



# Zinaida Good

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**OBJECTIVE:** To Accelerate Advances in Cancer Immunotherapy with Data-Driven Methods

## EDUCATION

- Ph.D.** Major: **Immunology** 09/2013 – 04/2018  
**Stanford University, Stanford, CA, USA**
- One of the inaugural students in the Computational & Systems Immunology track; GPA: 4.0.
- M.Sc.** Major: **Microbiology & Immunology** 09/2008 – 05/2012  
**University of British Columbia, Vancouver, BC, Canada**
- Defended M.Sc. thesis with the “Outstanding” status; GPA: 4.0.
- B.Sc.** Major: **Microbiology & Immunology** 09/2003 – 05/2008  
**University of British Columbia, Vancouver, BC, Canada**
- One of the top 15% students in the program; completed Science Co-op Program; GPA: 3.5.

## SELECTED WORK EXPERIENCE

- Postdoctoral Fellow** **Drs. Crystal L. Mackall & Sylvia K. Plevritis Labs, SCI / CSBL** 04/2018 – Present  
**Stanford University, Stanford, CA, USA**
- **Project:** Leverage multi-omics patient data to define properties of engineered T cells with optimal anti-tumor activity.
  - **Outcome:** Initiated projects to (1) define correlates of complete response in lymphoma patients receiving chimeric antigen receptor (CAR) T cells, and (2) identify features of successful CAR T cells based on reverse fate mapping and single-cell RNA-seq data.
- Ph.D. Candidate** **Drs. Garry P. Nolan & Sean C. Bendall Labs, M&I / Pathology** 09/2013 – 03/2018  
**Stanford University, Stanford, CA, USA**
- **Project 1:** Define a template for human T-cell differentiation across time and divisions *ex vivo* as a continuous single-cell trajectory.
  - **Project 2:** Examine B-lineage childhood acute lymphoblastic leukemia in the context of corrupted normal B lymphopoiesis.
  - **Outcome:** Developed a mass cytometry method for tracking cell proliferative history and a computational tool for single-cell developmental classification; by deconstructing ‘broken’ B-cell development, identified a cell subpopulation predictive of clinical outcome in acute lymphoblastic leukemia; built a system to map and steer human T-cell differentiation *ex vivo*.
- Research Associate** **Discovery Oncology, Research & Early Development** 06/2011 – 07/2013  
**Genentech, Inc., South San Francisco, CA, USA** (intern to 01/2012, contractor to 01/2013)
- **Project:** Identify potential strategies to target tumor re-initiating cells (TRICs) in colorectal cancer by characterizing tumor cells resistant to chemotherapy in orthotopic and subcutaneous xenograft mouse models.
  - **Outcome:** Co-developed a faithful mouse model for generating TRICs by administering best-in-class chemotherapy regimen to immunocompromised mice bearing orthotopic primary colon tumor fragments; performed phenotypic and functional analyses of TRICs; identified targets that proceeded into development as potential therapeutic leads.
- M.Sc. Student** **Dr. Michael R. Gold Lab, Microbiology & Immunology** 08/2008 – 06/2011  
**University of British Columbia, Vancouver, BC, Canada**
- **Project:** To define the mechanisms of immune memory, characterize mRNA processing bodies (P-bodies) in T and B lymphocytes and determine if P-bodies play a role in immune memory by storing pre-synthesized effector mRNAs.
  - **Outcome:** Designed a protocol for dual analysis of proteins and/or mRNAs in lymphocytes by flow cytometry and confocal microscopy; successfully completed the project and found that there are distinct subsets of P-bodies in T and B lymphocytes, and that P-bodies in effector and memory, but not naïve, CD8<sup>+</sup> T cells contain IFN- $\gamma$  mRNA.
- Intern** **Process Virology, Process Research & Development** 05/2007 – 12/2007  
**Genentech, Inc., South San Francisco, CA, USA**
- **Project:** Establish the mechanism of virus removal during late stage purification of therapeutic antibodies in order to facilitate clinical trials of novel therapeutic antibodies in Europe.
  - **Outcome:** Identified the forces responsible for clearance of 3 model viruses by anion-exchange chromatography and found that electrostatic interactions are primarily responsible for the removal of non-enveloped viruses, whereas non-electrostatic forces contribute to the clearance of the model enveloped virus.

## SELECTED WORK EXPERIENCE (CONT'D)

- Intern**                      **Dr. Aly Karsan Lab, Medical Biophysics**                      01/2006 – 08/2006  
**British Columbia Cancer Research Center, Vancouver, BC, Canada**
- **Project:** To identify novel drug targets in tumor angiogenesis and sepsis, investigate the roles of heterotrimeric G proteins in Toll-like receptor 4 (TLR4) signaling pathway of human endothelial cells.
  - **Outcome:** Gathered experimental data supporting the roles of two novel cytoplasmic proteins in TLR4 signaling pathway of human endothelial cells, wrote a scientific report.
- Lab Assistant**                      **Dr. Erin C. Gaynor Lab, Microbiology & Immunology**                      04/2005 – 06/2005  
**University of British Columbia, Vancouver, BC, Canada**
- Assisted with the analysis of various treatment options on biofilm formation by the bacterium *Campylobacter jejuni*.
  - Prepared antibiotics, media plates, and buffers; autoclaved biohazard waste, glassware, and solutions; cleaned laboratory devices.

## SELECTED AWARDS

<b>Keystone Symposia Scholarship</b>	<b>2018</b>	2 <sup>nd</sup> prize, UBC Life Sciences Institute poster comp.	2009
Stanford Biosciences Travel Grant	2016, 2017, 2018	<b>UBC Graduate Entrance Scholarship</b>	<b>2008</b>
<b>Parker Institute for Cancer Immunotherapy Scholar</b>	<b>2017</b>	Delegate to <i>WithinSight</i> national leadership conference: awards from UBC and Queen's University	2007
CYTO Image Analysis Challenge Finalist	2017	Ontario Scholar	
ISAC Student Travel Award for CYTO	2016, 2017	1 <sup>st</sup> place, local Sir Isaac Newton Physics contest	2003
CYTO Exceptional Student Award Finalist	2016	2 <sup>nd</sup> place, local Sir Isaac Newton Math contest	2003
<b>Featured Wikipedia Editor</b>	<b>2012, 2013</b>	Multiple ski racing awards (MVP, 1 <sup>st</sup> -3 <sup>rd</sup> places)	2002 – 2003
<b>1<sup>st</sup> prize, DARPA Shredder Challenge</b>	<b>2011</b>	2 <sup>nd</sup> place, Ural Regional Math contest	2001
(member of the team "All Your Shreds Are Belong to Us")		3 <sup>rd</sup> place, Ural Regional English contest	2001
4 <sup>th</sup> place, ImmunoVancouver speed poster competition	2011		

## MANUSCRIPTS & PUBLICATIONS

- **Good Z\***, Burns TJ\*, Tibshirani R, Nolan GP, Bendall SC<sup>§</sup>, and Samusik N<sup>§</sup>. "Comparison of dimensionality reduction methods for single-cell data". *Nature Methods* (preparing).
- **Good Z**, Glanville G, Gee MH, Davis MM, and Khatri P. "Computational and systems immunology: a students' perspective". *Trends in Immunology* (revising).
- Lynn RC, Weber EW, Gennert D, Sotillo E, **Good Z**, Anbunathan H, Jones R, Tieu V, DeBourcy C, Xu P, Majzner R, Satpathy A, Quake S, Chang H, and Mackall CL. "CAR T cells overexpressing cJun are exhaustion-resistant and mediate enhanced antitumor activity". *Nature* (revising).
- **Good Z**, Borges L, Vivanco Gonzalez N, Sahaf B, Samusik N, Tibshirani R, Nolan GP<sup>§</sup>, and Bendall SC<sup>§</sup>. "Proliferative tracing with single-cell mass cytometry optimizes generation of stem cell memory-like T cells". *Nature Biotechnology* (in press).
- **Good Z\***, Sarno J\*, Jager A, Samusik N, Aghaepour N, Simonds EF, While L, Lacayo NJ, Fantl WJ, Fazio G, Gaipa G, Biondi A, Tibshirani R, Bendall SC, Nolan GP<sup>§</sup>, and Davis KL<sup>§</sup>. "Single-cell developmental classification of B-cell precursor acute lymphoblastic leukemia at diagnosis reveals predictors of relapse". *Nature Medicine*, **24**(4): 474-83.
- **Good Z**. (2018). "Lymphocyte differentiation trajectories in human health and cancer". *Stanford University Libraries Digital Repository*, winter 2018 collection: Ph.D. thesis in Immunology.
- Samusik N, **Good Z**, Spitzer MH, Davis KL, and Nolan GP. (2016). "Automated mapping of phenotype space with single-cell data". *Nature Methods*, **13**(6): 493-6.
- Enquist IB, **Good Z**, Jubb AM, Fuh G, Wang X, Junttila MR, Jackson EL, and Leong KG. (2014). "Lymph node-independent liver metastasis in a model of metastatic colorectal cancer". *Nature Communications*, **5**: 3530.
- Franci C, Zhou J, Jiang Z, Modrasan Z, **Good Z**, Jackson EL, and Kouros-Mehr H. (2013). "Biomarkers of residual disease, disseminated tumor cells, and metastases in the MMTV-PyMT breast cancer model". *PLoS ONE*, **8**(3): e58183.
- **Tebaykina Z**. (2012). "Characterization of processing bodies in T and B lymphocytes". *cIRcle Library at the University of British Columbia*, spring 2012 collection: M.Sc. thesis in Microbiology and Immunology.
- Dauphinee SM, Voelcker V, **Tebaykina Z**, Wong F, and Karsan A. (2011). "Heterotrimeric Gi/Go proteins modulate endothelial TLR signaling independent of the MyD88-dependent pathway". *American Journal of Physiology - Heart and Circulatory Physiology*, **301**(6): H2246-53.
- Strauss DM, Lute S, **Tebaykina Z**, Frey DD, Ho C, Blank GS, Brorson K, Chen Q, and Yang B. (2009). "Understanding the mechanism of virus removal by Q sepharose fast flow chromatography during the purification of CHO-cell derived biotherapeutics". *Biotechnology & Bioengineering*, **104**(2): 371-80.

\*Co-first author; <sup>§</sup>co-senior author.

**PATENTS**

- USSN 62/371,093: Davis KL, **Good Z**, Nolan GP, Samusik N, and Tibshirani R. "Developmentally dependent predictor of relapse in acute lymphoblastic leukemia". Filed to the United States Patent and Trademark Office (2016): *patent pending*.
- PCT/US2019/13115, USSN 62/615,917: **Good Z**, Nolan GP, Bendall SC, Weber EW, and Mackall CL. "Compositions and methods of expansions of T-cell populations". Filed International Patent Application (2019): *patent pending*.

**CERTIFICATES**

- VFPVCB4LA5GM: **Machine Learning**. Taught by Andrew Ng from Stanford University on *Coursera* (2016).

**TEACHING & MENTORING**

**Visiting Scientist**      **Cellular Engineering Workshop: Immunotherapy**      09/23/2017  
**Teacher Institute, Exploratorium, San Francisco, CA, USA**

- Taught a workshop on engineered T-cell immunotherapies to a class of middle and high school biology teachers from the San Francisco Bay Area; provided participants with props, teaching materials, and tips for educating and inspiring their students about activating natural immune defenses against cancer, as well as the importance of math and computer science in modern-day biology.

**Student Advisor**      **Computational & Systems Immunology Ph.D. Program**      01/2015 – 09/2017  
**Stanford University, Stanford, CA, USA**

- Advised Immunology Ph.D. students about the Computational & Systems Immunology (CSI) track and relevant courses; held quarterly advising meetings with all 1<sup>st</sup> year students; organized 3 informational panels about the CSI track for entering students; discussed continuous curriculum development for the CSI track with program leadership.

**Teaching Assistant**      **IMMUNOL 310: Computational Immunology Seminar Series**      01/2015 – 08/2016  
**Stanford University, Stanford, CA, USA**

- Solicited student nominations, invited speakers, and created a course website (*immunol310.stanford.edu*) for the series in summers of 2015 and 2016; co-organized the seminars with Drs. Nimesh Kotecha and Purvesh Khatri; organized student dinners with each speaker following the seminar; was "100% effective" according to the teaching evaluation by the course participants.

**Invited Speaker**      **Canadian Undergraduate Computer Science Conference**      (22 – 25) 06/2016  
**British Columbia Institute of Technology, Burnaby, BC, Canada**

- Gave a full seminar on my career advice to computationally minded undergraduate students from multiple Canadian universities (details on *cucsc.ca*); participated in "Women in Computer Science" panel; offered personal advice to several students.

**Teaching Assistant**      **MICB 302: Immunology**      09/2010 – 12/2010  
**University of British Columbia, Vancouver, BC, Canada**

- Helped students understand the immune system by answering questions, holding office hours, and teaching a course tutorial; presented at review sessions and graded exams; received 2 nominations for a teaching award.

**Invited Mentor**      **Beyond B.Sc. Conference**      03/2010 & 03/2011  
**University of British Columbia, Vancouver, BC, Canada**

- Shared advice with undergraduate students on considering options following graduation and how to acquire useful skills.

**SELECTED VOLUNTEER EXPERIENCE**

<b>Collective Co-Leader</b>	Computational Health Collective, Engineered Cell Collective	02/2017 – Present
<b>Wikipedia Editor</b>	Wikipedia Community	01/2007 – Present
<b>Community Leader</b>	Bay Area Computational Immunology Community	08/2016 – 04/2018
<b>Classroom Performer</b>	UBC Living Lab Theater Troupe	01/2009 – 05/2010
<b>Rollerblading Performer</b>	2010 Vancouver Winter Olympic Games Opening Ceremony	08/2009 – 02/2010
<b>Organizing Member</b>	UBC World AIDS Day	09/2008 – 12/2009
<b>Graduation Coordinator</b>	UBC Microbiology & Immunology Student Association	03/2007 – 05/2008
<b>Sustainability Club Member</b>	Genentech Green Genes Club	05/2007 – 12/2007
<b>Wellness Peer Educator</b>	UBC Wellness Center	08/2004 – 05/2006

<b>SELECTED PRESENTATIONS</b>
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<b>1<sup>st</sup> Stanford Immunology Alumni Reunion</b> (talk)	Stanford University, Stanford, CA	June 25, 2018
<b>Big Data in Precision Health Conference</b> (poster)	Stanford University, Stanford, CA	May 23-24, 2018
<b>6<sup>th</sup> Center for Cancer Systems Biology Symposium</b> (poster)	Stanford University, Stanford, CA	May 11, 2018
<b>Parker Institute for Cancer Immunotherapy Retreat</b> (talk)	Four Seasons Resort Oahu, Kapolei, HI	Apr 25, 2018
<b>Comp. &amp; Systems Immunology Ph.D. Thesis Defense</b> (talk)	Stanford University, Stanford, CA	Mar 6, 2018
<b>Keystone Symposium on Emerging Cellular Therapies</b> (talk)	Keystone Conference Center, Keystone, CO	Feb 11-15, 2018
<ul style="list-style-type: none"> <li><i>Conference abstract (international):</i> "Guiding T-lymphocyte differentiation in cancer immunotherapy applications" by <b>Good Z</b>, Vivanco Gonzalez N, Samusik N, Sahaf B, Borges L, Tibshirani R, Nolan GP, and Bendall SC. <i>Oral presentation in Workshop 2: Cell Engineering.</i></li> </ul>		
<b>Parker Institute for Cancer Immunotherapy Science Club</b> (talk)	PICI Central Office, San Francisco, CA	Feb 9, 2018
<b>Topics and Techniques in Cancer Immunotherapy</b> (talk)	Stanford University, Stanford, CA	Oct 9, 2017
<b>ITI Institute and CyTOF Working Group</b> (full seminar)	Stanford University, Stanford, CA	Aug 8, 2017
<b>32<sup>nd</sup> Congress of the Int. Society for Adv. of Cytometry</b> (talk)	Hynes Convention Center, Boston, MA	Jun 10-14, 2017
<ul style="list-style-type: none"> <li><i>Conference abstract (international):</i> "Single-cell developmental classification of B-cell precursor acute lymphoblastic leukemia at diagnosis reveals predictors of relapse" by <b>Good Z</b>, Sarno J, Jager A, Samusik N, Aghaeepour N, Simonds EF, While L, Lacayo NJ, Fantl WJ, Gaipa G, Biondi A, Tibshirani R, Bendall SC, Nolan GP, and Davis KL. <i>Oral presentation in Parallel 3 Session: Biomarkers.</i></li> </ul>		
<b>Mass Cytometry Summit</b> (scientific talk)	Museum of Science, Boston, MA	Jun 9, 2017
<b>5<sup>th</sup> Center for Cancer Systems Biology Symposium</b> (poster)	Stanford University, Stanford, CA	May 5, 2017
<b>Baxter Lab Retreat</b> (poster)	Quadrus Conference Center, Palo Alto, CA	Jan 31, 2017
<b>Stanford Immunology Retreat</b> (talk)	Asilomar Conference Center, Asilomar, CA	Sep 9-11, 2016
<b>UBC Microbiology &amp; Immunology Guest Speaker</b> (seminar)	UBC, Vancouver, Canada	June 24, 2016
<b>31<sup>st</sup> Congress of the Int. Society for Adv. of Cytometry</b> (talk)	Wash. State Conv. Center, Seattle, WA	Jun 11-15, 2016
<ul style="list-style-type: none"> <li><i>Conference abstract (international):</i> "Dynamics of T-lymphocyte differentiation revealed by tracing single-cell proliferative history" by <b>Good Z</b>, Vivanco Gonzalez N, Samusik N, Borges L, Tibshirani R, Nolan GP, and Bendall SC. <i>Oral presentation in Parallel 16 Session: Mass Cytometry.</i></li> </ul>		
<b>Big Data in Biomedicine Conference</b> (poster)	Stanford University, Stanford, CA	May 25-26, 2016
<b>Stanford Pathology Department Retreat</b> (poster)	Stanford University, Stanford, CA	Apr 23, 2016
<b>American Association for Cancer Research Meeting</b> (talk)	Ernest N. Morial Conv. Center, New Or., LA	Apr 16-20, 2016
<ul style="list-style-type: none"> <li><i>Conference abstract (national):</i> "Relapse in BCP-ALL predicted by activated signaling in pro-BII to pre-BI developmental transition" by <b>Good Z</b>, Sarno J, Jager A, Samusik N, Fantl WJ, Aghaeepour N, Tibshirani R, Bendall SC, Gaipa G, Biondi A, Nolan GP, and Davis KL. <i>Oral presentation in AACR Minisymposium: Tumor Immunology.</i></li> </ul>		
<b>Intervene Immune 2<sup>nd</sup> TRIIM Clinical Trial Mini-Symposium</b> (talk)	Stanford University, Stanford, CA	Mar 18, 2016
<b>Stanford Cancer Institute Symposium</b> (poster)	Stanford University, Stanford, CA	Feb 23, 2016
<b>Baxter Lab Retreat</b> (speed talk and poster)	Quadrus Conference Center, Palo Alto, CA	Jan 20, 2016
<b>4<sup>th</sup> Center for Cancer Systems Biology Symposium</b> (poster)	Stanford University, Stanford, CA	Oct 22, 2015
<b>Intervene Immune 1<sup>st</sup> TRIIM Clinical Trial Mini-Symposium</b> (talk)	Stanford University, Stanford, CA	Oct 1, 2015
<b>Stanford Immunology Retreat</b> (speed talk and poster)	Asilomar Conference Center, Asilomar, CA	Sep 11-13, 2015
<b>International Society for Stem Cell Research Meeting</b> (poster)	Stockholmsmässan, Stockholm, Sweden	Jun 24-27, 2015
<ul style="list-style-type: none"> <li><i>Conference abstract (international):</i> "A multiplex single-cell assay to track proliferative history in differentiating cell systems" by <b>Good Z</b>, Vivanco Gonzalez N, Borges L, Nolan GP, and Bendall SC. <i>Poster in Poster Presentation III.</i></li> </ul>		
<b>Stanford Pathology Department Retreat</b> (poster)	Stanford University, Stanford, CA	May 2, 2015
<b>Genentech Discovery Oncology Department Meeting</b> (talk)	Genentech, South San Francisco, CA	Apr 18, 2013
<b>Microbiology &amp; Immunology M.Sc. Thesis Defense</b> (talk)	UBC, Vancouver, Canada	Apr 16, 2012
<b>Genentech Colorectal Cancer Working Group Meeting</b> (talk)	Genentech, South San Francisco, CA	Nov 25, 2011
<b>ImmunoVancouver 2011 Conference</b> (speed poster presentation)	UBC, Vancouver, Canada	Jun 7, 2011

**SELECTED PRESENTATIONS (CONT'D)**

- 24<sup>th</sup> Canadian Society for Immunology Meeting** (talk and poster) Chateau Lake Louise, Lake Louise, Canada Apr 8-11, 2011
- *Conference abstract (national):* "The role of mRNA processing bodies in memory CD8<sup>+</sup> T cells" by **Good Z**, Choi K, Osborne LC, Abraham N, and Gold MR. *Oral presentation & poster in Immune Response, Memory, and Vaccine Design Workshop.*
- UBC LSI-GSA Research Day 2011** (talk) UBC, Vancouver, Canada Mar 11, 2011
- UBC LSI-GSA Research Day 2009** (poster) UBC, Vancouver, Canada Mar 13, 2009
- Genentech Late Stage Purification Department Meeting** (talk) Genentech, South San Francisco, CA Nov 15, 2007
- Genentech Summer Intern Poster Day 2007** (poster) Genentech, South San Francisco, CA Aug 9, 2007