PROTEIN ENGINEERING GLOBAL

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Silicon Valley, USA

An interview with

Claes Gustafsson

Chief Commercial Officer & Co-founder
ATUM

Company background

California-based ATUM was founded in 2003, at the time named "DNA 2.0" with the goal of combining Synthetic Biology and Machine Learning to build better biology. Following the acquisition of the antibody company Migs in 2016 the company expanded into a new state-of-the-art laboratory and rebranded to ATUM.

Over the last few years, ATUM has successfully executed on >50 protein engineering projects. ATUM provides products and services ranging from gene synthesis, gene optimization, protein production, protein engineering, and cell line development to the life science industry ranging from biocatalysis to protein pharmaceuticals to food industry.

In the US alone, the bioeconomy measures about $1 trillion and is growing. ATUM is well positioned to sell the picks and shovels needed to build better biologics for the bioeconomy.

Please tell us about the types of protein services you offer and share any client success stories?

At ATUM, we emphasize the engineering focus on the final commercial endpoint. Instead of developing massively high throughput assays to allow for screening billions of molecules with some surrogate assay or trillions of molecules in an in silico assay, we instead quantify the biologics we engineer for the true commercial endpoint using low throughput high-quality assays combined with Machine Learning and Synthetic Biology to maximize the effective search space. When engineering chymosin, the enzyme that coagulates milk to cheese for our customer Chr Hansen, the final assay was making and testing cheese for taste and texture.

Today we are proud to be the engineering team behind CHY-MAX Supreme that was launched in April 2019. CHY-MAX Supreme offers a higher yield and processes more milk

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and cheese in minimal time, along with grating and slicing of cheese with fewer giveaways and restricted protein breakdown over time. It increases value by enabling cheesemakers to produce more cheese from the same amount of milk.

What are your thoughts on the current landscape of Life Sciences (particularly protein engineering) given the world (economy / Covid) at present? How do you think this will affect the industry and the way we operate?

The year of COVID presented the biotech industry with an unprecedented challenge. It took less than a year from the first sequencing of the viral genome to FDA approval of the first vaccine. ATUM aggressively supported numerous of our clients in their efforts to rapidly develop COVID vaccine, therapeutic and diagnostics. The company performed gene synthesis, protein engineering/production and cell line work faster and longer hours than ever before despite being limited by social distancing rules and full PPE clothing. Contrary to our political counterparts, it was comforting to see how biotech competitors and vendors all banded together to support each other, not worrying about cost, competitive advantage or IP protection as long as the work got done.

What do you feel is the most significant development in Pharmaceuticals / Medical Devices / Biotech?

In 2010, ten of the top ten selling pharmaceutical drugs were small molecules. Today nine out of ten top pharma drugs are biologics, primarily antibodies. Thus, in less than a decade, the pharmaceutical multi-billion dollar industry has pivoted from being a chemical industry to instead refocus its entire future towards biology.

The existing and future applications are enormous and industry-changing. We can already see the waves of drug modalities following from protein pharmaceuticals. Messenger RNA as a drug (essentially a transient form of gene therapy) revolutionized vaccine development in 2020 and has now been validated in many millions of patients. Gene therapy enabled by AAV or Lenti already has ~a dozen drugs on the market, and cell therapy in the form of CAR-T and similar is exploding in market size. All these emerging biologics need engineering for developability, manufacturability, efficacy and more.

To learn more about innovations in protein engineering, join us on the 27-28 October for panels and networking opportunities with leaders in the protein engineering industry around the world.