TIMOTHY KEYES

I am a data scientist, bioinformatician, and cancer biologist. In my work, I develop statistical and machine learning algorithms for analyzing high-dimensional single-cell data and predicting clinical outcomes in cancer patients.

I am searching for a position at the intersection of biomedical data science, machine learning, and medicine where I can use data to solve problems relevant to human health.

tkeyes@stanford.edu
@timothykeyes
keyes-timothy
keyes-timothy.github.io
timothy-keyes

EDUCATION

Current | 2015 — **M.D./Ph.D. - Cancer Biology**
Stanford University — Stanford, CA

- National Cancer Institute (NCI) National Research Service Award fellow
- Advisors: Kara Davis and Garry Nolan

Current | 2020 — **M.S. - Biomedical Informatics (concurrent with M.D./Ph.D.)**
Stanford University — Stanford, CA

2014 | 2010 — **B.A. - Psychology and Computational Neuroscience**
Princeton University — Princeton, NJ

- Summa cum laude
- GPA: 3.99

SELECT EMPLOYMENT

Current | 2022 — **Data Science Mentor - Posit Academy**
Posit, PBC (formerly RStudio, PBC) — Stanford, CA

- Leading group-based instruction and one-on-one mentoring for Posit Academy cohorts learning R and Python
- Engaging in regular professional development programming with experienced data science educators

2022 — **Graduate Intern - Oncology Bioinformatics, gRED**
Genentech, Inc — South San Francisco, CA

- Codeveloped a novel algorithm for detecting transcription factor network perturbations in cancer using Bayesian network modeling
- Automated a multiomic data integration pipeline for ATAC- and RNA-seq

SELECT PUBLICATIONS

2022 — **{tidytof}: A user-friendly framework for scalable and reproducible high-dimensional cytometry data analysis.**
Under review (copy available upon request)

- **Keyes TJ**, Koladiya A, Lo YC, Nolan GP, Davis KL.
- Project website: https://keyes timothy.github.io/tidytof/

2022 — **CytofIn enables Integrated Analysis of Public Mass Cytometry Datasets using Generalized Anchors**
Nature Communications

- Lo YC, **Keyes TJ**, Jager A, Sarno J, Domizi P, Majeti R, Sakamoto KM, Lacayo N, Mulligan CG, Waters J, Sahaf B, Bendall SC, Davis KL

2020 — **A cancer biologist's primer on machine learning applications in high-dimensional cytometry**
Cytometry

- **Keyes TJ**, Domizi P, Lo YC, Nolan GP, and Davis KL

PROGRAMMING

- R / tidyverse / tidymodels
- Python
- git / GitHub
- Bash
- C++
- SQL
- HTML
- css

DATA ANALYSIS

Exploratory data analysis
Data visualization (e.g. ggplot2)
Data cleaning (e.g. dplyr, pandas)
Deep Learning (Keras, TF)
Machine learning (e.g. Factor Analysis, GLMs, SVMs, Tree-based models)

LITERATE CODING

- R Markdown
- Quarto
- Jupyter Notebooks
- LaTex
- flexdashboards
- blogdown / bookdown

Resume generated in R with pagedown

Source code: github.com/keyes-timothy/cv

Updated January 23, 2023.

OPEN-SOURCE SOFTWARE

tidytof: A user-friendly framework for interactive and highly reproducible cytometry data analysis
(Role: Author, Maintainer)

- An R package for analyzing high-dimensional cytometry data using the tidyverse

MARX: A novel algorithm for detecting cancer-specific single-cell features
(Role: Author, Maintainer)

- An R package that implements Matrix factorization and Residual Expression (MARX), an algorithm for comparing high-dimensional biological measurements to a lower-dimensional reference linear subspace

CytofIn: An R package for CyTOF data integration
(Role: Contributor)

- An R package for homogenizing and normalizing heterogeneous mass cytometry (CyTOF) data from diverse data sources

LEADERSHIP

Current | 2018

Co-founder - Executive Board
Medical Student Pride Alliance, 501(c)(3) — Birmingham, AL

- Co-founded national non-profit organization advocating for LGBTQ+ medical students
- Led Research & Analytics division, resulting in multiple publications

Awards
Stanford University School of Medicine — Stanford, CA

- American Society of Hematology (ASH) Abstract Achievement Award (2022)
- rstudio::global(2021) Diversity Scholarship (2021)
- Point Foundation Graduate Student Scholarship (2020)
- National Cancer Institute Ruth L. Kirschstein Pre-doctoral National Research Service Award (2019)

2021 | 2017

Teaching
Stanford University School of Medicine — Stanford, CA

- R for Data Science (2021)
- Immunology in Health and Disease (2017-2019)

GRANTS

2024 | 2021

Deep Neural Network Prediction of Relapse in Pediatric Acute Leukemia
The Mark Foundation for Cancer Research (ASPIRE II Award); $750,000

2023 | 2018

Computational Approaches to Predicting Post-treatment Relapse in Pediatric Acute Myeloid Leukemia
The Andrew McDonough B+ (Be Positive) Foundation; $150,000

REFERENCES

Kara Davis, DO
Stanford University School of Medicine (PhD Co-advisor)

- email: kardavis@stanford.edu

Garry Nolan, PhD
Stanford University School of Medicine (PhD Co-advisor)

- email: gnolan@stanford.edu