modern biology: an ovary, grown from a blood sample, in a dish.

The pursuit is not new — biologists have chased "in vitro gametogenesis," or IVG, for two decades — but the human egg has always been its Everest. Conception's claim is that it has, at last, pitched a camp on the mountain.

Keep one hand on the brake. The claim arrived not in a peer-reviewed journal but on a company blog and a post on X. The eggs are immature — primary oocytes, arrested at a stage well before anything could fertilize them. And Conception is candid that the hardest step, coaxing those early eggs through full maturation, remains unsolved. Asked whether women should stop freezing their eggs, Krisiloff's answer was, essentially: don't. And yet the direction of travel is unmistakable — because the mouse has already made the round trip.

A mouse, a fab, and one loaded word

The mouse made the round trip

In 2016 the Japanese biologist Katsuhiko Hayashi turned mouse skin cells into eggs, fertilized them, and produced healthy pups that grew up and had pups of their own. In 2023 he went further, building eggs from male cells and reporting mice with two fathers. In mice, in vitro gametogenesis is no longer a hypothesis; it is a protocol.

The decade-long question has been whether the same trick survives the jump to a species whose eggs take months, not days, to ripen — and whose failures are measured in human lives, not litters.

What Conception actually did

Conception's contribution is to have carried a human line further down that path than anyone has publicly shown — to a primary oocyte, inside an engineered ovarian niche, from a starting material as banal as blood. That is a real distance covered on the hardest leg of the journey.

"Conception grows its mini-ovaries by the thousand and benchmarks them in parallel. That is not the language of a clinic. It is the language of a fab."

The company says it now grows thousands of these mini-ovaries at once, carrying millions of future egg cells, and uses that parallelism to test which culture conditions push development furthest. Read that sentence again. The unit of work is not a patient or a cycle; it is a batch. Reproductive biology has quietly borrowed the mindset of semiconductor manufacturing — many identical attempts, measured against each other, iterated.

Why "early" is the whole story

The word doing the heavy lifting is *early*. A primary oocyte is to a fertilizable egg what a blank wafer is to a working chip: the right material, most of the distance still ahead. Maturation is precisely where mouse success has failed to generalize, and where the epigenetic bookkeeping — the chemical marks telling a genome which parent it came from — is easiest to corrupt. If IVG has a graveyard, it is here, at the step between "early" and "done."

The manufacturing mindset

That reframing — from patient to batch, from cycle to yield — is the quiet radical move in this week's announcement. It treats the egg not as a gift of biology to be harvested a dozen at a time, but as a product to be made, measured, and improved. Whether the framing survives contact with the messy reality of human development is the question the next decade will answer. That it now exists at all is the news.

From lab to clinic — and the fork before it

Take Conception at its most conservative and the clinical story is a decade of patient safety work: mature the eggs, prove they fertilize, show the embryos are normal, then run the long, cautious trials any heritable intervention demands. Useful, humane, slow. That is the story the field is telling, and it is probably right.

But there is a fork most coverage drives straight past. IVF's defining constraint has always been the count — the dozen-odd eggs a cycle yields. Nearly every limit on embryo screening flows from it. With ten embryos you can avoid a disease allele, or nudge a polygenic score by a couple of points — gains so small they sit inside the test's own measurement noise. Selection has been, for one boring reason, statistically real and practically trivial: N is tiny.

Unlimited eggs break that constraint. If a blood draw can one day yield hundreds or thousands of embryos, selection stops being a rounding error and becomes a lever whose length you choose. Nothing about the biology of a single embryo changes. Everything about the *choosing* does. That is the part nobody is pricing — and the subject of the column overleaf.

This is why IVG belongs in a magazine about inflection points rather than one about fertility. The first lab-grown baby, if it ever comes, is a distant and cautious event. The moment the egg count stops being fixed is neither distant nor cautious — and it may arrive first.

FIELD NOTES

How to grow an egg from blood

- 1 Draw & reprogram.** An ordinary blood sample is converted into induced pluripotent stem cells (iPSCs) — adult cells rewound to an embryo-like state that can become almost any tissue.
- 2 Sort into an ovary.** The iPSCs are guided into two lineages: primordial germ cells (future eggs) and ovarian "helper" cells that supply the signals eggs need to develop.
- 3 Assemble & wait.** Together they self-organize into a 3-D "mini-ovary." Inside, early eggs — primary oocytes — form. Maturing them into a fertilizable egg is the step still unsolved.

GLOSSARY

In vitro gametogenesis (IVG)

Making eggs or sperm from ordinary body cells in the lab, instead of harvesting them from the body.

iPSC

An induced pluripotent stem cell — an adult cell chemically "rewound" so it can become almost any cell type.

Primary oocyte

An immature egg, paused early in development. The starting point of this story, not the finish line.

Polygenic score

A statistical estimate of a trait or disease risk, summed across many gene variants — the basis for embryo "selection."

The Egg Was Never the *Product*

THE CONSENSUS — and it is sober and mostly correct — runs like this: IVG is an early, unreviewed result; the eggs are immature; the clinic is a decade or more away; and even then it will be a fertility treatment, a gentler IVF for cancer survivors, older mothers, people born without gametes. Humane, and slow. Nothing to see beyond the ward.

NOW THE MOVE THAT LOOKS WRONG. The headline figure here is not "one egg." It is Conception's aside that it already grows egg precursors by the *million*, in parallel. Fertility is the application. Abundance is the invention — and abundance, in reproduction, changes a different variable than the one everyone is watching. For a technologist the pattern is familiar to the point of cliché: when you make production nearly free, value migrates to selection. Cheap storage made the search engine matter. Cheap compute made the training set matter. Reproduction has run for four billion years on the opposite regime — production catastrophically expensive, selection therefore moot. IVG proposes to flip it. When eggs are unlimited, the binding question is no longer "can we conceive?" but "which of these thousand embryos do we transfer?" The germline acquires a search step. That is the inflection, and it is not a medical one.

WHY THE CONSENSUS IS RIGHT TO WAVE THIS OFF — FOR NOW. Every link in the chain is still weak. The eggs don't yet mature, and maturation is exactly where epigenetic and imprinting errors accumulate — and where mouse results have refused to generalize to primates for a decade. Polygenic selection, even with unlimited N, buys less than its boosters claim: scores are noisy, population-specific, and pleiotropic — pull one trait and you drag others you never chose. And the law is waiting: most of the world bans heritable selection for non-medical traits, and the U.S. won't fund the embryo research needed to even study it. The skeptics are not wrong that the clinic is far away. They are wrong about which number to watch. Don't watch the birth. Watch the supply curve.

Signals

Three developments from the past week worth a technologist's attention.

64

SEMICONDUCTORS

A chip that writes DNA

A Harvard-led team reported a silicon chip that synthesizes 64 distinct DNA strands at once — each up to 39 bases long — using nothing harsher than water and enzymes. Concentric ring electrodes drive tiny currents that raise or lower the local pH, switching synthesis on and off site by site: the very electrochemical patterning trick that shapes microchips, aimed now at biology. Prior enzymatic methods managed about a dozen strands. Reading DNA has grown cheaper for twenty years while writing it lagged; this narrows the gap — the read/write asymmetry at the heart of the whole bioeconomy.

SOURCE · NATURE ELECTRONICS; HARVARD SEAS (2026)

400

FUSION

Fusion's paper trail — megawatts on the record

Commonwealth Fusion Systems published five peer-reviewed papers laying out the physics case that its planned ARC plant will deliver a continuous **400 megawatts** of net electricity to the grid — the first time a private fusion firm has put a commercial machine's numbers through outside review. First power is targeted for the early 2030s, and the demonstrator, SPARC, is still being commissioned. Confidence on paper is not electrons on wires. But for the first time, the paper exists — and reviewers signed it.

SOURCE · JOURNAL OF PLASMA PHYSICS (CAMBRIDGE); NATURE (2026)

2

MATERIALS

AI's first superconductors

An Aalto University-led group let machine learning screen vast numbers of candidate compounds, then ran quantum calculations on the survivors — and surfaced two previously unknown superconductors, YRu_3B_2 and LuRu_3B_2 , both drawing their superconductivity from electrons trapped in the flat bands of a kagome lattice. Two is a small number. The method that found them, its authors argue, could find thousands — the same screen-then-verify loop that is quietly reorganizing discovery across chemistry and biology.

SOURCE · SCIENCEDAILY; AALTO UNIVERSITY (JULY 2026)

Seven figures that frame the week

Every number verified against a primary source.

17.5%

Share of adults worldwide the WHO expects to face infertility in their lifetime — roughly one in six.

8–14

Eggs a typical IVF cycle yields today. The supply ceiling in vitro gametogenesis proposes to erase.

millions

Future egg cells Conception says it already grows in parallel, across thousands of lab-built "mini-ovaries."

2016

Year the first mammalian eggs were grown from skin cells — in mice, by Katsuhiko Hayashi.

\$38M

Total venture funding raised by Conception since its 2018 founding as Ovid Research.

64

Distinct DNA strands Harvard's new chip writes at once; the old enzymatic ceiling was about twelve.

400 MW

Net electricity Commonwealth Fusion's ARC plant is designed to put on the grid — now backed by five peer-reviewed papers.

The Long View

Three of this week's four stories are the same story wearing different coats. A chip that writes DNA, an algorithm that finds superconductors, an ovary grown in a dish — each takes a process that used to be artisanal, scarce, and serial and makes it parallel, cheap, and searchable. That is the through-line of this magazine's name. The inflection is rarely the first unit; it is the moment the *marginal* unit gets cheap, because that is when the bottleneck moves and a new scarcity — data, selection, judgment, electricity — quietly takes its place.

Reproduction is the most consequential place that pattern could land, which is exactly why it deserves less breathless coverage, not more. The honest position on IVG is two-handed: the clinic is genuinely far off and freighted with unsolved biology, and the supply break is genuinely near and under-discussed. Both are true at once. The mistake — made by boosters and debunkers alike — is to let the first fact retire the second.

So watch the boring number. Not the first baby: that headline, if it ever comes, is a decade out and will tell you little. Watch the count — how many eggs, from how little, at what cost. The day that number stops being a dozen is the day this stops being a fertility story and starts being an everything story.

SOURCES & FURTHER READING

Conception announcement — Business Standard, Jul 1 2026 · business-standard.com/health/...126070100363_1.html

"The first early human eggs from stem cells" — Conception · conception.bio/science-and-updates

Conception background — MIT Technology Review · technologyreview.com/2021/10/28/1038172

Two-father mice / mouse IVG — Scientific American · scientificamerican.com/article/mice-with-two-fathers...

Mouse eggs from scratch — STAT · statnews.com/2021/07/15

Infertility, 1 in 6 — World Health Organization, Apr 2023 · who.int/news/item/04-04-2023

Embryo-selection utility — Karavani et al., *Cell* (2019) · [cell.com/cell/fulltext/S0092-8674\(19\)31210-3](https://cell.com/cell/fulltext/S0092-8674(19)31210-3)

Optimal oocyte number — Fertility & Sterility · [fertstert.org/article/S0015-0282\(13\)01881-5](https://fertstert.org/article/S0015-0282(13)01881-5)

DNA-writing chip — Nature Electronics; Harvard SEAS · nature.com/articles/s41928-026-01662-9

ARC fusion physics papers — CFS; Nature · nature.com/articles/d41586-026-01795-z

AI-found superconductors — ScienceDaily; Aalto Univ. · sciencedaily.com/releases/2026/07/260701205006.htm

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THE LENS

When the cost of making *one* falls to nothing, where does the scarcity go?

This week, it moved from the ovary to the algorithm. Next week: find the pattern before the press release does.

NEXT ISSUE · FRIDAY, JULY 24, 2026

Researched, written & designed with Claude. Typeset in Poppins & Lora on the Anthropic palette. INFLECTION is a weekly deep dive into the moment a technology bends from curiosity to consequence.

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