Enabling the Best Possible Drug

Facilitating the Research, Development, and Production of Novel Peptide Drugs

Belyntic is a Berlin-based chemistry-for-healthcare start-up with an innovative peptide manufacturing technology called Peptide Easy Clean (PEC). The company offers the world's first broadly applicable peptide purification kits and services for custom solutions targeting purification and modification of novel peptide therapeutics. These help to develop more complex molecules, personalized medication, and generate productivity gains in pharmaceutical R&D and manufacturing. Oliver Reimann and Andreas Regnery, two of the company's co-founders, explain the idea and the strategy behind Belyntic.

Oliver Reimann, Belyntic

Andreas Regnery, Belyntic

CHEManager: How did it all start?

Oliver Reimann: Robert Zitterbart, Dominik Sarma, and I studied chemistry together at Humboldt University. By the end of our PhD, we asked ourselves what options we had for our professional career? The idea of founding a company popped up. We liked the idea and attended founding classes where we developed the concept of an alternative way of purifying peptides. The status quo using chromatography was everyday business in our research, and we knew its drawbacks: it is slow, consumes an incredible amount of solvent, and requires extensive method optimization. So, our mission was clear: We needed to change that and applied for a federal fund called „EXIST Forschungstransfer" to develop Peptide Easy Clean, short PEC. We got the grant and completed our founders team with economist Andreas Regnery. Today we have five additional employees.

What makes PEC so unique?

O. Reimann: First, it's essential to understand that the purification of chemically synthesized peptides is vital during production. It adds a significant amount of cost and time to the overall process of manufacturing R&D peptides, clinical-grade peptides, and approved peptide drugs. Hence, the HPLC bottleneck applies along the whole value chain. PEC is an entirely new way of purifying peptides. It relies on a proprietary linker molecule to catch the target peptide from its crude mixture with a covalent chemical bond on a solid purification media. The user then washes off impurities and can even apply solid-phase modifications. The molecule is tracelessly cleavable, whereupon the purified peptide is released. This concept is called catch-and-release. Now, in contrast to HPLC, the user can run this method in parallel, for example, in 96-well filter plates, opening doors for high-throughput manufacturing of purified peptides during drug discovery. The modification feature can help to speed up optimizations of the drug candidate. Moreover, PEC reduces the amount of solvent by more than 75%.

What's your biggest challenge to master?

Andreas Regnery: We currently see no generally applicable, alternative catch-and-release system on the market. Therefore, the biggest obstacle is to convince people to switch to another technique than they are used to. Our customers have used HPLC for decades. The method, even with the related drawbacks, is an integral part of their processes. This challenge holds true for custom synthesis service providers as well as for manufacturers of peptide drugs.

How do you plan to turn your innovation into a new standard?

A. Regnery: We have a strong focus on the R&D market. That is, we try to establish the technology early in the value chain. A potential candidate will then mature alongside a beneficial use of PEC for its manufacturing. We see a strong pipeline of new peptide drugs in preclinical stages and hence are confident that we will diffuse into the later stages of the value chain effectively. Additionally, we have launched projects to create novel peptide vaccines to showcase our technology's platform character and market matureness in the pharmaceutical value chain.

How did the Corona crisis hit your business?

O. Reimann: When the first cases of Covid-19 occurred in Europe in February 2020, we increased the home office hours for our lab staff where possible and switched to virtual meetings.

We also tried to anticipate the scientific discourse and evolvement of the vaccine pipeline. And indeed, we identified a perfect match: Peptide-based vaccines must be delivered together with an immune-potentiating agent—a so-called adjuvant. Coupling the adjuvant to the peptide and forming a self-adjuvant peptide can significantly improve the efficacy. However, until today, peptide and adjuvant are typically added in a mixture because conjugation was a major synthetic obstacle, leading to insufficient immunogenicity. We knew that our modification approach could solve this problem, and we started working on PEC as a platform to generate better antiviral agents. We recently secured funding of €700,000 to use the platform technology for developing a peptide-based therapeutic vaccine against a rare, but fatal disease called progressive multifocal leukoencephalopathy (PML).

Personal Profiles

Oliver Reimann, co-founder of Belyntic, studied chemistry at the Free University of Berlin and completed his PhD under Prof. Christian Hackenberger at the Leibniz Institute for Molecular Pharmacology Berlin. Partially funded by the Fonds of the Chemical Industry, he was working in the very dynamic field of Alzheimer's Disease related research in the area of peptide & protein chemistry. At Belyntic, Reimann is responsible for the PEC-Linker production and he is leading the ImmunoPEC platform development.

Andreas Regnery, co-founder and one of the managing directors of Belyntic, studied business administration with a minor in electrical engineering at TU Kaiserslautern which he completed with a diploma thesis on the compatibility of sustainability and shareholder value. After that, he worked for several years as a consultant and lecturer for an SME-focused management consultancy. Regnery therefore brings in-depth experience in corporate finance, strategic business management and business model development. He is leading the financial and HR activities of Belyntic.

Business Idea

A Unique Razor & Blade Model

Belyntic is a chemistry-for-healthcare startup from Berlin, Germany. It aims to transform the discovery, development, and manufacturing of better peptide-based therapeutics with its proprietary and unparalleled peptide manufacturing technology Peptide Easy Clean (PEC).

PEC relies on a single first-in-class cleavable molecule, developed and patented by Belyntic: the PEC-Linker. Its use grounds on a revolutionary catch-and-release concept to purify and modify chemically synthesized peptides.

Customers can benefit from significant time and cost savings using PEC in their processes, from R&D to production.

- Parallel peptide purification in high throughput enables validation of drug discovery hits and fast, affordable manufacturing of neoantigens for personalized anticancer immunotherapies.
- Complex peptide modifications become feasible, enabling companies to develop the most efficient drug.
- PEC saves a significant amount of organic solvents for the larger-scale manufacturing of peptides, cutting down the overall costs and improving the ecological footprint of peptide drug manufacturing.

A Mature Plaftorm Technology

Belyntic has built a high-level expert team in peptide chemistry during its seed financing stage since the foundation in May 2018.

Belyntic builds its business model on selling the PEC-Linker for peptide manufacturing along the entire pharmaceutical value chain. The easy integration of the PEC-Linker into process workflows and instruments allows quick and low-cost implementation of PEC in the customer's manufacturing setup („Razor"). To run his operations, the customer purchases the PEC-Linker as a consumable („Blade").

For fast business growth within the market segments of R&D and production of peptide-based drugs, Belyntic has established a strong global sales network with distribution and OEM partners.

- Belyntic GmbH, Berlin, Germany
  https://belyntic.com

Belyntic

Elevator Pitch

Enabling the Best Possible Drugs

The exploration of peptides has led to many life-saving therapeutics. Moreover, as the building blocks of viral protein envelopes and particular antigens on cancer cells, peptides have become an essential part of the research and development (R&D) for immunotherapeutic treatments.

Yet, high-throughput manufacturing during drug discovery and chemical modification for enhanced drug efficacy are unsolved critical-to-success challenges.

Belyntic offers a proprietary technology that can help overcome this bottleneck to unlock the full potential of peptide development.

Milestones

2016:
- The founders secure €700,000 pre-seed money from the EXIST Transfer of Research program to develop the PEC technology

2018:
- Foundation in May by Oliver Reimann, Robert Zitterbart, Dominik Sarma and Andreas Regnery

2019:
- Completion of €1.3 million seed financing round with public funding from Investitionsbank Berlin (IBB) and equity contributions from High-Tech Gründerfonds (HTGF) and business angel Till Knorr

2020:
- Belyntic is one of the winners of the Innovation Award Berlin-Brandenburg

2021:
- The Federal Agency for Disruptive Innovation (SPRIN-D) finances the development of a peptide-based antiviral therapeutic vaccine against progressive multifocal leukoencephalopathy (PML) using Belyntic's platform technology

Roadmap

2022:
- Develop strategic alliances to ramp up PEC-Linker sales
- Provide proof-of-concept for PML vaccine

2023:
- Establish new industry standards through PEC-assisted, regulated production processes
- Complete preclinical studies with PML vaccines

2024:
- Break-even with PEC-Linker sales
- IND-filing for PML vaccine

The Belyntic team in front of the headquarters in Berlin-Adlershof. The company's vision is to transform discovery, development, and production of novel peptide therapeutics for a healthier life.

Belyntic's Peptide Easy Clean (PEC) technology relies on a proprietary single first-in-class cleavable linker. It uses a revolutionary catch-and-release concept to purify and modify chemically synthesized peptides.