

BioCentury

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Emerging Company Profile

Complix: Scaffolds with a twist

By Stephen Hansen
Staff Writer

Complix N.V. believes the protein scaffolds created with its Alphabody technology will have greater stability and diversity than therapeutics based on other protein scaffolds. The resulting therapeutics could bind their targets with greater affinity than other types of proteins, and the company expects Alphabodies to be amenable to routes of administration other than injection.

The company was founded in 2008 based on the work of CSO Ignace Lasters and CEO Mark Vaeck. This is Vaeck's third venture in the next-generation protein space. He was previously CEO of **Ablynx N.V.**, which is developing Nanobody therapeutics, and of **ActoGeniX N.V.**, which is using genetically modified bacteria for oral delivery of protein and peptide therapeutics.

Alphabodies are single-chain proteins with a molecular weight of 10-14 kD that are composed of three alpha helical peptides wrapped around each other in a superhelical fashion. The peptides are connected with flexible linker loops at each end of the superhelix.

According to Vaeck, one distinct advantage of this compact structure is extreme stability.

The melting temperature for typical

Complix N.V.

Diepenbeek, Belgium

Technology: Alphabody synthetic protein scaffolds based on naturally occurring peptide alpha-helices

Disease focus: Autoimmune, infectious

Clinical status: Lead selection

Founded: 2008 by Mark Vaeck, Ignace Lasters, Gemma Frisius Fund, Baekeland Fonds, Vinnof and TrustCapital

University collaborators: Centre de Recherche Public de la Sante, University of Ghent, and University of Hasselt

Corporate partners: None

Number of employees: 15

Funds raised: €6.8 million (\$8.7 million)

Investors: Vesalius Biocapital Partners, LRM N.V., Centre de Recherche Public de la Sante, Gemma Frisius Fund, Baekeland Fonds, Vinnof, TrustCapital

CEO: Mark Vaeck

Patents: None issued

proteins "would be somewhere between 40 and 60 degrees Celsius, and for some more stable proteins, it's approaching 80-90 degrees. But for Alphabodies, it is

higher than 120 degrees," Vaeck told BioCentury.

This increased stability should allow Complix to pursue a variety of delivery methods, including inhaled, topical and lyophilized formulations. Vaeck said oral delivery also is a possibility, especially for viral or bacterial diseases that are localized to the gastrointestinal system.

Alphabodies also provide diversity. While other scaffolds can have 10-20% variability in their outer amino acids, Alphabodies can have up to 70% variability without affecting their stability, according to Vaeck. "This gives us much more flexibility to search for binders with high affinity," he said.

Vaeck added that Alphabodies can be displayed in very large phage libraries, allowing for selection of the best binders "from multi-billions of variants."

Manufacturing is cost-efficient, he said, because Alphabodies are produced by bacterial fermentation using recombinant *E. coli*.

While Alphabodies can antagonize or agonize a wide range of targets, Complix is focusing its two internal discovery programs on alpha helical targets in infectious and autoimmune diseases.

For infectious diseases, the focus is viruses that use an alpha helical structure

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Complix N.V.,
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as a cell entry mechanism, such as HIV, influenza and respiratory syncytial virus (RSV). Alphabodies in this program would bind to the alpha helix on the virus to prevent it from entering the human cell.

For autoimmune diseases, Complix is developing Alphabodies against undisclosed targets in the inflammation cascade. The company hopes to enter the clinic with an autoimmune candidate by mid-2012 and partner the program once it has reached clinical proof of concept.

For the viral program, the company will look for a partner at the preclinical stage, where Vaeck said animal model efficacy data can remove a significant amount of risk.

Complix also is interested in collaborations in disease areas outside its internal focus.

The company is looking to raise an additional €2 million to add to its initial series A round of €5 million. Vaeck said the cash would take the company beyond mid-2012.

Another company working with alpha helical peptides is **Aileron Therapeutics Inc.** The company's Stapled Peptide technology locks a peptide into its biologically active alpha helical conformation. Aileron is targeting intracellular protein-protein interactions (see *BioCentury*, Aug. 30).

COMPANIES AND INSTITUTIONS MENTIONED

Ablynx N.V. (Euronext:ABLX), Ghent, Belgium

ActoGeniX N.V., Zwijnaarde, Belgium

Aileron Therapeutics Inc., Cambridge, Mass.

Complix N.V., Diepenbeek, Belgium