

## **Cradle raises \$73m Series B led by IVP to accelerate adoption of AI-powered protein engineering**

- The investment will help Cradle accelerate its mission to empower millions of scientists to engineer more sustainable products and better therapeutics on smaller budgets and with higher success rates.
- Industry leaders such as Novo Nordisk, Johnson & Johnson Innovative Medicine, Novonosis and Grifols use Cradle's generative AI platform for research and development across therapeutics, diagnostics, food, chemical, and agricultural products.
- Results to date show that Cradle can accelerate discovery and development of protein based products up to 12x in commercially relevant projects.

**Amsterdam, The Netherlands & Zurich, Switzerland, 26th November 2024** — Cradle, the leading platform for AI-powered protein engineering, has raised \$73m in Series B funding to respond to rising demand for its technology in R&D intensive industries. The round was led by [IVP](#) with participation from previous investors Index Ventures and Kindred Capital. Today's funding takes the total raised by Cradle to date over \$100m.

### **Using Generative AI unlock the impact of engineered biology**

Proteins are at the core of many products, from pharmaceuticals to food. Engineering these molecular machines has the power to reshape our world— enabling life-changing therapeutics, animal-free foods, eco-friendly pesticides, oil-free chemicals, and more. Developing new proteins is therefore key to unlocking smarter, more sustainable solutions to some of our toughest societal and planetary challenges, from fighting climate change to transforming healthcare and manufacturing.

However, traditional research methods for engineering better proteins have been slow, expensive, and unreliable. It can take years and many millions of dollars to run a successful R&D process and many projects are never completed successfully because they cannot achieve their targets.

Cradle's AI platform enables scientists to accelerate the discovery and development of improved proteins by making the process of engineering better proteins significantly easier, faster, and more cost-effective. The key to Cradle's success lies in its AI platform's unique approach, which allows it to dramatically reduce the number of experimental rounds needed. (See notes to editors for more detail.)

### **Cradle accelerates protein research & development as much as ten-fold**

Cradle has experienced rapid growth, and is now in commercial deployment across a wide range of industries. In the last year, Cradle has significantly expanded its customer base and

impact, signing new partnerships with Novo Nordisk and Ginkgo Bioworks and growing its customer base to include pharmaceuticals, chemicals, food, agriculture, and materials.

Cradle's platform has been shown to accelerate research and development timelines considerably. For example, one biotechnology customer used Cradle to accelerate the activity of the [P450 enzyme](#) by 4x in just three experimental rounds, compared to the previous 10 rounds. Cradle's AI delivered significant value by helping to unlock a project that had previously stalled and was on a trajectory to termination. Cradle's platform discovered several impactful novel mutations paving the way for enhanced variants and future diversification strategies for this asset.

Cradle customers retain all intellectual property rights for proteins engineered on Cradle's platform and have strict security controls over their data. Cradle's platform architecture automatically generates models tailored to a customer's objectives and the customer's data is used solely for training their specific models, ensuring data security. Cradle's platform is also adaptable across multiple assets and use cases for both pharmaceutical and industrial applications including enzymes, antibodies, peptides, vaccines, and therapeutic proteins.

**Stef van Grieken, Cradle's CEO and co-founder, said:** "Cradle was founded on the belief that we could solve global planetary and human health challenges by using generative AI to rapidly accelerate the development of bio-based products. Over the past two years, our own research and our collaborations with partners have proven that this technology can deliver remarkable results across a range of applications, from developing new vaccines and sustainable chemicals, to novel diagnostics and agricultural crop protection. Our goal is now to put Cradle's software into the hands of a million scientists and empower them to build great products. Our Series B will make this next phase of growth possible and we're delighted to have the backing of IVP to help us scale."

**Alex Lim, General Partner at IVP, commented:** "Biology is one of the domains where generative AI can have the biggest positive impact and Cradle is leading the way with its pioneering approach to protein design as a digital service. Given the costs associated with drug discovery or similar fields of research, any efficiencies at the R&D stage will translate to both major financial returns for customers and significant real-world benefits for humanity. With impressive results delivered by Cradle's platform just two years after launch, we see a bright future ahead for one of Europe's - and the world's - most consequential AI companies."

The Series B funding will partly be used to expand Cradle's own wet lab to generate additional datasets that will be used to train Cradle's models to address a growing array of challenges and modalities. Cradle will also expand its engineering team to further improve Cradle's ML capabilities to better generalise across tasks and handle more complex proteins.

Cradle recently appointed life sciences industry veteran Sam Partovi as Chief Commercial Officer, the company's 40th hire, to help expand Cradle's impact in the biotech sector. Cradle

will continue to expand its AI research, sales and operations teams to help onboard more new customers, scale the business and get its software into the hands of every scientist.

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### **About Cradle**

Cradle's mission is to make engineering biology easier, quicker, and more cost-effective. Its machine-learning platform helps scientists to design better proteins, faster and more successfully, speeding up the development of new therapeutics and bio-based products such as enzymes, antibodies and bio-based materials and chemicals.

Founded in December of 2021, Cradle is based in Amsterdam, The Netherlands and Zurich, Switzerland with a team comprised of machine learning and biotech research specialists with experience at many of the world's leading technology and biotech companies, including Google, Zymogen, Novartis, Uber, Meta, Deepmind and Perfect Day.

Cradle is backed by IVP as well as Index Ventures and Kindred Capital. For more information, visit [www.cradle.bio](http://www.cradle.bio)

### **About IVP**

IVP helps breakout companies grow into enduring market leaders. With a 40-year record of supercharging growth and 130+ IPOs, we've partnered with over 400 companies including Abridge, Coinbase, CrowdStrike, Datadog, DeepL, Discord, Dropbox, GitHub, Glean, Grammarly, HashiCorp, Hims & Hers, Perplexity, Pigment, Slack, Snap, Twitter and UiPath. As trusted allies, IVP helps founders and CEOs meet the challenge of leading a rapidly growing company.

## **NOTES TO EDITORS**

### **Frequently Asked Questions**

#### **What are proteins?**

Proteins are nature's 'little machines'. They are in every living cell, and are responsible for making, breaking down and communicating most things in nature. Their complex structure allows them to do many things from catalysing a chemical reaction, binding to a disease target or sending a signal in the body. Many of the products we use today, from advanced therapeutics to household detergents, already have proteins at their core.

#### **What is engineering biology?**

Engineering biology is a field of science focused on redesigning and engineering organisms to have new abilities. This is done by adjusting the DNA sequences that code for proteins in order to produce the desired function and properties.

Engineering biology has an incredible range of potential applications and benefits, from therapeutics to cure diseases such as cancer, to food ingredients that don't require animals, pesticides that are not bad for the environment, or manufacturing chemicals and materials without the use of oil.

### **What problem is Cradle solving?**

The traditional process of researching and developing a new protein-based product is expensive and time consuming. These conventional approaches are based on extensive trial-and-error, and require many rounds of experimentation in expensive laboratory settings. Developing a protein-based therapeutic takes many years and hundreds of millions of dollars before clinical trial - and many projects fail because the protein-based therapeutic does not achieve its desired efficacy, safety and manufacturability properties. Similarly, developing a biology-based alternative to a chemical can cost tens of millions of dollars, before a company is even ready to build a manufacturing facility.

### **How does Cradle solve this problem?**

Cradle's AI platform allows scientists to engineer better proteins, faster and more efficiently. Similarly to how ChatGPT can write and edit a text for you, Cradle's platform is able to generate protein sequences that scientists test in the lab. The software allows any team of scientists to engineer better proteins much faster than would otherwise be possible.

The key to Cradle's success lies in its ability to dramatically reduce the number of experimental rounds required. Traditional methods usually require 10-20 experimental rounds, each taking 8-12 weeks and costing tens of thousands to hundreds of thousands per round. Cradle has seen companies using their software reduce the number of rounds required by up to 90%. Additionally, projects that rely on traditional methods are often cancelled when there isn't an obvious path forward for the protein to further improve. Cradle's AI is often able to suggest novel and unintuitive solutions, ultimately increasing the chance that a project reaches its target.

Cradle recently found that its platform was able to achieve state of the art results on the enzyme optimization challenges of the ['Align to Innovate' benchmark](#) with its automatically generated models.

### **How does Cradle's approach work?**

At the core of Cradle's approach sits a generative protein language model. Akin to image models being able to generate a picture, these models are able to generate protein sequences based on the desired function and properties scientists are trying to obtain.

The generative protein language model is trained on billions of protein sequences and Cradle's own proprietary foundational datasets collected in its laboratory in Amsterdam. Scientists bring these sequences into the various experiments inside their laboratories.

However, unlike static -zero-shot- models, Cradle's AI continuously evolves by automatically fine-tuning these models for customers using the customer's own experimental results. This

iterative process allows the AI to learn, becoming increasingly adept at predicting successful protein designs with each round of experimentation. As a result, far fewer experimental rounds are needed, saving both time and resources. The platform also increases the likelihood of project success by enabling a broader, more intelligent exploration of potential solutions than humans can, leading fewer projects to fail because targets are not met.

### **How is this different from AlphaFold?**

AlphaFold is a machine learning model that predicts the structure of a protein. Its creators recently won a nobel prize because of their work on AlphaFold. Understanding the structure of proteins can be very helpful in allowing humans to understand how the protein may behave and use their intrinsic knowledge to make changes. AlphaFold uses the primary sequence to predict this structure. Cradle's models are generative, which means they can generate a sequence based on the desired function and properties of a protein.

### **How does Cradle use customer data?**

Cradle customers retain all intellectual property rights for proteins designed on Cradle's platform and have strict security controls over their data. The customer's data is used solely for training their specific models, ensuring data security.

Cradle's partnerships with customers are not royalty or milestone-based. Instead, Cradle offers a simple software subscription to provide access to best-in-class generative AI for therapeutics development.