NEWS RELEASE

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FOR IMMEDIATE RELEASE

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First preclinical proof-of-concept of mutation-based individualized cancer vaccine

Deep sequencing of immunogenic mutations may pave way for customized immunotherapy

Mainz, Germany, Jan. 17, 2012 – The Institute of Translational Oncology (TRON) together with BioNTech AG today announced the publication of a joint paper in the international journal *Cancer Research* that describes a new path for individually tailored cancer therapy. An interdisciplinary team of genome scientists and immunologists led by the cancer researcher Prof. Ugur Sahin for the first time demonstrated that whole cancer genome information could be used to tailor effective cancer specific vaccines.

The researchers applied Next Generation Sequencing (NGS) for discovery of somatic point mutations in a mouse melanoma. The identified mutations were then used as a template to synthesize multiple peptide antigens for vaccination studies. The group identified a surprisingly frequent immunogenicity of such mutations allowing them to be used as vaccine targets. Moreover, the authors demonstrated that even single well-chosen mutated targets are sufficient to induce therapeutic immune responses able to inhibit the growth of mouse melanoma tumors. The finding is of high relevance as human cancers carry up to hundreds of somatic mutations, thereby providing a rich source for the design of novel cancer vaccines.

“Up to now, there had been no comprehensive experimental data on the immunogenicity of somatic mutations from tumors,” says Dr. John Castle, co-author and head of the NGS-team at TRON. “Using NGS technology and peptide vaccination, we were able to design the first mouse tumor exome-capture study and showed that mutations can be a source for individualized vaccination therapies.” Co-author Dr. Sebastian Kreiter adds: “Our data show that around 30 % of the sequences we used for vaccination were immunogenic and led to lymphocyte expansion.”

“The findings encourage us to proceed towards clinical translation of our concept,” explains Prof. Ugur Sahin, principal investigator and head of the TRON and BioNTech research teams. ”Targeting multiple mutations may be the key to address a central problem in cancer therapy- the cellular and genomic heterogeneity of tumors allowing cancer cells to escape conventional treatments. In our concept, the multiplicity of mutations is the Achilles heel of cancer, making tumors vulnerable to genome tailored actively personalized cancer vaccines”.

References:

John C. Castle, Sebastian Kreiter, Jan Diekmann, Martin Löwer, Niels von de Roemer, Jos de Graf, Abderraouf Selmi, Mustafa Diken, Sebastian Boegel, Claudia Paret, Michael Koslowski, Andreas N. Kuhn, Cedrik M. Britten, Christoph Huber, Özlem Türeci, Ugur Sahin. Exploiting the mutanome for tumor vaccination. Cancer Research. Published online January 11, 2012.

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About TRON

TRON -Translational Oncology at the University Medical Center of the Johannes Gutenberg University Mainz, is a biopharmaceutical research organization that pursues new diagnostics and drugs for the treatment of cancer and other diseases of the immune system. TRON aims to develop novel platforms for individualized therapies and biomarkers, translating basic research into drug applications. TRON partners with academic institutions, biotech companies and the pharmaceutical industry, executing research with leading-edge technologies and supporting the development of innovative drugs with its unique expertise and infrastructure. For more information visit www.tron-mainz.de

About BioNTech

BioNTech (**Bio**pharmaceutical **N**ew **Tech**nologies) *AG* is a holding of leading biotechnology companies focussing on the development of innovative diagnostic and therapeutic approaches for cancer and life-threatening diseases. BioNTech integrates a broad portfolio of disease specific molecular biomarkers and cutting edge drug development platforms that enable the development of fully personalized cancer immunotherapy approaches.