

KEVIN RUE-ALBRECHT

Computational Biologist (Dipl. Ing., Ph.D.)




I am a computational biologist at the [University of Oxford](#).

My research interests in computational biology include software engineering best practices, DevOps, single-cell genomics, and interactive data visualization. I particularly enjoy using and contributing R packages part of the [Bioconductor project](#). A list of software packages that I maintain or contributed to is available on the "Software" page of my [website](#).


My academic research primarily explores the host immune response to infectious diseases, inflammation, and self-antigens.



EDUCATION

- 2008 • **CPGE BCPST Vêto - Lycée Jean Rostand**
Class Préparatoire aux Grandes Écoles  Strasbourg, France
- Biology
 - Chemistry
 - Physics
 - Earth Sciences
 - Mathematics
 - Programming
- 2011 • **École Polytechnique Universitaire Polytech Nice-Sophia**
Ingénieur diplômé, MSc  Sophia Antipolis
- Pharmacology
 - Biotechnology
 - Toxicology
 - Environmental Safety
 - Bioinformatics
- Major:** Bioinformatics and Modelling for Biology
- 2015 • **University College Dublin**
Ph.D. in Computational Infection Biology  Dublin, Ireland
- Thesis:** Comparative systems biology analyses of the bovine transcriptional response to species of the *Mycobacterium* genus.
- [Bioconductor](#) package for [Gene Ontology \(GO\)](#) analysis of gene expression data ([GOexpress](#)).

RESEARCH EXPERIENCE

- Jul. 2009
|
Aug. 2009 • **Research Assistant, intern**
INSERM, Unité Mixte de Recherche S725, Biologie des Cellules Dendritiques Humaines  Strasbourg, France
- Recombinant protein expression of MHC class II molecules in HeLa cells.
- Jun. 2010
|
Sep. 2010 • **Research Assistant - Computational Biology, intern**
[Shields Lab, University College Dublin](#)  Dublin, Ireland
- Computational analysis of structural disorder in *Saccharomyces cerevisiae* interacting proteins.

CONTACT INFO

 kevinrue67@gmail.com

 github.com/kevinrue

For more information, please contact me via email.

SKILLS

Experienced in statistical analysis, genomics, and software engineering.

Full experience with next generation sequencing data analysis.

Highly skilled in R, Bash, Python, with experience in C#, JavaScript, HTML, SQL, PHP, CSS, LaTeX, Perl, and Matlab.

This resume was made with the R package [pagedown](#).

A PDF version is available [here](#).

Last updated on 2020-03-30.

- Sep. 2011
|
Jan. 2012
- **Ph.D. student - Computational Infection Biology, rotation 1**
[Shields Lab](#), UCD Complex and Adaptive Systems Laboratory (CASL)
📍 Dublin, Ireland
 - *In silico* structure-based prediction of *Mycobacterium bovis* epitopes in cattle (supervisor: [Dr. Anthony Chubb](#)).
- Jan. 2012
|
Apr. 2012
- **Ph.D. student - Computational Infection Biology, rotation 2**
[Dr Neil Ferguson's Group](#), [UCD Conway Institute](#) 📍 Dublin, Ireland
 - Expression and purification of a Hepatitis B protein construct for experimental screening of interacting drug fragments.
- Apr. 2012
|
Jul. 2012
- **Ph.D. student - Computational Infection Biology, rotation 3**
[Prof. James O'Gara's Group](#), UCD Science Centre North
📍 Dublin, Ireland
 - Evaluation of a gene candidate underlying *Staphylococcus aureus* antibiotic resistance by Sanger sequencing and biofilm assay
- 2015
|
2016
- **Research associate - Bioinformatics & Biostatistics**
[Prof. Martin Wilkins's Group](#), Imperial Centre for Translational and Experimental Medicine, [Imperial College London](#)
📍 London, UK
 - Integration of genetic variation, proteomic and metabolomics data and associated deep phenotype data, in collaboration with the [Morrell Group](#).
 - [Bioconductor](#) package for the analysis of genetic variants ([TVTB](#)).
- 2016
|
2017
- **Postdoctoral Researcher - Computational Biologist**
[Ratcliffe group](#), [Target Discovery Institute](#), [University of Oxford](#)
📍 Oxford, UK
 - Management and quality control of genomics data for analyses of DNA targeted resequencing, ChIP-seq, RNA-seq in the context of oxygen sensing and renal cancer.
 - Prototype of [MeteorJS](#) application to manage sequencing data ([kevinrue/Seqbook](#)).
- 2017-
2020
- **Postdoctoral Researcher - Computational Biologist**
[Sansom Group](#), [Kennedy Institute of Rheumatology](#), [University of Oxford](#)
📍 Oxford, UK
 - Molecular pathogenesis of inflammatory bowel disease, in collaboration with the [Powrie Group](#).
 - Role of thymic epithelial cells in T-cell development, in collaboration with the [Holländer Group](#) and [Ponting Group](#).
 - Contribution to software pipelines for single-cell genomics data analysis ([sansomlab/tenx](#)).
 - [Bioconductor](#) package for interactive exploration of [SummarizedExperiment](#) objects ([iSEE](#)).
 - R package for the analysis of ChIP-seq data ([kevinrue/deeperTools](#)).



PROFESSIONAL EXPERIENCE

- Apr. 2011
|
Jul. 2011
- **Software developer, intern**
[MEDIT S.A.](#) 📍 Palaiseau, France
 - Implementation of structurally-constrained multiple alignment of protein sequences for the commercial software [MED-SuMo](#).



TEACHING EXPERIENCE

- 2014

●

Agricultural Microbiology
[University College Dublin](#)

Dublin, Ireland

Teaching assistant of [MICR20010](#) at [University College Dublin](#).
- 2014

●

Molecular Genetics and Biotech
[University College Dublin](#)

Dublin, Ireland

Teaching assistant of [BMOL20090](#) at [University College Dublin](#).
- 2019

●

iSEE: Interactive visualization of SummarizedExperiment objects
[Bioconductor conference 2019](#)

New York, USA

Co-instructor of a [2-hour workshop](#) at the [Bioconductor conference 2019](#).
- 2019
 |
 present

●

R Code Clinic
[Big Data Institute](#), [University of Oxford](#)

Oxford, UK

Volunteer to sit with individuals and assist them with any R problems they need help with. Website: <https://bdioclub.netlify.com/>.



FUNDING AND AWARDS

- 2011

●

Wellcome Trust Four-year PhD Programme
 Computational Infection Biology

Dublin, Ireland

Title: Transcriptome analysis of the bovine macrophage response to *Mycobacterium tuberculosis* complex strains.
- 2014

●

5th Annual PhD Symposium in Computational Biology & Innovation
 Best oral presentation

Dublin, Ireland
- 2015

●

ISMB/ECCB conference
 Conference fee waiver

Dublin, Ireland

[23rd Annual International Conference on Intelligent Systems for Molecular Biology \(ISMB\)](#) and [14th European Conference on Computational Biology \(ECCB\)](#). Special Interest Group (SIG) [Bioinformatics Open Source Conference \(BOSC\)](#).
- 2017

●

Bioconductor 2017 conference
 Conference fee waiver and travel grant for [BioC 2017](#).

Boston, USA

 - Flash presentation for [TVTB](#).
 - Flash presentation for [GOexpress](#).
- 2019

●

Bioconductor 2019 conference
 Conference fee waiver and travel grant for [BioC 2019](#).

New York, USA

 - Instructor of a [2-hour workshop](#) at the [Bioconductor conference 2019](#).
 - Co-organiser of the Special Interest Group (SIG) [Extending gene set and signature representations](#).
- 2019

●

RStudio Shiny Contest
[Winner](#) of the “Most technically impressive” prize.



ORGANISER AND CHAIR

- 2012 ● **Computational Biology and Innovation PhD Symposium**
[University College Dublin](#) 📍 Dublin, Ireland
 Co-organiser in charge of sponsorships and the abstract book.

- 2013 ● **Bioinformatics Seminar**
[University College Dublin](#) 📍 Dublin, Ireland
 Co-organiser of a weekly meeting to present and discuss ongoing projects in the university.

- 2014 |

- 2018-2020 ● **Genomics Forum**
[Kennedy Institute of Rheumatology](#), [University of Oxford](#) 📍 Oxford, UK
 Coordinator of a weekly meeting to present and discuss ongoing projects in the institute.

- 2019 ● **Special Interest Group**
[Bioconductor conference 2019](#). 📍 New York, USA
 Topic: [Extending gene set and signature representations](#).



TRAINING AND COURSES

- 2012 ● **Introductory Statistics using R for Computational Biologists**
[University College Dublin](#) 📍 Dublin, Ireland

- 2012 ● **Python Programming for Computational Biologists**
[University College Dublin](#) 📍 Dublin, Ireland

- 2012 ● **Online Research Skills for Computational Biologists**
[University College Dublin](#) 📍 Dublin, Ireland

- 2012 ● **Advances in Infection Biology**
[University College Dublin](#) 📍 Dublin, Ireland

- 2012 ● **Bioinformatics Research Seminars**
[University College Dublin](#) 📍 Dublin, Ireland

- 2012 ● **Genomics – Principles and Practical Applications**
[University College Dublin](#) 📍 Dublin, Ireland

- 2013 ● **Hot Topics in Food and Nutrition Research**
[University College Dublin](#) 📍 Dublin, Ireland

- 2013 ● **Sequence Data Analysis Training**
 Wageningen Institute of Animal Sciences 📍 Wageningen, Netherlands

- 2013 ● **Network Analysis in Systems Biology**
[Coursera](#), [Icahn School of Medicine at Mount Sinai](#)

- 2014 ● **Teaching in Higher Education**
[University College Dublin](#) 📍 Dublin, Ireland

- 2015 ● **Statistics for Genomic Data Science**
[Coursera](#), [Johns Hopkins University](#)
 This course is part of the [Genomic Data Science Specialization](#).

- 2015 ● **Bioconductor for Genomic Data Science**

This course is part of the [Genomic Data Science Specialization](#).

2015 • **Command Line Tools for Genomic Data Science**
[Coursera](#), [Johns Hopkins University](#)
This course is part of the [Genomic Data Science Specialization](#).

2015 • **Python for Genomic Data Science**
[Coursera](#), [Johns Hopkins University](#)
This course is part of the [Genomic Data Science Specialization](#).

2016 • **Machine Learning**
[Coursera](#), [Stanford University](#)



PROFESSIONAL MEMBERSHIPS

2012 • **International Society for Computational Biology (ISCB)**
<https://www.iscb.org/>
|
present



PEER REVIEW

2019 • **OUP Bioinformatics**
<https://academic.oup.com/bioinformatics>
1 article

2019 • **Journal of Open Source Software**
<https://joss.theoj.org/>
1 article



SELECTED PUBLICATIONS AND POSTERS

2018 • **iSEE: Interactive Summarized Experiment Explorer.**
F1000Res.
Rue-Albrecht, K., F. Marini, C. Soneson and A. T. L. Lun

2019 • **Orchestrating single-cell analysis with Bioconductor.**
Nat Methods.
Amezquita, R. A., A. T. L. Lun, E. Becht, V. J. Carey, L. N. Carpp, L. Geistlinger, F. Marini, **K. Rue-Albrecht**, D. Risso, C. Soneson, L. Waldron, H. Pages, M. L. Smith, W. Huber, M. Morgan, R. Gottardo and S. C. Hicks

2019 • **The Short Chain Fatty Acid Butyrate Imprints an Antimicrobial Program in Macrophages**
Immunity.
Schulthess, J., S. Pandey, M. Capitani, **K. C. Rue-Albrecht**, I. Arnold, F. Franchini, A. Chomka, N. E. Ilott, D. G. W. Johnston, E. Pires, J. McCullagh, S. N. Sansom, C. V. Arancibia-Carcamo, H. H. Uhlig and F. Powrie



CONFERENCE PRESENTATIONS

- 2013 ● **Association of Veterinary Teachers and Research Workers (AVTRW)**
 Oral presentation. 📍 Hillsborough, Ireland
Title: Systems Biology of Host-Pathogen Interactions and Bovine Tuberculosis - Differential transcriptional response of bovine monocyte-derived macrophages following different mycobacterial infections
- 2013 ● **Animal Health Ireland Workshop & Conference**
 Poster. 📍 Rochestown Park Hotel, Cork
Title: Microarray analysis of the bovine macrophage response to *Mycobacterium bovis*, *M. bovis* Bacille Calmette-Guérin (BCG) and *M. avium* subspecies *paratuberculosis*.
- 2013 ● **Virtual Institute of Bioinformatics and Evolution (VIBE)**
 Oral presentation. 📍 Galway, Ireland
Title: Systems Biology of Host-Pathogen Interactions and Bovine Tuberculosis - Differential transcriptional response of bovine monocyte-derived macrophages following different mycobacterial infections.
- 2013 ● **Computational Biology & Innovation Symposium**
 Poster. 📍 Dublin, Ireland
Title: Microarray analysis of the bovine macrophage response to *Mycobacterium bovis*, *M. bovis* Bacille Calmette-Guérin (BCG) and *M. avium* subspecies *paratuberculosis*.
- 2013 ● **Dublin Academy of Pathogenomics & Infection Biology (DAPI)**
 Poster. 📍 Dublin, Ireland
Title: Microarray analysis of the bovine macrophage response to *Mycobacterium bovis*, *M. bovis* Bacille Calmette-Guérin (BCG) and *M. avium* subspecies *paratuberculosis*.
- 2014 ● **Society for General Microbiology (SGM)**
 Poster. 📍 Dublin, Ireland
Title: Microarray analysis of the bovine macrophage response to *Mycobacterium bovis*, *M. bovis* Bacille Calmette-Guérin (BCG) and *M. avium* subspecies *paratuberculosis*.
- 2014 ● **Virtual Institute of Bioinformatics & Evolution (VIBE)**
 Oral presentation. 📍 Carlow, Ireland
Title: The quest for meaningful visualisation of genome-wide expression data.
- 2014 ● **EMBO conference: Microbiology after the genomics revolution - Genomes 2014**
 Poster. 📍 Paris, France
Title: Transcriptome analysis reveals differential innate immune response to members of the *Mycobacterium tuberculosis* complex.
- 2014 ● **The Acid Fast Club, Summer Meeting**
 Oral presentation. 📍 Berlin, Germany
Title: Transcriptome analysis reveals differential innate immune response of bovine macrophages to strains of the *Mycobacterium tuberculosis* complex.

- 2014 ● **UCD Conway Festival of Research & Innovation**
Poster. 📍 Dublin, Ireland.
Title: Transcriptome analysis reveals differential innate immune response to members of the *Mycobacterium tuberculosis* complex.
- 2014 ● **Wellcome Trust Final Year PhD Students' Meeting**
Poster. 📍 London, UK
Title: Transcriptome analysis reveals differential innate immune response to members of the *Mycobacterium tuberculosis* complex.
- 2015 ● **Quantitative Genomics**
Poster. 📍 London, UK
Title: `GOexpress`: A R/Bioconductor package for the identification and visualisation of robust gene ontology signatures through supervised learning of gene expression data.
- 2015 ● **BOSC - ISMB/ECCB conference**
Oral presentation and poster. 📍 Dublin, Ireland
 - [Talk](#) `GOexpress`: A R/Bioconductor package for the identification and visualisation of robust gene ontology signatures through supervised learning of gene expression data.
 - [Poster](#) `GOexpress`: Identify and visualise gene expression using supervised learning and Gene Ontology.
- 2017 ● **NGS-SIG - Single-cell RNA-seq**
Oral presentation. 📍 Oxford, UK
Title: Variability of human dendritic cells responses to differentially invasive *Salmonella* strains at single-cell level.
- 2017 ● **Bioconductor**
Oral presentations. 📍 Boston, USA
 - `GOexpress`: Visualise and summarise gene expression data using Gene Ontology
 - `TVTB`: The VCF Tool Box: an effort to summarise and visualise variants
- 2018 ● **Genome Informatics**
Poster. 📍 Cambridge, UK
Title: Promiscuous expression of lincRNAs in medullary thymic epithelial cells
- 2019 ● **Bioconductor**
Oral presentations. 📍 New York, USA
 - [Talk](#): Interactive and reproducible visualization of `SummarizedExperiment` objects.
 - [Workshop](#): Interactive visualization of `SummarizedExperiment` objects with `iSEE`.
 - [Special Interest Group](#): Extending gene set and signature representations.

🗣️ LANGUAGE

- **French**
Native.

English

Fluent. TOEIC score 970.



Italian

Working knowledge.



Spanish

Limited. Used to be fluent though ☹.



German

Limited. Haven't practiced in a long time.