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### **The PI3K/AKT/mTOR-signalling pathway offers therapeutic options and is the reason for chemoresistance in gynaecological cancer**

**D**rug resistance is a common problem in tumour therapy. It is characterized by reduced drug efficacy caused by gene mutations, increased DNA repair, and enhanced drug clearance and detoxification. However, up to now the complex molecular mechanism of chemoresistance is still not well understood. Increasing evidence points towards AKT over-expression and alteration of the PI3K/AKT/mTOR-cascade as a central mechanistic reason for this resistance. The effects of over-expression and down-regulation of AKT on the sensitivity to treatment as well as the role of AKT expression level have been analyzed. Given the fact that survival of cancer patients is strongly influenced by immunological parameters, immunotherapeutic strategies appear promising. Therefore a better understanding of the interaction between tumour

cells and cells of the immune system is a necessary prerequisite. The interaction of ovarian and breast cancer cells with immune cells has been evaluated in relevant in-vitro co-culture systems. It was possible to correlate the AKT expression level in tumour cells with the killing efficiency of tumour cells by NK-cells. Furthermore the molecular basis for resistance mechanisms against NK-cell mediated killing has been analyzed. Due to the fact that the PI3K/AKT/mTOR-pathway is involved in cancer tumorigenesis members of this pathway are regarded as attractive candidate for therapeutic interventions. Several inhibitors for the PI3K/AKT/mTOR-pathway have been analyzed in in-vitro models for ovarian and breast cancer. Results of the pre-clinical in-vitro studies will be presented.

#### **Biography**

Jens Claus Hahne has received the PhD in biochemistry from the Albert-Ludwigs-University Freiburg, Germany. During his PhD work Jens was trained in virology, cell- and molecular-biology. During several postdoc positions [Department of Molecular Pathology at the University of Bonn (Germany), Charite Berlin (Germany), Department of Gynaecology and Obstetrics at the University of Wuerzburg (Germany)] he received a broad training and knowledge in molecular pathology and cancer research. At the moment he is working in the Department of Molecular Pathology at the ICR (London, UK). He has published more than 60 papers in reputed journals and has been serving as an editorial board member of repute.

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