



The German Federal Institute for Risk Assessment (BfR) is the national institute which prepares expert reports and opinions on questions of food, feed, chemical safety, and consumer health protection in Germany on the basis of internationally recognised scientific assessment criteria. It advises the Federal Government and other institutions and interest groups in these areas. The BfR conducts its own research on topics, which are closely linked to its assessment tasks. It is an institution with legal capacity within the portfolio of the Federal Ministry of Food and Agriculture (BMEL).

In the department Experimental Toxicology and ZEBET at BfR is in the unit “Toxicological Assessment Strategies” an opening for a

Master / Diploma Thesis

Topic: Phenotypic screening for predicting non-genotoxic carcinogens

Alterations in the appearance – morphology – of cells and the distribution of proteins can provide important information on the development of diseases such as cancer and support the identification of potentially harmful environmental chemicals. To detect such phenotypic changes, reporter cell lines are produced and an innovative, well-established 4i method are performed to visualize cell morphologies, followed by imaging and automated image analysis. During phenotypic screening, thousands of features describing cellular morphologies are extracted from images and further aggregated into phenotypic profiles, which eventually enable the prediction of potential human health risks from environmental chemicals.

Duties:

- Producing stable cell lines using Piggybac transposon system. The PiggyBac transposon is a mobile genetic element that efficiently moves the contents flanked between inverted terminal repeat sequences (ITRs) from the vector and integrates them into TTAA chromosomal sites. This system is an easy and consistent method for transgenesis. Several stable reporter cell lines will be produced with this system
- Performing Western Blot and siRNA Knockdown experiment to confirm that the expressed GFP conjugated protein is the expected protein
- Using 4i (iterative immunofluorescence imaging) method to perform small scaled screening on 96 well plate with around 20 compounds. 4i method facilitates visualization of more than 20 different proteins in the same sample. It comprises multiple iterations of staining, elution (signal removal) and re-staining steps
- Analyzing image and data using the CellProfiler image analysis software and the KNIME data analysis software

Requirements:

- Highly motivated student with background in biology/biochemistry/biomedicine or another related field (e.g. toxicology, chemistry, biotechnology, pharmacy)
- Experience with cell culture or some other of the required methods would be appreciated but is not a prerequisite
- Very good written and spoken English language skills
- Flexible, engaged and self-organized way of working

We offer an excellently equipped laboratory environment, a cooperative research environment in an interdisciplinary and international team and comprehensive supervision.

More detailed information is available from Dr. Shu Liu (Tel. +49 30 18412-29307).

If you are interested, please apply via E-Mail to (Shu.Liu@bfr.bund.de) using the subject „**Master thesis your name**“. Please send your application with complete documentation (including a short letter of motivation, CV, certificates and transcripts (Bsc) and contact information of at least one referee).

The BfR welcomes applications from people of all nationalities. The BfR is an innovative scientific institute offering family-friendly working conditions. for which it was awarded the “audit berufundfamilie®” (work and family) certificate. The BfR guarantees equal career opportunities for women and men. In the case of equal suitability, severely disabled applicants will be given preferential consideration and are only required to have a minimum level of physical suitability.

