DANIEL SCHREYER

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EDUCATION

University of Glasgow, United Kingdom
School of Cancer Sciences

PhD Candidate - Computational/Systems Biology

2020 – Present

FAU Erlangen-Nürnberg, Germany
Faculty of Natural Sciences

MSc - Cell and Molecular Biology; Grade: 1.2

2017 – 2020

FAU Erlangen-Nürnberg, Germany
Faculty of Natural Sciences

BSc - Biology; Grade: 2.0

2014 – 2017

EXPERIENCE

PhD - Computational/Systems Biology

University of Glasgow

April 2020 – Present | Glasgow, United Kingdom

Investigating the role of extrachromosomal circular DNA (ecDNA) in Pancreatic Cancer (PC)

- Generation and analysis of ecDNA sequencing data from PC cell lines and organoids
- Conducted cell culture and molecular biology experiments to generate sequencing data and validate computational results.
- Analysed and integrated various high-throughput biological data types, including WGS, WES, RNA-seq, and ATAC-seq.
- Utilized HPC and local server environments for data analysis and processing.
- Funded by the prestigious Marie Sklodowska-Curie Actions program of the European Union
- I was part of the PRECODE consortium, a PC research network of more than 30 scientists across 9 european countries
- **Skills: Project Management | Experimental Design | Problem-solving | Data Curation | Data Visualisation | Statistics | Scientific Writing | Data management | Molecular Biology**
- **Technology: R | Python | HPC | Sequencing | Nextflow | Bash**

Student Employee - Biological Laboratory

Siemens Healthineers

Jan 2018 – Sep 2018 | Erlangen, Germany

Advanced Microscopy and Nanopore Sequencing

- Conducted and optimised microscopy experiments, including blood smear examination
- Contributed to the development of new methods for disease diagnosis
- Performed Nanopore sequencing on viral genomes using the Oxford Nanopore MinION
- **Technology: Microscopy | Nanopore Sequencing**

SKILLS

- **Programming Languages**: R (Expert), Nextflow (Expert), Bash (Expert), Python (Intermediate), Perl (Beginner), HTML & CSS (Basic Knowledge)
- **Data Science & Visualisation Tools**: R, Python
- **Database Languages**: MySQL (Intermediate)
- **Workflow Development**: Nextflow, Bash
- **Tools & Frameworks**: Git, Bash, Unix environment, Containerisation, Docker, Singularity, HPC, Shiny
- **Molecular Biology**: Sequencing, Cancer Research, Cell Culture, Microscopy, PCR
- **Bioinformatics**: Genomics (WGS, WES), Transcriptomics (RNA-seq, scRNA-seq), Epigenomics (ATAC-seq)
- **Statistics**: R, Excel
- **Machine Learning**: Python
- **Personal**: Teamwork, Leadership, Strategic Planning, Project Management, Problem-solving, Organisation, Adaptability
- **Languages**: German (Native), English (Fluent)

PROJECTS

nf-core/circdna

- Developed and actively maintain an open-source bioinformatics nextflow pipeline for the analysis of ecDNA sequencing data using Nextflow and nf-core best practices.
- nf-co.re/circdna.
- github.com/nf-core/circdna
- **Technology: Nextflow | Git | Bioinformatics Tools | Docker | Singularity | Conda**

Single-cell RNA-seq processing pipeline (SCPP)

- SCPP is a Bash-written pipeline for processing single-cell RNA-seq data.
- github.com/DSchreyer/SCPP
- **Technology: Bash | Git | R**

Single-cell RNA-seq data analysis

- Analysis of scRNA-seq data generated from a mouse model developing retinal degeneration
- **Technology: R | Git | Bash**

Pancreatic Cancer (PC) Gene Information Web Application

- Developed a dynamic web application using the Shiny framework (R-package) to effectively display and analyse gene information related to PC.
- dschreyer.shinyapps.io/pdac_gene_info
- **Technology: R | Shiny framework**

Circle-seq: Sequencing of Circular DNA

- Adapted and performed Circle-seq, a method for sequencing of ecDNA.
- **Skills: Molecular Biology | Next-generation Sequencing | Data Analysis**

INTERNSHIPS

Industry Secondment

AstraZeneca

Jan 2023 – Feb 2023 Cambridge, UK

Data Analysis & Knowledge Transfer

- Analysed and integrated sequencing data generated of human model systems
- Discussed the use of ecDNAs for targeted patient therapies
- **Technology: Bash | Nextflow | R**
- **Skills: Communication | Teamwork | Organisation**

Research Secondment

Department of Pathology & Diagnostics, University of Verona

Mar 2022 – April 2022 Verona, Italy

Sequencing Data Analysis

- Analysed and integrated sequencing data generated of pancreatic cancer human model systems to identify and study ecDNAs
- Started an on-going collaboration investigating cancer cell behaviour under stress conditions
- Malinova, Schreyer, Fiorini et al. (Submitted to Nature)
- **Skills: Communication | Teamwork | Adaptability | Flexibility**

Research Internship

Computational Biology Division, University of Cape Town

Oct 2018 – Dec 2018 Cape Town, South Africa

Data Analysis and Visualization for GWAS Studies

- Analysis and visualisation of large-scale genome-wide association study (GWAS) data using Python and R
- Worked remotely on a High Performance Computing (HPC) system to analyze large datasets
- **Skills: Python | HPC | Bash | R**

COMPETITIONS

Participant - iGEM 2019

Team FAU Erlangen

Feb 2019 – Nov 2019 Erlangen, Germany

Immunology and Synthetic Biology Project

- Interational Genetically Engineered Machine (iGEM) is a student synthetic biology competition with participants from all around the world
- Worked on an interdisciplinary project involving immunology and synthetic biology
- Collaborated with a team of around 30 students and scientists from different backgrounds and disciplines to develop a bi-specific antibody targeting colorectal cancer cells
- **Skills: Project Management | Experimental Design | Human Practices | Problem-solving**

COURSES

- **Business Summer School (5-Days)**: IESE Business School, Barcelona
- **Python Bootcamp**: Udemy
- **Probability & Statistics**: Udemy
- **MySQL Bootcamp**: Udemy
- **Deep Learning with Python**: Udemy

AWARDS

Best Poster at the University of Glasgow Computational Biology Conference

Sep 2022 Glasgow, UK

PUBLICATIONS

1. Malinova, Antonia*, **Daniel Schreyer***, Elena Fiorini*, Davide Pasini, Michele Bevere, Sabrina D'Agosto, Silvia Andreani, et al. 2023. "ecDNA Amplification of MYC Drives Intratumor Copy-Number Heterogeneity and Adaptation to Stress in PDAC.". bioRxiv, 2023. https://doi.org/10.1101/2023.09.27.559717. (Submitted to Nature)
2. **Schreyer, Daniel***, John P. Neoptolemos, Simon T. Barry, and Peter Bailey. "Deconstructing pancreatic cancer using next generation-omic technologies–from discovery to knowledge-guided platforms for better patient management." Frontiers in Cell and Developmental Biology 9 (2022): 3660.
3. Geyer, Marlene, **Daniel Schreyer**, Lisa-Marie Gaul, Susanne Pfeffer, Christian Pilarsky, and Karla Queiroz. "A microfluidic-based PDAC organoid system reveals the impact of hypoxia in response to treatment." Cell Death Discovery 9, no. 1 (2023): 1-8.
4. Zeng, Siyuan, Bin Lan, Xiaofan Ren, Shuman Zhang, **Daniel Schreyer**, Markus Eckstein, Hai Yang et al. "CDK7 inhibition augments response to multidrug chemotherapy in pancreatic cancer." Journal of Experimental & Clinical Cancer Research 41, no. 1 (2022): 241.