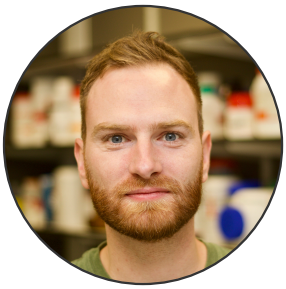

Conor M. **Finlay**

Senior Research Fellow

Trinity Translational Medicine Institute, Trinity College Dublin

+353 857148825 | cofinlay@tcd.ie; conor.finlay@manchester.ac.uk | 0000-0001-8285-0903 | kQ6U7AkAAAAJ | conorisco | conorisco

Cellular Immunologist and bioinformatician combinding molecular, in vivo and translational research

I am ready to educate the next generation of doctors and scientists and lead my own group to make transformative discoveries.

My research aims to redefine our understanding of macrophages in inflammation. My holistic reserach view operates at the level of the gene, cell, tissue and organism. I have a particular interest in type 2 immune responses, single cell omics, lung & kidney immunology and autoimmunity. The concepts I uncovered in my recent publication in *Immunity* form the basis of my current grant applications where I will identify factors that control macrophage differentiation and function in inflammation.

Current Roles

Senior Research Fellow, Trinity College Dublin

- I set up "TCD Omics" - single cell RNA-sequencing core service (independent project)
- Myeloid cell dysfunction in COVID-19 (COVID-19 SFI-funded strategic partnership)
- 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)

Honorary Research Fellow, University of Manchester

- Active collaboration on *MRC* programme grant with Prof. Judith Allen (approx 25% FTE).

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

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

SFI Pathways program 2022, €425,000. - *Title withheld*. - Short-listed for 2nd stage, expected outcome Q2 2023.

Presentations, Awards & contributions

- 16 Oral conference presentations (including 3 invited presentations)
- 8 Poster conference presentations
- Awards list available in appendix online

Oral Presentations (details of 8X poster presentations availible in appendex)

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

2023	Kidney Research UK	*Grant review*
2022	Irish Nephrology Society Conference	*Session Chair*
2022	Post-Doctoral scientist at TCD	*Interview panel*
2022	PhD Candidate in TCD	*Continuation Viva*
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*

Publications

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 TGF. *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., Nkurununngi, 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

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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

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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

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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

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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

- Dwivedi, A., Ui Mhaonaigh, A., Carrol, M., Little, M and Finlay, C.M. low density neutrophils in SARS-Cov 2 **Under Review, I am corresponding author**
- Commentry on my work in Immunity: Macrophages show up in style when Th2 lymphocytes organize their homecoming.
- Paper featured on The Immunology Podcast

Collaborations (active)

Lara Dungan, Niall Conlon — *St James' Hospital*
Understanding mast cells and their progenitors in Telangiectasia Macularis Eruptiva Perstans

Padraic Fallon — *Trinity College Dublin*
Title withheld; inflammation focused (mouse)

Arthur White — *Trinity College Dublin*
New statistical methods for semi-supervised clustering of flow and mass cytometry data

Legend Biotech (Ireland), Tony Mc Elligott — *Trinity College Dublin*
Title withheald

Judi Allen, Lili Zhang — *University of Manchester*
B cell-macrophage interactions in type 2 immune responses

Pn'g Loke *NIH, Bethesda, MA*
Effect of genotype on alternative activation of serous cavity macrophages

Niall Conlon, Katie Ridge *St James' Hospital*
Role of mast cell progenitors in chronic urticaria

Ross MacManus *Trinity College Dublin*
Linking immune cell perturbations to ankylosing spondylitis outcomes

Mark Travis *University of Manchester*
Title withheld, T cell and infection focused (mouse)

Maria M. Munoz San Martin *RCSI*
Title withheld, neurodegeneration and demyelination model (mouse)

Sharee Basdeo *Trinity College Dublin*
Innate immune training of human monocytes by SARS-Cov2 vaccine ChAdOx1

Judi Allen *University of Manchester*
Serous cavity macrophage in nematode control

Judi Allen, James Parkinson *University of Manchester*
The serous cavity proteome

Alvaro Diaz *Uni. de la República Uruguay*
Role of CD40 signalling in tissue resident macorphage proliferation

Teaching & Supervision

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 module refrom via comittee.

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

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	*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 (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 visualisation 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. I sit on the thesis committee of 3 Trinity PhD students in School of Medicine and Statistics. 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 the lack of single cell RNA-sequencing capacity in TCD. The service was launched 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. This has now received internal support for a 0.5 % FTE research assistant and we have offered services to 5 academic and 1 industry partners.

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*

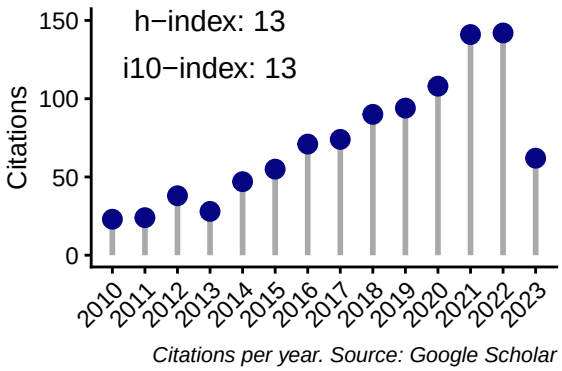
Prof Cliona O'Farrelly — *Trinity College Dublin*
Professor of Comparative Immunology; ofarrecl@tcd.ie — *School of Biochemistry and Immunology*

Appendix

Appendix on Github: **Media & commentary**, **Manuscripts in preparation**, **Short-listed Applications**,**Poster Presentations**, **Thesis Committees and Vivas**, **Interview panels**, **Training**,**Courses Societies and Committees**, and **Skills**.

Appendix

Citations



Citations per year. Source: Google Scholar

Details	Number of papers
Total papers	18
As First Author	6
As primary supervisor	1
Seconday author − Major contribution (>3 months)	7
Seconday author − Minor contribution (<3 months)	4
As corresponding author	4

Manuscripts in Preparation or review, etc (pre-prints as listed as part of publications)

- Ridge, R., Finlay, C.M., O' Farrelly, C., Moran, B., Alvarado-Vazquez, A., Hallgren, J., Conlon. CD34+ CD117+ FcεR1lo cells in peripheral blood are elevated in patients with chronic spontaneous urticaria and display phenotypes which correlate with treatment response
- Dwivedi, A., Ui Mhaonaigh, A., Carrol, M., Little, M and Finlay, C.M. Characterisation of low density neutrophils in SARS-Cov 2 patients (Under review)
- 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

Media and Commentary

- Li, X., and Jakubzick, C. V. (2023). Macrophages show up in style when Th2 lymphocytes organize their homecoming. Immunity 56, 900–902. 10.1016/j.immuni.2023.04.007.
- Immunity paper featured on The Immunology Podcast - Episode 51
- https://www.tcd.ie/news_events/articles/2023/researchers-tackle-parasitic-worms-that-infect-millions-worldwide/
- Trinity College and University of Manchester tackle parasitic worms that infect millions, Irish Medical Times, Vol 74 No.4, April 2023

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

Poster Presentations

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*

Training

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*

Thesis Committees and Continuation Vivas

2022-2023 School of Computer Science and Statistics PhD student — *Ultan Doherty*
2022-2023 School of Medicine PhD student — *Sarah Connolly*
2021-2023 School of Medicine PhD student — *Mariya Al Hamrashdi*

Interview Panels

2022	Post-Doctoral scientist at TCD (TTMI lab)	*Interview panel*
2022	Research Assistant at TCD (Core funded)	*Interview panel*
2022	Research Assistant at TCD (our lab)	*Interview panel*
2021	Research Assistant at TCD (our lab)	*Interview panel*

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)
- 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 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)

Skills Annex

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 multidisciplinary 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 cytometery 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 cytometry (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 multidisciplinary 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.