Dillon Corvino PhD

T cell & NK cell biology · Immuno-oncology · Single-cell & Spatial Genomics

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PROFILE

T cell and NK cell biologist with 6+ years of postdoctoral experience across tumour immunology, viral immunity, tissue-resident immunity, and translational immuno-oncology. Mechanistic expertise in type I IFN signalling, T cell dysfunction, and tissue-resident immunity spans oncology, chronic viral infection, and immune-mediated disease settings. Combines independent end-to-end single-cell and spatial multi-omics analysis, genetic engineering of primary human immune cells, and in vivo preclinical modelling with extensive hands-on experience in human primary tissue, including tumour and healthy tissue processing, PBMC isolation, and ex vivo culture systems ranging from tissue fragment cultures to air-liquid interface organoids. Demonstrated programme ownership: secured €100,000 in competitive funding as sole PI on a translational immunotherapy programme, led full scientific hiring cycles, and co-led international collaborations across four continents. Brings a track record of independent target identification and biomarker development from mechanistic discovery through peer-reviewed publication. Ready to apply deep immunological expertise and end-to-end multi-omic analytical capability to accelerate cell therapy programmes, translational biomarker strategies, or early-stage R&D pipelines from day one.

EXPERIENCE

Postdoctoral Researcher · University Hospital Bonn — Abdullah Lab *Jun 2025 – present*

Institute of Molecular Medicine and Experimental Immunology · PI: Prof. Zeinab Abdullah

- Leading independent research programme investigating unconventional T cell state transitions, tissue-resident immunity, and environmental sensing in antiviral and chronic disease contexts. Utilising LCMV infection and liver fibrosis models to identify novel immune cell programmes with translational relevance to chronic infection and inflammation
- Led full scientific recruitment cycle as primary hiring lead: authored job specifications, managed candidate pipeline, designed and executed structured interview process. Resulting in appointment of 3 PhD students and 2 research technicians; responsible for cross-functional onboarding into active experimental programmes
- Mentoring PhD and undergraduate researchers across experimental design, data analysis, and scientific writing; coordinating active international collaborations across Europe, Australia, and Japan

Postdoctoral Researcher · University Hospital Bonn — Bald Lab *Mar 2020 – Jun 2025*

Institute of Experimental Oncology · PI: Prof. Tobias Bald

- Owned and led the NK cell cancer immunotherapy research programme. Set scientific direction, independently coordinated multi-project experimental strategy, drove execution from conception through peer-reviewed publication
- Investigated NK cell plasticity and dysfunction in the tumour microenvironment using in vivo syngeneic and humanised tumour models integrated with high-dimensional spectral cytometry. Identified cellular state transitions underlying immunotherapy resistance and defining candidate targets for combination therapy strategies
- Designed and executed all single-cell multi-omics analyses independently and end-to-end: scRNA-seq, CITE-seq, scATAC-seq, scTCR-seq, from raw sequencing data through HPC processing, QC, integration, trajectory inference, chromatin accessibility, and biological interpretation; generated cross-functional data packages directly informing biomarker development and translational strategy across multiple collaborative programmes
- Contributed to spatial transcriptomics and high-multiplex spatial imaging analyses, including dataset design input and full downstream computational analysis, enabling tissue-resolved characterisation of immune niches in the TME

- Developed CRISPR knock-out, knock-in, and overexpression strategies in primary human NK cells and CD8 T cells using lentiviral and adenoviral delivery systems; contributed to CAR-NK cell engineering concepts establishing proof-of-concept in vitro data for preclinical cell therapy development
- Extensive hands-on experience with primary human tissue: processing of human tumour and healthy tissue biopsies, PBMC isolation, and generation of ex vivo model systems including air-liquid interface organoids, tissue fragment cultures, and chorioallantoic membrane (CAM) assays for testing CAR-T and CAR-NK cell therapies *in ovo*
- Secured €100,000 GO-Bio Initial BMBF grant as sole PI (2023): independently conceived, wrote, and submitted the full application for a CD56bright NK cell immunotherapy programme (ImmunoBright, code 16LW0427)
- Built and maintained cross-functional collaborations with systems biology, quantitative biology, clinical oncology, and computational groups across Germany, Australia, Japan, and the United States
- Provided day-to-day scientific leadership, experimental guidance, and manuscript support for 3 PhD candidates and multiple Masters and BSc students as co-supervisor

Postdoctoral Researcher · QIMR Berghofer Medical Research Institute — Bald Lab *Sep 2019 – Feb 2020*

Oncology and Cellular Immunology Laboratory · Brisbane, Australia

- Single-cell profiling of tumour-infiltrating lymphocytes in head and neck squamous cell carcinoma (HNSCC); characterised inhibitory receptor landscapes and functional heterogeneity of NK and CD8 T cells, data directly informed cross-functional discussion on IO biomarker prioritisation and provided mechanistic basis for reverse translation of clinical response patterns; findings contributed to subsequent published work on NK cell dysfunction

PhD Researcher · QIMR Berghofer / University of Queensland *Apr 2015 – Sep 2019*

Supervisor: Prof. Rajiv Khanna · Thesis: Strategies for improving adoptive T-cell immunotherapy

- Developed and characterised antigen-specific T cell therapy strategies; presented findings to technology transfer stakeholders in the context of commercialisation potential
- Contributed to clinical study linking TCR repertoire remodelling to therapeutic response in post-transplant adoptive cell therapy (JCI, 2019) — translational relevance to ACT monitoring and patient stratification

CORE COMPETENCIES

T cell & NK biology	CD8, CD4, unconventional T cell subsets, NK cells, TME biology, tissue-resident immunity, checkpoint and co-stimulatory pathways, type I IFN signalling, cytotoxicity mechanisms, resistance to cancer immunotherapy
Preclinical models	Murine syngeneic and humanised tumour models, LCMV acute and chronic viral infection, chronic liver disease, adoptive transfer, tissue immune phenotyping; chorioallantoic membrane (CAM) assay for in ovo tumour growth and immune cell response; human primary tissue processing (tumour, healthy tissue, PBMC); air-liquid interface organoids, tissue fragment cultures, and primary ex vivo culture systems
Cell engineering	CRISPR knock-out, knock-in, and overexpression in primary human NK and CD8 T cells; lentiviral and adenoviral overexpression systems; CAR-based engineering (NK and T cell); functional assay development (cytotoxicity, proliferation, ICS, degranulation)
Single-cell omics	Independent end-to-end pipelines: scRNA-seq, CITE-seq, scATAC-seq, scTCR-seq — Seurat, Monocle, ArchR, trajectory inference, chromatin state modelling, clonotype integration, HPC execution
Spatial omics	Spatial transcriptomics and high-multiplex spatial imaging — analysis pipeline execution and dataset design; tissue-resolved immune niche characterisation in tumour and inflammatory contexts

Cytometry	Spectral and conventional multiparameter flow cytometry, FACS sorting, high-dimensional panel design (40+ colour), tetramer staining
Computation	R / tidyverse (primary analytical language), ggplot2, Quarto, Nextflow, Docker, GitHub, HPC, reproducible end-to-end workflows; Python (functional proficiency; pipeline development and scripting for data engineering tasks); applied ML methods for outcome prediction and TCR structural embedding; large public database integration (TCGA and equivalent); proteomics data analysis (supporting); scientific visualisation (Adobe Illustrator)
Leadership	Independent research programme ownership; primary hiring lead (3 PhDs, 2 technicians); scientific mentorship of 10+ PhD, Masters, and BSc students; international collaboration coordination across 4 continents
Funding	PI — BMBF GO-Bio Initial €100,000 (2023); sole applicant — ImmunoSensation2 Innovation Fund €10,000 (2020)

SELECTED PUBLICATIONS

Full list: Google Scholar (899 citations, h-index 15) · ORCID: 0000-0003-0683-1369

Corvino D et al. Manuscript in preparation.
Unconventional T cell state transitions and tissue-resident immunity in antiviral infection — mechanistic characterisation with translational relevance to chronic infection and inflammatory disease

Corvino D et al. European Journal of Immunology 2025.
Type I IFN drives a dysfunctional, TCR-inert T cell state in cancer — mechanistic basis for T cell therapy failure and candidate target for improving personalised immunotherapy

Turiello R, Ng SS, … Corvino D. European Journal of Immunology 2025.
NKG7 validated as a stable TME cytotoxicity biomarker — translational utility for patient stratification and immune monitoring in clinical contexts

Braun M, … Corvino D, … Bald T. Immunity 2020.
CD155-driven degradation of CD226 as an immunotherapy resistance mechanism — informs co-stimulatory target selection and combination therapy strategy

Ng SS, … Corvino D, … Engwerda CR. Nature Immunology 2020.
NKG7 as a core regulator of cytotoxic granule exocytosis — defines an effector pathway with direct relevance to cell therapy potency and target biology

Smith C, Corvino D et al. Journal of Clinical Investigation 2019.
TCR repertoire remodelling as a correlate of clinical response to adoptive T cell therapy — supports TCR-seq-based monitoring and patient selection strategies

EDUCATION

PhD — Immunology · QIMR Berghofer / University of Queensland, Australia *2015 – 2019*

Bachelor of Biomedical Science, Honours Class I · Griffith University, Australia *2011 – 2014*
cGPA 6.83 / 7.0

FUNDING & AWARDS

GO-Bio Initial, BMBF — PI (ImmunoBright: CD56bright NK cells for cancer immunotherapy, code 16LW0427) *€100,000 · 2023*

ImmunoSensation2 Postdoc Innovation Fund — Sole Applicant (Lineage tracing of NK cell plasticity) *€10,000 · 2020*

Provisional Patent — Inventor ("Biomarkers of immunocompetence and uses therefor", AU 2017904567) *Filed Nov 2017*