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 as 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.
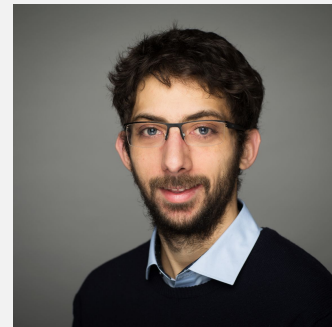
🎓 EDUCATION

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).

2011

École Polytechnique Universitaire Polytech Nice-Sophia
Ingénieur diplômé, MSc   📍 Sophia Antipolis

- Pharmacology
- Biotechnology
- Toxicology
- Environmental Safety
- Bioinformatics

Major: Bioinformatics and Modelling for Biology

2008

CPGE BCPST Véto - Lycée Jean Rostand
Class Préparatoire aux Grandes Écoles   📍 Strasbourg, France

- Biology
- Chemistry
- Physics
- Earth Sciences
- Mathematics
- Programming

💻 RESEARCH EXPERIENCE

2020-present

Computational Biologist - Biomedical Data Science trainer
Sims Group, MRC WIMM Centre for Computational Biology, University of Oxford
                                             📍 Oxford, UK
- Development and delivery of training materials to cohorts of trainees as part of the Oxford Biomedical Data Science Training Programme.
- Development of novel bioinformatics tools and pipelines following software engineering best practices.
- Contribution to scientific reports and publications.

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 2022-04-14.

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).

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).

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).

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

Jan. 2012 | Apr. 2012

Ph.D. student - Computational Infection Biology, rotation 2
Dr Neil Ferguson's Group, UCD Conway Institute   ◉ Dublin, Ireland

- Expression and purication of a Hepatitis B protein construct for experimental screening of interacting drug fragments.

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).

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.

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.

💼 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

Jun. 2021
|
Aug. 2021

Co-supervision for MSc summer intership

Lisa Guzzi, The Carpentries Google Meet (online)

Development of scripts and pipelines for the study of transcriptional
regulation in the *Drosophila melanogaster* midbrain using single-cell
genomics.

Aug. 2020
|
present

Bioconductor teaching committee

Bioconductor, The Carpentries Google Meet (online)

Development of online lessons in The Carpentries lesson incubator. Lead
developer of the lesson The Bioconductor project.

2020
|
present

Oxford Biomedical Data Science training programme

University of Oxford Microsoft Teams (online)

Full-time trainer for a course of four to seven weeks run three times a
year. Lessons cover Unix, Python and R for data science and biomedical
research.

2020

Intuitive interactive data exploration with iSEE

Swiss Institute of Bioinformatics Zoom (online)

Co-organizer of a 2h30 workshop at the SIB Days 2020.

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://bdicodeclub.netlify.com/.

2019

Interactive visualisation of SummarizedExperiment objects using iSEE

Bioconductor conference 2019 New York, USA

Co-instructor of a 2-hour workshop at the Bioconductor conference 2019.

2014

Molecular Genetics and Biotech

University College Dublin Dublin, Ireland

Teaching assistant of BMOL20090 at University College Dublin.

2014 ● **Agricultural Microbiology**
University College Dublin   📍 Dublin, Ireland
Teaching assistant of MICR20010 at University College Dublin.

✪ FUNDING AND AWARDS

2019 ● **RStudio Shiny Contest**
Winner of the "Most technically impressive" prize.

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.

2017 ● **Bioconductor 2017 conference**
Conference fee waiver and travel grant for BioC 2017. 📍 Boston, USA
• Flash presentation for 📄 TVTB.
• Flash presentation for 📄 GOexpress.

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).

2014 ● **5th Annual PhD Symposium in Computational Biology & Innovation**
Best oral presentation   📍 Dublin, Ireland

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.

📅 ORGANISER AND CHAIR

2021
|
present ● **Bioconductor Multilingual Working Group**
Working group of the Bioconductor Community Advisory Board.
📍 Zoom (online)
Co-organiser and reviewer of applications from prospective mentors and mentees. Lead developer of the Multilingual Bioconductor Code of Conduct.

2021
|
present ● **Bioconductor New Developer Program**
Program website.   📍 Zoom (online)
Co-organiser and reviewer of applications from prospective mentors and mentees. Lead developer of the Bioconductor Guidelines for Mentors and Mentees.

Feb. 2021 | present

Bioconductor Package Review Working Group
Working group of the Bioconductor Community Advisory Board.
📍 Zoom (online)
Recruitment of volunteer package reviewers in the Bioconductor community. Lead developer of Bioconductor Packages: Development, Maintenance, and Peer Review.

2021

Bioconductor conference 2021
Conference website.
📍 Airmeet (online)
Co-organiser and point of contact for the coordination and testing of live workshops.

2020

European Bioconductor conference 2020
Conference website.
📍 Airmeet (online)
Co-organiser, session chair, and support for the coordination and testing of live workshops.

2019

Special Interest Group
Bioconductor conference 2019.
📍 New York, USA
Topic: Extending gene set and signature representations.

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.

2013 | 2014

Bioinformatics Seminar
University College Dublin
📍 Dublin, Ireland
Co-organiser of a weekly meeting to present and discuss ongoing projects in the university.

2012

Computational Biology and Innovation PhD Symposium
University College Dublin
📍 Dublin, Ireland
Co-organiser in charge of sponsorships and the abstract book.

📖 TRAINING AND COURSES

2016

Machine Learning
Coursera, Stanford University

2015

Bioconductor for Genomic Data Science
Coursera, Johns Hopkins University
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.

2015 — **Statistics for Genomic Data Science**
Coursera, Johns Hopkins University
This course is part of the Genomic Data Science Specialization.

2014 — **Teaching in Higher Education**
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

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

PROFESSIONAL MEMBERSHIPS

Apr. 2021 | present — **Bioconductor Community Advisory Board**
http://www.bioconductor.org/about/community-advisory-board/

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

PEER REVIEW

2021 | present — **NAR Genomics and Bioinformatics**
https://academic.oup.com/nargab
1 article

2019 | present — **OUP Bioinformatics**
https://academic.oup.com/bioinformatics
2 articles

2019 | present

Journal of Open Source Software
https://joss.theoj.org/
2 articles

📄 SELECTED PUBLICATIONS AND POSTERS

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

2018

iSEE: Interactive SummarizedExperiment Explorer.
F1000Res.
Rue-Albrecht, K., F. Marini, C. Soneson and A. T. L. Lun

📑 CONFERENCE PRESENTATIONS

2021

Bioconductor
Oral presentations.   📍 Airmeet (online)
• Introduction to workshops - Informal welcome: Opening talk for the conference.
• Talk: 🎵 `velociraptor`, a Bioconductor toolkit for single-cell RNA velocity.
• Bioconductor 20th anniversary: Set up an automated repository converting community contributions into an HTML slide deck.

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.

2018

Genome Informatics
Poster.   📍 Cambridge, UK
Title: Promiscuous expression of lincRNAs in medullary thymic epithelial cells

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

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.

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.

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*.

🔤 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.