GILLIAN REYNOLDS

Worcestershire, United Kingdom
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PERSONAL NOTES

Formerly known as Gillian Woolard

EDUCATION

Individual Interdisciplinary PhD- Computer Science and Plant Genetics August 2019 - present
Co-Supervisors : Dr. Veronika Strnadova-Neeley, Dr. Jennifer Lachowiec
The Gianforte School of Computing and The Department of Plant Sciences and Plant Pathology
Montana State University, USA

PhD in Plant Genetics - changed programs January 2018 - August 2019
Interim Supervisor : Dr. Tracy Dougher August 2018- August 2019
Supervisor : Dr. Hikmet Budak January 2018 - August 2018
Department of Plant Sciences and Plant Pathology
Montana State University, USA

MRes Biology: Bioinformatics and Genomics September 2015 - August 2018
Thesis Supervisor : Professor Mahmut Tör
Thesis Title : Comparative Genomics of *Erwinia amylovora*
Department of Science and the Environment
The University of Worcester, UK

Biology Bsc(Hons) September 2011- July 2014
Final Year Project Title: The Role Late Cenozoic Climatic and Geological
Events Played In The Speciation Events of Seven Passeriforme Families.
Final year project supervisor : Dr. Mike Wheeler
Department of Science and the Environment
The University of Worcester, UK

SKILLS

Biological

As a result of the varied projects of which I have been a part of I have developed a number of skills of a range of areas. These include gene and genome alignments, phylogenetic tree construction, RNA-Seq analysis, GBS data analysis, sequence read mapping, genome assembly, genome annotation, comparative genomics and developing machine learning models.

Teaching and Supervision

I have enjoyed several teaching and undergraduate supervision opportunities at the University of Worcester. In addition, I have also been involved in the development of educational tools in Bioinformatics for both undergraduates and pre-university students. I am passionate about education and also access to education, something I was able to put into practice during my development of free educational materials and as an associate lecturer at Worcester University. At Montana State University I am currently mentoring an undergraduate student on the analysis of large scale RNA-Seq data and I look forward to future mentoring, teaching and outreach opportunities.

Communication

I consider myself fortunate to be a student in an area of research that spans multiple disciplines as I thoroughly enjoy communicating with people from a range of backgrounds. As a PhD student at MSU this has taken multiple forms including presentations, meetings, working with people from other colleges and initiating and developing a joint PhD proposal. I am thoroughly enjoying my time in both the Gianforte School of Computing and the department of plant sciences and plant pathology, where I frequently am able to hone those skills through my work with various research groups.

PROJECTS

Comparative Genomics of Erwinia amylovora September 2015 - August 2018
MRes research project, The University of Worcester

· For my masters thesis project I taught myself to assemble, annotate and perform comparative genomics on an Illumina sequenced bacterial genome. It was through this project I developed many of the technical skills I employ now as a PhD student.

Worcester Genome Project Regeneration 2017-2018
The University of Worcester

· In 2017, Dr. Mike Wheeler of the University of Worcester and I were awarded funding from the Learning and Teaching budget of the Institute of Science and the Environment to re-sequence four bacteria from an abandoned lead mine. These bacterial genomic sequences were used to enhance student learning of real world scientific problems and encourage the development of students as academic partners.

Updating Undergraduate Learning for Real World Applications 2017-2018
The University of Worcester

· Dr. Mike Wheeler of the University of Worcester and I rewrote the final year undergraduate biology module "Genomics and Bioinformatics" to include advanced next-generation sequence analysis to prepare graduates for real-world computational biology problems.

Transcriptomics of sulphoraphane-exposed Arabidopsis thaliana 2016-2017
The University of Worcester

· In this project, I taught myself to analyse Illumina RNA-Seq data. I employed and compared range of tools and techniques following the traditional and updated "Tuxedo protocol" and developed my use of Unix and python coding in this project.

Developing educational resources for A-level student 2014-2017
A Gift of Knowledge

· Alongside developing educational resources for A-level students in e-book format as part of my research assistant post, I also have developed educational resources in partnership with the Gift of Knowledge research initiative. The resources include 3 modules, with mini-lectures, exercises and auto-marked quizzes.

Link: http://www.bioinformatics.goknowledge.co.uk/

RESEARCH PUBLICATIONS

Williams,L., **Reynolds, G**., Mumey, B. (2019). RNA Transcript Assembly Using Inexact Flows. *In 2019 IEEE International Conference on Bioinformatics and Biomedicine (BIBM). IEEE, 2019*

Manuweera, B., **Reynolds, G**., Kahanda, I. (2019). Computational Methods for the *Ab initio* Identification of Novel microRNA in Plants: A Systematic Review. *PeerJ Computer Science 5:e233 2019.*

Pourreza Shahri, Morteza, **Gillian Reynolds**, Mandi Marie Roe, and Indika Kahanda. "PPPred: Classifying Protein-phenotype Co-mentions Extracted from Biomedical Literature." In Proceedings of the 10th ACM International Conference on Bioinformatics, Computational Biology and Health Informatics, pp. 414-422. ACM, 2019.

Shahri, Morteza Pourreza, Madhusudan Srinivasan, **Gillian Reynolds**, Diane Bimczok, Indika Kahanda, and Upulee Kanewala."Metamorphic Testing for Quality Assurance of Protein Function Prediction Tools." In 2019 IEEE International Conference On Artificial Intelligence Testing (AITest), pp. 140-148. IEEE, 2019.

Rajasekar, Karthik V., Shuangxi Ji, Rachel J. Coulthard, Jon P. Ride, **Gillian L. Reynolds**, Peter J. Winn, Michael J. Wheeler, Eva I. Hyde, and Lorna J. Smith. "Structure of SPH (self-incompatibility protein homologue) proteins: a widespread family of small, highly stable, secreted proteins." Biochemical Journal 476, no. 5 (2019): 809-826.

Sherrad, G., **Woolard, G**., Wheeler, M. Investigating the function of a small secreted protein family in physcomitrella patens. *MOSS 2016 Conference.* 2nd-5th September 2016, University of Leeds, U.K.

TEACHING & UNDERGRADUATE SUPERVISION

Teaching

Guest Lecturer in Cell Biology- *Introduction to bioinformatics*
First year class, The University of Worcester 2020

Co-module Leader in Bioinformatics and Genomics
Final (third) year class, The University of Worcester 2017-2018

Module Leader in Human Genetics
Second year class, The University of Worcester 2017

Guest Lecturer in Genomics and Bionformatics - *Phylogenetics*
Final (third) year class, The University of Worcester 2014-2016

Guest lecturer in Introduction to Biological Chemistry - *Phylogenetics*
First year class, The University of Worcester 2014-2015

Undergraduate Supervision

INBRE project

I am currently supervising and working with an undergraduate student who is assisting myself, Dr. Strnadova-Neeley and Dr. Lachowiec on a project where for which we were generously awarded INBRE funding. In this project are utilising vast amounts of publically available RNA-seq data to identify stably expressed genetic regions so that we may further study the promoter regions. 2019-present

Final Year Project Supervision

Draft Genome Assembly and Annotation of *Bacillus simplex* Isolated from Heavy Metal Contaminated Soil. 2017-2018

The Pre-processing, Assembly and Annotation of a B. simplex Genome Found in Lead Rich Soil: A Biological and Teaching Perspective. 2016-2017

Class Project Supervision

I have been the supervisor for a number of small undergraduate projects for students in the final year module "Genomics and Bionformatics". 2014-2016

EMPLOYMENT

PhD Student, Montana State University 2018 - present
Associate Lecturer in Biology, University of Worcester 2016 - 2018
Independent Study Co-Supervisor, University of Worcester 2016 - 2017
Data Quality Improvement Officer, National Health Service (NHS) Worcestershire Acute Trust 2015 - 2017
Guest Lecturer in Biology, University of Worcester 2014 - 2016
Research Assistant, University of Worcester 2014 - 2015

PROFESSIONAL MEMBERSHIPS

Royal Society of Biology

International Society for Computational Biology

REFERENCES

Available on Request