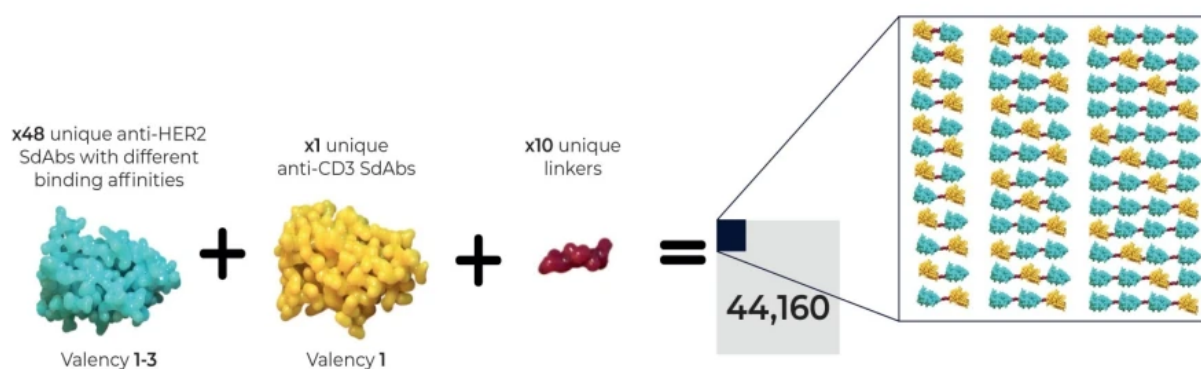


LabGenius Showcases AI-Driven Antibody Discovery Platform in a T-cell Engager Demonstration

May 15, 2023 by Andrii Buvailo

London-based LabGenius, known for its innovative approach to antibody discovery, recently revealed impressive results from its research platform demonstration project. This project showcased the company's machine learning-driven lead optimization capacity, which successfully delivered T-cell engagers (TCEs) with unprecedented tumor-killing selectivity. The results were presented at the 2023 Protein Engineering and Biotherapeutics (PEGS) Annual Meeting in Boston.

T-cell engagers are a form of immunotherapy designed to rally a patient's immune system against cancer cells. Despite their potential, optimizing TCEs for multiple properties has historically been challenging. On-target, off-tumor effects, where healthy tissues are inadvertently targeted due to the presence of the antigen across multiple tissue types, can cause unwanted toxicity and potentially lead to treatment discontinuation.



Antibody design space. Image credit: LabGenius.

The successful demonstration project highlights the potential of LabGenius' machine learning (ML) platform to overcome these challenges. The platform simultaneously optimizes potency, efficacy, tumor cell selectivity, and developability, making it a robust tool for AI antibody design. Specifically, it was used to co-optimize VHH-based HER2xCD3 TCEs in this study, resulting in novel molecules with high selectivity and performance.

These molecules exhibited superior killing selectivity, outperforming a relevant clinical benchmark, Runimotamab, by more than 400-fold. This highlights the potential of LabGenius' AI antibody discovery platform to revolutionize TCE optimization and potentially transform cancer treatments.

LabGenius' Chief Scientific Officer, Dr. Gino Van Heeke, stated, "Antibody-based immunotherapies, including TCEs, have the potential to transform the way we approach cancer treatment. This demonstration study has delivered impressive results, verifying that LabGenius' ML-driven platform can modify a molecule's design to overcome existing therapeutic shortcomings."

LabGenius aims to leverage this target and format-agnostic platform technology in both partnered programs and its pipeline of wholly-owned TCEs. The company's CEO and founder, Dr. James Field, sees this as a significant milestone, as it clearly demonstrates the platform's ability to accelerate antibody discovery and potentially reduce the toxic side effects linked with existing immunotherapies.

LabGenius, a leader in machine learning-driven protein engineering, has established a solid reputation for its cutting-edge antibody discovery platform. The company's multidisciplinary team combines expertise in computer science, robotic automation, and synthetic biology, positioning LabGenius at the forefront of the rapidly evolving field of AI-driven antibody discovery and design.

With its ML platform, LabGenius underscores the potential of AI in antibody discovery and design, making significant strides in TCE optimization. As the field continues to evolve, LabGenius is poised to lead the way in the development of AI-driven therapeutic solutions.

Expanding Role of AI in Biologics Discovery and Design

The role of AI in designing biologics is expanding, with an increasing number of companies harnessing these technologies to accelerate and enhance drug discovery processes. AI and machine learning (ML) are particularly instrumental in the discovery of biologics, complex molecules such as antibodies and vaccines derived from living organisms. According to a recent article 10 Companies Applying AI for Biologics Discovery, a number of biotech companies are currently focused on biologics, using computational approaches to overcome challenges associated with analysing large datasets, predicting molecule properties, and understanding intricate biological systems.

These companies leverage AI to optimize antibodies, predict safety and efficacy of biologics, and design vaccines against cancer and infectious diseases, among other applications. For instance, AbCellera uses AI to optimize antibodies, while Asimov employs machine learning to design and understand biological complexity. BigHat Biosciences and Nuritas combine machine learning with synthetic biology to expedite the characterization of antibodies and uncover bioactive peptides, respectively.

These advancements underscore AI's potential in expediting the design and discovery of biologics, reducing the time and resources required compared to traditional methods. AI's growing role in this field highlights its transformative potential in the world of biopharmaceuticals and the importance of companies like LabGenius in driving this innovation.

- LabGenius