Dr Sophie Curio

Scientist

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Summary

Scientist with expertise in immunology, oncology and data science. Passionate about improving medicine using data, including developing innovative computational approaches to develop better therapeutic options for difficult-to-treat diseases. Experience in project management, design and execution of research projects, leadership, and collaboration.

Work experience

Curio Consulting – *Consultant* 2024 – present

Provided expert consulting on cancer immunotherapy projects, offering strategic guidance on research initiatives.

University of Queensland, Brisbane, Australia – *Postdoctoral Research Fellow* 2021 – 2024

Coordinated and led cross-disciplinary projects investigating the role of immune cells in cancer and inflammatory disorders using experimental and computational approaches.

Imperial College London, London, United Kingdom – *Doctoral Student* 2017 - 2021

Conducted research investigating the role of immune cells in inflammatory bowel disease and colorectal cancer.

Harvard Medical School, Boston, United States – *Research Intern* 2016

Participated in research projects investigating the response to intrauterine vaccines in collaboration with Moderna.

German Center for Neurodegenerative Diseases, Bonn, Germany – *Student Assistant* 2012 –2015

Provided support to scientists and performed routine measurements on light microscopes.

Technical skills

Python

- Statistical analysis using SciPy, Pandas, NumPy and SciKit-Learn, including linear regression analysis, K-means clustering and unsupervised learning to generate predictive models
- Visualization and presentation of data using Matplotlib, Plotly and Seaborn, as well as Jupyter notebooks

- Performing single-cell RNA sequencing analysis, mining of publicly available datasets, integration of independent datasets and modelling of immune regulatory networks
- Package and virtual environment management using Conda
- Database management using SQL

R

- Statistical analysis and data visualization using ggplot2, gmodels, FSA and DescTools
- Analysis of B cell receptor diversity, microbiome sequencing data, Gene Set Enrichment Analysis (GSEA) and Gene Ontology (GO) analysis

Systems

- Installation and management of command-line software
- Using high-performance computing clusters (Slurm and PBS)
- Writing Bash scripts to automate tasks
- Version Control using git

Immunology/oncology

- Immunological assays (flow cytometry, molecular biology, RNA sequencing)
- Cell culture (primary immune cells, cell lines) & organoids (intestine, lung and liver)
- Microscopy (intravital imaging of the liver, confocal imaging)
- Mouse models of disease, including liver metastases, intestinal cancer, intestinal inflammation, lung inflammation and intestinal infection

Professional skills

Leadership & Project Management

- Coordinated and led cross-disciplinary projects investigating the role of immune cells in cancer and inflammatory disorders using computational and experimental approaches
- Active members of professional networks and organizing committees, with a particular focus on computational immunology and networks for early career researchers
- Competitively applied for grants and received > US$250,000 in funding (Cure Cancer Australia, Wellcome Trust)

Science communication

- Presented research findings in high-impact research papers and national and international conferences (raking in the top 5% of all research outputs scored by Altmetric)
- Provided peer review for internationally recognized journals and funding agencies
- Provided support to colleagues and students with no background in data analysis, including giving introductory courses to Python and single-cell RNA sequencing analysis

- Built relationships with consumers, such as patients and patient advocates, which included lab visits and collaboratively working on research grants

Collaboration

- Founded professional networks of early career immunologists in Europe and Australia
- Efficiently collaborated within the research group and with other research groups
- Co-investigator on multidisciplinary national research grant (Australian Medical Research Future Fund and National Health & Medical Research Council)

Professional Development

- Self-learner, from wet-lab science to data science
- Sought out opportunities to improve skills, in particular data science and leadership skills (Udemy Python & Data Science courses, EMBO Lab Leadership for Postdoc course, OzSingleCell Hackathon)

Teaching & mentoring

- Supervision and mentorship of three doctoral and thirteen pre-doctoral students undertaking experimental projects, including project design and day-to-day supervision
- Tutor for undergraduate practical courses and course organizer for immunology school for biology undergraduate students
- Mental Health First Aider (MHFA Australia)

Education

Imperial College London, London, United Kingdom – *Doctor of Philosophy* 2017 – 2021

Imperial College London, London, United Kingdom – *Master of Research* 2016 – 2017

Rheinische Friedrich-Wilhelms-University, Bonn, Germany – *Bachelor of Science* 2012 – 2015

Personal Projects & Achievements

- Glider pilot, participating in national and international competitions
- Flight instructor
- Secretary of Kingaroy Soaring Club
- Ultrarunner