

# Somesh Venkatakrisnan Sai

*PhD Student in Bioinformatics*



## Personal Information

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## Techinal Skills

- PROGRAMMING
  - *Proficient:* R • Python • HTML
  - *Experienced:* Shell •  $\text{\LaTeX}$
  - *Familiar:* SQL • CSS • Java • JavaScript
- TOOLS/LIBRARIES/  
FRAMEWORKS
  - *Proficient:* Shiny • Git
  - *Experienced:* R Packages • GitHub-Pages • Numpy • Pandas
  - *Familiar:* Keras • Tensorflow • Docker • Singularity
- SOFTWARES
  - RStudio, Jupyter Notebook
  - Several other bioinformatics tools, pipelines & softwares

## References

- **Prof. Dr. Maïke Sander**  
Scientific Director,  
Max-Delbrück Center (MDC) for  
Molecular Medicine,  
Robert-Rössle Str. 10, 13125 Berlin  
(maïke.sander@mdc-berlin.de)
- **Prof. Dr. Birgit Sawitzki**  
Translational Immunology Group,  
Berlin Institute of Health (BIH)  
Augustenburger Platz 1,  
13353 Berlin  
(birgit.sawitzki@bih-charite.de)

## About Me

Dedicated, highly-skilled and detail-oriented doctoral candidate with a strong background in Bioinformatics. I am actively seeking opportunities in Scientific Policy Research, Science Communication, Science Administration, or related spheres to leverage my scientific proficiency towards advancing strategic decision-making and innovation.

## Education

**Doctoral Researcher (sp. Bioinformatics),** **2019 – Present**  
*Frei Universität, Berlin*  
*Berlin Institute of Health (BIH) @ Charité, Berlin*  
*Berlin Institute for Medical Systems Biology (BIMSB)*  
*@ Max-Delbrück Center for Molecular Medicine, Berlin*

**MSc Computational Biology and Bioinformatics,** **2016 – 2019**  
*ETH Zürich, Switzerland*  
CGPA: 4.86 / 6

**B.Tech Bioinformatics,** **2012 – 2016**  
*Vellore Institute of Technology (VIT) University, India*  
CGPA: 9.37 / 10

## Research Experience

- Graduate Researcher** **2019 - Present**  
*Thesis: "scRNA-seq analysis of murine islet inflammation and adaptation by beta cells in response to T2D-related stressors"*
- Analyzed high-throughput, multi-parametric single-cell transcriptomics and imaging data in order to investigate mouse pancreatic islet inflammation in response to over-nutrition and aging.
  - Generated an atlas of highly-curated single-cell transcriptomics datasets of mouse pancreatic islets to study the adaptive responses of beta-cells against Type-2 diabetes (T2D)-related stressors.
  - Development and deployment of web-based interactive applications for exploring and visualizing single-cell transcriptomics datasets
  - Collaborated with multiple research groups and individuals, providing expert assistance in data analysis strategies and actively participating in collaborative projects.

**Master Thesis** *ETH Zürich, Switzerland.***2017 - 2018**

Supervisors:

1. Florian Kiefer, Novartis AG, Basel
2. Prof. Dr. Christian von Mering, Universität Zürich

*Thesis: "Using deep learning to explore the effectiveness of biological features for transcription factor interaction prediction"*

- Using deep architectures of artificial neural networks to predict protein-protein interactions and identify putative interactions for proteins of interests.
- Testing the suitability of biological or content-driven features for interaction prediction and studying the effects of underlying distribution of the data on the performance of the model.

**Undergraduate Research Assistant** *University of Calgary, Canada.***2015**

Supervisor : Prof. Dr. Steven Zimmerly

This research internship was part of Mitacs Gloablink Research Fellowship. I performed phylogenetic analysis of bacterial introns using computational tools and prediction of secondary structures of diversity generating retroelements.

## Teamwork Experience

**Science Communication Teacher Training (SCOTT) Program 2.0 MDC.****April 2023 – Present**

1. The SCOTT program offers monthly seminars, co-teaching opportunities, and independent projects, promoting theoretical understanding, practical application, and networking.
2. Assisted in the planning, organization and execution of a session - *Remarkable Animals and what we can learn from them* at the Long Night of Sciences 2023.

**Helmholtz Junior Representative** *Interim.***July 2023 – Present**

1. Undertook responsibilities of the outgoing Helmholtz Representative from MDC Berlin in order to serve as a liaison between the PhD Representatives of MDC Berlin and the PhD Representatives from other Helmholtz institutes across Germany.
2. Joined the **Survey Working Group** and currently consolidating the code-base in collaboration with other representatives in lieu of the upcoming 2023 N-squared [N2] Survey of doctoral candidates across all Helmholtz institutes.

**Immunology & Inflammation Seminar Series MDC.****January 2023 – Present**

Part of the organizing team for arranging institute-wide seminar series on a regular basis.

**BIMSB After Hours MDC.****2021 – Present**

Instrumental in restarting and actively organizing the monthly After Hours event as part of the core team, aimed at fostering social connections among researchers within the institute.

**Berlin Institute of Health Scientific Symposium BIH Charité.****2023**

Contributed to the core team by participating in discussions, planning, and organizing scientific talks, as well as other activities during the two-day internal scientific workshop held in Berlin in September 2023.

**PhD Representative MDC.****2020 – 2022**

1. Played an active role in assisting new PhD students transition into the institute.
2. Served as a liaison between other PhD Representatives, PhD Students and the Directorate.
3. Addressed the concerns of PhD students in a timely fashion.

**Make A Difference (MAD), VIT University.****2012 – 2015**

A youth volunteer network working to empower children at risk in shelter homes. My roles included:

1. Joined as a volunteer in 2012 and assisted the children in their learning process with weekly classes and activities.
2. Promoted to the role of Mentor in 2013. Effectively managed a team of 10 new volunteers and ensured proper coordination and undertook delegation of required tasks.
3. Headed the transport team in the logistics division for the annual Dream Camp - a three day event filled with various informative activities for the children.

## Presentations

- Delivered a presentation on *Multi-modal omics identifies altered immune crosstalk in western-diet induced pancreas inflammation* at the **Single Cells in Focus** Symposia series @ MDC Berlin, elucidating significant findings and engaging in scholarly discussions in November 2023.
- Participated as a presenter at the **BIH Scientific Symposium**, presenting findings from *Identifying shared transcriptional signatures in response to T2D-related environmental stressors in mouse pancreatic islet -cells* and actively participating in scientific discourse in September 2023.
- **Sai S.**, Omar I., Mühle K., Zhu H., Liu F., Matta I., Schneider M., Dey H., Vidal R., Sawitzki B., Sauer S. & Sander M. *Single cell RNA-seq profiling of Mouse Islet Immune Cells during Western Diet Feeding*. Poster presented at Single Cell Biology 2020 Conference; November 2020; Online.
- **Sai S.**, Ingle S., Nair K., Lulu S. *Computational investigation of POMC gene through SNP analysis, modeling and simulations*. Poster presented at 8th National Symposium - *Recent Trends in Structural Bioinformatics and Computer Aided Drug Design*, February 2016; Alagappa University, Karaikudi, India.

## Publications

- Bakina O., Conrad T., **Sai S.**, ... , Kettenmann H. *In situ Patch-seq analysis of microglia reveals a lack of stress genes as found in FACS-isolated microglia*. Preprint
- Nguyen-Ngoc K., Jun Y., **Sai S.**, ... , Hughes C., Sander M. *Engineered vasculature induces functional maturation of pluripotent stem cell-derived islet organoids*. Preprint
- Altieri B., Secener K., **Sai S.**, ... , Fassnacht M., Ronchi C., Sauer S. *Cell Atlas at Single-Nuclei Resolution of the Adult Human Adrenal Gland and Adrenocortical Adenomas*. Preprint
- Iwert C., Stein J., Appelt C., Vogt K., ..., **Sai S.**, ..., Kühl A., Klipp E., Sawitzki B. *TCAIM controls effector T cell generation by preventing Mitochondria-Endoplasmic Reticulum Contact Site-initiated cholesterol biosynthesis*. Preprint
- Friedel C., Whisnant A., ..., **Sai S.**, ..., Dölken L. *Dissecting Herpes Simplex Virus 1-Induced Host Shutoff at the RNA Level*. *Journal of Virology* 2021, Vol. 95, No. 3

## Achievements

**Gold Medalist** *B. Tech Bioinformatics* VIT University, India  
Graduated with First Rank from the batch..

**2016**

**Mitacs Globalink Research Intern Fellowship**

Received full scholarship for travel and stay during 12 week internship period in Calgary, Canada.

**2015**