



## Press Release

### Innovative injection process without the needle

#### **Capsulation and EMC microcollections together with the Charité are developing painless injections via the skin**

**Berlin, March 10<sup>th</sup> 2008** - The Berlin-based company Capsulation Nanoscience AG, has signed a cooperative contract with the Tuebingen-based biotechnology company EMC microcollections GmbH and Charité - Universitätsmedizin Berlin. The aim of this three-year long co-operation is the development of the topical vaccine, i.e. vaccines which, by simple application to the surface of the skin, can be used to treat cancer or to prevent infectious diseases. Taking part in the cooperative project, sponsored by the Federal Ministry of Education and Research with a million euros is also the Institute for Cell Biology at the University of Tuebingen.

The basis of the vaccine used in the needle-free, non-invasive method is the unique and mutually corresponding developments of the partners involved: Thus the composition of the basic components in synthetic vaccines could already be clarified in successful preliminary work undertaken by the Department of Immunology in the Dermatology Clinic at the Charité together with the University of Tuebingen and EMC microcollections GmbH. The Department of Skin Physiology of the Charité is producing the findings for the optimum penetration of the substance through the skin, whereas Capsulation Nanoscience AG is qualifying their functionalised Nanoparticles as carrier systems for vaccines.

"In order to reach our common goal, we need to adjust the immunologically-active components to the specific requirements of the skin's immune system," explains CEO, Prof. Karl-Heinz Wiesmüller, from EMC microcollections GmbH. At the same time, suitable forms of application need to be developed. In particular, the transport particles need to be modified to the size-ratios within the hair follicles. "For this we are testing nanoparticle-defined sizes between 400 nm and 1000 nm," adds Capsulation's Project Manager Lars Dähne. The task in hand is to reach only as far down as the hair follicles. The skin layers underneath, however, and the sebaceous glands should not be touched. After all, only above the sebaceous glands can the empty particles be excreted by the natural cleansing mechanism of the skin.

In the hair follicles, the vaccine particles are confronted with a dense net of immune cells. The residing Langerhans cells and dendrite cells of the inherent immune system incorporate the released vaccine components and present them to the immune system. "It is critical," according to Dähne, "that the amount of released vaccine per particle and time unit is enough to attain optimum sensitization." Capsulation's LBL<sup>®</sup>-Technology delivers the promising solution approach here.

The minimal vaccine developed by EMC microcollections and the Charité consists of only three substance groups absolutely necessary for a successful immunisation. The first, a cocktail of various well-known antigen fragments, activates cytotoxic cells against a certain pathogen, while the two other groups induce the general response to the immunity. The groups, which differ greatly in their physical chemical properties from



one another, need to be thus antagonised against the particle so that they release themselves simultaneously from the particle due to a charge change in the hair follicle, the so called pH-shift. "This is one part of the task that we want to undertake using the LBL<sup>®</sup>-Technology," says Dähne. After all, none of the three components should be missing at this particular point.

With the new vaccination method, complications such as inflammation, pain or allergic reactions, in comparison with common vaccination methods, can be avoided. In developing countries in particular, where the multiple use of one-time syringes is not uncommon, it can stop the spread through standard intramuscular vaccination of infectious diseases such as HIV and hepatitis. In this country, small children particularly would profit from the pain-free method.

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### **About Capsulation NanoScience AG**

Capsulation NanoScience AG is a leading company in the field of tailor-made drug-delivery systems and other innovative life science products on the basis of so-called nanocapsules. These nanocapsules are manufactured on the basis of the worldwide patent protected LBL Technology<sup>®</sup>. Due to their minute size and high level of functionality as well as their extremely reproducible manufacture, the capsules can be used in a diverse number of applications.

### **About EMC microcollections GmbH**

Founded in 1996, EMC microcollections GmbH is a high-tech company with particular expertise in the area of the production of structurally-diverse compound collections with a high substance potential for the development of new therapeutic agents. In addition, EMC offers the entire spectrum of customer-specific peptides and peptidomimetics synthesis as well as the manufacture of special biochemicals for basic research. The research focus of this biotechnology company is in the areas of immunomodulation and nanobiotechnology.

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<http://www.pressebox.de/pressefach/capsulation-nanoscience-ag>