

Dr. Sven Diederichs

Biography

currently: **Helmholtz-University-Group** leader for „**Molecular RNA Biology & Cancer**“ at the DKFZ & Institute of Pathology, Heidelberg
01/2005 - 05/2008: **Postdoctoral Fellow** at **Harvard Medical School** / MGH Cancer Center, Boston

Current Research

Our research focuses on the biogenesis, processing and regulation of microRNAs. microRNAs are newly discovered short RNAs, that regulate gene expression on a post-transcriptional level. They are generated in a multistep pathway from longer precursors including multiple RNase cleavage steps. microRNA expression and function are of specific importance since they have been implicated in cancer and other diseases.

We have recently identified a novel mechanism of post-transcriptional regulation of microRNA expression as well as a novel cleavage step in microRNA processing generating a novel precursor. These novel insights into the function of Argonaute proteins have been translated into a novel method to improve RNA interference.

Currently, we are focusing our research on microRNA processing, regulation and their role in cancer using molecular and cellular biology, biochemistry and mammalian cell culture methods.

Contact

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Future Projects and Goals

In the future, we will expand our research to larger **non-coding RNAs**. These are often highly conserved and differentially expressed in cancer, but their functions are rarely characterized. In addition to expression, localization and genomic copy number maps, we will focus on the discovery of the cellular and molecular functions of non-coding RNAs in health and disease.

Selected Publications

S Diederichs, S Jung, SM Rothenberg, GA Smolen, BG Mlody, DA Haber: "Coexpression of Argonaute-2 enhances RNA Interference toward perfect match binding sites" *Proc Natl Acad Sci U.S.A.* (2008) **105**: 9284-9289

S Diederichs, DA Haber: "Dual Role for Argonautes in microRNA Processing and post-transcriptional Regulation of microRNA Expression" *Cell* (2007) **131**: 1097-1108

S Diederichs, DA Haber: "Sequence Variations of microRNAs in human Cancer: Alterations in predicted secondary Structure do not affect Processing" *Cancer Research* (2006) **66**: 6097-6104

S Diederichs, E Bulk, B Steffen, P Ji, R Metzger, PM Schneider, K Lang, KS Zänker, WE Berdel, H Serve, C Müller-Tidow: "S100 family members and Trypsinogens are predictors of distant Metastasis and Survival in early-stage Non-Small Cell Lung Cancer" *Cancer Research* (2004) **64**: 5564-5569