

Academic Qualifications

11/2017 - 11/2020 **PhD Cancer Metabolism**
09/2014 - 07/2017 **M.Sc. Biochemistry**
grade: 1.0 (first class)
09/2014 - 07/2015 **Erasmus Exchange**
10/2011 - 09/2014 **B.Sc. Biochemistry**
grade: 2.3 (upper second class)
08/2004 - 06/2011 **Abitur**
grade: 1.7 (upper second class)

Honors and Awards

Marie Sklodowska-Curie [ITN] Early Stage Researcher Fellowship

“TRANSMIT – TRANSLating the role of Mitochondria in Tumorigenesis”

Scholarship holder Evangelisches Studienwerk Villigst
Monthly scholarship and access to a comprehensive educational program (03/2012 – current)

Conference grant for Cell-Symposia „Hallmarks of Cancer“ (12/2016, Belgium)

Project grant for research project at the MRC Cancer Unit Cambridge (07/2016 – 10/2016)

Erasmus Exchange Scholarship (09/2014 – 07/2015)

Research Projects

MRC Cancer Unit Cambridge (Cambridge, UK)

Dr. Christian Frezza (11/2017 – current)
Fumarase and fumarate: epigenetic modifications in FH-deficient tumors

Biocenter Würzburg (Würzburg, Germany)

Prof. Almut Schulze (11/2016 – 07/2017)
Regulation of cancer cell metabolism by PFKFB4

MRC Cancer Unit Cambridge (Cambridge, UK)

Dr. Christian Frezza (07/2016 – 10/2016)
Understanding of the contribution of mitochondrial dysfunction to cancer phenotype

TERM Würzburg (Würzburg, Germany)

Prof. Heike Walles (02/2016 – 06/2016)
Optimization of 3D model system including Caco2 and primary isolated DCs to detect immune-response

University of Oulu (Oulu, Finland)

Prof. Seppo Vainio (02/2015 – 05/2015)
Investigation of the role of extracellular vesicles during kidney morphogenesis

University of Würzburg (Würzburg, Germany)

Dr. Carsten Hagemann (04/2014 – 09/2014)
The role of the mitotic cell-cycle checkpoint protein MPS1 during temozolomide-treatment of GBM

Education

09/2014 – 07/2017
University of Würzburg

Biochemistry Master’s Program: final average 1.0, equals first class (*German grade scale ranges from excellent with distinction 1.0 to failed 6.0*)

Master-Thesis: Laboratory of Prof. Almut Schulze (11/2016 – current)

Regulation of cancer cell metabolism by PFKFB4

During my thesis, I am concentrating on phosphofructokinase 2/fructose-2,6-bisphosphatase 4 (PFKFB4), an allosteric regulator of the glycolysis by controlling the production of fructose-2,6-bisphosphate. Therefore, I will use and isolate mouse embryonic fibroblasts, which I will characterize via genomic PCR, qPCR, mass spectrometry and Fru-6-P-Assay. Poster-presentation at the 19th international AEK Cancer Congress 1-3 March 2017 in Heidelberg. Expected graduation date 01.07.17.

Relevant modules: Molecular and clinical oncology, RNA-research, tissue-engineering

Relevant practical experience:

- **molecular Oncology:** Animal work (mouse, drosophila), Seahorse-analyzer, hanging-drops, organoids, drosophila as a model, GSEA and David-analysis
- **RNA-science:** immunoprecipitation, pulldown-assay, density gradient, RNA-isolation/purification/amplification/transfection

09/2014 – 07/2015

University of Oulu

Erasmus Exchange: Biochemistry Master's Program (Oulu, Finland)

Relevant modules: Oncology, protein-science, systems biology, organogenesis

Relevant practical experience:

- **Biochemical methodologies:** Proteomics, fluorescence-spectroscopy, circular-dichroism-chromatography, stopped-flow-kinetics, Surface-Plasmon-Resonance (SPR), isothermal calorimetry (IC)

10/2011 – 09/2014

University of Würzburg

Biochemistry Bachelor's Program: final grade 2.3; equals upper second class

Bachelor-Thesis: Laboratory of Dr. Carsten Hagemann

The role of the mitotic cell-cycle checkpoint protein MPS1 during temozolomide-treatment of glioblastoma multiforme

Different human glioblastoma cell lines were treated with commercially available MPS1-inhibitors or transfected using MPS1 directed siRNA. MPS1 inhibited cells were then treated with Temozolomide and/or Nocodazole. Furthermore, the influence on the function of the mitotic spindle checkpoint was verified by FACS-analysis and karyograms.

Relevant modules: Biochemistry, immunology, molecular biology, bioanalytics, structural biology, genetic engineering, organic chemistry

Relevant practical experience:

- **Immunology:** B-cell purification, FACS- Analysis, ELISPOT, cell culture, preparation of mice (splenic removal)
- **Biochemistry and –analytics:** SDS-Page, protein staining, DNA/RNA-isolation, PCR-cloning, enzymatic catalysis with photometer
- **Structural biology:** description of the kinesin-features with pyMOL
- **Organic Chemistry:** organic synthesis

Mariengymnasium Jever

08/2004 – 06/2011

Abitur at the Mariengymnasium Jever (Germany)

- A-Levels in Chemistry, Mathematics, German, Politics
- Final grade: 1.7 (equals upper second class)

Practical experience

12/2016

Conference-attendance at Cell-Symposia: Hallmarks of Cancer (Belgium)

07/2016 – 10/2016

Internship in the laboratory of Dr. Christian Frezza at the MRC Cancer Unit Cambridge, University of Cambridge (United Kingdom)

Under the supervision of Edoardo Gaude, my project focused on the understanding of the contribution of mitochondrial dysfunction to the cancer phenotype. I used cybrids, which were developed in Dr. Frezza's lab, bearing varying proportions of the mutation mt8993T>G. Firstly, I characterized this model by using Seahorse bioanalyzer, Western Blot, live imaging and FACS-analysis. Secondly, to link the mitochondrial dysfunction and cancer phenotype, I performed invasion assays and growth assays. Moreover, to map metabolite-shifting, I used Liquid Chromatography coupled Mass Spectrometry (LC-MS). Possible interaction partners were analyzed by Immunoprecipitation-analysis.

02/2016 – 06/2016

Internship in the Institute of Prof. Dr. Heike Walles at the institute of Tissue Engineering and Regenerative Medicine, Würzburg (Germany)

| | |
|-------------------|---|
| | <p>In the group of Dr. Marco Metzger I learned techniques to set up 3D tissue-cultures of the human intestine. Moreover, I aimed to optimize a co-culture model system including human colon adenocarcinoma cells and primary isolated dendritic cells (DCs). Throughout this work, I learned to handle transwell models, perform TEER-measurements and FITC-dextran transport assays as well as to set up the necessary controls for the models via histochemistry and confocal microscopy. Furthermore, I gained in knowledge of primary DC isolation from human blood samples and the corresponding FACS-analysis. With the assembled model, I performed proof-of-concept studies by the usage of LPS-loaded nanoparticles and the time-dependent analysis of dose-dependent DC immune response.</p> <p>In a second project, I applied novel substances to mimic the physiological environment of the chymus including increase in the viscosity of the culture media. Therefore, I analyzed the dose-dependent viscosity profile via viscosimeter measurements.</p> |
| 10/2015 – 02/2016 | <p><u>Tutor for the basic biochemistry lecture for bachelor students</u></p> |
| 02/2015 – 05/2015 | <p><u>Internship in the Laboratory of Prof. Dr. Seppo Vainio in the Faculty of Biochemistry and Molecular Medicine Oulu (Finland)</u></p> <p>Under the supervision of Dr. Mirja Krause, we focused on the investigation of the role of extracellular vesicles during kidney morphogenesis. More precisely vesicles were isolated and characterized from several kidney cell lines as well as from primary kidneys from mice. Therefore, I learned techniques of purification for extracellular vesicles such as sequential ultracentrifugation. This was followed by characterization via antibody detection, electron microscopy and quantification by nanoparticle tracking analysis (NTA). Furthermore, I learnt to set up kidney organoids with an dissociation-reaggregation assay developed in the Vainio group, enabling the study of tubule formation in kidney-like pellets in the petri-dish with confocal microscopy. The work is currently being summarized in a paper that will be submitted to the Journal of Extracellular Vesicles next month.</p> |
| 11/2014 | <p><u>Attendance at the 16th Annual meeting of the Finnish Society for Developmental Biology (Hyytiälä, Finland)</u></p> |
| 08/2012 | <p><u>Participation in the Summer University of the Evangelisches Studienwerk Villigst about epigenetics</u></p> |
| 10/2010 | <p><u>Participation in the Fraunhofer-Talent-School Bremen 2010</u></p> <p>“Bausteine des Lebens – Bioanalytik von Proteinen“: Bioanalytics like SDS-Page, coomassie staining, Western blot, Maldi-ToF analysis as well as lectures about the background</p> |
| Skills | |
| Language | <ul style="list-style-type: none"> - German (native speaker); English (C1, IELTS test 7.5); French (A1), Finnish (A1) |
| Other skills | <ul style="list-style-type: none"> - <u>Computer literate</u>: Microsoft Office, GraphPad Prism, PyMol, SerialCloner, FlowJo, Adobe Illustrator - <u>Trainer certificate</u> for gymnastics - <u>Organisational work</u>: Mentoring of new scholarship holders, publicity work and presentations of educational scholarship “Villigst” at schools and universities as well as design of new study projects |