



Conor M. Finlay

SENIOR RESEARCH FELLOW

Trinity Translational Medicines Institute, Trinity College Dublin

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Cellular Immunology and bioinformatics

Research interests

Cellular Immunologist with three core skills: *in vivo* **models of inflammation, bioinformatics and clinical research**. My main research interest is in what factors control mononuclear phagocyte (macrophage) differentiation during inflammation on a single cell level and how this impacts on disease outcomes. I have expertise T cell function, autoimmunity, type 2 immune responses, stromal-immune cell interactions, myeloid cells, data visualisation and programming.

Current Roles

SENIOR RESEARCH FELLOW, TRINITY COLLEGE DUBLIN

- COVID19 Science Foundation Ireland-funded strategic partnership.
- Core facility development in single cell RNA-sequencing ("TCD Single Cell")
- Trinity Kidney Health Centre, lab management and clinical research.

HONORARY RESEARCH FELLOW, UNIVERSITY OF MANCHESTER

- Co-managing *MRC* programme grant with Prof. Judith Allen includes bi-monthly visits and weekly online meetings
- Collaborations with Judith Allen, Mark Travis and Matthew Hepworth groups (providing bioinformatics analysis)

Employment History

Research Fellow

Trinity College Dublin

SUPERVISOR: PROF MARK LITTLE

2021

- Lead single cell RNA-sequencing for COVID19 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 stitch results with new analytes for future analysis using machine learning. Management of research assistant and PhD students in THKC.

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 practice 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

Pharmaceutical advertisement and event reviewer

Bristol-Myers Squibb

PAID INTERNSHIP

2007

- Reviewed pharmaceutical advertisements for assessment of compliance. Created and managed database for reporting issues and producing analysis documents. Liaising with marketing and scientific teams to address and solve issues.

Education

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

BA(Mod) in Natural Sciences

Trinity College Dublin

MAJOR: BIOCHEMISTRY WITH IMMUNOLOGY

2007

- Grade: 1:1, graduated top of class

Publications

1. 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 - Under Review in Immunity IF 31*, 2021.12.17.472661. <https://doi.org/10.2139/ssrn.3992680>
2. 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>
3. 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. *The Journal of Immunology*, 206(7), 1618–1630. <https://doi.org/10.4049/jimmunol.2001225>
4. 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. *The Journal of Immunology*, 205(7), 1909–1919. <https://doi.org/10.4049/jimmunol.1901321>
5. 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>
6. 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>
7. 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. <https://doi.org/10.3389/fimmu.2019.01266>
8. 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>
9. 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>
10. 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>
11. 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. *The Journal of Immunology*, 196(2), 703–714. <https://doi.org/10.4049/jimmunol.1501820>
12. Bernard, N. J., Finlay, C. M., Tannahill, G. M., Cassidy, J. P., O'Neill, L. A., & Mills, K. H. (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>
13. 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>
14. Coleman, M. M., Finlay, C. M., Moran, B., Keane, J., Dunne, P. J., & Mills, K. H. G. (2012). The immunoregulatory role of CD4 + FoxP3 + CD25 - regulatory T cells in lungs of mice infected with *Bordetella pertussis*. *FEMS Immunology & Medical Microbiology*, 64(3), 413–424. <https://doi.org/10.1111/j.1574-695X.2011.00927.x>
15. 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- β -Mediated Suppression of Th17 and Th1 Responses. *The Journal of Immunology*, 183(3), 1577–1586. <https://doi.org/10.4049/jimmunol.0803803>

UNPUBLISHED MANUSCRIPTS IN PREPARATION

- Dwivedi, A., Ui Mhaonaigh, A., Carrol, M., Little, M and Finlay, C.M. Characterisation of low density neutrophils in SARS-Cov 2 patients
- Finlay, C.M. Parkinson, J.P., Chan, B.H.K. and Allen, J.E. Contribution of tissue resident macrophages to the proteome of the pleural fluid (running title)
- O'Conluain, R., Hollingsworth, s., Little, M. and Finlay, C.M., Soluble urokinase plasminogen activator receptor is a biomarker of kidney disease in ANCA-associated vasculitis (running title)

Funding

MR/V011235/1 Programme Grant

Medical Research Council

2.26 MILLION GBP CO-INVESTIGATOR (2 APPLICANTS)

2021

- “Macrophages in type 2 immunity: unravelling susceptibility and resistance to tissue nematode infection”. I co-wrote grant and provided scientific design and all preliminary data. I was awarded an honorary research fellow position at UoM to facilitate ongoing involvement in this project when I left Manchester to return to Ireland.

Building Engagements in Health Research Scheme

Internal TCD

10K EUR, CO-APPLICANT

2021

- Co-Applicant as scientific lead with Jennifer Scott (TCD, ICAT fellow) as medical lead. ‘Nanoparticle modulation of neutrophil and monocyte responses to ANCA’

Skills

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).

Laboratory techniques: Expert in cell culture, cell sorting (BD Machines), high parameter (20+) flow cytometry, mass cytometry (including panel design), tissue digestion, ELISA, lab management, inventory, ordering, health and safety.

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

Clinical research: Cell isolation from blood (Whole blood, granulocytes/neutrophils, PBMC), 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, 5 years), Python (Intermediate, 3 years), RMarkdown (Intermediate, 3 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 (4 years experience). Mass cytometry analysis (FACS, Spectre). Analysis of microarray/bulk RNA-seq datasets analysis in R (limma, DESeq2). 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).

Presentations & awards

ORAL

2022	COVID-19 Immunology, Vaccines and Lessons for the Future	TCD, Dublin
2022	Parasitic Helminths: New Perspectives in Biology and Infection	Hydra, Greece
2022	Trinity Translational Medicine Institute - Conference 2022	TTMI, Dublin
2021	Cytokine and interferon society meeting	Cardiff
2019	Irish Society of Immunology	RCSI, Dublin
2019	BSI Type 2 Immunology Meeting	Manchester
2019	KU Leuven, UZ Gasthuisberg Campus	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

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
2011	Cytokine and interferon society meeting	Florence

AWARDS

- 2022 Wiley Top Cited Article Award - Parasite Immunology
- 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

Teaching & Supervision

LECTURING

R programming, data visualisation and transcriptomic analysis (3 workshops)

20 students

MSC IN IMMUNOLOGY

2021

- Part of immuogenetics module - assesment: student presentations of bioinformatic analysis

T cells (4 lectures)

30 Students

BA(MOD) BIOCHEMISTY WITH IMMUNOLOGY

2016-2017

- Assesment: wirtten exam

Cancer immunology and immunotherapy (2 lectures)

30 Students

BA(MOD) BIOCHEMISTY WITH IMMUNOLOGY

2016-2017

- Assesment: wirtten exam

Multiple sclerosis (1 lecture)

30 Students

BA(MOD) BIOCHEMISTY WITH IMMUNOLOGY

2016-2017

T cell differentiation, effector function and regulation (2 lectures)

20 students

MSC IN IMMUNOLOGY

2016-2017

- Assesment: wirtten exam

Introduction to parasite and type 2 Immune responses (3 lectures)

20 students

MSC IN IMMUNOLOGY

2014-2017

- Assesment: wirtten exam

Tutorials

3 students

BA(MOD) BIOCHEMISTY WITH IMMUNOLOGY

2014-2017

- Ongoing small group tutorials for 3 students each year.

Other teaching related duties In 2016 took on all 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 (including backboard). I have organised visits of school students as various points between 2013-2016. I have developed a 12 hour course in basic data science skills for immunologists basic data science skills for immunologist (click here). I acted as official 'external mentor' of a PhD student in Wellcome Trust in Immunomatrix in Complex Disease PhD program in Manchester. My teaching philosophy is Think-Pair-Share - a method to keep students engaged by creating a mini student led discussions in class.

SUPERVISION

3 month student project

Trinity College Dublin

BA(MOD) MOLECULAR MEDICINE

2022

- Primary supervisor

2 week student project

Trinity College Dublin

BACHELOR IN MEDICINE

2021-2022

- Lab/statistical training. Continued Informal mentorship with one student.

3 month student project

Trinity College Dublin

BA(MOD) MOLECULAR MEDICINE

2021

- Primary supervisor – lab/statistical training, writing mentorship. Ongoing collaboration with a co-first author paper in preparation together.

Formal supervision

Trinity College Dublin

RESEARCH ASSISTANT

2021

- Direct supervision and training. Daily interaction.

6 month student project

University of Manchester

MRES INFECTION BIOLOGY

2020-2021

- Co-primary supervisor - project design and mentorship & direct supervision/training, student now in UK graduate Industry role.

6 month student project

University of Manchester

MRES INFECTION BIOLOGY

2018-2019

- Co-primary supervisor - project design and mentorship & direct supervision/training, student now a PhD Candidate in Leeds.

Informal mentorship

Trinity College Dublin

PHD
• Informal supervisor. Project design and management and career mentorship. Two papers published together, awarded best presentation at ICS 2018. Now a Post-Doc in Glasgow.

2017-2021

3 month student project

Trinity College Dublin

MSC IMMUNOLOGY

2016

• Co-primary supervisor - project design and mentorship & direct supervision/training. Student now a PhD candidate in TCD.

Informal mentorship

Trinity College Dublin

PHD
2015-2017

• Informal supervisor. Project design and management.

3 month student project

Trinity College Dublin

MSC IMMUNOLOGY

2015

• Co-primary supervisor - project design and mentorship & direct supervision/training. Project led to IRC-funded PhD that I co-wrote.

3 month student project

Trinity College Dublin

MSC IMMUNOLOGY

2014

• Co-primary supervisor - project design and mentorship & direct supervision/training. Student now in Biotech Industry role.

Outreach and organisation

Discover Research Night, Dublin Sep 2014. Marie Skłodowska-Curie-funded. I was the event organiser responsible for public engagement at Trinity Biomedical Sciences Institute, 8 weeks' full-time.

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".

Single Cell TCD Core facility. I formed a working group in 2021 to address the competitive disadvantage of not having a working single cell RNA-sequencing in TCD. The service was soft launched internally in 2022 on a cost-for-service basis and delivers a full pipeline from consultation, cellular isolation, library preparation, sequencing, bioinformatics and basic downstream analysis. I am to expand this to a full service and hire talent to expand the capability of this service to include external industry clients.

Referees

Prof Judi Allen

University of Manchester

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

Lydia Becker Institute

Dr Matthew Hepworth

University of Manchester

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

Lydia Becker Institute

Prof Kingston HG Mills

Trinity College Dublin

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

School of Biochemistry and Immunology

Prof Cliona O'Farrelly

Trinity College Dublin

PROFESSOR OF COMPARATIVE IMMUNOLOGY; OFARRECL@TCD.IE

School of Biochemistry and Immunology

Appendix

SHORTLISTED APPLICATIONS

- Shortlisted for UKRI Innovation/Rutherford Fund Skills Development Fellowship (Computational Biology), 2017.
- Shortlisted as candidate from school of medicine for Science Foundation Ireland Pathways programme, 2021
- Shortlisted for academic-industry partnership with Janssen Pharmaceuticals, Belgium, 2019

MISCILLANEOUS CONTRIBUTIONS

2022	Frontiers in Immunology	Article review
2022	Irish Nephrology Society Conference	Session Chair
2022	Post-Doctoral scientist at TCD	Interview panel
2022	PhD Candidate in TCD	Continuation Viva
2021	French National Research Agency (ANR) 2021 generic call	Grant review
2021	BBSRC Discovery Fellows award	Grant review
2021	Research Assistant at TCD	Interview panel
2018	Scientific Reports	Article review
2017-2020	Parasite Immunology	Article review

TRAINING

2018	Single Cell RNA-sequencing	Earlham Institute
2017	Home Office personal animal licence	Manchester
2014	Fluorescent activated cell sorting	UCD

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
- Cryogenics safety workshop
- Radiological safety workshop
- LAST animal handling course (2009)
- Data Protection and Health Research (2021)
- Project Management

SOCIETIES AND COMMITTEES

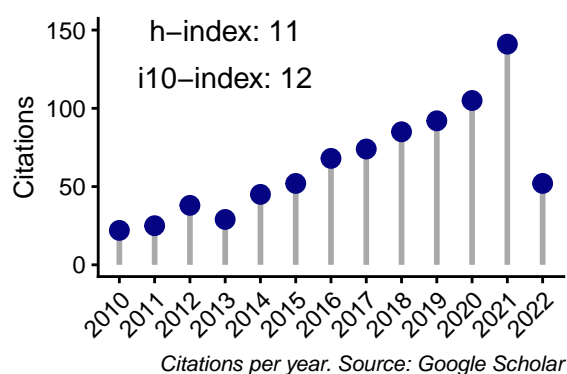
SOCIETY MEMBERSHIP

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

COLLEGE COMMITTEES

- STTAR Data Committee (COVID SPP)
- Single Cell TCD core facility working group (Chair)
- Financial services end user committee
- FLOCI -Flow cytometry analysis committee

CITATION METRICS



Details	Number of papers
Total papers	15
As First Author	6
As primary supervisor	1
Seconday author – Major contribution (>3 months)	6
Seconday author – Minor contribution (<3 months)	2
As corresponding author	4