GSI - **SEMINAR**

Im Theorieseminarraum, SB3 Raum 3.170a

Darmstadt, Planckstraße 1

Donnerstag, den 9. Juli 2015, 14:00 Uhr

PD Dr. Christine Blattner

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P53 in embryonic stem cells: regulation of the DNA damage response and other functions

Stem cells are pluripotent cells with the capacity of unlimited self-renewal. Since stem cells provide the proliferative pool of an organ and can even differentiate into a whole new organism, a proper DNA damage response is of utmost importance. P53 is one of the most important tumour suppressor proteins. It is activated in differentiated cells in response to DNA damage where it then induces proliferation arrest and cell death. It was discussed for more than a decade whether p53 is also active in stem cells. I will show that p53 contributes to the DNA damage response in murine embryonic stem cells. While p53 induces its target genes in response to DNA damage, its anti-proliferative activity is compromised under normal growth conditions. This is at least in part due to an interaction with the inhibitory protein Mdm4, a protein that is highly abundant in stem cells. But if p53 is inactive most of the time, why have stem cells such a high amount of p53. In order to find an answer to this question, we applied RNA sequencing to monitor the transcriptome of p53-positive and p53-negative stem cells. Here we found that p53 indeed alters the transcriptome of stem cells. However, while in differentiated cells p53 controls abundance of anti-proliferative genes, in stem cells it controls the abundance of several proto-oncogenes. In the seminar, I will discuss whether alterations in post-translational modifications or alternative splicing may contribute to the altered property of p53 in stem cells.

Einladender: Gerhard Kraft

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