PhD position (TVL-E13/65%)

“Regulation of the inflammatory response and antitumor immunity by the DNA damage signaling kinase HIPK2”

Location & Institution:
Mainz is a beautiful, historical University city with an international academic research environment. The Institute of Toxicology at the University Medical Center in Mainz has longstanding research expertise in the function and regulation of the cellular DNA damage response, DNA damage signaling and DNA damage repair. The Institute is well embedded into the recently established Collaborative Research Center “Regulation of DNA repair & genome stability” (SFB 1361) at the JGU of Mainz.

Background:
Deregulation of the DNA damage response is a major driving force for chronic inflammation, genome instability and cancer. DNA damage can be sensed both in the cell nucleus as well as in the cytosol. In the cytosol, DNA sensor cGAS recognizes DNA fragments released from the nucleus and from mitochondria. The DNA-cGAS complex activates ER-associated STING and triggers assembly of a STING signalosome, which culminates in antiviral and antitumor immunity by induction of type I interferon. cGAS plays an essential role in ionizing radiation and chemotherapeutic drug-induced cell death and cellular senescence, and boosts antitumor immunity in a cancer setting. The protein kinase HIPK2 is activated upon DNA damage and controls DNA damage-induced cell fate by regulating cell death and DNA repair. Preliminary results point to an unexplored function of HIPK2 in inflammation and antitumor immunity. Elucidating the molecular links between state-of-the-art cancer therapy, HIPK2, the innate immune response and antitumor immunity may identify novel treatment options for cancer and chronic inflammation.

Job description:
The PhD project is aimed at elucidating the role of HIPK2 in antitumor immunity and inflammation. The work program includes a broad spectrum of techniques from cell biology, molecular biology, biochemistry and molecular genetics including: generation and functional analysis of cell models using Crisp/Cas-mediated gene editing, molecular characterization of known and novel HIPK2-binding proteins in the context of antitumor immunity, immunofluorescence-based subcellular localization analysis, life-cell imaging/dynamic localization studies using high-content analysis, mass spectrometry-based interactome analyses, FACS-based cell cycle and cell fate analyses as well as genome-wide RNA Seq analysis.

Qualification:
We are looking for highly motivated applicants to join an enthusiastic and collaborative research environment. Candidates should have demonstrated very good performance during their undergraduate studies and should have a Master degree in Biochemistry, Molecular Biology, Cell Biology or related subjects. We expect a high degree of self-motivation as well as good communication skills with a very good command of English and the ability to work in a team.

Project duration, position and application: 3 years, TVL-E13/65%

Please send your CV, a letter of intent, University certificates and names and addresses of two references until 15th of September to Prof. Thomas Hofmann (E-mail: toxicology@uni-mainz.de).

Project-relevant publications: