

## Interview with Prof. Dr. Wolf-Henning Boehncke



**MorphoSys is developing a promising antibody substance, MOR102, for the treatment of psoriasis. Presently, there are few methods for effective treatment of psoriasis and hence there is significant market potential for any approach that can better help those suffering from this disease. Prof. Dr. Wolf-Henning Boehncke investigated the antibody MOR102 in preclinical trials and shared his thoughts in this interview about psoriasis and MOR102.**

Prof. Dr. Boehncke has been a lecturer at the Frankfurt/Main University Dermatology Clinic since 1996 and, as a senior physician, manages the department for “Allergology and Immunology.” Furthermore, he is the spokesperson for the “psoriasis team” within the German Dermatological Society. In 2003, Prof. Dr. Boehncke was awarded the science prize of the GlaxoSmithKline foundation, the Novartis Prize for therapy-related research, and the Galenus-von-Pergamon Prize for his excellent work in psoriasis research.

**MorphoSys** Prof. Dr. Boehncke, why is there a significant need for better methods of treatment for psoriasis?

**Prof. Dr. Boehncke** The number of people suffering from psoriasis is very large—at least 100 million cases worldwide are estimated. Importantly, an effective cure for this disease has not yet been found. Due to the severity of the illness, approximately 20% of all psoriasis patients require therapy beyond topical substances, i.e. systemic drug treatment or phototherapy. Unfortunately current therapy is lacking in several ways. More specifically, adverse side effects, drug-resistant variants and lack of long-term drug efficacy all contribute to problems associated with current treatments. Hence, I see the necessity to develop better therapeutic agents for the treatment of psoriasis.

**MorphoSys** What is the advantage of using antibodies against psoriasis as opposed to small-molecule drugs?

**Prof. Dr. Boehncke** Therapeutic antibodies can inhibit the disease-related mediators or cell-to-cell interactions in a very targeted manner, thus considerably improving treatment of moderate to severe forms of psoriasis.

**MorphoSys** How did the MOR102 project originate?

**Prof. Dr. Boehncke** In clinical trials conducted a few years ago, Boehringer Ingelheim demonstrated that a mouse antibody, BIRR-1 (Enlimomab), could be successfully applied in the treatment of deep dermal burn and inflammatory diseases such as rheumatoid arthritis. BIRR-1 worked by targeting the cell adhesion molecule ICAM-1, which can be found on the inner surface of blood vessels. ICAM-1 is believed to play a major role in the development of psoriasis.



Due to its animal-based origin, BIRR-1 brought with it certain problems in its use as a therapeutic agent. More specifically, human patients recognized this mouse-derived substance as “foreign” and mounted an immune response against it. These problems can be circumvented through the use of 100% human antibodies, such as those from MorphoSys’ HuCAL® GOLD library. MOR102 is therefore the human counterpart to BIRR-1, which should show similar efficacy in treating the disease, but without any of the negative side effects associated with the BIRR-1 mouse antibody.

**MorphoSys** Why is especially ICAM-1 such an interesting target to fight psoriasis?

**Prof. Dr. Boehncke** It is known that psoriasis is an autoimmune response of the body, in which the immune system misinterprets the body’s own skin cells as “pathogenic” and attacks them. ICAM-1 is specifically over-expressed on the inner walls of the blood vessels beneath psoriasis-affected skin. It acts as a molecular partner, an “anchor” so to speak, to help the auto-reactive immune cells causing the disease to enter the skin tissue. An antibody capable of blocking this interaction—such as MOR102—should reduce the severity of the disease significantly. This approach of targeting ICAM-1 taken by MorphoSys should not only show significant results in treating psoriasis, but also result in fewer side effects compared to other drug treatments.

**MorphoSys** What requirements must the MOR102 antibody fulfill to effectively treat psoriasis?

**Prof. Dr. Boehncke** First, it must be capable of binding to the target molecule ICAM-1 as efficiently as BIRR-1 did. Only in this way it can limit the interaction of ICAM-1 with the relevant immune cells of the body and develop its therapeutic effect. Initial tests with MOR102 have demonstrated that the antibody has similar binding properties to BIRR-1, thus fulfilling a very important first step in treatment of the disease.

**MorphoSys** What experience did you gain with MOR102 in the animal model?

**Prof. Dr. Boehncke** The preclinical investigation of MOR102 was performed using the so-called psoriasis SCID mouse model, which is considered a standard and predictive animal model in psoriasis drug development. SCID mice are laboratory test mice whose immune systems have been severely compromised, and on which psoriatic skin from human patients can be grafted. Thus, a piece of psoriatic tissue is available on these mice, which has all the major physiological properties of human psoriasis. In the animal model, treatment using MOR102 reduced the psoriasis by more than 40%—a very significant reduction.

**MorphoSys** Are these results indicative of future clinical trials in human beings?

**Prof. Dr. Boehncke** I have tested many active substances using this mouse model and have observed that results in this system are a good indicator of future results in human patients. I am therefore very optimistic that the MOR102 antibody will show promising effects once it goes into clinical trials.

**MorphoSys** Could you provide an overview of the further development of the project?

**Prof. Dr. Boehncke** An interesting next step would be comparison of the fully human antibody MOR102 with drugs that are already on the market to treat psoriasis. Should this show a good result, I imagine that the compound could progress into clinical development in human patients in 2005.

**MorphoSys** Prof. Dr. Boehncke, thank you very much for the interview.