# Zhian N. Kamvar, PhD

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## EMPLOYMENT

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| 2020–2023 | **Lesson Infrastructure Developer**, *The Carpentries*, A Non-profit Organisation in Education. |

Lead development and deployment of a modular infrastructure for building reproducible lessons for a broad community of educators to bring data science skills to thousands of researchers worldwide.
- Skills Acquired: **Operational Excellence, Security, AWS, Monitoring Frameworks**

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| 2018–2020 | **Research Sofwtare Engineer**, *Imperial College London*. |

Developed well-tested R packages for field epidemiology and modelling.
- Skills Acquired: **Collaborative Problem Solving, Leadership**

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| 2017–2018 | **Postdoctoral Researcher**, *University of Nebraska-Lincoln*. |

Population genetics of the white mold pathogen *Scleortinia sclerotiorum*.
- Skills Acquired: **Docker, Automation with Make**

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| 2012–2016 | **Graduate Research Assistant**, *Oregon State University*, PhD Dissertation Research. |

Dissertation: Development and application of tools for genetic analysis of clonal populations
- Skills Acquired: **Project Management, Git, Testing, Scripting, DevOps, Communication**

## PROFESSIONAL EXPERIENCE

### Development

- Highly experienced >**10 years** experience in **developing and deploying well-tested research software using Git and CI/CD pipelines** (GitHub Actions, AWS, Circle CI, Travis CI)
- >**5 years** of **project management experience** coordinating software development for a **broad set of stakeholders** in Population Genetics, Epidemiology, and CS Education
- >**5 years** experience building **reproducible analyses with CI and Docker** (Kamvar et al, 2017)

### Tools

- **Expert R developer** of several widely used and well-tested R packages (>**10 years**)
- Experienced with **Python** for creating unique modules for population genomic simulation analysis pipeline and solving advent of code challenges (**3 years**)
- Developed **GitHub Actions** to work with the GitHub (REST and GraphQL) API using BASH, R, and node JS (>**3 years**)
- Maintained **reproducible pipelines in Make and BASH** (**2 years**) for both CI and HPC

### Collaboration

- Developed a modular, **user-friendly and accessible** open source lesson infrastructure to facilitate **automated validation, rendering, and system monitoring** of data science lessons that are used and maintained by >**2000 volunteers** serving >**10,000 learners annually**
- **Coordinated communications** to hundreds of stakeholders in separate sub-communities about the impacts of upcoming infrastructure changes via video, blogs, and live Q&A
- **Mentored** three novice colleagues in **DevOps, security, automation, accessibility, and project management** of our lesson infrastructure for handoff

### Communication

- **Coached** >**100 graduate researchers** to communicate their research to broad audiences
- Developed and delivered material for **9 workshops** in **3 disciplines** reaching >**300 learners**
- Published **19 peer-reviewed publications** including **7 first-author publications**
- Author of >**30 technical blog posts** summarizing complex topics for a general audience

## EDUCATION

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| December 2016 | **Ph.D. Botany and Plant Pathology**, *Oregon State University (OSU)*, Corvallis, OR, USA. |
| December 2007 | **B.S. Biology**, *Truman State University (TSU)*, Kirksville, MO, USA. |

## Leadership

**2021–Present** — **Maintainer**, *the tinkr R package*, rOpenSci.
Collaboration with Maëlle Salmon (original author) of rOpenSci to create a lightweight R package to parse and transform Markdown documents to XML. This has been used in **validation** of markdown elements and facilitating **automated human language translation**.

**2018–2020** — **Coordinator of Software Development**, R Epidemics Consortium (RECON).
Worked with software developers, mathematical modellers, and field epidemiologists to **design quality standards for software development, validation testing, and analysis of epidemiological data**.

**2018–2019** — **Lead Developer**, *R4Epis Project*, Médecins Sans Frontières (Doctors Without Borders).
Collaborated with **diverse team of developers and field epidemiologists** to create a well-tested series of templates for automated outbreak and survey data analysis.

**2012–2016** — **Co-Founder**, *Inspiration Dissemination*, KBVR Corvallis, Oregon State University.
Created award-winning radio program for graduate researchers to communicate their research to broad audiences. **Mentored 4 radio hosts in communication** and show management. This radio program continues to exist over 10 years later.

## Selected Projects (on GitHub)

Infrastructure: **carpentries/workbench** — *lesson publication suite* consisting of templates, software, and CI/CD workflows designed for user-friendly publishing of data science lessons

Workflows: **carpentries/lesson-transition** — *automated workflow* for lesson infrastructure+syntax transition

R packages: **carpentries/sandpaper** . . . . . . . . . . . . . . . . . . . . . . *user interface for* **The Carpentries Workbench**

**ropensci/tinkr** . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . *transform markdown to XML and back again*

**grunwaldlab/poppr** . . . . . . . . . . . . . . . . . . *analysis of populations with mixed reproductive modes*

Analyses: **zkamvar/clonal-inference-simulations** . . *simulations and analysis in* **Python**, **R**, *and* **BASH**

**everhartlab/sclerotinia-366** . . . . . . . . . . **fully automated** *and reproducible analysis in* **Docker**

## Selected Publications

Developer Guide — 2023-12-31 | *Remote Deployment and Management* | Workbench Developer's Guide | https://carpentries.github.io/workbench-dev/remote/intro.html

Presentation — 2022-07-28 | *Building Accessible Lessons with R and Friends* | RStudio::conf, Washington DC | Recording and Materials: bit.ly/znk-rstudio-2022

Blog Post — 2022-06-14 | *Communication & Collaboration with Contributors in an Open-Source Organization* | ROpenSci Blog | doi: 10.59350/z329k-sqn35

Blog Post — 2020-08-10 | *Design Principles for the Next Iteration of The Carpentries Lesson Template* | Carpentries Blog | https://carpentries.org/blog/2020/08/lesson-template-design/

Presentation — 2019-07-11 | *Advancing Data Analytics for Field Epidemiologists using R: the R4Epis Innovation Project* | Use!R, Tolouse, FR | Recording and Materials: bit.ly/znk-UseR-2019

Peer-Reviewed Publication — **Kamvar ZN**, Amaradasa BS, Jhala R, McCoy S, Steadman JR, Everhart SE. (2017) Population structure and phenotypic variation of *Sclerotinia sclerotiorum* from dry bean (*Phaseolus vulgaris*) in the United States. *PeerJ* **5**:e4152 doi: 10.7717/peerj.4152

data/analysis: https://github.com/everhartlab/sclerotinia-366

doi: 10.17605/OSF.IO/EJB5Y

## Personal References

**Robert Davey (supervisor 2023)**
Director of Technology | The Carpentries | robertdavey@carpentries.org

**Kari L. Jordan (supervisor 2022)**
Executive Director | The Carpentries | karijordan@carpentries.org

**François Michonneau (supervisor 2020–2022)**
Senior Training Engineer | Voltron Data | francois.michonneau@gmail.com