



## Timothy Keyes

- MD Student, expected graduation Spring 2021
- Ph.D. Student in Cancer Biology, admitted Winter 2018
- MSTP Student
- Masters Student in Biomedical Informatics, admitted Winter 2021
- 📄 Curriculum Vitae available Online

### Bio

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#### BIO

Timothy is an MD/PhD student studying cancer biology and biomedical informatics at the Stanford University School of Medicine. He is a joint member of Kara Davis's laboratory in the Department of Pediatrics and Garry Nolan's Laboratory in the Department of Pathology.

As a biomedical data scientist, Timothy's research focuses on the application of machine learning to single-cell data analysis in the context of pediatric leukemia. Through the use of emerging, high-throughput single-cell technologies such as mass cytometry and sequence-based cytometry, Timothy's research is designed to build predictive models of patient outcomes - such as relapse or minimal residual disease (MRD) - at the point of diagnosis. To do so, he uses a variety of computational tools including generalized linear models, clustering, and deep learning. In addition, his work prioritizes constructing easy-to-use, highly-reproducible data analysis pipelines that can be shared as open-source tools for the scientific community.

Outside of science, Timothy has a longstanding interest in human rights and social justice work among members of the lesbian, gay, bisexual, transgender, and queer (LGBTQ+) community. He currently serves as the resident data scientist for the Medical Student Pride Alliance (MSPA), a 501(c)(3) non-profit organization that advocates for diversity, equity, and inclusion for LGBTQ+ medical students in medical schools across the United States. As a data scientist at MSPA, Timothy analyzes and visualizes data to guide MSPA's strategic decision-making as well as for academic publication. He also advises and mentors other student members of MSPA performing data analysis in Python and R.

In recognition of his accomplishments, Timothy has received several institutional and national award for both research and advocacy. These include a National Research Service Award (NRSA) from the National Cancer Institute, a Junior Leadership Award from the Building the Next Generation of Academic Physicians (BNGAP) LGBT Workforce, Stanford Medicine's Integrated Strategic Plan Star Award, and a Point Foundation Scholarship.

#### HONORS AND AWARDS

- Point Foundation Graduate Student Scholarship, Point Foundation (2020)
- Ruth L. Kirschstein Pre-doctoral National Research Service Award, National Institutes of Health (National Cancer Institute) (2019)
- Community Impact Award, Stanford University (2019)
- Integrated Strategic Plan Star Award, Stanford Medicine (2019)
- Junior Leadership Award, Building the Next Generation of Academic Physicians (BNGAP) LGBT Workforce (2019)
- Award for Excellence in Promotion of Diversity and Societal Citizenship, Stanford University School of Medicine (2018)

## MEMBERSHIP ORGANIZATIONS

- LGBT-Meds, Financial Officer (former)
- SUMMA: Stanford University Minority Medical Alliance, Chair (former)
- Medical Student Pride Alliance (MSPA), Assistant Director for Data Analytics

## EDUCATION AND CERTIFICATIONS

- B.A., Princeton University , Psychology and Neuroscience (2014)

## Publications

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### PUBLICATIONS

- **Progressive B Cell Loss in Revertant X-SCID.** *Journal of clinical immunology*  
Lin, C. H., Kuehn, H. S., Thauland, T. J., Lee, C. M., De Ravin, S. S., Malech, H. L., Keyes, T. J., Jager, A., Davis, K. L., Garcia-Lloret, M. I., Rosenzweig, S. D., Butte, M. J.  
2020
- **A Cancer Biologist's Primer on Machine Learning Applications in High-Dimensional Cytometry.** *Cytometry. Part A : the journal of the International Society for Analytical Cytology*  
Keyes, T. J., Domizi, P., Lo, Y., Nolan, G. P., Davis, K. L.  
2020
- **Documenting Social Media Engagement as Scholarship: A New Model for Assessing Academic Accomplishment for the Health Professions.** *Journal of medical Internet research*  
Acquaviva, K. D., Mugele, J. n., Abadilla, N. n., Adamson, T. n., Bernstein, S. L., Bhayani, R. K., Büchi, A. E., Burbage, D. n., Carroll, C. L., Davis, S. P., Dhawan, N. n., English, K. n., Grier, et al  
2020; 22 (12): e25070
- **Medical Student Pride Alliance: The first national LGBTQ+ medical student affinity organisation.** *Medical education*  
Goetz, T. G., Zucker, S. n., Keyes, T. n., Gisoni, M. n.  
2020; 54 (5): 471–72
- **Student Education About Pre-exposure Prophylaxis (PrEP) Varies Between Regions of the United States.** *Journal of general internal medicine*  
Bunting, S. R., Garber, S. S., Goldstein, R. H., Ritchie, T. D., Batteson, T. J., Keyes, T. J.  
2020
- **Navigating Controversy: A Critical Element of Medical Education.** *Academic medicine : journal of the Association of American Medical Colleges*  
Jia, J. L., Kamceva, M. n., Keyes, T. J.  
2018; 93 (12): 1750
- **Structural and functional features of central nervous system lymphatic vessels** *NATURE*  
Louveau, A., Smirnov, I., Keyes, T. J., Eccles, J. D., Rouhani, S. J., Peske, J. D., Derecki, N. C., Castle, D., Mandell, J. W., Lee, K. S., Harris, T. H., Kipnis, J.  
2015; 523 (7560): 337-?