

# Conor M. Finlay

PRINCIPAL INVESTIGATOR

Trinity Translational Medicine Institute, Trinity College Dublin

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Cellular Immunologist and bioinformatician, combining molecular, *in vivo* and translational research.

## Snapshot

My main research interest is in what genetic factors control mononuclear phagocyte (macrophage) differentiation during inflammation on a single cell level and how this impacts on disease outcomes. I have expertise in single cell RNA-sequencing, NGS, cell biology, *in vitro* and *in vivo* sciences and summarising complex data through effective data visualisation.

## Current roles

### SENIOR RESEARCH FELLOW, TRINITY COLLEGE DUBLIN (2022-PRESENT)

- Principal Investigator of the Finlay laboratory (Immune cell biology and bioinformatics, 2 PhD students), since 2024
- Founder and scientific director of TCD Omics - Single cell RNA-sequencing core facility, since 2021
- Trinity Kidney Centre clinical collaboration with Prof. Mark Little including co-supervising students working on immunophenotyping and biomarker projects, 2022-present
- Pleural effusion clinical collaboration with Associate Prof. Luara Gleeson, 2023-present

### HONORARY RESEARCH FELLOW, UNIVERSITY OF MANCHESTER (2021-PRESENT)

- Collaboration on MRC programme grant with Prof. Judith Allen.

## Employment History

### Research Fellow

Trinity College Dublin

SUPERVISOR: AIDEEN LONG

2023-2024

- HEALD consortium - molecular biology and sequencing lead of tumour DNA and RNA-sequencing (with Aideen Long), since August 2023

### Research Fellow

Trinity College Dublin

SUPERVISOR: PROF MARK LITTLE

2017-2023

- Single cell RNA-sequencing lead on COVID-19 strategic partnership. Laboratory management of Trinity Kidney Health Centre (THKC). Clinical data analysis: incorporating data from clinical datasets (RedCap) with biobank datasets to stratify patients and combine with biomarker results for analysis using machine learning.

### Research Associate

University of Manchester

SUPERVISOR: PROF JUDITH ALLEN.

2017-2021

- Origin, heterogeneity, proliferation and effector function of macrophages during helminth infection and type 2 immune responses. Funding: Medical Research Council/Wellcome Trust. See recent preprint for outputs.

### Lecturer (teaching relief)

Trinity College Dublin

SCHOOL OF BIOCHEMISTRY AND IMMUNOLOGY

2016-2017

- Performed the teaching duties for a senior professor on sabbatical for 1 year. Duties included undergraduate practical supervision, undergraduate and MSc teaching via lectures and tutorials, setting examinations and corrections with associated administration duties.

### Post-doctoral Researcher

Trinity College Dublin

SUPERVISOR: PROF KINGSTON HG MILLS.

2013-2016

- Research projects: 1. IP-protected translational project identifying and testing novel helminth-derived proteins as therapeutics for inflammatory disease. 2. Role of mast cells in the alternative activation of macrophages via IL-33. 3. Circadian regulation of autoimmune disease

## Education

### Special Purpose Certificate in Teaching, Learning & Assessment for Academic Practice

Trinity College Dublin

PERSPECTIVES ON TEACHING AND LEARNING IN HIGHER EDUCATION

2022

- Constitutes one third of the SP Cert

### Informatics Training Scheme (Wellcome Trust TPA)

University of Manchester

PROGRAMMING AND COMPUTATIONAL APPROACHES TO BIOLOGY MODULES

2020

- Constituted 50% of taught component of MSc Bioinformatics and Systems Biology

### PhD in Immunology

Trinity College Dublin

IMMUNE MODULATION BY THE HELMINTH PARASITE *FASCIOLA HEPATICA*

2013

- Supervisor: Kingston Mills

## Funding

### AWARDED

#### SFI-Pathways Programme

457K, PI

- Macrophage Activation and Transition in the Autoimmune Kidney (MacATAK): uncovering functional outcomes of macrophage differentiation in the inflamed kidney

Science Foundation Ireland

2024-2028

#### Trinity Doctorate Award 2024-2025, PI-led application

122K, PI

- Mapping Macrophage Cell State Transition in Inflammation and Infection at Single Cell Resolution

Trinity Doctorate Award

2024-2028

#### Higher Education Research Equipment Grant

30.2K, PI

- Cell counting solution to support TCD Omics

Higher Education Authority

2024-2025

#### Dean's Research Initiatives Fund

20K, PI

- Mapping human macrophage anti-microbial function in pleural infection

Faculty of Health Sciences, TCD

2024

#### Enterprise Ireland-funded Industry collaboration

84K

- Title withheld, scRNA-sequencing of blood cancer

Legend Biotech

2024

#### Building Engagements in Health Research Scheme

10K EUR, Co-PI

- Understanding mast cells and their progenitors in Telangiectasia Macularis Eruptiva Perstans (TMEP)

Internal TCD

2023

#### MR/V011235/1 Programme Grant

2.26 MILLION GBP, RESEARCH CO-INVESTIGATOR

- "Macrophages in type 2 immunity: unravelling susceptibility and resistance to tissue nematode infection". I co-wrote grant and provided scientific design and preliminary data. Awarded an honorary position at UoM to facilitate ongoing collaboration after leaving Manchester

Medical Research Council

2021

#### Building Engagements in Health Research Scheme

10K EUR, Co-PI

- 'Nanoparticle modulation of neutrophil and monocyte responses to ANCA'

Internal TCD

2021

## Presentations, Awards & contributions

### ORAL PRESENTATIONS

2024	UK Kidney Week (Invited talk)	Edinburgh
2023	AI-driven Digital Content Technology (ADAPT) Collaboration Day (Invited talk)	TU Dublin
2023	Irish society of Parasitology	Tralee, Ireland
2023	Building Engagements in Health Research	TCD, Dublin
2022	Mononuclear Phagocytes in Health and Disease (Invited talk)	CRICK, London
2022	Parasitic Helminths: New Perspectives in Biology and Infection	Hydra, Greece
2022	COVID-19 Immunology, Vaccines and Lessons for the Future (Invited talk)	TCD, Dublin
2022	Trinity Translational Medicine Institute - Conference 2022 (Invited talk)	TTMI, Dublin
2021	Cytokine and interferon society meeting	Cardiff
2019	Irish Society of Immunology (best presentation award)	RCSI, Dublin
2019	BSI Type 2 Immunology Meeting	Manchester
2019	KU Leuven, UZ Gasthuisberg Campus (Invited talk)	KU Leuven
2015	Molecular and cellular biology of helminth parasites IX	Hydra, Greece
2015	TBSI Post-Doc Research Day	TCD, Dublin
2015	1st TBSI-Weimann joint Immunology conference	Rehovot, Israel
2015	European Congress of Immunology	Vienna
2009	European Congress of Immunology	Berlin

### POSTER PRESENTATIONS

2023	British Society of Immunology	Belfast
2019	British Society of Immunology	Liverpool
2018	Type 2 Immunity in Homeostasis and Disease	Bruges
2017	British Society of Immunology	Brighton
2016	British Society of Immunology	Liverpool
2015	Frontiers in neurology	TCD, Dublin
2014	Cytokine and interferon society meeting	Melbourne
2012	Keystone: Biology of Cytokines	Colorado
2012	British Society of Immunology	Colorado
2011	Cytokine and interferon society meeting	Florence

## MEDIA AND COMMENTRY

- Commentry in *Immunity*: “Macrophages show up in style when Th2 lymphocytes organize their homecoming”
- Paper featured on The Immunology Podcast - Episode 51
- Immunity paper featured on August 2023 edition of *Journal of Allergy and Clinical Immunology* News Beyond Our Pages column.
- Irish Health Professional 2023
- Medical Express 2023

## AWARDS

2022	Wiley Top Cited Article Award - Parasite Immunology
2021	EFIS/EJI Travel/Abstract Award Winners Presenting at Cytokines 2021
2019	Best presentation from selected abstracts - Irish Society of Immunology
2015	Visiting student training scheme - Weizmann Institute of Science
2015	TBSI Post-Doc Research Day - Runner up talk prize
2014	Milstein Travel Award - International Cytokine society
2007	Valdicotrian - Biochemistry with Immunology degree
2007	Best Undergraduate Research Poster Prize - School of Biochemistry and Immunology

## DISCIPLINE CONTRIBUTIONS

2024	European Journal of Immunology	Article review
2024	European Congress of Immunology	Poster session reviewer
2023	Kidney Research UK	Grant review
2023	Annals of the Rheumatic Diseases	Article review
2023	British Fellowship awarding body (name withheld)	Grant review
2022	Irish Nephrology Society Conference	Session Chair
2022	Post-Doctoral scientist at TCD	Interview panel
2022	PhD Candidate in TCD	Continuation Viva
2022	Kidney Kinternational	Article review
2021-2022	Frontiers in Immunology	Article review
2021-2022	Research Assistant at TCD	Interview panel
2021	French National Research Agency (ANR) 2021 generic call	Grant review
2021	BBSRC Discovery Fellows award	Grant review
2021	Venture capital funded Trinity Spinout – Parvalis Tx	Patent (inventor)
2018	Scientific Reports	Article review
2017-2020	Parasite Immunology	Article review

## Active Collaborations

### Graham Heieis & Bart Everts

O-GLCNACYLATION IN MACROPHAGE HOMEOSTASIS

Leiden

### Lara Dungan, Niall Conlon

UNDERSTANDING MAST CELLS AND THEIR PROGENITORS IN TELANGIECTASIA MACULARIS ERUPTIVA PERSTANS

St James' Hospital

### Padraic Fallon

TITLE WITHHELD; INFLAMMATION FOCUSED (MOUSE)

Trinity College Dublin

### Arthur White

NEW STATISTICAL METHODS FOR SEMI-SUPERVISED CLUSTERING OF FLOW AND MASS CYTOMETRY DATA

Trinity College Dublin

### Legend Biotech & Tony Mc Elligott

TITLE WITHHEALD

Trinity College Dublin

### Judi Allen, Lili Zhang

B CELL-MACROPHAGE INTERACTIONS IN TYPE 2 IMMUNE RESPONSES

University of Manchester

<b>Pn'g Loke</b> EFFECT OF GENOTYPE ON ALTERNATIVE ACTIVATION OF SEROUS CAVITY MACROPHAGES	NIH, Bethesda, MA
<b>Niall Conlon, Katie Ridge</b> ROLE OF MAST CELL PROGENITORS IN CHRONIC URTICARIA	St James' Hospital
<b>Ross MacManus</b> LINKING IMMUNE CELL PERTURBATIONS TO ANKYLOSING SPONDYLITIS OUTCOMES	Trinity College Dublin
<b>Mark Travis</b> TITLE WITHHELD, T CELL AND INFECTION FOCUSED (MOUSE)	University of Manchester
<b>Maria M. Munoz San Martin</b> TITLE WITHHELD, MICROGLIA FOCUSED (MOUSE)	RCSI
<b>Sharee Basdeo</b> INNATE IMMUNE TRAINING OF HUMAN MONOCYTES AND MACROPHAGES BY SARS-COV2 VACCINE CHAdOx1	Trinity College Dublin
<b>Judi Allen</b> SEROUS CAVITY MACROPHAGE IN NEMATODE CONTROL	University of Manchester
<b>Judi Allen, James Parkinson</b> THE PLUERAL CAVITY MACROPHAGE PROTEOME	University of Manchester
<b>Alvaro Diaz</b> ROLE OF CD40 SIGNALLING IN TISSUE RESIDENT MACORPHAGE PROLIFERATION	Uni. de la República Uruguay

## Teaching & Supervision

### FORMAL TEACHING

<b>Introduction to omics technologies</b> CORE RESEARCH SKILLS MODULE • General introduction to ustilising omics technologies in reseach to new PhD students	20 students 2023
<b>Transcriptomics (2 hr workshop)</b> MSC IN IMMUNOLOGY • Introduction to Transcriptomics and single cell technologies	20 students 2022
<b>Datascience for Immunology (3 workshops and assessment)</b> MSC IN IMMUNOLOGY • 12 hours direct teaching time. Introduction to R programming, with a focus on analysis in R markdown. Analysing and visualising immunology data in R. Single cell RNA-sequencing analysis. Student assessment in Single cell RNA-sequencing analysis. Module design and module reform via comittee.	20 students 2022
<b>R programming, data visualisation and transcriptomic analysis (3 workshops)</b> MSC IN IMMUNOLOGY • Part of immunogenetics module - This included 3 dry lab sessions (in person) and assessment: student presentations of bioinformatic analysis (microarray)	20 students 2021
<b>T cells (4 lectures)</b> BA(MOD) BIOCHEMISTY WITH IMMUNOLOGY (4TH YEAR) • This advanced course teaches most aspect of T cell biology form development, T cell education, tolerance, activation through the immunological synapse, APC function, co-stimulation, expansion, tissue/lymph node homing, T cell subset differentiation, regulation and the concept of immune responses types. Assessment: written exam	30 Students 2016-2017
<b>Cancer immunology and immunotherapy (2 lectures)</b> BA(MOD) BIOCHEMISTY WITH IMMUNOLOGY (4TH YEAR) • Brief history of chemotherapy, failed early immune oncology interventions, recent success, checkpoint inhibitors, combination studies, CAR-T cell, future perspectives Assessment: written exam	30 Students 2016-2017
<b>Multiple sclerosis (1 lecture)</b> BA(MOD) BIOCHEMISTY WITH IMMUNOLOGY (4TH YEAR) • Th1 and Th17 cells in autoimmunity, animal models of disease, S1p1 inhibitors, VLA4, future targets.	30 Students 2016-2017
<b>T cell differentiation, effector function and regulation (2 lectures)</b> MSC IN IMMUNOLOGY • Introductory course to T cell biology, differentiation and the cytokine control of immune responses. Assessment: written exam	20 students 2016-2017
<b>Introduction to parasite and type 2 Immune responses (3 lectures)</b> MSC IN IMMUNOLOGY • This is an advanced course that covers aspect of type 2 immune responses. Th2 cells, helminth infections, eosinophils, M2 macrophages, wound repair, hygiene hypothesis and allergy. Workshop style with three PBL topics. Assessment: written exam	20 students 2014-2017
<b>Intgrtated Tutorials</b> BA(MOD) BIOCHEMISTY WITH IMMUNOLOGY (3RD YEAR) • Ongoing small group tutorials for 3 students each year integrated with specific modules	3 students 2014-2017

### RESEARCH PROJECT SUPERVISION

2024-2028 PhD Immunology	TCD
2024-2028 PhD Bioinformatics	TCD
2024 Msc Molecular Medicine	TCD
2023-2027 PhD Immunology (Co-supervisor)	TCD
2023 Ba(Mod) Molecular Medicine (intercalating Medical student)	TCD
2022 Ba(Mod) Molecular Medicine (intercalating Medical student)	TCD
2021-2022 Bachelor in Medicine	TCD
2021-2022 Research Assistant	TCD
2021-2022 PhD student	TCD
2021 Ba(Mod) Molecular Medicine (intercalating Medical student)	TCD
2020-2021 Mres Infection Biology	UoM
2018-2019 Mres Infection Biology	UoM
2017-2021 PhD Student (day-to-day supervisor, unofficial)	TCD
2016 Msc Immunology	TCD
2015-2017 PhD Student	TCD
2015 Msc Immunology	TCD
2014 Msc Immunology	TCD

**Additional teaching duties** In 2016 I took on the academic duties for a Professor in TCD on teaching sabbatical. This included all aspects of the role, including practical supervision, assessment and marking, tutorials and administrative duties. I have organised visits for school students between 2013-2016. I sit on thesis committees for 3 PhD students.

## Outreach, organisation, and PPI

**Discover Research Night**, Dublin Sep 2014. Marie Skłodowska-Curie-funded. I was the event organiser responsible for public engagement at Trinity Biomedical Sciences Institute, organising a team of 50 researchers in leading themed tours of scientific facilities. We were the most subscribed event of Dublin Research Night (>500 members of the public).

**10th International Symposium on Bordetella**, Sep 2013. Logistics manager responsible for operations of the conference including registration, AV equipment and support for speakers.

**Manchester Immunology Group Seminar Series**, May 2017 – Sep 2018. Co-lead organiser. Handling invitations, hospitality, communications, for renowned international speakers to visit University of Manchester.

**School talk**, Oaklands Community College, Edenderry Co. Offaly, 2021. “The life of a scientist”.

**TCD Omics Core facility**. I have established formal pipelines for a single cell RNA-sequencing core service ‘TCD Omics’. I have successfully lobbied my institute to fund a research assistant to support the service under my supervision.

**Patient involvement** I have worked alongside patient representatives for Vasculitis Ireland as part of the PARADISE project. I have pitched an idea to the St James hospital Patient Representative Group and received feedback on development of a research programme, lay abstract and patient information leaflet.

## Publications

\* (Co-)corresponding author or (co-)senior authorship

- Ridge, K., Moran, B., Alvarado-Vazquez, P. A., Hallgren, J., Little, M. A., Irvine, A. D., O’Farrelly, C., Dunne, J., Finlay\*, C. M., & Conlon\*, N. (2024). Lin – CD117 + CD34 + FceRI + progenitor cells are increased in chronic spontaneous urticaria and predict clinical responsiveness to anti- IgE therapy. *Allergy*. <https://doi.org/10.1111/all.16127>
- Finlay\*, C. M., & Allen\*, J. E. (2024). IL-4-ever young: Type 2 cytokine signaling in macrophages slows aging. *Immunity*, 57(3), 403–406. <https://doi.org/10.1016/j.immuni.2024.02.013>
- Dwivedi, A., Mhaonaigh, A. U., Carroll, M., Khosravi, B., Batten, I., Ballantine, S., Phelan, S., O’Doherty, L., George, A., Sui, J., Hawerkamp, H., Fallon, P., Noppe, E., Mason, S., Conlon, N., Ni Cheallaigh, C., Finlay, C. M. \*, & Little, M. A. \*. (2024). Neutrophil dysfunction in COVID-19. *Accepted in JCI Insight*, 171659-INS-RG-DN-2.
- Han, J., Gallerand, A., Erlich, E. C., Helmink, B. A., Mair, I., Li, X., Eckhouse, S. R., Dimou, F. M., Shakhsher, B. A., Phelps, H. M., Chan, M. M., Mintz, R. L., Lee, D. D., Schilling, J. D., Finlay, C. M., Allen, J. E., Jakubzick, C. V., Else, K. J., Onufer, E. J., ... Randolph, G. J. (2024). Human serous cavity macrophages and dendritic cells possess counterparts in the mouse with a distinct distribution between species. *Nature Immunology*, 25(1), 155–165. <https://doi.org/10.1038/s41590-023-01688-7>
- Finlay, C. M., Parkinson, J. E., Zhang, L., Chan, B. H. K., Ajendra, J., Chenery, A., Morrison, A., Kaymak, I., Houlder, E. L., Murtuza Baker, S., Dickie, B. R., Boon, L., Konkel, J. E., Hepworth, M. R., MacDonald, A. S., Randolph, G. J., Rückerl, D., & Allen\*, J. E. (2023). T helper 2 cells control monocyte to tissue-resident macrophage differentiation during nematode infection of the pleural cavity. *Immunity*, 56(5), 1064–1081.e10. <https://doi.org/10.1016/j.immuni.2023.02.016>

6. McEntee, C. P., Houston, S., Finlay, C. M., Rossi, S., Liu, G., Shaw, T. N., Casulli, J., Fife, M., Smedley, C., Griffith, T. S., Pepper, M., Hussell, T., Hansbro, P. M., Schwartz, J.-M., Paidassi, H., & Travis, M. A. (2023). A subset of CD4<sup>+</sup> effector memory T cells limit immunity to pulmonary viral infection and prevent tissue pathology via activation of latent TGF $\beta$ . *bioRxiv*, 2023.03.02.527395. <https://doi.org/10.1101/2023.03.02.527395>
7. McManus, C. M., Bouchery, T., Suleiman, M., Kildemoes, A. O., Ferguson, A., Wang, T., Finlay, C. M., Chan, R., Renahan, T., Mukundan, A., Nkurunungi, G., & Bobardt, S. D. (2022). Hydra 2022: return of the interactive conference on helminth parasitology after the pandemic. *Trends in Parasitology*, 38(12), 999–1007. <https://doi.org/10.1016/j.pt.2022.09.013>
8. Finlay\*, C. M., Parkinson, J. E., Chan, B. H. K., Ajendra, J., Chenery, A., Morrison, A., Houlder, E., Baker, S. M., Dickie, B., Boon, L., MacDonald, A., Konkel, J. E., Ruckerl, D., & Allen\*, J. E. (2021). Genotype and Th2 Cells Control Monocyte to Tissue Resident Macrophage Differentiation During Nematode Infection of the Pleural Cavity. *bioRxiv*, 2021.12.17.472661. <https://doi.org/10.2139/ssrn.3992680>
9. Fiancette, R., Finlay, C. M., Willis, C., Bevington, S. L., Soley, J., Ng, S. T. H., Baker, S. M., Andrews, S., Hepworth, M. R., & Withers, D. R. (2021). Reciprocal transcription factor networks govern tissue-resident ILC3 subset function and identity. *Nature Immunology*, 22(10), 1245–1255. <https://doi.org/10.1038/s41590-021-01024-x>
10. Cunningham, K. T., Finlay, C. M., & Mills, K. H. G. (2021). Helminth Imprinting of Hematopoietic Stem Cells Sustains Anti-Inflammatory Trained Innate Immunity That Attenuates Autoimmune Disease. *Journal of Immunology (Baltimore, Md. : 1950)*, 206(7), 1618–1630. <https://doi.org/10.4049/jimmunol.2001225>
11. Finlay, C. M., Cunningham, K. T., Doyle, B., & Mills, K. H. G. (2020). IL-33-Stimulated Murine Mast Cells Polarize Alternatively Activated Macrophages, Which Suppress T Cells That Mediate Experimental Autoimmune Encephalomyelitis. *Journal of Immunology (Baltimore, Md. : 1950)*, 205(7), 1909–1919. <https://doi.org/10.4049/jimmunol.1901321>
12. Finlay\*, C. M., & Allen\*, J. E. (2020). The immune response of inbred laboratory mice to *Litomosoides sigmodontis*: A route to discovery in myeloid cell biology. *Parasite Immunology*, 42(7), e12708. <https://doi.org/10.1111/pim.12708>
13. Czajkowska, B. I., Finlay, C. M., Jones, G., & Brown, T. A. (2019). Diversity of a cytokinin dehydrogenase gene in wild and cultivated barley. *PloS One*, 14(12), e0225899. <https://doi.org/10.1371/journal.pone.0225899>
14. McEntee, C. P., Finlay, C. M., & Lavelle, E. C. (2019). Divergent Roles for the IL-1 Family in Gastrointestinal Homeostasis and Inflammation. *Frontiers in Immunology*, 10, 1266. <https://doi.org/10.3389/fimmu.2019.01266>
15. Campbell, S. M., Knipper, J. A., Ruckerl, D., Finlay, C. M., Logan, N., Minutti, C. M., Mack, M., Jenkins, S. J., Taylor, M. D., & Allen, J. E. (2018). Myeloid cell recruitment versus local proliferation differentiates susceptibility from resistance to filarial infection. *eLife*, 7, e30947. <https://doi.org/10.7554/eLife.30947>
16. Sutton, C. E., Finlay, C. M., Raverdeau, M., Early, J. O., DeCoursey, J., Zaslon, Z., O'Neill, L. A. J., Mills, K. H. G., & Curtis, A. M. (2017). Loss of the molecular clock in myeloid cells exacerbates T cell-mediated CNS autoimmune disease. *Nature Communications*, 8(1), 1923. <https://doi.org/10.1038/s41467-017-02111-0>
17. Finlay\*, C. M., Stefanska, A. M., Coleman, M. M., Jahns, H., Cassidy, J. P., McLoughlin, R. M., & Mills, K. H. G. (2017). Secreted products of *Fasciola hepatica* inhibit the induction of T cell responses that mediate allergy. *Parasite Immunology*, 39(10), e12460. <https://doi.org/10.1111/pim.12460>
18. Finlay, C. M., Stefanska, A. M., Walsh, K. P., Kelly, P. J., Boon, L., Lavelle, E. C., Walsh, P. T., & Mills, K. H. G. (2016). Helminth Products Protect against Autoimmunity via Innate Type 2 Cytokines IL-5 and IL-33, Which Promote Eosinophilia. *Journal of Immunology (Baltimore, Md. : 1950)*, 196(2), 703–714. <https://doi.org/10.4049/jimmunol.1501820>
19. Bernard, N. J., Finlay, C. M., Tannahill, G. M., Cassidy, J. P., O'Neill, L. A., & Mills, K. H. G. (2015). A critical role for the TLR signaling adapter Mal in alveolar macrophage-mediated protection against *Bordetella pertussis*. *Mucosal Immunology*, 8(5), 982–992. <https://doi.org/10.1038/mi.2014.125>
20. Finlay, C. M., Walsh, K. P., & Mills, K. H. G. (2014). Induction of regulatory cells by helminth parasites: exploitation for the treatment of inflammatory diseases. *Immunological Reviews*, 259(1), 206–230. <https://doi.org/10.1111/imr.12164>
21. Coleman, M. M., Finlay, C. M., Moran, B., Keane, J., Dunne, P. J., & Mills, K. H. G. (2012). The immunoregulatory role of CD4<sup>+</sup> FoxP3<sup>+</sup> CD25<sup>+</sup> regulatory T cells in lungs of mice infected with *Bordetella pertussis*. *FEMS Immunology and Medical Microbiology*, 64(3), 413–424. <https://doi.org/10.1111/j.1574-695X.2011.00927.x>
22. Walsh, K. P., Brady, M. T., Finlay, C. M., Boon, L., & Mills, K. H. G. (2009). Infection with a helminth parasite attenuates autoimmunity through TGF- $\beta$ -mediated suppression of Th17 and Th1 responses. *Journal of Immunology (Baltimore, Md. : 1950)*, 183(3), 1577–1586. <https://doi.org/10.4049/jimmunol.0803803>

## Referees

### Prof Judi Allen

PROFESSOR OF IMMUNOBIOLOGY; JUDI.ALLEN@MANCHESTER.AC.UK

### Dr Matthew Hepworth

SIR HENRY DALE FELLOW; MATTHEW.HEPWORTH@MANCHESTER.AC.UK

### Prof Kingston HG Mills

PROFESSOR OF EXPERIMENTAL IMMUNOLOGY; KINGSTON.MILLS@TCD.IE

University of Manchester

Lydia Becker Institute

University of Manchester

Lydia Becker Institute

Trinity College Dublin

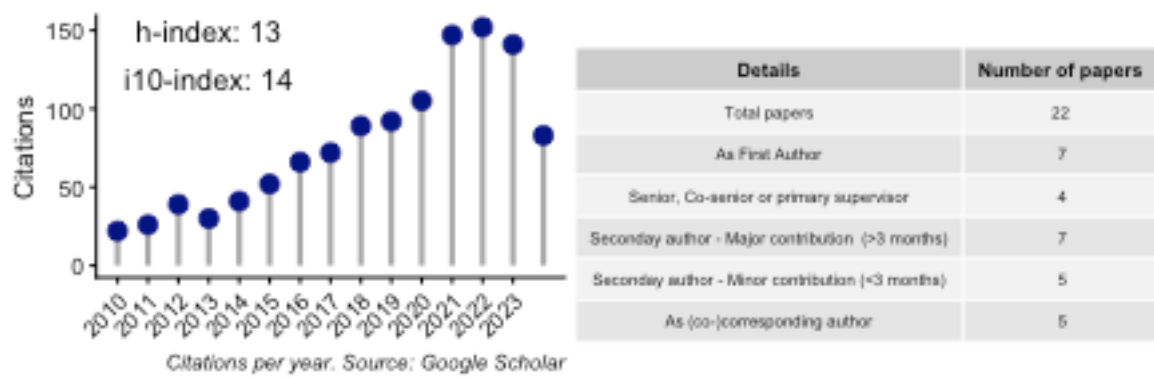
School of Biochemistry and Immunology





# Appendix

## CITATION METRICS



## DATASETS, CODE & WEBSITES

<b>scRNA-seq data from Allergy paper 2024</b> <a href="https://www.ncbi.nlm.nih.gov/geo/query/acc.cgi?acc=GSE261424">https://www.ncbi.nlm.nih.gov/geo/query/acc.cgi?acc=GSE261424</a> <b>scRNA-seq expression app</b> <a href="https://shiny.its.manchester.ac.uk/mdehsjpr/original/">https://shiny.its.manchester.ac.uk/mdehsjpr/original/</a> <b>PARADISE R package for analysis of Kidney disease dataset (private)</b> ON REQUEST <b>L sigmodontis collective analysis</b> <a href="https://github.com/Conorisco/LITO_DATABASE">https://github.com/Conorisco/LITO_DATABASE</a> <b>scRNA-seq data from Immunity paper 2023</b> <a href="https://www.ncbi.nlm.nih.gov/geo/query/acc.cgi?acc=GSE189031">https://www.ncbi.nlm.nih.gov/geo/query/acc.cgi?acc=GSE189031</a>	<i>NCBI</i> 2024 <i>shiny app</i> 2023 <i>R package</i> 2023 <i>Github</i> 2022 <i>NCBI</i> 2021
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## SHORT-LISTED APPLICATIONS

- Short-listed for UKRI Innovation/Rutherford Fund Skills Development Fellowship (Computational Biology), 2017.
- Short-listed for academic-industry partnership post-doctoral position, Belgium, 2019
- Short-listed as candidate from school of medicine for Science Foundation Ireland Pathways programme, 2021
- Short-listed for Lister Prize 2023

## TRAINING

2023	LAST (Ireland) course (rodents)	<i>LAST Ireland</i>
2022	Illumina Sequencing (NovaSeq 6000)	<i>Illumina</i>
2018	Single Cell RNA-sequencing	<i>Earlham Institute</i>
2017	Home Office personal animal licence	<i>Manchester</i>
2014	Fluorescent activated cell sorting	<i>UCD</i>

## THESIS COMMITTEES AND CONTINUATION VIVAS

2022-2023 School of Computer Science and Statistics PhD student	<i>Ultan Doherty</i>
2022-2023 School of Medicine PhD student	<i>Sarah Connolly</i>
2021-2023 School of Medicine PhD student	<i>Mariya Al Hamrashdi</i>

## INTERVIEW PANELS

2022	Post-Doctoral scientist at TCD (TTMI lab)	<i>Interview panel</i>
2022	Research Assistant at TCD (Core funded)	<i>Interview panel</i>
2022	Research Assistant at TCD (our lab)	<i>Interview panel</i>
2021	Research Assistant at TCD (our lab)	<i>Interview panel</i>

## COURSES

UNIVERSITY OF MANCHESTER
• Data Protection
• Introduction to High Performance Computing
• Introduction to version control using Git
• Introduction to the UNIX shell
• Programming with Python
• Data analysis using R
• Introduction to Python



## TRINITY COLLEGE DUBLIN

- Biological safety workshop
- Cyrogenics safety workshop
- Radiological safety workshop
- LAST animal handling course (2009)
- Data Protection and Health Research (2021)
- Project Management
- Academic Practice: Perspectives on Teaching and Learning in Higher Education (1/3 SpCert - July 2022)
- Data Protection: Data Transfer and Secondary Use of Data (2021)
- Equality, Diversity and Inclusion in Higher Education

## SOCIETIES AND COMMITTEES

### SOCIETY MEMBERSHIP

- British Society of Immunology
- Irish Society of Immunology
- International Cytokine & Interferon Society
- Myeloid Network

### COLLEGE COMMITTEES

- STTAR Data Committee (2021-present)
- Single Cell TCD core facility working group (Chair)
- FLOCI -Flow cytometry analysis committee (2021-Present)
- Post-Doc Representative for comparative medicine unit (CMU; animal research unit) executive committee (2016)
- Covid Strategic partnership (SFI Funded) (2021-present)
- STTAR Covid-19 M-Bio LIMS (clinical data access)

## SKILLS

I have a broad skillset that includes animal research, translational research, molecular biology, bioinformatics and clinical data analysis that enable me to design and manage research projects from a multidisciplinary point of view.

**Translational research and clinical data analysis:** Ability to manage and interact with multidisciplinary teams of clinicians, scientists, biobanking teams, biostatisticians and bioinformaticians. Experience with biobanking, clinical database management (RedCap). Patient stratification, data curating and multi-modal integration: data analysis of longitudinal clinical datasets with 100s of clinical fields and 10000s of patients. Writing reports in RMarkdown to be read by clinicians and scientists.

**Programming, Data analysis, Statistics & Visualisation:** R (Fluent, 7 years), Python (Intermediate, 5 years), RMarkdown (Intermediate, 5 years) Unix/Bash (Beginner). Data analysis/visualisation in and in R. Other programs: FlowJo and Prism, Adobe Illustrator, biostatistics and its application to experimental design and interpretation. Database creation and maintenance. R Shiny Apps. high-performance computing (basic).

**Bioinformatics** Expert in summarising take-home messages from single cell RNA-sequencing analysis in R and python (7 years experience). Mass cytometry analysis (FLOCore, Spectre). Analysis of microarray/bulk RNA-seq datasets analysis in R (limma, DESeq2), nCounter nanostaining analysis. Pathway analysis (IPA, GO), regulatory network analysis (SCENIC), trajectory inference (Slingshot, RNA velocity), clustering (hierarchical and graph-based methods), dimension reduction (UMAP, t-SNE, PCA), basic experience with machine learning (non linear, random forest) and systems biology (graphs, networks, logical modelling and differential equations).

**Animal models of Disease:** 12 years experience in *in vivo* model design: Autoimmunity (Experimental autoimmune encephalomyelitis, DSS-colitis, Imiquimod-induced inflammation), Cancer (B16 melanoma, CT26 lung), Infection (*L. sigmodontis*, *B. pertussis*, *F. hepatica*), Allergy (Allergen airway hypersensitivity) and general *in vivo* manipulation (Cell transfers, Irradiation/bone marrow transplantation peritonitis models, circadian rhythm modulation, cytokine administration, intraplural injections).

**Molecular biology** NGS library preparation (Illumina) including single cell RNA-sequencing (BD Rhapsody and 10X genomics), Illumina sequencing (NovaSeq 6000) sample preparation, study design for NGS, DNA & RNA extraction, RT-qPCR, nucleic acid QC (TapeStation, Qubit), PCR. Label free quantitative proteomics, bulk RNA-seq and ATAC-seq library preparation, enzyme assays. FFPE nucleic acid isolation.

**Laboratory techniques:** Expert in cell culture, cell sorting (BD Machines), high parameter (30+) flow cytometry, mass cytometry (including panel design, optimisation, storage, batch correction), tissue digestion, ELISA, cell isolation from blood (Whole blood, granulocytes/neutrophils, PBMC), lab management, inventory, ordering, health and safety.