

# Jochen Heß

PhD 1999 at the Julius-Maximilians-Universität of Würzburg, Germany; Postdoc at the DKFZ Heidelberg, Germany; Project Leader at the DKFZ Heidelberg, Germany since 2002; *Venia Legendi* in Histology and Cell Biology at the Ruprecht-Karls-University of Heidelberg.

## Current Research

In the past, our research program focused on molecular principles of gene expression and the complex network of transcription factor activation and regulation. Using well-established cell culture and genetically modified mouse model systems as well as state of the art genome-wide technologies, we asked the question, how alterations in AP-1 regulated genetic networks contribute to the cellular decision concerning cell proliferation, differentiation and survival. The oncogenic transcription factor AP-1 (mainly composed of Jun and Fos proteins) is at the receiving end of numerous signalling pathways initiated by physiological and pathological stimuli to induce specific alterations in gene expression implicated in normal development and manifestation of various disorders, specifically in skin and bones.

In order to investigate the role of AP-1 and its target genes during tumour development and malignant progression, we applied global gene expression analysis on samples of a chemically induced tumour model of mouse back skin. Combinatorial studies revealed a comprehensive list of differentially expressed genes some of which represents novel Fos/AP-1 target genes in epithelial tumour cells. Additionally, we performed detailed functional analysis of novel tumour-associated genes using cell culture and mouse model systems to obtain new insight into the molecular nature of tumour promotion as well as malignant progression.

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## Future Projects and Goals

The aim of our research program is the identification of new targets to develop novel strategies for innovative tumour diagnosis, prevention and/or therapy. Therefore, we will continue to elucidate the molecular principles of the signalling and transcription factor networks that drives tumour development. In the future, we will focus on promoter module topology and transcription factors and cofactors as well as signalling pathways that modulate AP-1 regulated genetic programs.

## Selected Publications

- Hess, J., Angel, P. and Schorpp-Kistner, M. (2004) AP-1 subunits: quarrel and harmony among siblings. *J Cell Sci*, 117, 5965-5973.
- Hummerich, L., Muller, R., Hess, J., Kokocinski, F., Hahn, M., Furstenberger, G., Mauch, C., Lichter, P. and Angel, P. (2006) Identification of novel tumour-associated genes differentially expressed in the process of squamous cell cancer development. *Oncogene*, 25, 111-121.
- Klucky, B., Mueller, R., Vogt, I., Teurich, S., Hartenstein, B., Breuhahn, K., Flechtenmacher, C., Angel, P. and Hess, J. (2007) Kallikrein 6 induces e-cadherin shedding and promotes cell proliferation, migration, and invasion. *Cancer Res*, 67, 8198-8206.