

Beyond the Library: 10¹⁰ Virtual Compounds and Antibody Variants Screened Overnight by Ainnocence AI

AI-driven platform surpasses the limits of traditional drug discovery for both small molecules and antibodies, unlocking vast chemical and protein space

SAN FRANCISCO , CA, UNITED STATES, October 9, 2025 /EINPresswire.com/ -- [Ainnocence](#), a next-generation AI-driven biotech company, today announced a major milestone: its proprietary AI platform can screen

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*Dr. Lurong Pan, CEO of
Ainnocence*

10¹⁰ small-molecule compounds or antibody variants virtually overnight, a scale far beyond what traditional discovery methods can achieve. This breakthrough redefines the speed, precision, and breadth of modern drug discovery.

Small-Molecule Discovery: Beyond Docking Limitations

Traditional small-molecule discovery relies on docking-

based virtual screens, which are constrained to evaluating up to ~1 million compounds due to computational limits. Ainnocence’s generative AI platform breaks this barrier by exploring 10 billion candidate molecules overnight, optimizing them for potency, selectivity, pharmacokinetics, and safety simultaneously. This allows researchers to uncover novel chemical scaffolds that would never appear in conventional libraries,

- Exploration of vast chemical space: Access to billions of molecules beyond existing libraries.
- Simultaneous property optimization: Balancing multiple objectives ensures drug-like candidates with strong clinical potential.
- Acceleration of discovery timelines: Early-stage lead identification is reduced from 18–24 months to just 4–8 weeks.
- Reduced cost and resource use: Less reliance on wet-lab screening and iterative experimentation.

Antibody Discovery: Unlocking the Full Potential of Somatic Hypermutation

Antibody discovery has traditionally been limited by experimental libraries and high-throughput

screening, which even at their largest are less than 10⁸ variants. Virtual screening at this scale was previously impossible. Natural somatic hypermutation in B-cells theoretically produces 10¹⁰–10¹² antibody variants.

Ainnocence's AI engine can virtually explore the full diversity of antibodies at this scale, enabling in-silico multi-objective optimization for binding affinity, specificity, stability, developability in silico and immunogenicity. This capability opens the door for:

- Designing antibodies against challenging or previously “undruggable” targets.
- Rapid identification of high-affinity, stable antibodies for therapeutic, diagnostic, or vaccine applications.
- Reducing early-stage experimental cost while improving hit quality and diversity.

“By separately pushing the boundaries of small-molecule and antibody discovery, we are redefining what is possible in modern drug development” said Dr. Lurong Pan, CEO of Ainnocence. “Our platform explores chemical and protein space orders of magnitude beyond conventional methods, generating high-quality leads faster, more efficiently, and with unprecedented confidence.”

Ainnocence invites research groups and biopharma partners to leverage its sequence-first AI platform for small molecules, antibody engineering, protein therapeutics, vaccine development, and hard-to-drug targets. For collaboration details, contact service@ainnocence.com or visit www.ainnocence.com.

About Ainnocence

Founded in 2021, Ainnocence is a next-generation biotech company whose self-evolving AI platform can virtually screen 10¹⁰ protein sequences, antibody variants, or small-molecule candidates for multitarget and multi-objective optimization. By simultaneously optimizing multiple properties, the platform delivers high-probability leads with unprecedented speed and cost efficiency.

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