

# Michael Sandholzer, PhD

## Computational Biologist – Data Science & Cancer Immunology

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### SUMMARY

Data science and computational biology specialist with over 4 years of deep expertise in Cancer Immunology, and integrative multi-omics. Proven track record of delivering decision-oriented insights from complex clinical, and molecular datasets. Experienced in scientific consulting, stakeholder engagement, and translating high-dimensional data into actionable strategies across academic, clinical, and GMP-regulated biopharma environments.

### CORE SKILLS

**Domain Knowledge:** Human immunology, cancer biology, immuno-oncology, biomarker discovery, translational research

**Genomics & Multi-Omics:** scRNA-seq, scTCR-seq, scATAC-seq, CITE-seq, CRISPR screen, glycomics, bulk RNA-seq

**Programming:** R (Seurat, Bioconductor), Python (Scanpy, Scirpy, SCENIC), Unix/Linux, HPC, Git, Docker, Snakemake

**Computational Methods:** AI/ML (scikit-learn, PyTorch), pseudotime, regulatory network inference, predictive modeling

**Collaboration & Leadership:** Cross-functional teamwork, scientific project scoping, client-facing presentations, mentoring

### EXPERIENCE

#### Postdoctoral Scientist in Cancer Immunotherapy

University Hospital of Basel

Nov 2024 – present

Basel, CH

- Led 7+ multi-omics projects, providing consulting on study design, data integration, and interpretation for immuno-oncology research.
- Analyzed longitudinal clinical trial datasets using ML, pseudotime, and RNA velocity to predict therapeutic response.
- Implemented novel scCITE-seq approaches integrating glycomics and transcriptomics to support biomarker discovery strategies.
- Scoped and executed CRISPR knockout screening to investigate cancer glycosylation mechanisms and metastatic potential *in vivo*.
- Served as primary scientific contact for interdisciplinary teams, aligning computational with clinical and experimental priorities.
- Delivered executive-ready analyses and presentations that directly influenced R&D continuation and prioritization decisions.
- Established reproducible data standards and mentored junior scientists in best practices for computational rigor and data hygiene.

#### PhD Researcher in Cancer Immunotherapy

University Hospital of Basel

Mar 2021 – Nov 2024

Basel, CH

- Led integrative analysis of Phase I/II clinical trial data to link immune biomarkers with patient outcomes in adoptive cell therapy.
- Conducted end-to-end multi-omics analysis combining scRNA-seq, scTCR-seq, flow cytometry to characterize therapy resistance.
- Built automated, scalable Python and R pipelines on HPC infrastructure, reducing analysis runtime by approximately 40%.
- Collaborated closely with clinicians, wet-lab, and translational teams to translate findings into experimental and clinical strategy.
- Delivered data-driven insights that shaped a successful Phase I trial and enabled Europe-wide Phase II expansion.

#### Manufactory Science and Technology Postgraduate Cell and Gene Therapy

Novartis Pharma Stein AG Cell and Gene Therapy

Apr 2020 – Feb 2021

Stein AG, CH

- Supported development and validation of GMP-compliant analytical procedures for CART therapy (Kymriah).
- Contributed to closed-system process development and quality documentation supporting clinical manufacturing.
- Gained firsthand exposure to regulatory, clinical, and commercial dynamics of cell therapy manufacturing.
- Trained colleagues in flow cytometry methodologies and analytical best practices.

## EDUCATION

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<b>PhD in Cancer Immunotherapy</b> <i>University of Basel</i>	Mar 2021 – Nov 2024 Basel, CH
<b>Master of Science ETH in Chemistry</b> <i>Swiss Federal Institute of Technology Zurich, ETH</i>	Sep 2018 – Mar 2020 Zurich, CH
<b>Bachelor of Science in Chemistry and Biochemistry</b> <i>Ludwig Maximilian University of Munich, LMU</i>	Sep 2015 – Aug 2018 Munich, DE

## SELECTED PUBLICATIONS

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**Sandholzer, M. T.**, *et al.* Longitudinal profiling of tumor-reactive T cells during TIL therapy in metastatic melanoma. *bioRxiv*, 2025.2009.2023.678066 (2025).

Serger, C., Rebuffet, L.\*, **Sandholzer, M. T.\***, *et al.* Integrated single cell analysis identifies CD39+ tumor-associated NK cells with cytotoxic potential in lung cancer. *bioRxiv*, 2025.2008.2026.672316 (2025).

Wieboldt, R., **Sandholzer, M.**, *et al.* Engagement of sialylated glycans with Siglec receptors on suppressive myeloid cells inhibits anti-cancer immunity via CCL2. *Cell Mol Immunol*, **21**, 495-509 (2024).

König, D.\*, **Sandholzer, M. T.\***, *et al.* Melanoma clonal heterogeneity leads to secondary resistance after adoptive cell therapy with tumor-infiltrating lymphocytes. *Cancer Immunol Res*, **12**, 814-821 (2024).

König, D., Kasenda, B., **Sandholzer, M.**, *et al.* Adoptive cell therapy with tumor-infiltrating lymphocytes in combination with nivolumab in patients with advanced melanoma. *Immunooncol Technol*, **24**, 100728 (2024).

\* These authors contributed equally to this work.

## REFERENCES

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Available upon request.