



# SCIENCE CIRCLE LECTURE

By Professor Dr. Roland Eils  
University of Heidelberg and  
German Cancer Research Center (DKFZ)

The Embassy of the Federal Republic of Germany  
and  
The German House for Research and Innovation  
cordially invite you to a

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University of Heidelberg and German Cancer Research Center (DKFZ)

On Tuesday, 1<sup>st</sup> December 2015, 6:00 pm  
At the German House, 2 Nyaya Marg Chanakyapuri, New Delhi

The lecture will be followed by a Dinner Reception

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### Professor Dr. Roland Eils

Prof. Dr. Roland Eils, who holds a PhD in Mathematics, is currently a Professor at Heidelberg University and holds a joint appointment as division head at the German Cancer Research Center (DKFZ) in Heidelberg. He is founding and managing director of BioQuant, the Center for Quantitative Analysis of Molecular and Cellular Biosystems at Heidelberg University. His research focuses on the integration of tools from mathematical modeling, image analysis and informatics into life science research and he is a leading figure in systems biology and bioinformatics for cancer genomics.

TITLE: Big Data in Life  
Sciences and Health:  
Challenges for Cancer  
Research and Patient  
Care

Recent developments in DNA sequencing technology now enable sequencing of the human genome for less than US\$1,000 facilitating applications in basic and translational cancer research. These cost reductions have spurred initiatives such as the UK-based 100,000 Genomes Project, the International Cancer Genome Consortium and in the time to come hundreds of thousands of patient genomes will become sequenced in the next few years, and in Germany alone we expect completion of >25,000 genomes by 2018. Sequencing of many individual cells per sample will lead to a further, massive explosion of genome sequencing data in the next few years. Thus, an unprecedentedly rich set of "big data" will emerge in cancer and other diseases with the promise to improve patient stratification, diagnostics and personalized medicine. These promises are, however, accompanied by significant challenges such as ethical and legal considerations for generation, storage, analysis and distribution of genome sequences and the diversity of analysis pipelines which renders data processed in different institutions largely non-comparable. He will discuss in his presentation those promises and challenges and will outline potential avenues to overcome some of the most pressing hurdles with the promise to strongly impact cancer research and patient care in the future.