

DR SHILA GHAZANFAR

CURRICULUM VITAE

School of Mathematics and Statistics (F07)
The University of Sydney
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I am an early career researcher in Statistical Bioinformatics. My interests lie in statistical analysis of high-throughput sequencing data and how this can be used to answer important questions in biological and medical research. I have excellent communication skills honed through teaching and presenting research to a wide audience and I work well both as a team member and individually. I especially enjoy the day to day challenges of learning about and solving problems in a collaborative research environment.

EDUCATION

The University of Sydney 2013 – 2017
PhD in Mathematical Statistics
Thesis: **Statistical approaches to harness high throughput sequencing data in diverse biological systems.**
Available online: <http://hdl.handle.net/2123/17268>

The University of Sydney 2009 - 2012
B. Science (Advanced Mathematics) (Honours I)
Majors in Statistics and Pure Mathematics
Thesis: **Statistical issues of integrative gene set approaches for biomedical data.**

EMPLOYMENT

The University of Sydney September 2017 – Current
Judith and David Coffey Life Lab, Charles Perkins Centre
School of Mathematics and Statistics
Position: **Research Associate**

The University of Sydney May 2017 – August 2017
School of Life and Environmental Science (SOLES)
Position: **Research Associate**

The University of Sydney March 2017 – July 2017
School of Mathematics and Statistics
Position: **Casual tutor**

March 2012 – November 2012

The University of Sydney March 2013 – November 2016
School of Mathematics and Statistics
Position: **Postgraduate Teaching Fellow**

PUBLICATIONS

ORCID ID: 0000-0001-7861-6997

Lim, S., Lee J., Gide, T., Menzies, A., Guminski, A., Carlino, M., Breen, E., Yang, J., **Ghazanfar, S.**, Kefford, R., Scolyer, R., Long, G., and Rizos, H. (2018). Circulating cytokines predict immune-related toxicity in melanoma patients receiving anti-PD-1-based immunotherapy. *Clinical Cancer Research* (Accepted).

Ghazanfar, S., Strbenac, D., Ormerod, J. T., Yang, J. Y. H. and Patrick, E. (2018) DCARS: Differential correlation across ranked samples. *Bioinformatics*, 10.1093/bioinformatics/bty698.

Sykes, E. K., McDonald, C. E., **Ghazanfar, S.**, Mactier, S., Thompson, J. F., Scolyer, R. A., Yang, J. Y., Mann, G. J. and Christopherson, R. I. (2017). A 14-Protein Signature for Rapid Identification of Poor Prognosis Stage III Metastatic Melanoma. *Prot. Clin. Appl.*, doi:10.1002/prca.201700094

Ghazanfar, S., Vuocolo, T., Morrison, J. L., McMillen, I. C., Yang, J. Y. H., Buckley, M. J., Tellam, R. L. (2017). Gene

Expression Allelic Imbalance in Ovine Brown Adipose Tissue Impacts Energy Homeostasis. PLOS ONE. doi: journal.pone.0180378

Ghazanfar, S., Bisogni, A. J., Ormerod, J. T., Lin, D. M., & Yang, J. Y. H. (2016). Integrated Single Cell Data Analysis Reveals Cell Specific Networks and Novel Coactivation Markers. BMC Systems Biology. doi:10.1186/s12918-016-0370-4

Yang, P., Patrick, E., Humphrey, S. J., **Ghazanfar, S.**, James, D. E., Jothi, R., & Hwa Yang, J. Y. (2016). KinasePA: Phosphoproteomics data annotation using hypothesis driven kinase perturbation analysis. Proteomics. doi:10.1002/pmic.201600068

Ghazanfar, S., & Yang, J. Y. H. (2016). Characterizing mutation–expression network relationships in multiple cancers. Computational Biology and Chemistry. doi:10.1016/j.compbiolchem.2016.02.009

PREPRINTS AND SUBMITTED MANUSCRIPTS

Lin, Y., **Ghazanfar, S.**, Wang, K. Y. X., Gagnon-Bartsch, J. A., Lo, K. K., Su, X., Han, Z., Ormerod, J. T., Speed, T. P., Yang, P., Yang, J. Y. H. (2018). scMerge: Integration of multiple single-cell transcriptomics datasets leveraging stable expression and pseudo-replication. bioRxiv. doi: 10.1101/393280

Lin, Y., **Ghazanfar, S.**, Strbenac, D., Wang, A., Patrick, E., Speed T., Yang, J. Y. H., Yang, P. (2017). Housekeeping genes, revisited at the single-cell level. bioRxiv. doi: 10.1101/229815

Bisogni, A. J., **Ghazanfar, S.**, Williams, E. O., Wu, C., Yang, J. Y. H., Lin, D. M. (2018). Principles that Mediate Tuning of delta-Protocadherin Function and Enhance Adhesive Diversity. (Submitted).

GRANTS

The University of Sydney 2015 Educational Innovation Grant
#15030 *Improving Statistical Efficacy through Engaged Enquiry and Student-Driven Research in a large First Year Unit*.
Educational Innovation Grant - Round 1 (**\$6,625**). Project leader: Dr Di Warren.

RESEARCH SUPERVISION AND MENTORING

2018 Summer Research Scholarship Student: Andrew Lee: ‘Establish an interactive visualisation platform to facilitate clinical research in chronic kidney disease’, supervision under guidance by Professor Jean Yang and Professor Germaine Wong.

2017 BINF3101 Bioinformatics Project Unit of Study: Elise Bickley: ‘Analysis of gene expression, protein interactions and mutations to determine candidate genes for clinically targetable therapeutics’, joint supervision with Professor Jean Yang.

AWARDS AND SCHOLARSHIPS

- 2018 Oz Single Cells Data Analysis Challenge: “Utilising ambient RNA and damaged cell profiles for appropriate cell selection in droplet-based single cell transcriptomics” (**\$250**).
- 2016 2nd Oral Prize at AB3ACBS Conference (**\$100**).
- 2016 SSAI NSW Branch Travel Grant to attend the Australian Statistical Conference in December 2016 (**\$750**).
- 2015 2nd Poster Prize at COMBINE Symposium (**\$75**).
- 2015 SSAI NSW Branch Travel Grant to attend Young Statisticians Conference in February 2015 (**\$500**).
- 2014 University of Sydney Faculty of Science grant to attend EMBL Australia PhD Symposium (**\$100**).
- 2013 Successful application to attend the EMBL Australia PhD Course (accommodation and meal costs paid for).
- 2013 AMSI Travel Scholarship for BioInfoSummer 2013 (**\$750**).
- 2013 CSIRO OCE PhD Scholarship (Stipend **\$7,000 p.a. for three years, total \$21,000 with operating expense \$10,000 p.a., total \$30,000**).
- 2013 University of Sydney School of Mathematics and Statistics PRSS Funding (**Total \$950**).
- 2013 Australian Postgraduate Award (**\$28,715 p.a. for three years and six months**).

- 2012 CSIRO Mathematics, Informatics, and Statistics (CMIS) Honours Scholarship **(\$3,000)**.
- 2008 Higher School Certificate All-Round Achievers' Award.

TECHNICAL SKILLS

I have extensive experience in statistical data analysis and software development as listed below:

- Proficient knowledge of R, RStudio, RMarkdown, and Bioconductor software environment.
- Excellent knowledge of designing interactive R Shiny applications for public use.
Shiny applications such as PACMEN and KinasePA are available online at shiny.maths.usyd.edu.au
- Knowledge of Unix and Linux environments, and knowledge of designing bash scripts.
- Knowledge of interacting with genomic tools such as UniProt and UCSC Genome Browser.
- Experience in deploying computational tasks to High Performance Computing clusters such as PBSPro.
- Experience in manipulating large sets of Next Generation Sequencing data including pre-processing from raw read files, quality control, statistical analysis and data visualisation.
- Excellent oral and written communication skills, with emphasis on working in a collaborative environment.

PROFESSIONAL SERVICE AND EXPERIENCE

- Attended Mentoring and Guidance in Careers Workshop in October 2018. This was a week-long workshop with a competitive application process for mentoring of female and gender diverse early career researchers in Mathematics and Physics.
- Attended Charles Perkins Centre EMCR workshop on 'Manuscripts and Grant Reviewing' in June 2018.
- Present a talk at The University of Sydney Faculty of Science Higher Degree by Research Supervisor Forum: Supervising 21st Century Style: New Challenges and Opportunities in June 2018.
- Attended workshop on 'Effective data presentation at conferences' in March 2018.
- Volunteer for University of Sydney Open Day August 2017.
- Executive member of the COMBINE student and early-career researcher organisation in 2017, part of the COMBINE National Committee Media and Communications team.
- Member of organising committee for COMBINE Student Symposium in October 2016.
- Student member of AustMS since November 2015.
- Student member of the Statistical Society of Australia (SSAI) since November 2013.
- Chaired a session at the COMBINE Symposium in October 2015.
- Volunteer for University of Sydney Open Day August 2015.
- Presented a talk at School of Mathematics and Statistics 'Thank You to Teachers' evening in August 2015.
- Attended 'Data Visualisation Masterclass' at Charles Perkins Centre in June 2015.
- Completed 'High Performance Computing Intermediate Training' at University of Sydney in March 2015.
- Attended 'UCSC Genome Browser' workshop in September 2014.
- Volunteer for University of Sydney Info Day January 2014.
- Participated in the inaugural EMBL Australia PhD Course, a two week intensive course on molecular biology and bioinformatics held at the University of Melbourne in June 2013.
- Involved in the CSIRO Vacation Scholarship Program from January to March 2013.
- Involved in the Charles Perkins Centre Summer Vacation Scholarship Program from December 2011 to February 2012.
- Volunteer for School Tutoring Program at the University of Sydney in 2009.
- Involved in Peer Tutoring at Macarthur Girls High School in 2007.

PEER REVIEW

Publons URL: publons.com/a/1038599/

- Reviewed for Scientific Reports (3)
- Reviewed for PLOS Computational Biology (1)

PRESENTATIONS

- **Invited** Oral presentation at the upcoming **ComBio2018** meeting in September 2018.
- Oral presentation at the **RECOMB Computational Cancer Biology** satellite meeting in April 2018.
- Oral presentation at the **Sydney Bioinformatics Research Symposium** in June 2017.
- Oral presentation at the **Australian Statistical Conference** in December 2016.
- Oral presentation at **The University of Sydney Postgraduate Cancer Symposium** in December 2016.
- Oral presentation at the **Australian Bioinformatics and Computational Biology Society (ABACBS) Conference** in November 2016.
- Seminar presented to **The University of Sydney Regenerative Neuroscience Group** in October 2016.
- Oral presentation at **International Conference of Bioinformatics (INCOB)** in September 2016.
- Seminar presented to the **University of Sydney Statistical Bioinformatics Research** group in September 2016.
- Presented a 5 minute outreach talk on current melanoma research to a group of young professionals at **Vibewire's FastBreak** event on 27 May 2016.
- Oral presentation at **Asia Pacific Bioinformatics Conference** in San Francisco, USA, in January 2016.
- Conducted a **workshop in Classification in R** at **BioInfoSummer** in Sydney in December 2015.
- Oral presentation at the **JB Douglas Awards** in November 2015.
- Oral presentation at the **Young Statisticians Conference** in Adelaide in February 2015.
- Poster at the 2014 **International Conference on Systems Biology (ICSB)** in Melbourne in September 2014.
- Poster at the 2013 **Australasian Genomic Technologies Association (AMATA) Conference** in Gold Coast QLD.
- Oral presentation at the 2012-2013 **CSIRO Vacation Scholarship Big Day In** in Sydney.
- Oral presentation for the 2011-2012 **Charles Perkins Centre Summer Vacation Scholarship** in Sydney.

TEACHING

I have extensive experience in aspects of teaching such as:

- Lecturing statistics in the following subjects:
 - **MATH1005 Statistics** (S2 2015, S2 2016, Winter School 2014, 2015) ~300 students per stream, ~80-100 Winter.
 - **PHAR1811 Foundations of Pharmacy** (S1 2014, S1 2015) ~280 students each year.
 - **STAT2911 Probability and Statistical Models (Advanced)** (S1 2015) – lectures on parametric bootstrap and conditional expectation (~40 students).
- Computer demonstrations using R statistical software.
- Duty tutoring involving helping students for any first-year mathematics and statistics unit (S1 2013, S2 2013, S1 2014).
- Designing and marking final exams, assignments and quizzes.
- Subjects tutored vary in topic and difficulty::
 - **STAT3014 Applied Statistics** (S2 2013, S2 2014);
 - **STAT3012 Applied Linear Models** (S1 2016);
 - **STAT2911 Probability and Statistical Models (Advanced)** (S1 2015);
 - **STAT2011 Statistical Models** (S1 2015, S1 2017);
 - **STAT2012 Statistical Tests** (S2 2014);
 - **PHAR2813 Therapeutic Principles** (S1 2014, S1 2016);
 - **PHAR2821 Drug Discovery and Design B** (S2 2013, S2 2014, S2 2016);
 - **MATH1905 Statistics (Advanced)** (S2 2014);
 - **PHAR1811 Foundations of Pharmacy** (S1 2014);
 - **MATH1005 Statistics** (S2 2012, S2 2013, Winter School 2014, Winter School 2015, S2 2015, S2 2016);
 - **MATH1015 Biostatistics** (S1 2013, S1 2014);
 - **MATH1011 Applications of Calculus** (S1 2012, Summer School 2014, Summer School 2017, S1 2017);
 - **MATH1111 Introduction to Calculus** (S1 2013, S1 2014).

REFEREES

Professor Jean Yee Hwa Yang
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Additional referees are available upon request.