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### **GENEART and GENOVAC team up on research antibodies**

**Regensburg/Freiburg, October 5, 2005. Biotechnology companies GENEART and GENOVAC today announced that they are collaborating on antibody production. By bringing together their core competencies in the field of synthetic genes and genetic immunization, the two biotechnology companies are enhancing their unique service offering for antibody production using genetic immunization – delivering antibodies at the click of a mouse. All that is required for producing antibodies is a single file containing the genetic sequence of the antigen. The joint service offered by the two biotechnology companies makes it simpler and faster to create diagnostic detection systems and to develop vaccines and new drugs. The strategic bundling of expertise and capacities will enable the two companies to establish a sustainable position on the fast-growing market for research antibodies, which is estimated to have a sales volume of approx. USD 800 million worldwide for 2005.**

Antibodies play a key role in the development of pharmaceuticals. The most recent Ernst & Young biotechnology study predicts that already 18% of the drug candidates that pharmaceutical and biotechnology companies have in the pipeline belong to the antibodies category. At the same time, the importance of research antibodies that support the development of pharmaceutical candidates has grown enormously over the last decade. The global market volume is already estimated at approx. USD 800 million for 2005. Within this market, the production of antibodies by genetic immunization is seen as a particularly high-growth sector and the collaboration between the two biotech companies targets this category.

Until recently, the method considered the optimum standard for the production of specific antibodies involved the use of proteins that were often complex and expensive to purify. Dispensing with proteins and opting instead for direct DNA immunization gives scientists more time and helps avoid setbacks. In addition, antibodies produced by genetic immunization often have functional characteristics that cannot be achieved through traditional methods. GENOVAC began establishing itself in this sector in 1999 and has built up an extensive customer base. Thanks to GENEART's expertise in the field of synthetic genes, the two partners are now offering new levels of quality in genetic



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immunization. "Tailor-making" synthetic genes for use in antibody production improves overall chances of success and also opens up whole new levels of freedom. "Optimization for maximum expression and the fact that we tailor the gene sequence to our precise requirements mean we are even successful with otherwise difficult targets. We are, therefore, even more flexible when it comes to the production of specific antibodies and are achieving significant increases in customer satisfaction," says Dr. John Thompson, CEO of GENOVAC, explaining the qualitative benefits for customers. The manufacturing process is also much faster and simpler than traditional antibody production. Thanks to GENEART's expertise, the partners need just one single file with the sequence data of the required antigen to produce the antibodies. Supported by the complex patented GeneOptimizer software program, the Regensburg-based scientists can then optimize this sequence in silico and synthesize it in the lab. The resulting synthetic gene is then cloned into one of GENOVAC's special immunization vectors to support the production of antibodies.

GENOVAC uses the DNA produced in this process to create highly specific antibodies through DNA immunization. Unlike traditional methods, no immune response is triggered by peptides or isolated proteins when using this form of immunization. Instead, the protein antigen is produced in the host organism itself by immunization via DNA. The antigen therefore exists in the organism in its natural 3D structure. Antibodies obtained in this way have very high specificity and affinity. With classically produced antibodies, however, contaminated impurities or breakdown products often form during purification of the relevant proteins, e.g. from bacteria cells, and have a negative effect on the success of the project and the quality of the antibodies produced. Furthermore, genetic immunization with DNA enables antibodies to be produced that recognize the natural structures of complex-folded transmembrane proteins.

"GENOVAC is an excellent partner for our remarkable 'antibodies at the click of a mouse' service. GENOVAC's long-standing expertise in genetic immunization is the ideal complement to our core competence in the field of gene synthesis and vaccine development," says Prof. Wagner, Managing Director Science at GENEART, describing the concept behind the collaboration, which advances GENEART's expansion strategy by forming strategic alliances.

Both companies expect the cooperation to improve the market penetration of their respective product and service portfolios in the short term and to significantly increase their market share in the field of customer-specific antibody production in the medium to long term.



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### **background information**

#### **About GENEART GmbH**

GENEART GmbH based in the BioPark in Regensburg was founded in November 1999 by Prof. Ralf Wagner, Dr. Marcus Graf and Prof. Hans Wolf as a spin-off of the University of Regensburg. Dipl. Kfm. Christian Ehl has been complementing the operative management team around the scientific managing director Prof. Ralf Wagner as commercial managing director since July 2000. The lead investor was the Regensburg equity fund S-Refit AG and other initial investors included tbg and Bayern Kapital. The second round of financing in September 2002 was led by equinet Venture Partners AG from Frankfurt. GENEART now provides integrated system solutions for DNA engineering and processing based on the gene synthesis technology platform to deliver improved drugs and biotech products. The spectrum of performance ranges from the manufacture of optimised synthetic genes certificated to DIN EN ISO 9001:2000, the generation of gene libraries in combinatorial biology right up to the production of DNA-based effective substances. 45 employees work in Regensburg and in the marketing representation in Toronto/Canada today.  
[www.geneart.com](http://www.geneart.com)

#### **About GENOVAC GmbH**

GENOVAC was originally founded in 1999 and pioneered the genetic immunization technology for industrial applications. Based on the high level of technical skills and the engagement of its staff, GENOVAC quickly established itself as the world leader in generating custom-made polyclonal and monoclonal antibodies by genetic immunization. Innovative proprietary technologies have been developed and tested to generate and test highly-specific, high-affinity antibodies against the native protein starting from a cDNA, without needing to isolate the protein target for screening purposes. In 2004, GENOVAC expanded its service portfolio to become a solution provider from DNA to antibodies and is now more orientated to each customer's individual needs. GENOVAC guides its customers at every step from gene synthesis, through plasmid production and the generation of tailor-made antibodies to the development of marketable sandwich ELISA systems or humanized antibodies. As a solution provider, GENOVAC is a service company who plans and advises each customer individually through intensive contact to develop optimal solutions. Together, over 40 members of staff are employed in Freiburg ( [www.genovac.com](http://www.genovac.com) ) and at the mother company's US facility in Fargo ( [www.aldevron.com](http://www.aldevron.com) ).