

## CURRICULUM VITAE

Peter Francis Hickey

### PERSONAL DATA

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Walter and Eliza Hall Institute of Medical Research  
1G, Royal Parade  
Parkville, VIC, 3052

### EDUCATION AND TRAINING

#### Degrees

2015 Ph.D. in Statistics  
Department of Mathematics and Statistics  
The University of Melbourne, Melbourne  
Advisors: **Terry Speed** and **Peter Hall**  
2009 B. Sc. (First Class Honours) in Mathematics and Statistics  
University of Melbourne

#### Postdoctoral Training

2016–2018 Department of Biostatistics  
Johns Hopkins Bloomberg School of Public Health  
Advisor: **Kasper D. Hansen**

### PROFESSIONAL EXPERIENCE

2018–Present Senior Research Officer  
Advanced Technology and Biology  
Walter and Eliza Hall Institute of Medical Research  
2016–2018 Postdoctoral Fellow  
Department of Biostatistics  
Johns Hopkins Bloomberg School of Public Health

2010–2015      Research Assistant  
                    Bioinformatics Division  
                    Walter and Eliza Hall Institute of Medical Research

## PROFESSIONAL ACTIVITIES

### Professional Memberships

Member, Statistical Society of Australia  
Member, Australian Bioinformatics And Computational Biology Society  
Member, Australasian Genomic Technologies Association

## EDITORIAL ACTIVITIES

### Served as *referee* for

Bioinformatics  
Biostatistics  
F1000Research  
Genetic Epidemiology  
Genome Biology  
Heredity  
Nature Methods  
PLOS Computational Biology  
PLOS Genetics

## HONORS AND AWARDS

2019      Bioconductor Travel Award (To present at BioC in New York, USA)  
2018      AGTA Travel Award (To present at the AGTA meeting in Adelaide, Australia)  
2018      Bioconductor Travel Award (To present at BioC in Toronto, Canada)  
2015      Bioconductor Travel Award (To present at BioC in Seattle, USA)  
2015      Edith Moffat Travel Award (To interview for international for postdoctoral positions)  
2013      Prize for best lightning talk at the Australian Epigenetics Conference  
2013      Third prize for best lightning talk at the Young Statisticians Conference

# PUBLICATIONS

## Journal Articles (peer reviewed)

\* indicates equal contributions

† indicates corresponding author(s) (if not the senior author)

- [1] M. I. Love<sup>\*†</sup>, C. Soneson, **P. F. Hickey**, L. K. Johnson, N. T. Pierce, L. Shepherd, M. Morgan, and R. Patro. “Tximeta: Reference sequence checksums for provenance identification in RNA-seq”. *PLoS Computational Biology* (2020). DOI: [10.1371/journal.pcbi.1007664](https://doi.org/10.1371/journal.pcbi.1007664).
- [2] C. Seillet<sup>\*†</sup>, K. Luong, J. Tellier, N. Jacquelot, R. D. Shen, **P. F. Hickey**, V. C. Wimmer, L. Whitehead, K. Rogers, G. K. Smyth, A. L. Garnham, M. E. Ritchie, and G. T. Belz<sup>†</sup>. “The neuropeptide VIP confers anticipatory mucosal immunity by regulating ILC3 activity”. *Nature Immunology* (2020). DOI: [10.1038/s41590-019-0567-y](https://doi.org/10.1038/s41590-019-0567-y).
- [3] S. Su<sup>\*†</sup>, L. Tian, X. Dong, **P. F. Hickey**, S. Freytag, and M. E. Ritchie<sup>†</sup>. “CellBench: R/Bioconductor software for comparing single-cell RNA-seq analysis methods”. *Bioinformatics* (2020). DOI: [10.1093/bioinformatics/btz889](https://doi.org/10.1093/bioinformatics/btz889).
- [4] G. M. Verstappen<sup>\*†</sup>, J. A. Ice, H. Bootsma, S. Pringle, E. A. Haacke, K. de Lange, G. B. van der Vries, **P. F. Hickey**, A. Vissink, F. K. L. Spijkervet, C. J. Lessard<sup>†</sup>, and F. G. M. Kroese<sup>†</sup>. “Gene expression profiling of epithelium-associated FcRL4+ B cells in primary Sjögren’s syndrome reveals a pathogenic signature”. *Journal of Autoimmunity* (2020). DOI: [10.1016/j.jaut.2020.102439](https://doi.org/10.1016/j.jaut.2020.102439).
- [5] L. Boukas<sup>\*</sup>, J. M. Havrilla, **P. F. Hickey**, A. R. Quinlan, H. T. Bjornsson, and K. D. Hansen<sup>†</sup>. “Coexpression patterns define epigenetic regulators associated with neurological dysfunction”. *Genome Research* (2019). DOI: [10.1101/gr.239442.118](https://doi.org/10.1101/gr.239442.118).
- [6] J. T. Hickey<sup>\*</sup>, R. G. Timmins, N. Maniar, E. Rio, **P. F. Hickey**, C. A. Pitcher, M. D. Williams, and D. A. Opar<sup>†</sup>. “Pain-Free Versus Pain-Threshold Rehabilitation Following Acute Hamstring Strain Injury: A Randomized Controlled Trial”. *The Journal of Orthopaedic and Sports Physical Therapy* (2019). DOI: [10.2519/jospt.2019.8895](https://doi.org/10.2519/jospt.2019.8895).
- [7] H.-F. Koay<sup>\*</sup>, S. Su, D. Amann-Zalcenstein, S. R. Daley, I. Comerford, L. Miosge, C. E. Whyte, I. E. Konstantinov, Y. d’Udekem, T. Baldwin, **P. F. Hickey**, S. P. Berzins, J. Y. W. Mak, Y. Sontani, C. M. Roots, T. Sidwell, A. Kallies, Z. Chen, S. Nüssing, K. Kedzierska, L. K. Mackay, S. R. McColl, E. K. Deenick, D. P. Fairlie, J. McCluskey, C. C. Goodnow, M. E. Ritchie, G. T. Belz, S. H. Naik, D. G. Pellicci<sup>†</sup>, and D. I. Godfrey<sup>†</sup>. “A divergent transcriptional landscape underpins the development and functional branching of MAIT cells”. *Science Immunology* (2019). DOI: [10.1126/sciimmunol.aay6039](https://doi.org/10.1126/sciimmunol.aay6039).
- [8] L. F. Rizzardi<sup>\*</sup>, **P. F. Hickey**<sup>\*</sup>, V. Rodriguez DiBlasi, R. Tryggvadóttir, C. M. Callahan, A. Idrizi, K. D. Hansen<sup>†</sup>, and A. P. Feinberg<sup>†</sup>. “Neuronal brain-region-specific DNA methylation and chromatin accessibility are associated with neuropsychiatric trait heritability”. *Nature Neuroscience* (2019). DOI: [10.1038/s41593-018-0297-8](https://doi.org/10.1038/s41593-018-0297-8).

- [9] J. T. Hickey<sup>\*</sup>, **P. F. Hickey**, N. Maniar, R. G. Timmins, M. D. Williams, C. A. Pitcher, and D. A. Opar<sup>†</sup>. “A Novel Apparatus to Measure Knee Flexor Strength During Various Hamstring Exercises: A Reliability and Retrospective Injury Study”. *The Journal of Orthopaedic and Sports Physical Therapy* (2018). DOI: [10.2519/jospt.2018.7634](https://doi.org/10.2519/jospt.2018.7634).
- [10] N. Jansz<sup>\*</sup>, A. Keniry, M. Trussart, H. Bildsoe, T. Beck, I. D. Tonks, A. W. Mould, **P. F. Hickey**, K. Breslin, M. Iminoff, M. E. Ritchie, E. McGlinn, G. F. Kay, J. M. Murphy, and M. E. Blewitt<sup>†</sup>. “Smchd1 regulates long-range chromatin interactions on the inactive X chromosome and at Hox clusters”. *Nature Structural & Molecular Biology* (2018). DOI: [10.1038/s41594-018-0111-z](https://doi.org/10.1038/s41594-018-0111-z).
- [11] N. Jansz<sup>\*</sup>, T. Nesterova, A. Keniry, M. Iminoff, **P. F. Hickey**, G. Pintacuda, O. Masui, S. Kobelke, N. Geoghegan, K. A. Breslin, T. A. Willson, K. Rogers, G. F. Kay, A. H. Fox, H. Koseki, N. Brockdorff, J. M. Murphy, and M. E. Blewitt<sup>†</sup>. “Smchd1 Targeting to the Inactive X Is Dependent on the Xist-HnrnpK-PRC1 Pathway”. *Cell Reports* (2018). DOI: [10.1016/j.celrep.2018.10.044](https://doi.org/10.1016/j.celrep.2018.10.044).
- [12] **P. F. Hickey**<sup>\*†</sup>. “Representation and Manipulation of Genomic Tuples in R”. *The Journal of Open Source Software* (2016). DOI: [10.21105/joss.00020](https://doi.org/10.21105/joss.00020).
- [13] A. Keniry<sup>\*</sup>, L. J. Gearing<sup>\*</sup>, N. Jansz, J. Liu, A. Z. Holik, **P. F. Hickey**, S. A. Kinkel, D. L. Moore, K. Breslin, K. Chen, R. Liu, C. Phillips, M. Pakusch, C. Biben, J. M. Sheridan, B. T. Kile, C. Carmichael, M. E. Ritchie, D. J. Hilton, and M. E. Blewitt<sup>†</sup>. “Setdb1-mediated H3K9 methylation is enriched on the inactive X and plays a role in its epigenetic silencing”. *Epigenetics & Chromatin* (2016). DOI: [10.1186/s13072-016-0064-6](https://doi.org/10.1186/s13072-016-0064-6).
- [14] D. G. Phelan<sup>\*</sup>, D. J. Anderson, S. E. Howden, R. C. B. Wong, **P. F. Hickey**, K. Pope, G. R. Wilson, A. Pébay, A. M. Davis, S. Petrou, A. G. Elefanty, E. G. Stanley, P. A. James, I. Macciocca, M. Bahlo, M. M. Cheung, D. J. Amor, D. A. Elliott<sup>†</sup>, and P. J. Lockhart<sup>†</sup>. “ALPK3-deficient cardiomyocytes generated from patient-derived induced pluripotent stem cells and mutant human embryonic stem cells display abnormal calcium handling and establish that ALPK3 deficiency underlies familial cardiomyopathy”. *European Heart Journal* (2016). DOI: [10.1093/eurheartj/ehw160](https://doi.org/10.1093/eurheartj/ehw160).
- [15] D. Lacey<sup>\*</sup>, **P. F. Hickey**, B. D. Arhatari, L. A. O’Reilly, L. Rohrbeck, H. Kiriazis, X.-J. Du, and P. Bouillet<sup>†</sup>. “Spontaneous retrotransposon insertion into TNF 3’UTR causes heart valve disease and chronic polyarthritis”. *Proceedings of the National Academy of Sciences of the United States of America* (2015). DOI: [10.1073/pnas.1508399112](https://doi.org/10.1073/pnas.1508399112).
- [16] H. Oey<sup>\*</sup>, L. Isbel<sup>\*</sup>, **P. F. Hickey**, B. Ebaid, and E. Whitelaw<sup>†</sup>. “Genetic and epigenetic variation among inbred mouse littermates: identification of inter-individual differentially methylated regions”. *Epigenetics & Chromatin* (2015). DOI: [10.1186/s13072-015-0047-z](https://doi.org/10.1186/s13072-015-0047-z).
- [17] **P. F. Hickey**<sup>\*†</sup> and M. Bahlo. “X chromosome association testing in genome wide association studies”. *Genetic Epidemiology* (2011). DOI: [10.1002/gepi.20616](https://doi.org/10.1002/gepi.20616).
- [18] M. Bahlo<sup>\*†</sup>, J. Stankovich, P. Danoy, **P. F. Hickey**, B. V. Taylor, S. R. Browning, Australian, ew Zealand Multiple Sclerosis Genetics Consortium (ANZgene), M. A. Brown, and J. P. Rubio. “Saliva-derived DNA performs well in large-scale, high-density single-nucleotide polymorphism microarray studies”. *Cancer Epidemiology, Biomarkers & Prevention* (2010). DOI: [10.1158/1055-9965.EPI-09-0812](https://doi.org/10.1158/1055-9965.EPI-09-0812).

- [19] L. G. Riley<sup>\*</sup>, S. Cooper, **P. F. Hickey**, J. Rudinger-Thirion, M. McKenzie, A. Compton, S. C. Lim, D. Thorburn, M. T. Ryan, R. Giegé, M. Bahlo, and J. Christodoulou<sup>†</sup>. “Mutation of the mitochondrial tyrosyl-tRNA synthetase gene, YARS2, causes myopathy, lactic acidosis, and sideroblastic anemia—MLASA syndrome”. *American Journal of Human Genetics* (2010). DOI: [10.1016/j.ajhg.2010.06.001](https://doi.org/10.1016/j.ajhg.2010.06.001).

## Journal Articles, Consortia member (peer reviewed)

- [20] L. Jiang, M. Wang, S. Lin, R. Jian, X. Li, J. Chan, G. Dong, H. Fang, A. E. Robinson, F. Aguet, et al. “A quantitative proteome map of the human body”. *Cell* (2020). DOI: [10.1016/j.cell.2020.08.036](https://doi.org/10.1016/j.cell.2020.08.036).
- [21] GTEx Consortium, Laboratory, Data Analysis & Coordinating Center (LDACC)—Analysis Working Group, Statistical Methods groups—Analysis Working Group, Enhancing GTEx (eGTEx) groups, NIH Common Fund, NIH/NCI, NIH/NHGRI, NIH/NIMH, NIH/NIDA, Biospecimen Collection Source Site—NDRI, Biospecimen Collection Source Site—RPCI, Biospecimen Core Resource—VARI, Brain Bank Repository—University of Miami Brain Endowment Bank, Leidos Biomedical—Project Management, ELSI Study, Genome Browser Data Integration & Visualization—EBI, Genome Browser Data Integration & Visualization—UCSC Genomics Institute, University of California Santa Cruz, Lead analysts: Laboratory, Data Analysis & Coordinating Center (LDACC): NIH program management: Biospecimen collection: Pathology: eQTL manuscript working group: A. Battle, C. D. Brown, B. E. Engelhardt, and S. B. Montgomery. “Genetic effects on gene expression across human tissues”. *Nature* (2017). DOI: [10.1038/nature24277](https://doi.org/10.1038/nature24277).
- [22] X. Li, Y. Kim, E. K. Tsang, J. R. Davis, F. N. Damani, C. Chiang, G. T. Hess, Z. Zappala, B. J. Strober, A. J. Scott, A. Li, A. Ganna, M. C. Bassik, J. D. Merker, GTEx Consortium, Laboratory, Data Analysis & Coordinating Center (LDACC)—Analysis Working Group, Statistical Methods groups—Analysis Working Group, Enhancing GTEx (eGTEx) groups, NIH Common Fund, NIH/NCI, NIH/NHGRI, NIH/NIMH, NIH/NIDA, Biospecimen Collection Source Site—NDRI, Biospecimen Collection Source Site—RPCI, Biospecimen Core Resource—VARI, Brain Bank Repository—University of Miami Brain Endowment Bank, Leidos Biomedical—Project Management, ELSI Study, Genome Browser Data Integration & Visualization—EBI, Genome Browser Data Integration & Visualization—UCSC Genomics Institute, University of California Santa Cruz, I. M. Hall, A. Battle, and S. B. Montgomery. “The impact of rare variation on gene expression across tissues”. *Nature* (2017). DOI: [10.1038/nature24267](https://doi.org/10.1038/nature24267).
- [23] eGTEx Project. “Enhancing GTEx by bridging the gaps between genotype, gene expression, and disease”. *Nature Genetics* (2017). DOI: [10.1038/ng.3969](https://doi.org/10.1038/ng.3969).
- [24] A. Saha, Y. Kim, A. D. H. Gewirtz, B. Jo, C. Gao, I. C. McDowell, GTEx Consortium, B. E. Engelhardt, and A. Battle. “Co-expression networks reveal the tissue-specific regulation of transcription and splicing”. *Genome Research* (2017). DOI: [10.1101/gr.216721.116](https://doi.org/10.1101/gr.216721.116).
- [25] M. H. Tan, Q. Li, R. Shanmugam, R. Piskol, J. Kohler, A. N. Young, K. I. Liu, R. Zhang, G. Ramaswami, K. Ariyoshi, A. Gupte, L. P. Keegan, C. X. George, A. Ramu, N. Huang, E. A. Pollina, D. S. Leeman, A. Rustighi, Y. P. S. Goh, GTEx Consortium, Laboratory, Data Analysis & Coordinating Center (LDACC)—Analysis Working Group, Statistical Methods groups—

- Analysis Working Group, Enhancing GTEx (eGTEx) groups, NIH Common Fund, NIH/NCI, NIH/NHGRI, NIH/NIMH, NIH/NIDA, Biospecimen Collection Source Site—NDRI, Biospecimen Collection Source Site—RPCI, Biospecimen Core Resource—VARI, Brain Bank Repository—University of Miami Brain Endowment Bank, Leidos Biomedical—Project Management, ELSI Study, Genome Browser Data Integration & Visualization—EBI, Genome Browser Data Integration & Visualization—UCSC Genomics Institute, University of California Santa Cruz, A. Chawla, G. Del Sal, G. Peltz, A. Brunet, D. F. Conrad, C. E. Samuel, M. A. O’Connell, C. R. Walkley, K. Nishikura, and J. B. Li. “Dynamic landscape and regulation of RNA editing in mammals”. *Nature* (2017). DOI: [10.1038/nature24041](https://doi.org/10.1038/nature24041).
- [26] T. Tukiainen, A.-C. Villani, A. Yen, M. A. Rivas, J. L. Marshall, R. Satija, M. Aguirre, L. Gauthier, M. Fleharty, A. Kirby, B. B. Cummings, S. E. Castel, K. J. Karczewski, F. Aguet, A. Byrnes, GTEx Consortium, Laboratory, Data Analysis & Coordinating Center (LDACC)—Analysis Working Group, Statistical Methods groups—Analysis Working Group, Enhancing GTEx (eGTEx) groups, NIH Common Fund, NIH/NCI, NIH/NHGRI, NIH/NIMH, NIH/NIDA, Biospecimen Collection Source Site—NDRI, Biospecimen Collection Source Site—RPCI, Biospecimen Core Resource—VARI, Brain Bank Repository—University of Miami Brain Endowment Bank, Leidos Biomedical—Project Management, ELSI Study, Genome Browser Data Integration & Visualization—EBI, Genome Browser Data Integration & Visualization—UCSC Genomics Institute, University of California Santa Cruz, T. Lappalainen, A. Regev, K. G. Ardlie, N. Hacohen, and D. G. MacArthur. “Landscape of X chromosome inactivation across human tissues”. *Nature* (2017). DOI: [10.1038/nature24265](https://doi.org/10.1038/nature24265).
- [27] F. Yang, J. Wang, GTEx Consortium, B. L. Pierce, and L. S. Chen. “Identifying cis-mediators for trans-eQTLs across many human tissues using genomic mediation analysis”. *Genome Research* (2017). DOI: [10.1101/gr.216754.116](https://doi.org/10.1101/gr.216754.116).

## Preprints (not peer reviewed)

\* indicates equal contributions

† indicates corresponding author(s) (if not the senior author)

- [28] L. F. Rizzardi\*, **P. F. Hickey**, A. Idrizi, R. Tryggvadóttir, C. M. Callahan, K. E. Stephens, S. D. Taverna, H. Zhang, S. Ramazanoglu, K. D. Hansen†, and A. P. Feinberg†. “Human brain region-specific variably methylated regions (VMRs) are enriched for heritability of distinct neuropsychiatric traits”. *bioRxiv* (2021). Preprint. DOI: [10.1101/2021.01.02.425010](https://doi.org/10.1101/2021.01.02.425010).
- [29] L. M. Weber\*, A. A. Hippen, **P. F. Hickey**, K. C. Berrett, J. Gertz, J. A. Doherty, C. S. Greene, and S. C. Hicks†. “Genetic demultiplexing of pooled single-cell RNA-sequencing samples in cancer facilitates effective experimental design”. *bioRxiv* (2020). Preprint. DOI: [10.1101/2020.11.06.371963](https://doi.org/10.1101/2020.11.06.371963).

- [30] A. Keniry<sup>\*</sup>, N. Jansz, L. J. Gearing, I. Wanigasuriya, J. Chen, C. M. Nefzger, **P. F. Hickey**, Q. Gouil, J. Liu, K. A. Breslin, M. Iminoff, T. Beck, A. T. del Fierro, L. Whitehead, S. A. Kinkel, P. C. Taberlay, T. Willson, M. Pakusch, M. E. Ritchie, D. J. Hilton, J. M. Polo, and M. E. Blewitt<sup>†</sup>. “Xmas ESC: A new female embryonic stem cell system that reveals the BAF complex as a key regulator of the establishment of X chromosome inactivation”. *bioRxiv* (2019). Preprint. DOI: [10.1101/768507](https://doi.org/10.1101/768507).
- [31] K. J. Trevis<sup>\*</sup>, N. J. Brown<sup>\*</sup>, C. Green, P. Lockhart, **P. F. Hickey**, M. Fanjul-Fernández, C. Bromhead, T. Desai, T. Vick, G. Gillies, H. Mountford, E. Fitzpatrick, L. Gordon, P. Hewson, V. Anderson, M. B. Delatycki, I. E. Scheffer<sup>†</sup>, and S. J. Wilson<sup>†</sup>. “Tracing Autism Traits in Large Multiplex Families to Identify Endophenotypes of the Broader Autism Phenotype”. *bioRxiv* (2019). Preprint. DOI: [10.1101/659722](https://doi.org/10.1101/659722).

## Theses, Editorials

- [32] **P. F. Hickey**. “The statistical analysis of high-throughput assays for studying DNA methylation”. PhD thesis. Department of Mathematics and Statistics, University of Melbourne, 2015. URL: <https://minerva-access.unimelb.edu.au/handle/11343/55699>.
- [33] **P. F. Hickey** and M. D. Robinson. “Genomics by the beach”. *Genome biology* (2014). DOI: [10.1186/gb4171](https://doi.org/10.1186/gb4171).
- [34] **P. F. Hickey**. “X chromosome association testing in genome-wide association studies”. Honours Thesis. Department of Mathematics and Statistics, University of Melbourne, 2009.

## Citation databases

Google Scholar: [profile](#) (link)  
 ORCID: [0000-0002-8153-6258](#) (link)  
 Europe PMC Citations: [profile](#) (link)

## PRACTICE ACTIVITIES

### Software - Bioconductor Project

[bsseq](#) Analyze, Manage and Store Bisulfite Sequencing Data.  
[CellBench](#) Construct Benchmarks for Single Cell Analysis Methods.  
[DelayedMatrixStats](#) Functions that Apply to Rows and Columns of 'DelayedMatrix' Objects.  
[GenomicTuples](#) Representation and Manipulation of Genomic Tuples.  
[MatrixGenerics](#) S4 Generic Summary Statistic Functions that Operate on Matrix-Like Objects.  
[minfi](#) Analyze Illumina Infinium DNA Methylation Arrays.  
[tximeta](#) Transcript Quantification Import with Automatic Metadata.

## Software - Other

[methtuple](#) A caller for DNA methylation events that co-occur on the same DNA fragment from high-throughput bisulfite sequencing data, such as whole-genome bisulfite-sequencing.