Dr. Thomas Ulas

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Life and Medical Sciences (LIMES) Institute

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Research Expertise

As a bioinformatician with extensive training in computational science, I am deeply fascinated by the intersection of biology and computer technology. My primary research interest centers around utilizing advanced computational methods to gain insights into the intricacies of complex biological systems, with a particular focus on the immune system and genomics. Through my work, I aim to contribute to our understanding of the underlying mechanisms driving various diseases, including COVID-19, by leveraging the potential of network analysis and systems immunology approaches. Additionally, I am actively exploring neonatal immunological ontogeny to develop a more comprehensive understanding of immune system development in early life.

One of my major research goals is to utilize genomics data to identify potential therapeutic targets and biomarkers for a wide range of diseases. By leveraging computational tools to analyze large-scale genomics datasets, I hope to uncover new insights into the underlying mechanisms of diseases and to identify novel targets for drug development. Moreover, my research in this area may help accelerate the development of personalized medicine approaches, where treatments are tailored to the individual patient based on their genomic profile.

Overall, my passion lies in utilizing cutting-edge computational tools to drive advances in human health and deepen our understanding of the human system as a whole.

Education / Training

2003-2009 Bachelor and Master in Bioinformatics at University of Bielefeld

2009-2012 PhD Thesis, Technical University Braunschweig

Appointments / Positions Held

2021-now Group Leader Bioinformatics & Computational Network Research / PRECISE, Systems Medicine - German Center for Neurodegenerative Diseases (DZNE) & University of Bonn, Germany

2019-2021 Team Leader Bioinformatics, PRECISE Bioinformatics, Systems Medicine - PRECISE Platform for Single Cell Genomics and Epigenomics, German Center for Neurodegenerative Diseases (DZNE) & University of Bonn, Germany

2014-2019 Team Leader Bioinformatics, group for Genomics and Immunoregulation, LIMES, University of Bonn, Germany

2012-2014 Postdoctoral research fellowship, group for Genomics and Immunoregulation, LIMES, University of Bonn, Germany

Honors / Awards

2018 Appointment to the Data Analysis Expert Board of the West German Genome Center founded by the DFG

2018 Invited authorship of the chapter

2020 Nutricia Wissenschaftspreis zur Erforschung des Stillens und der Muttermilch

2021 MDPI Biology - Invited Editorial Board member

10 Most Relevant Publications for Dr. Thomas Ulas

1. Oestreich Marie, Holsten Lisa, Agrawal Shobhit, Dahm Kilian, Koch Philipp, Jin Han, Becker Matthias, **Ulas Thomas**. hCoCena: horizontal integration and analysis of transcriptomics datasets. Bioinformatics, 38,20,4727-4734, 2022
2. Bonaguro Lorenzo, Schulte-Schrepping Jonas, **Ulas Thomas**, Aschenbrenner Anna C, Beyer Marc, Schultze Joachim L. A guide to systems-level immunomics. Nature immunology, 23,10,1412-1423, 2022
3. Anna C. Aschenbrenner, Maria Mouktaroudi, Benjamin Krämer, [...], Mihai G. Netea, Joachim L. Schultze, Matthijs Kox, Monique M.B. Breteler, Jacob Nattermann, Antonia Koutsoukou, Evangelos J. Giamarellos-Bourboulis, **Thomas Ulas**, German COVID-19 Omics Initiative (DeCOI). Disease severity-specific neutrophil signatures in blood transcriptomes stratify COVID-19 patients. Genome Med. 2021 Jan 13,13(1):7. doi: 10.1186/s13073-020-00823-5
4. Becker M, Schultze H, Bresniker K, Singhal S, **Ulas T**, Schultze JL. A novel computational architecture for large-scale genomics. Nat Biotechnol. 2020 Nov,38(11):1239-1241. doi: 10.1038/s41587-020-0699-5.
5. Schulte-Schrepping J, Reusch N, [...], **Ulas T**, Becker M, Geffers R, Witzenrath M, Drosten C, Suttorp N, von Kalle C, Kurth F, Händler K, Schultze JL, Aschenbrenner AC, Li Y, Nattermann J, Sawitzki B, Saliba AE, Sander LE, Severe COVID-19 Is Marked by a Dysregulated Myeloid Cell Compartment. Deutsche COVID-19 OMICS Initiative (DeCOI). Cell. 2020 Aug 5: S0092-8674(20)30992-2. doi: 10.1016/j.cell.2020.08.001.
6. Tuit S, Salvagno C, Kapellos TS, Hau CS, Seep L, Oestreich M, Klee K, de Visser KE, **Ulas T***, Schultze JL. Transcriptional Signature Derived from Murine Tumor-Associated Macrophages Correlates with Poor Outcome in Breast Cancer Patients. Cell Rep. 2019 Oct 29,29(5):1221-1235.e5. doi: 10.1016/j.celrep.2019.09.067. PubMed PMID: 31665635, PubMed Central PMCID: PMC7057267.
7. Sundararajan Z, Knoll R, Hombach P, Becker M, Schultze JL, **Ulas T**. Shiny-Seq: advanced guided transcriptome analysis. BMC Res Notes. 2019 Jul 18,12(1):432. doi: 10.1186/s13104-019-4471-1. PubMed PMID: 31319888, PubMed Central PMCID: PMC6637470.
8. van der Poel M, **Ulas T***, Mizee MR, Hsiao CC, Miedema SSM, Adelia, Schuurman KG, Helder B, Tas SW, Schultze JL, Hamann J, Huitinga I. Transcriptional profiling of human microglia reveals grey-white matter heterogeneity and multiple sclerosis-associated changes. Nat Commun. 2019 Mar 13,10(1):1139. doi: 10.1038/s41467-019-08976-7. PubMed PMID: 30867424, PubMed Central PMCID: PMC6416318.
9. **Ulas T**, Sabine Pirr, Beate Fehlhaber, [...], Constantin S von Kaisenberg, Judith Friesenhagen, Lena Fischer-Riepe, Stefanie Zenker, Joachim L Schultze, Johannes Roth, Dorothee Viemann: S100-alarmin-induced innate immune programming protects newborn infants from sepsis. Nature Immunology 05/2017, 18(6)., DOI:10.1038/ni.3745
10. Eva Beins*, **Ulas T***, Svenja Ternes, Harald Neumann, Joachim L. Schultze, Andreas Zimmer:

Characterization of Inflammatory Markers and
Transcriptome Profiles of Differentially Activated Embryonic
Stem Cell-Derived Microglia. Glia 03/2016, 64(6).
DOI:10.1002/glia.22979