

*Emerging Company Profile***SuppreMol: Sopping up Fc**

By Ludger Wess
Senior Editor, Europe

Autoimmune diseases often are treated by trying to block inflammatory processes. Based on its founders' work on the structure of the IgG/Fc receptor complex, SuppreMol GmbH is trying to block autoimmune diseases upstream by inhibiting the activation of B cells by immune complexes.

Although the structures of the immunoglobulin IgG have been known for decades — its Y-shaped arms, the Fab fragments and its Fc region — scientists did not know exactly how Fc interacted with its receptor on the surface of immune cells, or what the complex looked like.

In the 1990s, scientists in the lab of nobelist Robert Huber, co-founder of SuppreMol and professor at Technical University Munich, used X-ray crystallography to determine that the Fc portion of the antibody, which is shaped like the head of a pincer, opens slightly and then picks up the receptor. Using the X-ray data, the scientists were able to develop structures that block the interaction between antibody and Fc receptor, thereby down-regulating the immune system, which is overactive in autoimmune diseases and allergies.

Unlike other companies, which are blocking selected cellular Fc receptors with specific inhibitors, SuppreMol is using a soluble receptor that competes with all cellular Fc receptors. SuppreMol's founders developed the idea when they realized that soluble Fc receptors (sFcRs) occur naturally in serum and other body fluids and that their concentration inversely correlates with disease severity.

Fc receptors control the interactions of antibodies with effector cells, thus providing an important connection between humoral

SuppreMol GmbH

Munich, Germany

Technology: Fc Receptor Platform

Disease focus: Autoimmune diseases

Clinical status: Preclinical

Founded: 2002 by Robert Huber, Uwe Jacob and Peter Sondermann

University collaborators: Max-Planck-Institute for Biochemistry, Medical University Hannover, University of Uppsala

Corporate partners: Zambon Group

Number of employees: 5

Funds raised: ND

Investors: Z-Cube

CEO: Peter Buckel

Patents: One issued covering soluble Fc receptors

and cellular immunity. Members of this receptor family modulate the activation of immune cells by immune complexes and/or antigens and are involved in generating both protective immune responses and pathological inflammatory reactions.

sFcRs are recombinant autologous therapeutic proteins that compete with cellular Fc receptors, thereby preventing the binding of immune complexes to immune cells.

"As a result," CSO and co-founder Uwe Jacob told BioCentury, "we can stop multiple types of cellular receptors from becoming activated in parallel. There's always a certain redundancy with the cellular receptors, and blocking one type may not be sufficient to get the desired effect."

"We have shown in all relevant standard mouse models, including lupus, rheumatoid

arthritis and multiple sclerosis, that the approach works," added CEO Peter Buckel.

SuppreMol has an issued European patent on soluble Fc receptors and has filed for a patent in the U.S. "We believe we have a very strong IP position in the Fc receptor field," Buckel said.

SuppreMol's lead program is in idiopathic thrombocytopenic purpura (ITP), an Orphan indication. ITP is characterized by impaired blood coagulation, as patients develop antibodies that eliminate their blood platelets.

"We would like to develop a soluble receptor in this indication through Phase I and II on our own," Buckel said, "and then try to approach blockbuster indications such as RA and MS in partnerships."

SuppreMol hopes to file an IND at year end and begin clinical trials in 2007. Buckel said Phase I and II trials in ITP take about one and a half years each.

SuppreMol (Munich, Germany) was founded within the Max-Planck-Institute for Biochemistry and is now moving out of the institute, following a convertible loan by Z-Cube, the corporate venture arm of pharma and fine chemical group Zambon Group SpA (Milan, Italy).

The amount is undisclosed, but will take SuppreMol through preclinical development, Buckel said. "It is kind of a bridge financing, and the loan will be converted in a series A round, which we are trying to close this year."

SuppreMol is hoping to raise €15-€20 million (\$18-\$23 million), which would enable the company to complete the Phase II trials in ITP. If the company doesn't raise enough in its A round to complete those trials, Z-Cube is committed to take part in a B round.

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