

NEWS | FUTURE OUTLOOK

Stanford Built a Biotech Project With 37,000 Employees. None of Them Are Human.

An army of AI agents screened 50,000 clinical trials in a week and designed a cancer therapy on its own. Pharma's org chart may never look the same.

By **Manasee Kurlekar** | September 28, 2026



Drug development is one of the most expensive bets in business. A new medicine takes years and hundreds of millions of dollars to build, and most candidates still fail. Stanford decided to test a radical answer: take the humans out of the org chart.

Researchers at Stanford have built a virtual biotech company made up of 37,000 AI agents that collaborate to analyze drug targets and design therapies. It is a working model of what a pharma company might look like if every desk were occupied by software.

The structure is familiar on purpose. A virtual Chief Scientific Officer sits at the top and delegates research questions to specialised teams of agents covering target discovery, safety assessment, modality selection and clinical development. Each agent has its own databases and tools, and each belongs to one of four divisions, mirroring the departments of a real drugmaker.

Senior author James Zou's framing was ambitious. His team wanted to see whether a single system could handle everything from hunting for drug targets to designing clinical trials.

Years of work, done in a week

The first test was a question that has cost the industry billions: which drug candidates are most likely to succeed?

The agents analyzed roughly 50,000 clinical trials and found that cell-type specificity and switch-like target-gene activity were linked to better trial progression, more market approvals and fewer adverse events. They reviewed and catalogued the full set in under a week. Zou says human teams would have needed years for the same job.

In an industry where late-stage failure is the costliest failure, a signal that separates likely winners from likely losers earlier is worth a great deal of money.

The real test: designing a drug

Then came the harder part. The agents proposed a lung cancer therapy design, and they used only information available before January 2025 to do it.

A major pharmaceutical company later built a therapy along the same lines independently.

Zou called it independent, third-party validation, and he says the system has since surfaced other candidate targets designed in a similar way.

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