# Conor M. **Finlay**

**SENIOR RESEARCH FELLOW**

*Trinity Translational Medicines Insitute, Trinity College Dublin*

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conorisco | 🐦 conorisco

*Immunologist with mutidiciplary skills in cellular, molecular, bioinformatics and clinical research*

## Snapshot

I am an energetic ambitious immunologist with a clear goal to build an independent research platform. My research interests include type 2 immune responses, autoimmunity and the implantation of computational approaches to analysis of immune cells and disease outcomes.

The ideas I generated from my recent work in *Immunity* forms the basis of 2 major grant applications under review where I aim to identify the factors that control mononuclear phagocyte (macrophage) differentiation during inflammation and how this impacts on disease outcomes.

I am ready to educate the next generation of doctors and scientists and lead my own group to make transformative discoveries in Immunology. I have a passion for enhancing research capacity through implementation of formalised structures to address the challenge of both generating 'omics' technology data and integrating this data with clinical databases.

## Current Roles

### SENIOR RESEARCH FELLOW, TRINITY COLLEGE DUBLIN

Notable projects:

- Myeloid cell dysfunction in COVID-19 (COVID-19 SFI-funded strategic partnership)
- Core facility development in single cell RNA-sequencing ("TCD Omics", independent project)
- lab management and biomarker research (Trinity Kidney Health Centre with Mark Little).
- Data integration of multi-modal clinical data, supervising development of R package (with Mark Little)
- Longitudinal clinical study design (high parameter (30+) flow cytometry panels) - T cell exhaustion as a predictor of autoimmune relapse (PARADISE, with Mark Little)
- Bioinformatic support to multiple projects
- Numerous active collaborations (see below)

### HONORARY RESEARCH FELLOW, UNIVERSITY OF MANCHESTER

- Collaboration on *MRC* programme grant with Prof. Judith Allen.
- Ongoing collaborations with Doug Dyer and Mark Travis groups

## Employment History

**Research Fellow**  *Trinity College Dublin*
SUPERVISOR: PROF MARK LITTLE  *2021*
- 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

**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

**Special Purpose Certificate in Teaching, Learning & Assessment for Academic Practice** *Trinity College Dublin*
Perspectives on teaching and Learning in Higher Education *2022*
- Consitutes 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 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

# Funding

**Building Engagements in Health Research Scheme** *Internal TCD*
10K Eur, Co-PI *2023*
- Understanding mast cells and their progenitors in Telangiectasia Macularis Eruptiva Perstans (TMEP)'

**MR/V011235/1 Programme Grant** *Medical Research Council*
2.26 Million GBP, Research Co-Investigator *2021*
- "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

**Building Engagements in Health Research Scheme** *Internal TCD*
10K Eur, Co-PI *2021*
- 'Nanoparticle modulation of neutrophil and monocyte responses to ANCA'

# Funding (under review)

1. **The Lister Institute of Preventive Medicine Prize 2023**, £250,000. Under international review
   - *Title withheld*.
   - Short-listed for 2nd stage, Expected outcome May 2023.

2. **SFI Pathways program 2022**, €425,000.
   - *Title withheld*.
   - Short-listed for 2nd stage, expected outcome April 2023.

# Presentations & awards

## Oral

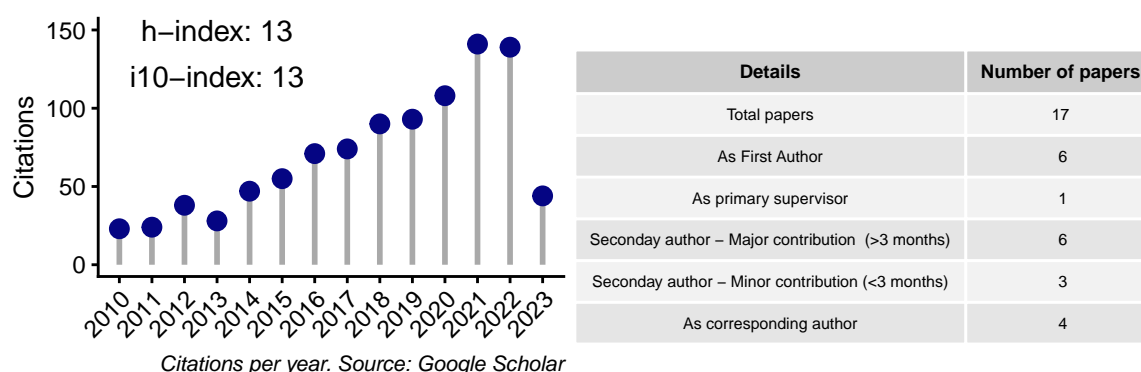| | | |
|---|---|---|
| 2023 | AI-driven Digital Content Technology (ADAPT) Collaboration Day (Invited talk) | *TU Dublin* |
| 2022 | Mononuclear Phagocytes in Health and Disease (Invited talk) | *CRICK, London* |
| 2022 | Parasitic Helminths: New Perspectives in Biology and Infection | *Hydra, Greece* |
| 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

| | | |
|---|---|---|
| 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 |
| 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 |

# Publications



h–index: 13
i10–index: 13

| Details | Number of papers |
|---|---|
| Total papers | 17 |
| As First Author | 6 |
| As primary supervisor | 1 |
| Seconday author – Major contribution  (>3 months) | 6 |
| Seconday author – Minor contribution (<3 months) | 3 |
| As corresponding author | 4 |

*Citations per year. Source: Google Scholar*

1. 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*, 1–18. `https://doi.org/10.1016/j.immuni.2023.02.016`

2. 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+ effector memory T cells limit immunity to pulmonary viral infection and prevent tissue pathology via activation of latent TGFβ. *bioRxiv*, 2023.03.02.527395. `https://doi.org/10.1101/2023.03.02.527395`

3. Han, J., Gallerand, A., Erlich, E. C., Helmink, B. A., Mair, I., Li4, X., Eckhouse2, S. R., Dimou, F. M., Shakhsheer, B. A., Phelps, H., Chan, M., Schilling5, J. D., Finlay, C. M., Judith, Allen, E., Jakubzick, C. V., Else, K., Onufer, E. J., Zhang, N., & Randolph, G. J. (2023). In-depth comparison of human serous cavity resident macrophages and dendritic cells to their murine counterparts. *PREPRINT (Version 1) Available at Research Square*. https://doi.org/`https://dx.doi.org/10.21203/rs.3.rs-2689141/v1`

4. 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`

5. 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`

6. 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`

7. 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`

8. 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`

9.  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`

10. 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`

11. 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`

12. 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`

13. 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`

14. 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`

15. 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`

16. 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`

17. 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`

18. 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- -Mediated Suppression of Th17 and Th1 Responses. *The Journal of Immunology*, *183*(3), 1577–1586. `https://doi.org/10.4049/jimmunol.0803803`

# Collaborations (active)

**Lara Dungan, Katie Ridge**  *St James' Hospital*
STUDY DESIGN, SAMPLING, SINGLE CELL RNA-SEQ (FULL PIPELINE) WITH ANALYSIS  *2023-Present*
• Understanding mast cells and their progenitors in Telangiectasia Macularis Eruptiva Perstans

**Padraic Fallon**  *Trinity College Dublin*
ANALYSIS IS NCOUNTER (NANOSTRING) DATA, BIOLOGICAL INTERPRETATION.  *2023-Present*
• Title withheld; inflammation focused (mouse)

**Arthur White**  *Trinity College Dublin*
GRANT APPLICATION (IN PREPARATION FOR 2022 SUBMISSION), SCIENTIFIC INPUT, PROVISION OF PRELIMINARY DATA.  *2023-Present*
• New statistical methods for semi-supervised clustering of flow and mass cytometry data

**Judi Allen, Lili Zhang**  *University of Manchester*
BIOINFORMATICS, STUDY DESIGN  *2022-present*
• B cell-macrophage interactions in type 2 immune responses

**Pn'g Loke**  *NIH, Bethesda, MA*
ATAC-SEQ ANALYSIS, SINGLE CELL RNA-SEQ ANALYSIS, HYPOTHESIS GENERATION  *2022-Present*
• Effect of genotype on alternative activation of serous cavity macrophages

**Niall Conlon, Katie Ridge**  *St James' Hospital*
STUDY DESIGN, SAMPLING, SINGLE CELL RNA-SEQ (FULL PIPELINE) WITH ANALYSIS  *2022-Present*
• Role of mast cell progenitors in chronic urticaria

**Ross MacManus**  *Trinity College Dublin*
STUDY DESIGN, SAMPLING, SINGLE CELL RNA-SEQ (FULL PIPELINE) WITH ANALYSIS  *2022-Present*
• Linking immune cell perturbations to ankylosing spondylitis outcomes

**Mark Travis**  *University of Manchester*
BULK RNA-SEQ ANALYSIS, BIOLOGICAL INTERPRETATION, MANUSCRIPT WRITING  *2022-Present*
• Title withheld, T cell and infection focused (mouse)

**Maria M. Munoz San Martin**  *RCSI*
SINGLE CELL RNA-SEQ LIBRARY PREPARATION AND ANALYSIS  *2022-Present*
• Title withheld, neurodegeneration and demyelination model (mouse)

**Sharee Basdeo**                                                                      *Trinity College Dublin*
STUDY DESIGN, SINGLE CELL RNA-SEQ LIBRARY PREPARATION AND ANALYSIS AND BIOLOGICAL INTERPRETATION                    *2022-Present*
- Innate immune training of human monocytes by SARS-Cov2 vaccine ChAdOx1

**Judi Allen**                                                                         *University of Manchester*
SCIENTIFIC INPUT, STUDY DESIGN                                                                *2021-present*
- Serous cavity macrophage in nematode control

**Judi Allen, James Parkinson**                                                        *University of Manchester*
DATA ANALYSIS, MANUSCRIPT WRITING                                                             *2019-present*
- The serous cavity proteome

**Alvaro Diaz**                                                                        *Uni. de la República Uruguay*
SCIENTIFIC INPUT                                                                              *2017-present*
- Role of CD40 signalling in tissue resident macorphage proliferation

# **Tea**ching & Supervision

## FORMAL TEACHING

**Transcriptomics (2 hr workdshop)**                                                    *20 students*
MSC IN IMMUNOLOGY                                                                             *2022*
- Introduction to Transcriptomics and single cell technologies

**Datascience for Immunology (3 workshops and assessment)**                             *20 students*
MSC IN IMMUNOLOGY                                                                             *2022*
- 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 attending curriculum meetings.

**R programming, data visualisation and transcriptomic analysis (3 workshops)**         *20 students*
MSC IN IMMUNOLOGY                                                                             *2021*
- Part of immunogenetics module - This included 3 dry lab sessions (in person) and assessment: student presentations of bioinformatic analysis (microarray)

**T cells (4 lectures)**                                                               *30 Students*
BA(MOD) BIOCHEMISTY WITH IMMUNOLOGY (4TH YEAR)                                                *2016-2017*
- 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

**Cancer immunology and immunotherapy (2 lectures)**                                    *30 Students*
BA(MOD) BIOCHEMISTY WITH IMMUNOLOGY (4TH YEAR)                                                *2016-2017*
- Brief history of chemotherapy, failed early immune oncology interventions, recent success, checkpoint inhibitors, combination studies, CAR-T cell, future perspectives Assessment: written exam

**Multiple sclerosis (1 lecture)**                                                     *30 Students*
BA(MOD) BIOCHEMISTY WITH IMMUNOLOGY (4TH YEAR)                                                *2016-2017*
- Th1 and Th17 cells in autoimmunity, animal models of disease, S1p1 inhibitors, VLA4, future targets.

**T cell differentiation, effector function and regulation (2 lectures)**               *20 students*
MSC IN IMMUNOLOGY                                                                             *2016-2017*
- Introductory course to T cell biology, differentiation and the cytokine control of immune responses. Assessment: written exam

**Introduction to parasite and type 2 Immune responses (3 lectures)**                   *20 students*
MSC IN IMMUNOLOGY                                                                             *2014-2017*
- 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

**Integrtated Tutorials**                                                              *3 students*
BA(MOD) BIOCHEMISTY WITH IMMUNOLOGY (3RD YEAR)                                                *2014-2017*
- Ongoing small group tutorials for 3 students each year integrated with specific modules

## YOUNG SCIENTIST SUPERVISION

**Katy White**                                                                         *Trinity College Dublin*
BA(MOD) MOLECULAR MEDICINE (INTERCALATING MEDICAL STUDENT)                                    *2022*
- "Nanoparticle modulation of neutrophil and monocyte responses to ANCA" Primary supervisor (ongoing)

**Medical Student Lab Rotations**                                                      *Trinity College Dublin*
BACHELOR IN MEDICINE                                                                          *2021-2022*
- Two students per year - Lab/statistical training. Continued Informal mentorship with one student, another student presented research from this project at Irish Nephrology Conference 2022. Grade: I (2021 & 2022)

**Makala Carroll**                                                                     *Trinity College Dublin*
RESEARCH ASSISTANT                                                                            *2021-2022*
- "PREVENTION IN PERSONALISED MEDICINE - paradise study". Direct supervision and training. Daily interaction and mentorship.

**Amrita Dwivedi** *Trinity College Dublin*

PHD STUDENT *2021-2022*

- "Aberrant neutrophils are associated with poor outcome and display a disease specific response in Covid 19" Informal co-supervisor. Project management, bioinformatics training, manuscript writing.

**Ruán Ó Conluain** *Trinity College Dublin*

BA(MOD) MOLECULAR MEDICINE (INTERCALATING MEDICAL STUDENT) *2021*

- "Soluble urokinase plasminogen activator receptor in ANCA-associated vasculitis." Primary supervisor with lab/statistical training, writing mentorship. Ongoing collaboration with a co-first author paper in preparation together. Prizes: Best Overall Student: M.Sc. in Molecular Medicine. David Oliveira Medical Student Prize (Shortlisted and Oral Presentation) Royal Society of Medicine: Nephrology Section. Presented Poster: Vasculitis + ANCA International Conference 2022. Henry Coke Drury research scholarship. Presented at the TTMI Immunology meeting

**Charlotte Hargreaves** *University of Manchester*

MRES INFECTION BIOLOGY *2020-2021*

- "The role of B lymphocytes within a murine filarial nematode infection." Grade: II.1 Co-primary supervisor - project design and mentorship & direct supervision/training, now in UK graduate Industry role.

**Anya Morrison** *University of Manchester*

MRES INFECTION BIOLOGY *2018-2019*

- "The role of CD4+ T cells in macrophage proliferation and alternative activation." Grade: II.1 Co-primary supervisor - project design and mentorship & direct supervision/training, student now a Virology PhD Student in Leeds.

**Dr Kyle Cunningham** *Trinity College Dublin*

PHD STUDENT *2017-2021*

- "Helminth products promote anti-inflammatory trained innate immunity by imprinting long-term hematopoietic stem cells." Informal supervisor. Project design and management and career mentorship. Two papers published together. Awarded best presentation at Irish society of Immunology 2018. TCD Postgraduate Research Symposium – First Prize. Now type 2 Immunology Post-Doc in Glasgow.

**Aisling Ui Mhaonaigh** *Trinity College Dublin*

MSC IMMUNOLOGY *2016*

- "The Immunoregulatory activity of exosomes secreted by the parasitic worm, Fasciola hepatica." Grade: II.1 Co-primary supervisor - project design and mentorship & direct supervision/training. PhD candidate in TCD.

**Dr Robert Walsh** *Trinity College Dublin*

PHD STUDENT *2015-2017*

- "Modulation of immune responses by Fasciola hepatica-derived products" Informal supervisor. Project design and management. Now at Novartis as medical science liaison.

**Dr Kyle Cunningham** *Trinity College Dublin*

MSC IMMUNOLOGY *2015*

- "The role of IL-33 in the induction of regulatory-type-2 responses that control autoimmunity." Grade: I with Distinction. Co-primary supervisor - project design and mentorship & direct supervision/training. Keith Tipton Award Second Prize. Project led to IRC-funded PhD that I co-wrote (see above)

**Ben Doyle** *Trinity College Dublin*

MSC IMMUNOLOGY *2014*

- "Modulation of Innate immune responses by the helminth parasite Fasciola hepatica "Grade: II.1 Co-primary supervisor - project design and mentorship & direct supervision/training. Student now at Nuritas Ltd.

**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 (including backboard). I have organised visits for school students at 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.

# 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, 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) 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".

**TCD Omics 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**

Professor of Immunobiology; judi.allen@manchester.ac.uk

University of Manchester

Lydia Becker Institute

**Dr Matthew Hepworth**

Sir Henry Dale Fellow; matthew.hepworth@manchester.ac.uk

University of Manchester

Lydia Becker Institute

**Prof Kingston HG Mills**

Professor of Experimental Immunology; kingston.mills@tcd.ie

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School of Biochemistry and Immunology

**Prof Cliona O'Farrelly**

Professor of Comparative Immunology; ofarrecl@tcd.ie

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**Prof Judi Allen**

Professor of Immunobiology; judi.allen@manchester.ac.uk

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Lydia Becker Institute

**Dr Matthew Hepworth**

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**Prof Kingston HG Mills**

Professor of Experimental Immunology; kingston.mills@tcd.ie

Trinity College Dublin

School of Biochemistry and Immunology

**Prof Cliona O'Farrelly**

Professor of Comparative Immunology; ofarrecl@tcd.ie

Trinity College Dublin

School of Biochemistry and Immunology

# Appendix

## Skills

I have a broad skillet that includes animal research, translational research, molecular biology, bioinformatics and clinical data analysis that make me uniquely well suited to the design and management of research projects from a multi disciplinary point of view.

**Programming, Data analysis, Statistics & Visualisation**: R (Fluent, 6 years), Python (Intermediate, 4 years), RMarkdown (Intermediate, 4 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 (5 years experience). Mass cytom&shy;ety analysis (FLowCore, Spectre). Analysis of microarray/bulk RNA-seq datasets analysis in R (limma, DESeq2), nCounter nanosting anlaysis. Pathway analysis (IPA, GO), regulatory network analysis (SCENIC), trajectory inference (Slingshot, RNA velocity), clustering (hierarchical and graph-based methods), dimension reduction (UMAP, Trimap, 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, intraplueral injections).

**Laboratory techniques**: Expert in cell culture, cell sorting (BD Machines), high parameter (30+) flow cytometry, mass cytom&shy;etry (including panel design, optimisation, storage, batch correction), 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 sequecing (Novaaseq 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 and research data handling**: Ability to mange and interact with multi-disciplinary teams of clinicians and scientist. 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.

## Discipline and College contributions

| Year | | |
|---|---|---|
| 2023 | Kidney Research UK | *Grant review* |
| 2022-current | School of Computer Science and Statistics PhD student | *Thesis committee* |
| 2022 | Irish Nephrology Society Conference | *Session Chair* |
| 2022 | Post-Doctoral scientist at TCD | *Interview panel* |
| 2022 | PhD Candidate in TCD | *Continuation Viva* |
| 2021-current | School of Medicine PhD student | *Thesis committee* |
| 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* |

## Training

| Year | | |
|---|---|---|
| 2023 | LAST (Ireland) course - awaiting exam outcome | *LAST Ireland* |
| 2022 | Illumina Sequencing (NovaSeq 6000) | *Illumina* |
| 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 saftey workshop
- Cyrogenics saftey workshop
- Radiological saftey workshop
- LAST animal handling course (2009)
- Data Protection and Health Research (2021)
- Project Manegment
- 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)

## SOCIETIES AND COMMITTEES

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

### COLLEGE COMITTEES
- STTAR Data Committee (2021-present)
- Single Cell TCD core facility working group (Chair)
- FLOCI -Flow cytometery 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 (clincial data access)

## 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. The proteome of the pleural fluid

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