

Florian Wünnemann

POSTDOCTORAL RESEARCHER

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Bioinformatics researcher with 5 years of postdoctoral experience in biomedical research at the intersection of data production, processing and analysis for omics technologies.

🏢 Research experience

University Hospital Heidelberg

Heidelberg, Germany

POSTDOCTORAL RESEARCHER IN THE SCHAPIRO LAB

Jan. 2022 - ongoing

- Using spatial omics technologies to study myocardial infarction. Development of Nextflow pipelines for spatial omics data processing. Development of nf-core/molkart and nf-core/mcmicro.

Montreal Heart Institute

Montreal, Canada

POSTDOCTORAL RESEARCHER IN THE LETTRE LAB

Aug. 2018 - Aug. 2021

- Using high-throughput CRISPR screens, polygenic risk scores, genetics of heart valve disease and single-cell technology to investigate complex human cellular traits.

Université de Sherbrooke

Remote

PROFESSIONNEL RECHERCHE NIV. II

Jan. 2019 - Jan. 2022

- Part of the GenAP initiative (www.genap.ca) as single-cell expert, to include single-cell tools into the GenAP2 platform. Development of Galaxy tools, Rshiny applications and Docker containers for single-cell analysis within the GenAP cloud.

Institute for Evolution and Biodiversity, University of Münster

Münster, Germany

STUDENT RESEARCH ASSISTANT

Sep. 2011 - July 2012

- Acquisti group: Analysis of genomes and metagenomes in the context of nutrient limitation and fertilization.

Institute for Evolution and Biodiversity, University of Münster

Münster, Germany

STUDENT ASSISTANT

Mar. 2011 - May 2011

- Bioinformatic work in the Bornberg-Bauer group for Molecular Evolution and Bioinformatics.

🎓 Education

University of Münster / CHU Sainte Justine Research Center

Münster, Germany / Montreal, Canada

PH.D. (DR.RER.NAT) - LIFE SCIENCES

Apr. 2014 - Apr. 2018

- Thesis title: The role of genetic factors in pathogenesis and progression of cardiac malformations

University of Münster

Münster, Germany

MSC IN LIFE SCIENCES

Oct. 2011 - Feb. 2014

- Thesis title: Functional and genetic characterization of a novel arrhythmic syndrome

University of Münster

Münster, Germany

BSC IN LIFE SCIENCES

Oct. 2008 - Sep. 2011

- Thesis title: Impact of nutrient limitation in insects: Comparative genomics of the pea aphid and the human body louse

💻 Computational skills

- **General:** GWAS analysis, Exome/Genome variant calling, Plink, image analysis (Fiji, Napari, QuPath), basic bash scripting, creation of Galaxy tools and wrappers, setup of <https://spatialomics.usegalaxy.eu/>
- **Containerization & High-Performance Computing (HPC):** Docker, Singularity, Nextflow pipeline creation and execution, SLURM, PBS, Virtual machine (VM) management
- **R:** Rshiny application development, Rmarkdown, OMICS data analysis (RNA-seq, single-cell OMICS, spatial OMICS)
- **Python:** Basic computer vision applications, single-cell & spatial OMICS analysis, bioconda, biocontainers

Hackathons

spverse hackathon

NF-CORE/MCMICRO - SPATIALDATA INTERACTION

Heidelberg, Germany

19.07.2023 - 21.07.2023

nf-core hackathon March 2022

DEVELOPING MODULES FOR NF-CORE/MCMICRO

Local site Tuebingen

27.03.2023 - 29.03.2023

SpaceHack 2.0

EVALUATION OF DIFFERENT SEGMENTATION METHODS FOR SPATIAL TRANSCRIPTOMICS

Online

11.12.2022 - 15.12.2022

nf-core hackathon July 2020

BEGINNER IN NF-CORE AND WORKED ON SINGLE-CELL TOOLS

Online

13.07.2020 - 17.07.2020

\$ Funding History

WALTER-BENJAMIN POSTDOCTORAL POSITION, DEUTSCHE FORSCHUNGSGEMEINSCHAFT (DFG)

2022 - 2024

POSTDOCTORAL TRAINING SCHOLARSHIP (CANADIAN CITIZENS AND PERMANENT RESIDENTS), FONDS DE RECHERCHE QUÉBEC

SANTÉ (FRQS)

2019 - 2021

🏆 Honors and Awards

2021/06

Poster prize: Prix Fonds de recherche du Québec (FRQS) (Recherche fondamentale doctorale / Postdoc)

Montreal, Canada

2019/06

Best oral presentation award, 22nd Montreal Heart Institute research day

Montreal, Canada

2017/05

Best oral presentation award, 32nd student congress at the CHU Sainte-Justine

Montreal, Canada

2016/05

Markwald award for best oral presentation, Weinstein Cardiovascular Development and Regeneration Conference 2016

Durham, USA

Publications

For a full list of all my scientific publications, please see my Google scholar profile:

https://scholar.google.de/citations?user=WsGy_hkAAAAJ&hl=de

Invited Presentations

Pre-symposium at the Réseau Québécois en Reproduction (RQR) about spatial omics

MAPPING IMMUNE CELL INFILTRATION DYNAMICS DURING ACUTE MYOCARDIAL INFARCTION USING SPATIAL OMICS

Quebec City, Quebec

18.10.2023 - 18.10.2023

Resolve Biosciences - Immersive Spatial Biology Experience

MOLECULAR CARTOGRAPHY HELPS REVEAL IMMUNE CELL INFILTRATION ROUTES AND THEIR MICROENVIRONMENTS DURING ACUTE MYOCARDIAL INFARCTION.

Heidelberg, Germany

26.09.2022 - 26.09.2022

Presentations

Lunaphore spatial biology week

UTILIZING MCMICRO FOR STREAMLINED PROCESSING OF HIGHLY-MULTIPLEXED IMAGING DATA

Online

05.10.2023 - 05.10.2023

American Society of Human Genetics (ASHG) Meeting 2019

PRIORITIZATION OF GENOMIC LOCI FOR CORONARY ARTERY DISEASE USING TARGETED CRISPR SCREENS FOR ENDOTHELIAL DYSFUNCTION

Houston, Texas, USA

15.10.2019 - 19.10.2019

XXIIe Journée de la recherche ICM

VALIDATION OF GENOME-WIDE POLYGENIC RISK SCORES FOR CORONARY ARTERY DISEASE IN FRENCH CANADIANS

Montreal, Canada

06.06.2019 - 06.06.2019

7th annual MGSE Symposium

SINGLE CELL LANDSCAPE OF MAMMALIAN HEART MATURATION

Münster, Germany

21.03.2018 - 22.03.2018

American Society of Human Genetics (ASHG) Meeting 2017

IDENTIFICATION OF A NOVEL MARKER FOR VALVE MATURATION: LOSS OF ADAMTS19 FUNCTION CAUSES PROGRESSIVE VALVE DISEASE IN MICE AND MEN

Orlando, Florida, USA

18.10.2017 - 18.10.2017

Congrès de la recherche des étudiantes des cycles supérieurs et des post-doctorants en recherche au CHU Sainte-Justine

HEART VALVE DYSFUNCTION IN MEN AND MICE IS CAUSED BY LOSS OF FUNCTION MUTATIONS IN ADAMTS19, A NOVEL MARKER FOR VALVULAR INTERSTITIAL CELLS

Montreal, Canada

26.05.2017 - 26.05.2017

Weinstein Cardiovascular Development and Regeneration Conference 2016

LOSS OF ADAMTS19, A NOVEL MARKER FOR VALVULAR INTERSTITIAL CELL POPULATIONS DURING VALVE MATURATION, CAUSES AORTIC VALVE DYSFUNCTION

Durham, North Carolina, USA

18.05.2016 - 21.05.2016

Evolgen, collaborative meeting on genome evolution

ACTRANSDB: AN ONLINE DATABASE FOR ACANTHAMOEBA CASTELLANI TRANSCRIPTS,

Ciążeń, Poland

27.06.2012 - 28.06.2012

2nd Muenster graduate school evolution symposium

BIOGEOCHEMISTRY MEETS MOLECULAR EVOLUTION VIA METAGENOMICS: TRACING NITROGEN FLUXES FROM ECOSYSTEMS TO GENOMES IN MICROBIAL COMMUNITIES

Münster, Germany

18.06.2012 - 19.06.2012

Poster presentations

American Society of Human Genetics (ASHG) Meeting 2023

SPATIAL OMICS OF ACUTE MYOCARDIAL INFARCTION REVEALS NOVEL SITES OF IMMUNE CELL INFILTRATION

Washington DC, USA

01.11.2023 - 05.11.2023

Spatial biology congress Rotterdam

SPATIAL OMICS ANALYSIS OF MURINE ACUTE MYOCARDIAL INFARCTION REVEALS NOVEL IMMUNE CELL INFILTRATION ROUTES

Rotterdam, Netherlands

05.07.2023 - 07.07.2023

XXIIIe Journée de la recherche ICM

CRISPR PERTURBATIONS AT MANY CORONARY ARTERY DISEASE LOCI IMPAIR VASCULAR ENDOTHELIAL CELL FUNCTIONS

Montreal, Canada

17.06.2021 - 17.06.2021

Cold Spring Harbor Laboratories: The Biology of Genomes

CRISPR PERTURBATIONS AT MANY CORONARY ARTERY DISEASE LOCI IMPAIR VASCULAR ENDOTHELIAL CELL FUNCTIONS

Virtual

11.05.2021 - 14.05.2021

Weinstein Cardiovascular Development and Regeneration Conference

A SINGLE-CELL PERSPECTIVE ON GROWTH AND MATURATION PATHWAYS IN THE MOUSE HEART.

Nara, Japan

16.05.2018 - 18.05.2018

American Society of Human Genetics (ASHG) 2014

DE NOVO MUTATION IN SOX18 CAUSES A NOVEL FORM OF HYPOTRICHOSIS-LYPHEDEMA-TELANGECTASIA WITH SEVERE VASCULAR DEFECTS

San Diego, California, USA

18.10.2014 - 22.10.2014

42nd Annual Meeting of the Ecological Society of Germany, Austria and Switzerland 2012

SOIL METAGENOMICS TO UNRAVEL THE SIGNATURE OF FERTILIZERS ON THE MOLECULAR COMPOSITION OF THE BACTERIAL RIBOSOME

Lueneburg, Germany

10.09.2012 - 14.09.2012

Languages

- German (mother-language)
- English (fluent)
- French (fluent)