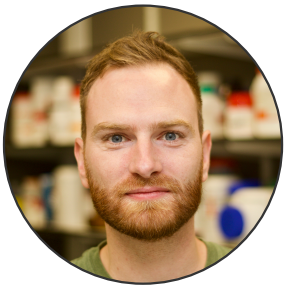


Conor M. **Finlay**

Senior Research Fellow

Trinity Translational Medicines Insitute, Trinity College Dublin

cofinlay@tcd.ie; conor.finlay@manchester.ac.uk | 0000-0001-8285-0903 | kQ6U7AkAAAAJ | conorisco | conorisco

Cellular immunologist with bioinformatic skills

Research interests

I am a cellular Immunologist with three core skills: *in vivo* models of inflammation, bioinformatics and clinical research. My current research obsession is the regulation of mononuclear phagocyte differentiation during inflammation on a single cell level.

Current Roles

Senior Research Fellow, Trinity College Dublin

- COVID19 Science Foundation Ireland-funded strategic partnership
- TCD Single Cell Core development
- Trinity Kidney Health Centre, Prof. Mark A Little.

Honorary Research Fellow, University of Manchester

- Co-managing Medical Research Council programme grant with Prof Allen
- Bioinformatics collaborations
- Core facility engagement

Past Employment

Research Fellow — *Trinity College Dublin*

Supervisor: Prof Mark Little — *2021*

- Hired to lead single cell RNA-sequencing aspect of the Science foundation Ireland COVID strategic partnership.

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

Lecturer (teaching relief) — *Trinity College Dublin*

School of Biochemistry and Immunology — *2016-2017*

- I took on the teaching duties for a senior professor for 1 year including undergraduate practicle supervision, undergraduate and masters level teaching , examinations and corrections.

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 potential 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 5 years of pharmaceutical adversitments for assessment of complience. Created and managed database for reporting issues and producing analysis documents. Liasing 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 tought compenent 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: Biochemisty with Immunology *2007*

- Grade: 1:1, graduated top of class

Skills

Animal models of Disease: Experimental autoimmune encephalomyelitis, Litomosoides sigmodontis infection, OVA/Alum and dust mite-induced airway hypersensitivity, dextran sodium sulphate-induced colitis, circadian rhythm modulation, B16 melanoma, Sterile peritonitis, IL-4-complex administration, House airway hypersensitivity, Fasciola hepatica infection, Bordetella pertussis infection.

Laboratory techniques: In vitro cell culture, FACS & MACS cell sorting, flow cytometry (expert), mass cytometry, tissue digestion, ELISA, enzyme assays, RT-qPCR, confocal microscopy, Amnis Image Stream, sample preparation for mass spectrometry and single cell RNA-sequencing. Basic experience with PCR, genotyping, immunoblots and library preparation for Next Generation Sequencing.

Clinical research: Preparation of cells from human blood. Biobanking, clinical database management. Patient stratification and statistical analysis. Working in as part of a multi-disciplinary scientific-clinical research team. Data curating and integration: data analysis of longitudinal clinical datasets with 100s of clincal fields and 10000s of patients. Writing reports in RMarkdown to be read by clinicians and scientists.

Programming, Data analysis, Statistics & Visualisation: R (Fluent), Python (Intermediate), RMarkdown (Intermediate) Unix/Bash (Beginner). Data analysis/visualisation in and in R using Tidyverse and ggplot2. Advanced user of Microsoft Office applications, TreeStar FlowJo and GraphPad Prism. Competent user of Adobe Illustrator and pathway analysis tools e.g. IPA. Strong background in statistics and its application to experimental design and interpretation of results. Database creation and maintenance. Creation of Shiny Apps. Basic knowledge of computer science and use of high-performance computer clusters.

Bioinformatics. Analysis of microarray/bulk RNA-seq datasets analysis using the DESeq2 and EdgeR packages. Single cell analysis using Scater within SingleCellExperiment, pySCENIC, Velocyto, Seurat, FlowCore, FlowSOM, CytofKit. Dimensionality reduction: PCA, t-SNE and UMAP. Progression analysis using monocle3, Destiny and RNA velocity. Clustering using Phonograph, DevSM, FlowSOM hclust and treeclust.

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". Funded, 2.26 million GBP. 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'

- Shortlisted for UKRI Innovation/Rutherford Fund Skills Development Fellowship (Computational Biology), Sep 2017.

Publications

1. Finlay, C. M., Parkinson, J., Chan, B. H. K., Ajendra, J., Chenery, A., Morrison, A., Houlder, E. L., Baker, S. M., Dickie, B., Boon, L., MacDonald, A. S., Konkel, J. E., Rückerl, 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/10.1101/2021.12.17.472661

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., DeCourcey, J., Zaslona, Z., O'Neill, L. A. J., Mills, K. H. G., Curtis, A. M., CE, S., CM, F., M, R., JO, E., J, D., Z, Z., LAJ, O., KHG, M., & AM, C. (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. Sutton, C. E., Finlay, C. M., Raverdeau, M., Early, J. O., DeCourcey, J., Zaslona, 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

11. 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

12. 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

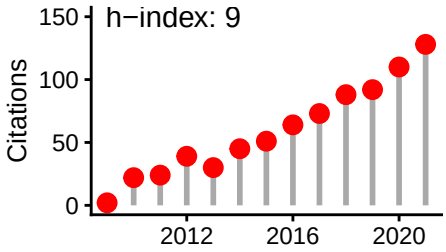
13. Bernard, N. J., Finlay, C. M., Tannahill, G. M., Cassidy, J. P., O'Neill, L. A., & Mills, K. H. (2015). A critical role for the TLR signaling adapter Mal in alveolar macrophage-mediated protection against Bordetella pertussis. *Mucosal Immunology*, *8*(5), 982–992. https://doi.org/10.1038/mi.2014.125

14. 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

15. 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

16. 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



Presentations

Oral

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

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

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 in Trinity college dublin to address the competitive disadvantage of not having a working single cell RNA-sequencing. My aim is to deliver a single cell RNA-seq service to TCD researchers on a cost per service basis that will act as a platform to develop a full core facility service.

Teaching

2021	R programming, data visualisation and transcriptomic analysis (3 workshops)	*MSc in Immunology*
2016-2017	T cell differentiation, effector function and regulation (4 lectures)	*BA(Mod)*
2016-2017	Cancer immunology and immunotherapy (2 lectures)	*BA(Mod)*
2016-2017	EAE as a model for multiple sclerosis	*BA(Mod)*
2016-2017	T cell differentiation, effector function and regulation (2 lectures)	*MSc in Immunology*
2014-2017	Introduction to parasite and type 2 Immune responses (3 lectures)	*MSc in Immunology*

Other duties include Undergraduate practical supervision, tutorials, and organising visits of school students as various points between 2013-2016. Introduction to data scientists for immunologists course available here. Acting as an official 'external mentor' of a PhD student in Wellcome Trust in Immunomatrix in Complex Disease PhD program in Manchester.

Supervision

2 week student project — *Trinity College Dublin*

Bachelor in Medicine — *2021*

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

3 month student project — *Trinity College Dublin*

BA(Mod) — *2021*

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

Formal supervison — *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 — *2017-2021*

- 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.

3 month student project — *Trinity College Dublin*

Msc Immunology — *2016*

- Co-primary supervisor - project design and mentorship & direct supervision/training. Sudent 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.

Training

Formal

Single Cell RNA-sequencing — *Earlham Institute*

1 week course — *2018*

- library preparation, sequencing, QC & analysis

Home Office personal animal licence — *University of Manchester*

1 WEEK COURSE; ONGOING TRAINING — *2017*

- PIL A, B & C

Fluorescent activated cell sorting — *University College Dublin*

1 WEEK COURSE — *2014*

- Theory and practical training using BD machines

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 saftey workshop
- Cyrogenics saftey workshop
- Radiological saftey workshop
- LAST animal handling course (2009)

Other Contributions

Reviewing

2021	French National Research Agency (ANR) 2021 generic call	*Grant review*
2021	BBSRC Discovery Fellows award	*Grant review*
2018	Scientific Reports	*Article review*
2017-2020	Parasite Immunology	*Article review*

Societies and committees

Society Membership

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

Internall Comittees

- STTAR Data Committee (COVID SPP)
- Single Cell TCD working group
- Finanical services end user committee

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*