



## Sean Bendall

Assistant Professor (Research) of Pathology

### Bio

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#### ACADEMIC APPOINTMENTS

- Assistant Professor (Research), Pathology
- Member, Bio-X
- Member, Stanford Cancer Institute
- Member, Wu Tsai Neurosciences Institute

#### HONORS AND AWARDS

- NIH Director's New Innovator Award, National Institutes of Health (2016)
- NIH Pathway to Independence Award, NIH / NIGMS (2013)
- Dale F. Frey Breakthrough Scientist, Damon Runyon Cancer Research Foundation (2012)
- ISAC President's Award of Excellence, International Society for Advancement of Cytometry (2012)
- Fellowship, Canadian Institute of Health Research (CIHR) (2009)

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#### PROFESSIONAL EDUCATION

- PhD, University of Western Ontario , Proteomic Analysis of Human Embryonic Stem Cell Culture (2008)
- BSc, University of Victoria (2002)

### Research & Scholarship

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#### CURRENT RESEARCH AND SCHOLARLY INTERESTS

Our goal is to understand the mechanisms regulating the development of human systems (both embryonic and adult). In particular, we are interested in clarifying the roles of both protein coding genes as well as pathobiology (disease state or pathogen) known to be uniquely human – therefore, not analogously studied in model organisms. Drawing on both pluripotent stem cell biology, hematopoiesis, and immunology, combined with novel high-content single-cell analysis (CyTOF – Mass Cytometry) and imaging (MIBI-Multiplexed Ion Beam Imaging) we are creating templates of ‘normal’ human cellular behavior. Using these we can decipher the roles of protein regulators on cellular specification as well as the influence of human-specific pathobiology on system remodeling at the single cell level. This work will enable a better understanding of how disease corrupts this process. Ultimately, our objective will be to use such approaches to not only reveal how novel regulators function in the context of complex cellular systems, but also enable the mechanistic characterization of human pathobiology in primary human tissues. In doing so we will understand how changes in related physiological or pathological systems can be more readily recognized and controlled.

In addition to the lab's work on human hematopoiesis and pluripotent stem cell specification we are seeking collaborative partnerships surrounding problems in human immunology as well as in regenerative medicine, including efforts to exploit next generation single-cell analysis and new computational methods to create systems level models of these processes so that they may be better understood and directed.

## Teaching

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### COURSES

#### 2018-19

- Cellular and Clinical Aspects of Cancer: CBIO 242 (Spr)

#### 2017-18

- Cellular and Clinical Aspects of Cancer: CBIO 242 (Spr)

### STANFORD ADVISEES

#### Doctoral Dissertation Reader (AC)

Michelle Atallah, Sarah Barnes, James Harden, Maggie Martins

#### Postdoctoral Faculty Sponsor

Felix Hartmann, Dunja Mrdjen, JP Oliveria

#### Doctoral Dissertation Advisor (AC)

Ariel Calderon, Bryan Cannon, David Glass, Sam Kimmey

#### Doctoral Dissertation Co-Advisor (AC)

Nora Vivanco Gonzalez

### GRADUATE AND FELLOWSHIP PROGRAM AFFILIATIONS

- Immunology (Phd Program)

## Publications

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### PUBLICATIONS

- **Parallel analysis of tri-molecular biosynthesis with cell identity and function in single cells.** *Nature communications*  
Kimmey, S. C., Borges, L., Baskar, R., Bendall, S. C.  
2019; 10 (1): 1185
- **Proliferation tracing with single-cell mass cytometry optimizes generation of stem cell memory-like T cells.** *Nature biotechnology*  
Good, Z., Borges, L., Vivanco Gonzalez, N., Sahaf, B., Samusik, N., Tibshirani, R., Nolan, G. P., Bendall, S. C.  
2019
- **A Structured Tumor-Immune Microenvironment in Triple Negative Breast Cancer Revealed by Multiplexed Ion Beam Imaging.** *Cell*  
Keren, L., Bosse, M., Marquez, D., Angoshtari, R., Jain, S., Varma, S., Yang, S., Kurian, A., Van Valen, D., West, R., Bendall, S. C., Angelo, M.  
2018; 174 (6): 1373
- **A Universal Live Cell Barcoding-Platform for Multiplexed Human Single Cell Analysis.** *Scientific reports*  
Hartmann, F. J., Simonds, E. F., Bendall, S. C.  
2018; 8 (1): 10770
- **Single-cell developmental classification of B cell precursor acute lymphoblastic leukemia at diagnosis reveals predictors of relapse.** *Nature medicine*  
Good, Z., Sarno, J., Jager, A., Samusik, N., Aghaepour, N., Simonds, E. F., White, L., Lacayo, N. J., Fantl, W. J., Fazio, G., Gaipa, G., Biondi, A., Tibshirani, et al  
2018; 24 (4): 474–83

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