# Zinaida Good, Ph.D.

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**OBJECTIVE:** To Advance Engineered T Cell Immunotherapies by Learning from Patient Data

*I am a cross-trained scientist with expertise in machine learning, computational biology, immunology, and oncology. My long-term goal is to understand and enhance engineered cellular immunotherapies for cancer, immune-mediated diseases, and transplantation. I build advanced algorithms for high-dimensional single-cell and spatial data to identify mechanisms of therapy resistance based on primary patient samples. Actionable clinical insights enable me to test preclinically novel cell design strategies in cellular assays and mouse models that appropriately represent new patient biology and gather sufficient preclinical data for clinical translation. As an instructor at the Stanford Cancer Institute (SCI) and the Department of Biomedical Data Science (DBDS), I lead a team of 3 research associates, informally mentor 2 postdoctoral fellows, and collaborate with clinical faculty on correlative and translational projects. I am preparing to launch an independent research program at the interface between systems immunology and engineered T cell immunotherapies.*

## EDUCATION

**Ph.D.** Major: **Computational & Systems Immunology** 09/2013 – 04/2018
**Stanford University, Stanford, CA, USA**

- One of the inaugural students in the CSI track of the Immunology Ph.D. program; GPA: 4.0.

**M.S.** Major: **Microbiology & Immunology** 09/2008 – 05/2012
**University of British Columbia, Vancouver, BC, Canada**

- Defended M.S. thesis with the "Outstanding" status; GPA: 4.0.

**B.S.** 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

**Instructor** **Drs. Crystal L. Mackall & Sylvia K. Plevritis Labs, SCI / DBDS** 01/2023 – Present
**Stanford University, Stanford, CA, USA**

- **Project 1:** Perform reverse fate mapping analyses of CD19 and CD19/22-targeted CAR T cell clonotypes to identify single-cell features of CAR T cells with optimal homing, expansion, and persistence properties in adult patients with leukemia and lymphoma.
- **Project 2:** Perform lineage tracing with scRNA-seq and scTCR-seq data across pre-manufacture apheresis, infusion products, and post-infusion cerebrospinal fluid (CSF) samples in pediatric patients treated with GD2-CAR T cells for diffuse midline glioma (DMG).
- **Outcome:** (1) Through lineage tracing, defined gene expression programs and cell states with optimal CAR T cell homing, expansion, and persistence in pre-manufacture apheresis and infusion CD19-CAR and CD19/22-CAR products (Good *et al. In Preparation*). (2) Generated a draft single-cell GD2-CAR T cell atlas for DMG (Ramakrishna and Good *et al. In Preparation*).

**Postdoctoral Fellow** **Drs. Crystal L. Mackall & Sylvia K. Plevritis Labs, SCI / DBDS** 04/2018 – 01/2023
**Stanford University, Stanford, CA, USA**

- **Project 1:** Leverage multi-omics single-cell data (flow cytometry, CyTOF, scRNA-seq, CITE-seq, scTCR-seq) to define correlates of clinical response in patients with large B cell lymphoma (LBCL) receiving chimeric antigen receptor (CAR) T cells.
- **Project 2:** Integrate scRNA-seq, CITE-seq, and high-dimensional imaging (CODEX) patient data modalities to gain insights into metastasis in head and neck squamous cell carcinoma (HNSCC).
- **Outcome:** (1) Built single-cell data analysis pipelines for the Stanford Center for Cancer Cell Therapy and established that circulating CAR $T_{Reg}$ cells are associated with disease progression, less severe neurotoxicity, and diminished CAR T cell expansion in LBCL (Good *et al. Nature Medicine*, 2022). (2) Built a single-cell atlas of HNSCC and identified cellular niches whose gene modules are associated with survival (Zhang and Good *et al. In Preparation*). See publications for other projects.

**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:** (1) Developed a mass cytometry method for tracking cell proliferative history and constructed a system to map and steer human T cell differentiation *ex vivo* (Good *et al. Nature Biotechnology*, 2019). (2) Built a computational tool for single-cell developmental classification that enabled deconstructing 'broken' B cell development to identify a cell subpopulation predictive of clinical outcome in acute lymphoblastic leukemia (Good *et al. Nature Medicine*, 2018).

## SELECTED WORK EXPERIENCE *(Continued)*

**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 orthotropic 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.S. 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, $CD8^+$ T cells contain IFN-γ 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.

**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 devises.

## SELECTED HONORS & AWARDS

**NIH Pathway to Independence Award (K99/R00)** **2024**
**ACS-SCI Institutional Research Grant** **2024**
**AACR-Woman in Cancer Research Scholar** **2024**
NIH Research Career Accelerator Program Scholar 2024
Stanford Cancer Institute Associate Trainee Member 2024
**Parker Inst. for Cancer Immunotherapy Bridge Fellow** **2023**
**Arthur & Sandra Irving Cancer Immunology Fellow** **2022**
NK & Irene Cheung Family Scholar, Keystone Symposia 2022
**Stanford Cancer Institute Fellow** **2020**
ASH Abstract Achievement Award 2019
Keystone Symposia Scholarship 2019
**Parker Institute for Cancer Immunotherapy Scholar** **2018**
Stanford Biosciences Travel Grant 2016, 2017, 2018
CYTO Image Analysis Challenge Finalist 2017
ISAC Student Travel Award for CYTO 2016, 2017
CYTO Exceptional Student Award Finalist 2016
**Featured Wikipedia Editor** **2012, 2013**
**1st place, DARPA Shredder Challenge** **2011**
(member of the team "All Your Shreds Are Belong to Us")
4th place, ImmunoVancouver speed poster competition 2011
2nd prize, UBC Life Sciences Institute poster comp. 2009
**UBC Graduate Entrance Scholarship** **2008**
Delegate to *WithinSight* National Leadership Conf. 2007
Ontario Scholar 2003
1st place, local Sir Isaac Newton Physics contest 2003
2nd place, local Sir Isaac Newton Math contest 2003
Multiple ski racing awards (MVP, 1st-3rd places) 2002 – 2003
2nd place, Ural Regional Math contest 2001
3rd place, Ural Regional English contest 2001

## PATENTS

- Patent US 12,024,716 B2: **Good Z**, Nolan GP, Bendall SC, Weber EW, and Mackall CL. "Compositions and methods of expansions of T cell populations". (2024).
- 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: *patent pending*.

## FUNDING

### Active Research Support

**1K99CA293149** Good (PI) 07/01/2024 – 06/30/2029
NIH/NCI
*Learning Features of Optimal CAR T Cells for LBCL from Patient Data*
This Pathway to Independence (K99/R00) career development award aims to finalize my mentored training and enable me to establish an independent academic research program focused on cancer immunotherapy.
Total award amount (including indirect costs): $1,089,144
Role: PI

**ACS-SCI IRG Pilot Project** Good (PI) 03/01/2024 – 02/28/2025
American Cancer Society and Stanford Cancer Institute
*Mitigating CAR T Cell Immunosuppression in the Tumor Microenvironment*
This institutional research grant (IRG) pilot project aims to gather preliminary spatial and interactome data on resistance mechanisms in the tumor microenvironment of LBCL.
Total award amount (including indirect costs): $50,000
Role: PI

**Innovation Challenge** Good, Fraietta (MPI) 01/01/2024 – 12/31/2025
Parker Institute for Cancer Immunotherapy and Resilience, Inc.
*A Biomarker Data Ecosystem for Precision CAR T Cell Therapy*
This Project award aims to build a comprehensive data hub for CAR T cell therapies.
Total award amount (including indirect costs): $500,000
Role: PI

**Parker Bridge Fellow** Good (PI) 02/01/2023 – 01/31/2026
Parker Institute for Cancer Immunotherapy
*Defining a Therapeutic CAR T Cell in Patients with Cancer*
This career development award aims to establish reverse fate mapping, an approach to trace engineered T cells based on endogenous T cell receptor sequence as a 'barcode' in patients with cancer.
Total award amount (including indirect costs): $550,000
Role: PI

### Completed Research Support

**CCSB Pilot Project** Good (PI) 08/01/2020 – 07/31/2021
Stanford Center for Cancer Systems Biology (NIH/NCI U54-CA209971)
*Interrogating the Effects of CAR T Cells on the Tumor Microenvironment*
This pilot project grant aimed to build a tumor microenvironment interactome between CD19-targeted CAR T cells and other cell types in patients with large B cell lymphoma.
Total award amount (including indirect costs): $78,497
Role: PI

**SCI Fellow** Good (PI) 07/01/2020 – 06/30/2021
Stanford Cancer Institute
This postdoctoral fellowship aimed to support my training and prepare me to obtain a career development award in order to transition to independence.
Total award amount (including indirect costs): $75,000
Role: PI

**Parker Scholar** Good (PI) 04/22/2018 – 05/31/2020
Parker Institute for Cancer Immunotherapy
*Directing T Lymphocyte Fate Specification Choices in Cancer Immunotherapy Applications*
This postdoctoral fellowship aimed to establish a framework for constructing single-cell trajectories in the context of expansion of primary or engineered human T lymphocytes for adoptive cell transfer therapies.
Total award amount (including indirect costs): $146,501
Role: PI

## FUNDING *(Continued)*

**5T32AI007290** Jones (PI) 10/01/2013 – 03/31/2018
NIH/NIAID
*Ph.D. Program in Immunology at Stanford University*
This institutional research training grant supported Immunology Ph.D. trainees at Stanford University.
Total award amount (including indirect costs): $102,726
Role: Stanford Immunology Ph.D. Student

### Pending Research Support

**1OT2OD038101** Good, Gevaert (MPI) 09/01/2024 – 08/31/2026
NIH Director's Office
*Multimodal AI modeling of T cell therapies to predict patient response & nominate advanced cell design strategies*
This NIH Multimodal AI Initiative award aims to develop an ethical multimodal AI model to nominate promising design strategies for CAR T cell immunotherapies for LBCL.
Total award amount (including indirect costs): $3,947,453
Role: PI (***notified of award***)

### In-Kind Research Support

**PICI and 10x Genomics Pilot Project** Good, Ramakrishna (MPI) 07/06/2022 – 07/05/2024
Parker Institute for Cancer Immunotherapy and 10x Genomics, Inc.
*Clinical Dynamics of GD2-Targeted CAR T cell Response in Childhood DMG*
This pilot project from the collaboration between PICI and 10x Genomics aims to identify drivers of GD2-CAR T cell success or failure in pediatric diffuse midline glioma (DMG) using lineage tracing and spatial transcriptomics.
Total award amount (including indirect costs): In-kind reagents and technical support
Role: PI

## MANUSCRIPTS & PUBLICATIONS

### Original Research Articles

- **Good Z***, Hamilton MP*, Spiegel JY, Kurra S, Desai M, Wu F, Yang E, Ozawa MG, Frank MJ, Baird JH, Muffly L, Claire GK, Craig J, Kong KA, Wagh D, Coller J, Tibshirani R, Plevritis SK, Sahaf B, Miklos DB§, Mackall CL§. *Reverse fate mapping of CAR T cells in patients with B cell malignancies*. ***In Preparation***.
- Zhang W*, **Good Z***, Yu A, Espin Perez A, Saumyaa S, Chang S, Goltsev Y, Samusik N, Black S, Vazquez G, Mayer A, Gentles A, Nolan GP, Sunwoo JB, Plevritis SK. *A single-cell atlas of head and neck squamous cell carcinoma*. ***In Preparation***.
- Ramakrishna S*, **Good Z***, Desai M, Zamler D, Mancusi R, Mahdi J, Majzner RG, Schultz L, Richards RM, Kamens J, Barsan V, Campen C, Partap S, Ehlinger Z, Reynolds W, Chen Y, Hamilton MP, Geraghty A, Moon J, Baggott C, Kunicki M, Fujimoto M, Li A, Jariwala S, Mavroukakis S, Egeler E, Jacobs A, Erickson C, Yamabe-Kwong K, Prabhu S, Davis K, Feldman SA, Sahaf B, Mackall CL§, Monje M§. *Immune signatures associated with GD2 CAR T cell activity in H3K27M+ diffuse midline glioma patients.* ***In Preparation***.
- Hamilton MP*, Sugio T*, Noordenbos T*, Shi S, Bulterys PL, Long Liu C, Olsen MN, **Good Z**, Dahiya S, Frank MJ, Sahaf B, Mackall CL, Gratzinger D, Diehn M, Alizadeh AA§, Miklos DB§. (2024). *Risk of second malignancies & T-cell lymphoma after chimeric antigen receptor T-cell therapy.* ***New England Journal of Medicine***, 390(22): 2047-2060. PMID: 38865660.
- Yamada-Hunter SA*, Theruvath J*, Radosevich MT, McIntosh BJ, Freitas KA, Leruste A, Dhingra S, Martinez-Velez N, Mount CW, Sotillo E, Xu P, Delaidelli A, Desai MH, Sahaf B, **Good Z**, Labanieh L, Heitzeneder S, Banuelos A, Khan O, Marjon KD, Huang J, Wasserman SL, Spiegel JY, Sorensen PH, Monje M, Majzner RG, Weissman IL, Cochran JR, Mackall CL. (2024). *Selective phagocytosis of tumor cells while sparing T cells using engineered CD47 enhances antitumor immunity.* ***Nature***, 630(8016):457-465. PMID: 38750365.
- Hamilton MP, Craig E, Gentille Sanchez C, Mina A, Tamaresis J, Kirmani N, Ehlinger Z, Syal S, **Good Z**, Sworder B, Schroers-Martin J, Lu Y, Muffly L, Negrin R, Arai S, Lowsky R, Meyer E, Rezvani A, Shizuru J, Weng W, Shiraz P, Sidana S, Bharadwaj S, Smith M, Dahiya S, Sahaf B, Kurtz D, Mackall C, Tibshirani R, Alizadeh A, Frank M, Miklos D. (2024). *CAR19 monitoring by peripheral blood immunophenotyping reveals histology-specific expansion and toxicity.* ***Blood Advances***, 8(12):3314-3326. PMID: 38498731.

## MANUSCRIPTS & PUBLICATIONS *(Continued)*

- **Good Z***, Spiegel JY*, Sahaf B, Malipatlolla MB, Ehlinger ZJ, Kurra S, Desai MH, Reynolds WD, Wong Lin A, Vandris P, Wu F, Prabhu S, Hamilton MP, Tamaresis JS, Hanson PJ, Patel S, Feldman SA, Frank MJ, Baird JH, Muffly L, Claire GK, Craig J, Kong KA, Wagh D, Coller J, Bendall SC, Tibshirani RJ, Plevritis SK, Miklos DB§, Mackall CL§. (2022). *Post-infusion CAR $T_{Reg}$ cells identify patients resistant to CD19-CAR therapy*. ***Nature Medicine***, 28(9): 1860-1871. PMID: 36097223.
    - *News & Views article by:* Saini N and Neelapu SS (2022). *CAR Treg cells: prime suspects in therapeutic resistance.* ***Nature Medicine****,* 28(9): 1755-1756. PMID: 36109644.
    - *Covered by:* Chen A (2022). *CAR-T therapy doesn't work in all cancer cases. Scientists are starting to figure out why.* ***STAT News***, *https://www.statnews.com/2022/10/04/why-car-t-therapy-doesnt-work-in-all-cases.*
- Majzner RG*, Ramakrishna S*, Yeom KW, Patel S, Chinnasamy H, Schultz LM, Richards RM, Barsan V, Mancusi R, Geraghty AC, **Good Z**, Mochizuki A, Gillespie SM, Martin A, Toland S, Mahdi J, Reschke A, Chau I, Nie E, Chau AJ, Rotiroti MC, Mount CW, Baggott C, Mavroukakis S, Egeler E, Moon J, Erickson C, Green S, Kunicki M, Fujimoto M, Ehlinger Z, Reynolds W, Kurra S, Warren KE, Prabhu S, Vogel H, Rasmussen L, Cornell TT, Partap S, Fisher PG, Campen CJ, Filbin M, Grant G, Sahaf B, Davis KL, Feldman SA, Mackall CL§, Monje M§. (2022). *GD2-CAR T cell therapy for H3K27M-mutated diffuse midline gliomas*. ***Nature***, 603(7903): 934-941. PMID: 35130560.
- Zhang W, Li I, Reticker-Flynn NE, **Good Z**, Chang S, Samusik N, Saumyaa S, Li Y, Zhou X, Liang R, Kong CS, Le QT, Gentles AJ, Sunwoo JB, Nolan GP, Engleman EG, Plevritis SK. (2022). *Identification of cell types in multiplexed in situ images by combining protein expression and spatial location using CELESTA reveals spatial biology*. ***Nature Methods***, 19(6): 759-769. PMID: 35654951.
- Weber EW, Lynn RC, Parker KR, Lattin J, Anbunathan H, Sotillo E, **Good Z**, Malipatlolla M, Xu P, Vandris P, Majzner RG, Chen L-C, Wandless TJ, Chang HY, Satpathy AT, Mackall CL. (2021). *Transient rest restores functionality in exhausted CAR-T cells through epigenetic remodeling*. ***Science***, 2;372(6537): eaba1786. PMID: 33795428.
- Simonetta F, Alam IS, Lohmeyer JK, Sahaf B, **Good Z**, Chen W, Xiao Z, Hirai T, Scheller L, Engels P, Vermesh O, Robinson E, Haywood T, Sathirachindra A, Baker J, Malipotlalla MB, Schultz LM, Spiegel JY, Lee JT, Miklos DB, Mackall CL, Gambhir SS, Negrin RS. (2020). *Molecular imaging of chimeric antigen receptor T cells by ICOS-immunoPET*. ***Clinical Cancer Research***, 27(4): 1058-68. PMID: 33087332.
- **Good Z**, Borges L, Vivanco Gonzalez N, Sahaf B, Samusik N, Tibshirani R, Nolan GP§, Bendall SC§. (2019). *Proliferative tracing with single-cell mass cytometry optimizes generation of stem cell memory-like T cells*. ***Nature Biotechnology***, 37(3): 259-66. PMID: 30742126.
    - Selected as one of the three best Q1 2019 papers by the Parker Institute for Cancer Immunotherapy.
- Lynn RC, Weber EW, Sotillo E, Gennert D, Xu P, **Good Z**, Anbunathan H, Lattin J, Jones R, Tieu V, Granja J, DeBourcy C, Xu P, Majzner R, Satpathy AT, Quake SR, Chang H, Mackall CL. (2019). *c-Jun overexpression in CAR T cells induces exhaustion resistance*. ***Nature***, 576(7786): 293-300. PMID: 31802004.
- Fahy GM, Brooke RT, Watson JP, **Good Z**, Vasanawala SS, Maecker H, Leipold M, Lin DTS, Kobor MS, Horvath S. (2019). *Reversal of epigenetic aging and immunosenescent trends in humans*. ***Aging Cell***, 18(6): e13028. PMID: 31496122.
    - One of the top 2021 cited papers in *Aging Cell* (#3 of 1,842); top 5% of all research outputs scored by Altmetric (859).
- **Good Z***, Sarno J*, Jager A, Samusik N, Aghaeepour N, Simonds EF, While L, Lacayo NJ, Fantl WJ, Fazio G, Gaipa G, Biondi A, Tibshirani R, Bendall SC, Nolan GP§, Davis KL§. (2018). *Single-cell developmental classification of B cell precursor acute lymphoblastic leukemia at diagnosis reveals predictors of relapse*. ***Nature Medicine***, 24(4): 474-83. PMID: 29505032.
    - News & Views article by Martín-Subero JI (2018). *Predicting leukemia relapse*. ***Nature Medicine***, 24(4): 385-7.
- Samusik N, **Good Z**, Spitzer MH, Davis KL, Nolan GP. (2016). *Automated mapping of phenotype space with single-cell data*. ***Nature Methods***, 13(6): 493-6. PMID: 27183440.
- Enquist IB, **Good Z**, Jubb AM, Fuh G, Wang X, Junttila MR, Jackson EL, Leong KG. (2014). *Lymph node-independent liver metastasis in a model of metastatic colorectal cancer*. ***Nature Communications***, 5: 3530. PMID: 24667486.
- Franci C, Zhou J, Jiang Z, Modrasan Z, **Good Z**, Jackson EL, Kouros-Mehr H. (2013). *Biomarkers of residual disease, disseminated tumor cells, and metastases in the MTV-PyMT breast cancer model*. ***PLoS ONE***, 8(3): e58183. PMID: 23520493.
- Dauphinee SM, Voelcker V, **Tebaykina Z**, Wong F, 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. PMID: 21949112.
- Strauss DM, Lute S, **Tebaykina Z**, Frey DD, Ho C, Blank GS, Brorson K, Chen Q, 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. PMID: 19575414.

## MANUSCRIPTS & PUBLICATIONS *(Continued)*

### Commentaries & Reviews

- Alvarez-Breckenridge C, Anderson, KG, Correia AL, Demehri S, Dinh HQ, Dixon KO, Dunn GP, Evgin L, Goc J, **Good Z**, Hacohen N[§], Han P, Hanč P, Hickey JW, Kersten K, Liu BC, Buqué A, Mao Y, Milner JJ, Pritykin Y, Pucci F, Scharping NE, Sudmeier L, Wang Y, Wieland A, Williams MW. (2023). *Lessons for the next generation of scientists from the 2nd annual Arthur and Sandra Irving Cancer Immunology Symposium.* ***Cancer Immunology Research,*** 11(12): 1571-1577. PMID: 37906619.
- Bucktrout SL, Banovich NE, Butterfield LH, Cimen-Bozkus C, Giles JR, **Good Z**, Goodman D, Jonsson V, Laraeu C, Marson A, Maurer DM, Munson PV, Stubbington M, Taylor S, Cutchin A. (2022). *Advancing T cell-based cancer therapy with single cell technologies*. ***Nature Medicine***, 28(9): 1761-1764. PMID: 36127419.
- **Good Z**, Glanville G, Gee MH, Davis MM, Khatri P. (2019). *Computational and systems immunology: a students' perspective*. ***Trends in Immunology***, 40(8): 665-8. PMID: 31288986.

### Theses

- **Good Z**. (2018). *Lymphocyte differentiation trajectories in human health and cancer*. ***Stanford University Libraries Digital Repository***, winter 2018 collection: Ph.D. thesis in Immunology.
- **Tebaykina Z**. (2012). *Characterization of processing bodies in T and B lymphocytes*. ***cIRcle Library at the University of British Columbia***, spring 2012 collection: M.S. thesis in Microbiology and Immunology.

*Co-first author; [§]co-senior author.

## TEACHING & MENTORING

**Invited Scientist** **Grade 8 Science Class** 11/02/2023
**Pickering College, Newmarket, ON, Canada**

- Served as a guest speaker to inspire students about cancer research and being a scientist.
- Gave a talk on cancer immunotherapy to a room of Grade 8 students; focused on high-level concepts presented as fun videos and animations; emphasized the importance of math and programming as key skills in current biomedical research.

**Advocate** **Pediatric COVID-19 Vaccine Trial** 03/2021 – 07/2022
**Stanford University, Stanford, CA, USA**

- Enrolled both children into a Phase I trial of the COVID-19 Pfizer vaccine at the Stanford site. The kids were the first and second to receive the vaccine in their age groups; helped educate the parent community about the trial, the novel coronavirus, and COVID-19; recruited volunteers for Phase I-III trials at Stanford.
- Spoke frequently on local and national news about the importance of vaccinating children against COVID-19.

**Invited Educator** **COVID-19 Workshop Series** (9 – 12) 02/2021
**Children's Center of the Stanford Community, Stanford, CA, USA**

- Taught a series of 4 online workshops to the childcare center teachers and staff on COVID-19, as well as SARS-CoV-2 biology, transmission, treatment, and vaccines; covered best practices and shared advice on minimizing risk to the community.

**Leader-in-Residence** **Reunion Weekend 2020: Invited Alumna** 10/02/2020
**Pickering College, Newmarket, ON, Canada**

- Took on the role of Leader-in-Residence, a program that brings out exceptional alumni who share their experiences, insights and advice to current students at the annual reunion event and throughout the year.
- Gave an interview with the 102.7 CHOP FM student-ran radio station.

**Invited Speaker** **STEM Day Guest Speaker: Immunotherapy** 04/10/2019
**Lynbrook High School, San Jose, CA, USA**

- Gave a talk on cancer immunotherapy to a room of high school students from all years; focused on high-level concepts presented as fun videos and animations; emphasized the importance of math and programming as key skills in current biomedical research.
- Hosted a group of interested students for lunch at Stanford University and shared advice of getting involved in research.
- Continued to mentor one of the students through summer advising on a single-cell analysis and machine learning projects.

**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 1st 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. Nikesh 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.S. 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.

## TEACHING & MENTORING *(Continued)*

*I have served as an informal mentor to the following trainees and staff:*

| Name | Timeframe | Their position *then* | Their location *then* | Their position *now* | Their location *now* | My position *then* |
|---|---|---|---|---|---|---|
| Kristin Tsui, MS | 01/2024 – Present | LSRP Level 1 | Stanford | LSRP Level 1 | Stanford | Instructor |
| Chiu Hou (Kelvin) C. Mo, BS | 03/2023 – Present | BA Student | UC Berk. | LSRP Level 1 | Stanford | Instructor |
| Patrick J. Quinn, BS | 02/2023 – Present | LSRP Level 1 | Stanford | LSRP Level 1 | Stanford | Instructor |
| Anne M. Kramer, MD, PhD | 09/2022 – Present | Postdoc | Stanford | Postdoc | Stanford | Instructor |
| Yiyun Chen, PhD | 06/2022 – Present | Postdoc | Stanford | Postdoc | Stanford | Instructor |
| Christine Y. Yeh, MS | 03/2022 – 08/2023 | MD/PhD Student | Stanford | MD/PhD Student | Stanford | Instructor |
| Mark P. Hamilton, MD, PhD | 06/2021 – 08/2022 | Clinical Fellow | Stanford | Clinical Fellow | Stanford | Postdoc |
| Aarushi Mehrotra | 04/2019 – 07/2019 | High School Student | Lynbrook | BS Student | MIT | Postdoc |
| Anthony Culos | 06/2016 – 08/2016 | BS Student | UBC | PhD Student | Columbia | PhD Student |
| Nora Vivanco Gonzalez, BS | 07/2014 – 08/2016 | LSRP Level 1 | Stanford | Postdoc | Stanford | PhD Student |
| Kate Choi, BS | 02/2010 – 06/2011 | MS Student | UBC | Res. Tech. Level 3 | UBC | MS Student |

Columbia, Columbia University
LSRP, Life Sciences Research Professional
Lynbrook, Lynbrook High School
MIT, Massachusetts Institute of Technology
Postdoc, Postdoctoral Fellow
Stanford, Stanford University
UBC, University of British Columbia
UC Berk., University of California, Berkeley

## SELECTED VOLUNTEER EXPERIENCE

| | | |
|---|---|---|
| **Reviewer** | *Blood* | 05/2024 – Present |
| **Reviewer** | *Blood Advances* | 11/2023 – Present |
| **Insight Forum Member** | *The Economist* | 11/2023 – Present |
| **Reviewer** | *Trends in Immunology* | 10/2023 – Present |
| **Collective Co-Leader** | Computational Health Collective, Engineered Cell Collective | 02/2017 – Present |
| **Wikipedia Editor** | Wikipedia | 01/2007 – Present |
| **Community Co-Leader** | Bay Area Computational Immunology Community | 08/2016 – 04/2018 |
| **Reviewer** | *PLoS ONE* | 03/2013 – 08/2013 |
| **Classroom Performer** | UBC Living Lab Theater Troupe | 01/2009 – 05/2010 |
| **Rollerblading Performer** | 2010 Vancouver Winter Olympic Games Opening Ceremony | 08/2009 – 02/2010 |
| **Organizing Member** | UBC World AIDS Day | 09/2008 – 12/2009 |
| **Graduation Coordinator** | UBC Microbiology & Immunology Student Association | 03/2007 – 05/2008 |
| **Sustainability Club Member** | Genentech Green Genes Club | 05/2007 – 12/2007 |
| **Wellness Peer Educator** | UBC Wellness Center | 08/2004 – 05/2006 |

## CONSULTING

- **Boom Capital Ventures** (Woodside, CA): cell and protein therapies, screening platforms, health tech (01/2017 – Present).
- **Sangamo Therapeutics** (Brisbane, CA): (11/2023 – Present).
- **Mubadala Ventures** (San Francisco, CA): cell therapy, cancer diagnostics (02/2020 – 09/2022).
- **Alpha Sights** (New York, NY): immunology & oncology (07/2018 – 01/2022).
- **GLG** (New York, NY): cancer immunotherapy, single-cell sequencing technologies, mass cytometry (05/2020 – 12/2020).
- **Atheneum Partners** (Berlin, Germany): immunology (02/2021 – 08/2021)

## CERTIFICATES

- VFPVCB4LA5GM: **Machine Learning**. Taught by Andrew Ng from Stanford University on *Coursera* (2016).
- Laboratory Safety: General Safety, Injury Prevention, Emergency Preparedness, Biosafety, Bloodborne Pathogens, Laser Safety, Chemical Safety, Compressed Gas Safety, Radionuclide Safety, Animal Husbandry (2005 – 2023).
- Patient Data: Protecting Patient Privacy, HIPAA Privacy for Researchers (2013 – 2023).
- Animal Work: Animal Husbandry, Laboratory Animal Care and Use (2005 – 2023).
- Other: Harassment Prevention, Respectful Workplace, Ergonomics, Stewardship/Compliance for Principal Investigators, COVID-19 Hygiene Best Practices (2007 – 2023).

## SELECTED PRESENTATIONS

### Invited Talks

| | | |
|---|---|---|
| **Center for Cancer Systems Biology Seminar Series *(Planned)*** | Stanford University, Stanford, CA | Jan 17, 2025 |
| **66th American Society of Hematology Annual Meeting *(Planned)*** | San Diego Conv. Center, San Diego, CA | Dec 7-10, 2024 |
| **Comprehensive Cancer Research Training Program *(Planned)*** | Stanford University, Stanford, CA | Sep 16-18, 2024 |
| **6th Treg Directed Therapies Summit** | Hilton Boston Logan Airport, Boston, MA | May 21-23, 2024 |
| **Center for Biomedical Informatics Research Colloquium** | Stanford University, Stanford, CA | May 9, 2024 |
| **Center for Cell and Gene Therapy Seminar** | Baylor College of Medicine, Houston, TX | Mar 22, 2024 |
| **Sangamo Therapeutics** | Virtual | Nov 30, 2023 |
| **38th Annual International Clinical Cytometry Society Meeting**<br>• *Plenary Session 2* | Sheraton New Orl. Hotel, New Orleans, LA | Oct 1-3, 2023 |
| **CAR-TCR Summit**<br>• *Translation Track* | Hynes Conv. Center, Boston, MA | Aug 29-Sep1, 2023 |
| **Mass Cytometry User Group Meeting Bay Area** | 2 Tower Place, South San Francisco, CA | May 11, 2023 |
| **Precision Oncology News by Genome Web** | Webinar Sponsored by 10x Genomics | Oct 11, 2022 |
| **36th Society for Immunotherapy of Cancer Annual Meeting**<br>• *Concurrent Session 209: Single Cell Approaches to Advancing Understanding of Immunotherapy Resistance.* | WEWCC & Marriott Marquis, Washington, DC | Nov 11-14, 2021 |
| **Immunai** | Virtual | Nov 3, 2021 |
| **Parker Institute for Cancer Immunotherapy** | Virtual | Apr 23, 2021 |
| **Foresight Institute Vision Weekend** | The Internet Archive, San Francisco, CA | Nov 2-3, 2019 |
| **Parker Institute for Cancer Immunotherapy** | PICI Central Office, San Francisco, CA | Sep 6, 2019 |
| **Google Accelerated Science** | Google, Mountain View, CA | Aug 15, 2019 |
| **Arsenal Bio** | Arsenal Bio, South San Francisco, CA | Jul 11, 2019 |
| **1st Stanford Immunology Alumni Reunion** | Stanford University, Stanford, CA | Jun 25, 2018 |
| **Parker Institute for Cancer Immunotherapy** | PICI Central Office, San Francisco, CA | Feb 9, 2018 |
| **UBC Microbiology & Immunology Seminar Series** | University of British Columbia, Van., Canada | Jun 24, 2016 |

### Oral Presentations

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|---|---|---|
| **Stanford Cancer Institute Retreat** | Stanford University, Stanford, CA | Mar 26, 2024 |
| **Stanford Center for Cancer Cell Therapy Retreat** | Stanford Conf. Center, Redwood City, CA | Feb 5, 2024 |
| **Computation & Systems Immunology Symposium** | Stanford University, Stanford, CA | Oct 30, 2023 |
| **Science-In-Progress Immunology Seminar Series** | Stanford University, Stanford, CA | Oct 27, 2023 |
| **Parker Institute for Cancer Immunotherapy Retreat** | 1 Hotel Hanalei Bay, Princeville, HI | Apr 25, 2023 |
| **American Association for Cancer Research Annual Meeting** | Orange County Conv. Center, Orlando, FL | Apr 14-19, 2023 |

- *Conference abstract:* **Good Z**, Hamilton MP, Spiegel JY, Kurra S, Desai MH, Prabhu S, Chiou SH, Yeh CY, Chen Y, Yang E, Ozawa MG, Wu F, Frank MJ, Muffly L, Claire GK, Craig J, Iglesias MI, Bharadwaj S, Kong KA, Wagh D, Coller J, Davis MM, Plevritis SK, Sahaf B, Miklos DB, and Mackall CL. Lineage tracing of CAR T cells in patients with B cell malignancies. *Oral presentation in Minisymposium on Clinical Research Excluding Trials.*

| | | |
|---|---|---|
| **Keystone Symposium on Emerging Cellular Therapies** | Keystone Resort, Keystone, CO | Apr 27-30, 2022 |

- *Conference abstract:* **Good Z**, Hamilton MP, Sahaf B, Spiegel JY, Kurra S, Desai MH, Wu F, Yang E, Ozawa MG, Frank MJ, Baird JH, Muffly L, Claire GK, Craig J, Kong KA, Wagh D, Coller J, Tibshirani R, Plevritis SK, Miklos DB, and Mackall CL. Reverse fate mapping of CD19-CAR T cells in patients with lymphoma. *Oral presentation in T cell Exhaustion Session.*

| | | |
|---|---|---|
| **American Association for Cancer Research Annual Meeting** | Ernest N. Morial Conv. Ctr., New Orleans, LA | Apr 8-13, 2022 |

- *Conference abstract:* **Good Z**, Hamilton MP, Sahaf B, Spiegel JY, Kurra S, Desai M, Wu F, Yang E, Ozawa MG, Frank MJ, Baird JH, Muffly L, Claire GK, Craig J, Kong KA, Wagh D, Coller J, Tibshirani R, Plevritis SK, Miklos DB, and Mackall CL. Reverse fate mapping of CD19-CAR T cells in patients with lymphoma. *Oral presentation in Minisymposium on Adoptive Cell Therapy.*

| | | |
|---|---|---|
| **7th Annual Stanford Cancer Systems Biology Symposium** | Virtual | Mar 26, 2021 |
| **Stanford Center for Cancer Cell Therapy Scientific Retreat** | Virtual | Oct 14, 2020 |
| **61st American Society of Hematology Annual Meeting** | Orange County Conv. Center, Orlando, FL | Dec 7-10, 2019 |

- *Conference abstract:* **Good Z**, Spiegel JY, Sahaf B, Malipatlolla MB, Frank MJ, Baird JH, Muffly L, Claire GK, Craig J, Kong KA, Bendall SC, Miklos DB, and Mackall CL. Identification of two CAR T cell populations associated with complete response or progressive disease in adult lymphoma patients treated with axi-cel. *Oral presentation in Session 704: Immunotherapies II*.

## SELECTED PRESENTATIONS *(Continued)*

**Cell Therapies and Immunotherapy Conference** Courtyard by Marriott, San Francisco, CA Oct 20-22, 2019

- *Conference abstract:* **Good Z**, Spiegel JY, Sahaf B, Malipatlolla MB, Frank MJ, Baird JH, Muffly L, Claire GK, Craig J, Kong KA, Bendall SC, Miklos DB, and Mackall CL. CAR T cell populations associated with complete response or progressive disease in adult lymphoma patients treated with axi-cel. *Oral presentation on Main Podium*.

**Parker Institute for Cancer Immunotherapy Retreat** Meadowood Napa Valley, St Helena, CA Apr 29, 2019

**Parker Institute for Cancer Immunotherapy Retreat** Four Seasons Resort Oahu, Kapolei, HI Apr 25, 2018

**Computational & Systems Immunology Ph.D. Thesis Defense** Stanford University, Stanford, CA Mar 6, 2018

**Keystone Symposium on Emerging Cellular Therapies** Keystone Conference Center, Keystone, CO Feb 11-15, 2018

- *Conference abstract:* **Good Z**, Vivanco Gonzalez N, Samusik N, Sahaf B, Borges L, Tibshirani R, Nolan GP, and Bendall SC. Guiding T-lymphocyte differentiation in cancer immunotherapy applications. *Oral presentation in Workshop 2: Cell Engineering*.

**Topics and Techniques in Cancer Immunotherapy** Stanford University, Stanford, CA Oct 9, 2017

**ITI Institute and CyTOF Working Group** (full seminar) Stanford University, Stanford, CA Aug 8, 2017

**32nd Congress of the Int. Society for the Adv. of Cytometry** Hynes Convention Center, Boston, MA Jun 10-14, 2017

- *Conference abstract:* **Good Z**, 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. Single-cell developmental classification of B cell precursor acute lymphoblastic leukemia at diagnosis reveals predictors of relapse. *Oral presentation in Parallel 3 Session: Biomarkers*.

**Stanford Immunology Retreat** Asilomar Conference Center, Asilomar, CA Sep 9-11, 2016

**31st Congress of the Int. Society for the Adv. of Cytometry** Wash. State Conv. Center, Seattle, WA Jun 11-15, 2016

- *Conference abstract:* **Good Z**, Vivanco Gonzalez N, Samusik N, Borges L, Tibshirani R, Nolan GP, and Bendall SC. Dynamics of T-lymphocyte differentiation revealed by tracing single-cell proliferative history. *Oral presentation in Parallel 16 Session: Mass Cytometry*.

**American Association for Cancer Research Annual Meeting** Ernest N. Morial Conv. Center, New Orl., LA Apr 16-20, 2016

- *Conference abstract:* **Good Z**, Sarno J, Jager A, Samusik N, Fantl WJ, Aghaeepour N, Tibshirani R, Bendall SC, Gaipa G, Biondi A, Nolan GP, and Davis KL. Relapse in BCP-ALL predicted by activated signaling in pro-BII to pre-BI developmental transition. *Oral presentation in AACR Minisymposium: Tumor Immunology*.

**Intervene Immune 2nd TRIIM Clinical Trial Mini-Symposium** Stanford University, Stanford, CA Mar 18, 2016

**Baxter Lab Retreat** (speed talk and poster) Quadrus Conference Center, Palo Alto, CA Jan 20, 2016

**Intervene Immune 1st TRIIM Clinical Trial Mini-Symposium** Stanford University, Stanford, CA Oct 1, 2015

**Stanford Immunology Retreat** (speed talk and poster) Asilomar Conference Center, Asilomar, CA Sep 11-13, 2015

**Genentech Discovery Oncology Department Meeting** Genentech, South San Francisco, CA Apr 18, 2013

**Microbiology & Immunology M.S. Thesis Defense** University of British Columbia, Van., Canada Apr 16, 2012

**Genentech Colorectal Cancer Working Group Meeting** Genentech, South San Francisco, CA Nov 25, 2011

**ImmunoVancouver 2011 Conference** (speed talk and poster) University of British Columbia, Van., Canada Jun 7, 2011

**24th Canadian Society for Immunology Meeting** (talk and poster) Chateau Lake Louise, Lake Louise, Canada Apr 8-11, 2011

- *Conference abstract:* **Good Z**, Choi K, Osborne LC, Abraham N, and Gold MR. The role of mRNA processing bodies in memory $CD8^+$ T cells. *Oral presentation & poster in Immune Response, Memory, and Vaccine Design Workshop*.

**UBC Life Sci. Institute Grad. Student Assoc. Research Day** University of British Columbia, Van., Canada Mar 11, 2011

**Genentech Late-Stage Purification Department Meeting** Genentech, South San Francisco, CA Nov 15, 2007

## Poster Presentations

**American Association for Cancer Research Annual Meeting** San Diego Conv. Center, San Diego, CA Apr 5-10, 2024

- *Conference abstract:* **Good Z**, Hamilton MP, Spiegel JY, Desai MH, Ehlinger ZJ, Quinn PJ, Chen Y, Prabhu S, Chiou SH, Kurra S, Yang E, Ozawa MG, Frank MJ, Muffly L, Claire GK, Bharadwaj S, Dahiya S, Kong KA, Davis MM, Plevritis SK, Sotillo E, Sahaf B, Miklos DB, and Mackall CL. Lineage tracing defines responding CAR T cells in patients with B cell malignancies. *Poster presentation in Clinical Research on Adoptive Cellular Therapy 2.*

**Stanford Cancer Institute Retreat** Stanford University, Stanford, CA Mar 26, 2024

**Department of Biomedical Data Science Retreat** Stanford University, Stanford, CA May 1, 2023

**Comprehensive Cancer Research Training Program** Stanford University, Stanford, CA Sep 8-10, 2022

**Keystone Symposium on Emerging Cellular Therapies** Fairmont Banff Springs, Banff, AB, Canada Feb 8-12, 2020

- *Conference abstract:* **Good Z**, Spiegel JY, Sahaf B, Malipatlolla MB, Frank MJ, Baird JH, Muffly L, Claire GK, Craig J, Kong KA, Bendall SC, Miklos DB, and Mackall CL. CAR T cell populations associated with complete response or progressive disease in adult lymphoma patients treated with axi-cel. *Poster presentation in Poster Session I*.

## SELECTED PRESENTATIONS *(Continued)*

| | | |
|---|---|---|
| **Department of Biomedical Data Science Retreat** | Stanford University, Stanford, CA | Sep 27, 2019 |
| **Big Data in Precision Health Conference** | Stanford University, Stanford, CA | May 23-24, 2018 |
| **6th Center for Cancer Systems Biology Symposium** | Stanford University, Stanford, CA | May 11, 2018 |
| **5th Center for Cancer Systems Biology Symposium** | Stanford University, Stanford, CA | May 5, 2017 |
| **Baxter Lab Retreat** | Quadrus Conference Center, Palo Alto, CA | Jan 31, 2017 |
| **Big Data in Biomedicine Conference** | Stanford University, Stanford, CA | May 25-26, 2016 |
| **Stanford Pathology Department Retreat** | Stanford University, Stanford, CA | Apr 23, 2016 |
| **Stanford Cancer Institute Symposium** | Stanford University, Stanford, CA | Feb 23, 2016 |
| **Stanford Pathology Department Retreat** | Stanford University, Stanford, CA | May 2, 2015 |
| **4th Center for Cancer Systems Biology Symposium** | Stanford University, Stanford, CA | Oct 22, 2015 |
| **International Society for Stem Cell Research Meeting** | Stockholmsmässan, Stockholm, Sweden | Jun 24-27, 2015 |

- *Conference abstract:* **Good Z**, Vivanco Gonzalez N, Borges L, Nolan GP, and Bendall SC. A multiplex single-cell assay to track proliferative history in differentiating cell systems. *Poster in Poster Presentation III*.

| | | |
|---|---|---|
| **UBC Life Sci. Institute Grad. Student Assoc. Research Day** | University of British Columbia, Van., Canada | Mar 13, 2009 |
| **Genentech Summer Intern Poster Day** | Genentech, South San Francisco, CA | Aug 9, 2007 |

### Conference Session Moderation

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|---|---|---|
| **65th American Society of Hematology Annual Meeting** | San Diego Conv. Center, San Diego, CA | Dec 9-12, 2023 |

- *Oral Session 703. Cellular Immunotherapies: Basic and Translational: Cellular Immunotherapy: Preclinical and Translational Insights*

### Conference Panels

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|---|---|---|
| **Stanford Immunology Annual Scientific Conference** | Asilomar Conference Grounds, Asilomar, CA | Nov 10-12, 2023 |

- *Alumni Career Panel: Academic Path*

| | | |
|---|---|---|
| **Stanford Computational and Systems Immunology Symposium** | Stanford University, Stanford, CA | Oct 30, 2023 |

- *Career Panel: First Graduates*

## SELECTED MEDIA OUTREACH

### Video Press Releases

**VJHemOnc Interview** Apr 9, 2024

Headline: AACR 2024 | Using lineage tracing to define responding CAR T cells in patients with LBCL.

Brief description: Zinaida Good, PhD comments on the findings of using a lineage tracing approach to define responding CAR T cells in patients with large B cell lymphoma (LBCL). Identifying which cell populations expand during manufacturing and mediate therapeutic efficacy may allow for a greater ability to manufacture CAR T-cells that will improve patient outcomes. Dr. Good also briefly outlines the impact of the presence of regulatory T cells (Tregs).

URL: https://www.vjhemonc.com/video/iyvtwqwljmw-using-lineage-tracing-to-define-responding-car-t-cells-in-patients-with-lbcl/

**VJHemOnc Interview** Apr 9, 2024

Headline: AACR 2024 | The future of CAR Treg cells: organ transplantation & autoimmune disease.

Brief description: In this video, Zinaida Good, PhD briefly discusses some settings in which CAR T regulatory (CAR Treg) cells hold therapeutic potential, such as organ transplantation and autoimmune disease. Dr. Good highlights the necessity of developing protocols that will ensure the purity and stability of CAR Tregs.

URL: https://www.vjhemonc.com/video/iyvtwqwljmw-using-lineage-tracing-to-define-responding-car-t-cells-in-patients-with-lbcl/

**Parker Institute for Cancer Immunotherapy Interview** Jul 18, 2023

Headline: Zinaida Good, PhD, 2023 Parker Bridge Fellow.

Brief description: Zinaida Good, PhD, is a 2023 Parker Bridge Fellow and an instructor at Stanford University whose work at the interface between systems biology and cancer immunotherapy is leading to defining a “therapeutic” CAR T cell in patients with cancer.

URL: https://www.youtube.com/watch?v=a9ev6bL2qIM

**CGTLive Interview** Apr 26, 2023

Headline: Zinaida Good, PhD, on exploring CAR-T expansion through lineage tracing.

Brief description: In an interview with CGTLive, Good discussed the motivation behind the study and the key results. In particular, she highlighted the finding that CAR-positive T-regulatory cells in CAR-T infusion products that are associated with disease progression likely derive from preexisting thymic derived T-regulatory cells. She noted that this indicates that removing T-regulatory cells before CAR-T manufacturing could potentially be a method to improve efficacy of the finished product.

URL: https://www.cgtlive.com/view/zinaida-good-phd-exploring-car-t-expansion-through-lineage-tracing

**VJHemOnc Interview** Apr 16, 2023

Headline: AACR 2023 | Lineage tracing of CAR-T cells in patients with B-cell malignancies & the value of this approach.

Brief description: Zinaida Good, PhD discusses research which used lineage tracing of CAR-T cells to investigate clonal expansion in patients with B-cell malignancies. Dr Good further highlights the value of lineage tracing and how this tool may allow clinicians and researchers to better understand and engineer CAR-T cells.

URL: https://www.vjhemonc.com/video/pebcgy75lee-lineage-tracing-of-car-t-cells-in-patients-with-b-cell-malignancies-the-value-of-this-approach

**VJHemOnc Interview** Apr 16, 2023

Headline: AACR 2023 | Evaluating post-infusion CAR-$T_{reg}$ cells to identify patients resistant to CD19 CAR-T therapy.

Brief description: Zinaida Good, PhD discusses a study which evaluated post-infusion CAR-T regulatory (CAR-$T_{reg}$) cells in patients with large B-cell lymphoma (LBCL) treated with axicabtagene ciloleucel (axi-cel). In this study, $T_{reg}$ cells associated with poor prognosis and progression were identified, and Dr. Good further comments on how lineage tracing may be used to identify novel biomarkers of response.

URL: https://www.vjhemonc.com/video/pzpwqmilqsq-evaluating-post-infusion-car-treg-cells-to-identify-patients-resistant-to-cd19-car-t-therapy

**Parker Institute for Cancer Immunotherapy Interview** Feb 11, 2023

Headline: National Day of Women and Girls in Science.

Brief description: Parker Institute for Cancer Immunotherapy is proud to support #WomenInScience through research funding, networking, and mentorship. #PICINetwork researcher Zinaida Good, PhD, an instructor at Stanford Medicine, shares how she encourages women to #ChooseScience.

URL: https://www.linkedin.com/feed/update/urn:li:activity:7030235904061435904?utm_source=share&utm_medium=member_desktop

**Precision Oncology News** Oct 11, 2022

Headline: Determinants of CAR T-cell clinical response in lymphoma and glioma.

Brief description: In this webinar, Zinaida Good, post-doctoral scholar at Stanford University, described how multimodal single-cell analyses identified and validated a CD19-CAR T-cell subset with hallmark features of T regulatory cells in blood early post-infusion, which is associated with clinical progression, less severe neurotoxicity, and diminished CAR T-cell expansion.

URL: https://event.on24.com/wcc/r/3948474/44A52BD893723D10FE2480ADDC996994?partnerref=10xGenomics

## SELECTED MEDIA OUTREACH *(Continued)*

**NBC Bay Area Interview** Jun 20, 2022

Headline: Santa Clara County preps vaccines for children under 5.

Brief description: The first boxes of the Pfizer and Moderna COVID-19 vaccines for kids ages six months to five years old arrived in Santa Clara County Monday. Back in February, Zinaida Good, the mother of the two children, talked to NBC Bay Area about how her sons fared after getting the vaccine; they both are still doing well. Report by Marianne Favro.

URL: https://www.nbcbayarea.com/news/coronavirus/some-bay-area-kids-have-already-received-covid-vaccines/2798119

**VJHemOnc Interview** Apr 12, 2022

Headline: AACR 2022 | Reverse fate mapping of CAR-T cells in patients with large B-cell lymphoma.

Brief description: In this video, Zinaida Good, PhD discusses reverse fate mapping of CAR-T cells in patients with large B-cell lymphoma and the importance of understanding how CAR-T cells change on the clonal level. Dr Good explains that because CAR-T therapy is extremely successful in large B-cell lymphoma, it is important to further analyze gene expression in CAR-T cells and see how this information can help researchers better understand which clones are likely to be more successful during treatment.

URL: https://www.vjhemonc.com/video/qbpht-xqncg-reverse-fate-mapping-of-car-t-cells-in-patients-with-large-b-cell-lymphoma

**VJHemOnc Interview** Apr 12, 2022

Headline: AACR 2022 | Improving our understanding of CAR-T therapy to avoid T-cell exhaustion.

Brief description: Zinaida Good, PhD discusses the need to better understand which features and phenotypes are the most beneficial in a CAR-T cell product to avoid T-cell exhaustion. Dr Good highlights the diversity in CAR-T products and a study which investigated CAR-T cells at the clonal level, and concludes by explaining how reverse fate mapping of CAR-T cells helps researchers and clinicians better understand the application of CAR-T therapy in various malignancies.

URL: https://www.vjhemonc.com/video/pvh7517miv0-improving-our-understanding-of-car-t-therapy-to-avoid-t-cell-exhaustion

**NBC Bay Area Interview** Feb 1, 2022

Headline: Some Bay Area kids have already received COVID vaccines.

Brief description: The FDA will now review trial data from Stanford on the COVID vaccine in toddlers. Parents and experts say they have not seen anything unusual during the trial. Baby Soren Good was only seven months when he received the Pfizer COVID vaccine developed for children under five as part of a clinical trial at Stanford. His 3-year-old big brother Andel also received two doses of the vaccine in April. Their mom Zinaida Good said her sons had no problems after the shots. Report by Marianne Favro.

URL: https://www.nbcbayarea.com/news/coronavirus/some-bay-area-kids-have-already-received-covid-vaccines/2798119

**VJHemOnc Interview** Nov 16, 2021

Headline: SITC 2021 | Discovering immunotherapy resistance mechanisms using single-cell technologies.

Brief description: Zinaida Good, PhD talks on the use of single-cell technologies to decipher the mechanisms of resistance to chimeric antigen receptor (CAR) T-cell therapy. Dr Good explains that measuring a large number of markers provides a better understanding of these mechanisms. For instance, a marker of T-cell senescence, CD57, was included in a recent study investigating which intrinsic features of CAR T-cells correlated with durable response, and emerged as the strongest association with treatment response.

URL: https://www.vjhemonc.com/video/ld3as-brcpw-discovering-immunotherapy-resistance-mechanisms-using-single-cell-technologies

**VJHemOnc Interview** Nov 16, 2021

Headline: SITC 2021 | CAR T-cell populations associated with treatment response in lymphoma.

Brief description: Zinaida Good, PhD discusses the results of a study investigating chimeric antigen receptor (CAR) T-cell features associated with durable response in patients with lymphoma. In this study, the number of CAR T-cells and the specific CAR-T populations present in blood were analyzed at peak expansion in 32 patients receiving axicabtagene ciloleucel (axi-cel) CAR-T cell therapy using high-dimensional single-cell proteomics analysis.

URL: https://www.vjhemonc.com/video/yjupchtljqi-car-t-cell-populations-associated-with-treatment-response-in-lymphoma

**NBC Bay Area Interview** May 13, 2021

Headline: Stanford testing babies, young children for COVID-19 vaccine trials.

Brief description: The Good family is part of a three-phase COVID-19 trial at Stanford University looking into the vaccine effects on younger children. 3-year-old Andel Good got one-tenth of the adult dose of Pfizer. So did 8-month-old Soren Good, who got the shot on Wednesday. Soren Good is believed to be the youngest child in Stanford's trial and so far has not gotten any side effects. Dr. Zinaida Good, who is also a Stanford researcher, said that both children didn't have any reactions of concern. Report by Damian Trujillo.

URL: https://www.nbcbayarea.com/news/local/race-for-a-vaccine/stanford-testing-babies-young-children-for-covid-19-vaccine-trials/2544587

**CNN Live Interview** Apr 29, 2021

Headline: Children as young as six months in Stanford vaccine trial.

Brief description: CNN's Victor Blackwell interviewed Dr. Zinaida Good, a postdoctoral fellow in cancer immunotherapy at Stanford about the importance of vaccinating kids against COVID-19 and her kids' participation in the Pfizer vaccine trial at Stanford University.

URL (transcript): https://transcripts.cnn.com/show/cnr/date/2021-04-29/segment/10

## SELECTED MEDIA OUTREACH *(Continued)*

**ABC News Interview** Apr 27, 2021

Headline: Children as young as 6 months old now in COVID-19 vaccine trials.

Brief description: As nearly 140 million American adults have received at least one dose of a COVID-19 vaccine, vaccine makers Pfizer and Moderna have moved on to the next phase of the fight against the virus: studying to see if the vaccine will be safe and effective for children. ABC News' Kayna Whitworth speaks with parents whose children are currently enrolled in early COVID-19 vaccine trials for children under 16 years old, and the researchers conducting the studies. Dr. Zinaida Good, a research fellow at the Stanford cancer center, enrolled both her sons in Stanford Hospital's Pfizer trial. Report by Jason Kuang, Imtiyaz Delawala, and Allie Yang.

URL: https://abcnews.go.com/US/children-young-months-now-covid-19-vaccine-trials/story?id=77353416

*Also aired on ABC7 Eyewitness News, 6ABC Action News, ABC7 New York, ABC13 Houston, and Good Morning America on April 27-29, 2023.

**Foresight Institute Vision Weekend** Dec 15, 2019

Headline: Zinaida Good | Reversing epigenetic aging and immunosenescent trends in humans.

Brief description: Vision Weekend is the annual member gathering of Foresight Institute, a non-profit for advancing beneficial technologies for the long-term flourishing of life. This salon took place at the Internet Archive, San Francisco, CA as part of the Foresight Institute Salon Series on Vision Weekend.

URL: https://www.youtube.com/watch?v=WEIAvVSP-hc

**TechCrunch Article** Jul 14, 2013

Headline: It's not a bird, plane or taco-copter. This wedding has a ring-dropping quadcopter. Author: Kim-Mai Cutler.

Brief description: A quadcopter disrupted the near-dominant hold that children have on ring-bearing at weddings and brought bands to Otavio Good and Zinaida Tebaykina. The procession music? The James Bond theme song.

URL: https://techcrunch.com/2013/07/14/wedding-ring-copter

## Written Press Releases

**AACR Press Release** Apr 6, 2024

Headline: 2024 Women in Cancer Research Scholar Awardees

Brief description: The AACR is very pleased to administer this important program, which provides funds for the participation of early-career, meritorious scientists at the AACR Annual Meeting 2024. Scholars are selected on the basis of their qualifications, references from mentors, and an estimation of the potential professional benefit to the awardees.

URL: https://www.aacr.org/professionals/meetings/aacr-travel-grants/women-in-cancer-research-scholar-awards/2024-women-in-cancer-research-wicr-scholar-awardees/

**Parker Institute for Cancer Immunotherapy Press Release** Mar 29, 2024

Headline: PICI Network Investigators to Unveil Cancer Research Breakthroughs at AACR 2024

Brief description: PICI Network Investigators and Collaborators will play a central role in driving the scientific discourse and showcasing the latest innovations in cancer immunotherapy at The American Association for Cancer Research (AACR) Annual Meeting 2024, taking place from April 5-10 in San Diego.

URL: https://www.parkerici.org/the-latest/pici-network-investigators-to-unveil-cancer-research-breakthroughs-at-aacr-2024/

**Stanford Cancer Institute Press Release** Mar 5, 2024

Headline: American Cancer Society Institutional Research Grants at SCI

Brief description: Zinaida Good, PhD, an instructor at the Stanford Institutes of Medicine, was awarded a $50,000 American Cancer Society-Stanford Cancer Institute (ACS-SCI) IRG Pilot Grant for her project entitled "Mitigating CAR T cell immunosuppression in the tumor microenvironment."

URL: https://med.stanford.edu/cancer/research/funding/ACS-SCI/ACS-SCI-2024-good.html

**Standard BioTools Press Release** Sep 1, 2023

Headline: Bringing the CyTOF advantage to CAR cell therapy research.

Brief description: Standard BioTools shares how new advancements in immunophenotyping are accelerating CAR cell therapy development and improving precision medicine. We were excited to attend a presentation by Zinaida Good, PhD, from the Stanford Institutes of Medicine. Her talk explained to engaged attendees how CyTOF technology-based single-cell phenotyping and functional analysis was crucial for identifying an immune signature associated with progressive disease.

URL: https://www.standardbio.com/resources/blog-articles/2023/09/event-car-tcr-2023

## SELECTED MEDIA OUTREACH *(Continued)*

**Parker Institute for Cancer Immunotherapy Press Release** Jun 27, 2023

Headline: Zinaida Good, PhD has been selected as a 2023 PICI Bridge Fellow. Author: PICI.

Brief description: Dr. Zinaida Good, an instructor co-mentored by Dr. Sylvia Plevritis (DBDS) and Dr. Crystal Mackall (Departments of Pediatrics and Medicine), has received a career development award from the Parker Institute for Cancer Immunotherapy. This award will support the development of engineered T cell immunotherapies with $650,000 over a 3-year period.

URL: https://www.parkerici.org/the-latest/ecr23/

**10x Genomics Press Release** Apr 6, 2023

Headline: A movement rises to guide CAR T-cell therapy development with single cell multiomics. Author: Olivia Habern.

Brief description: Scientists have leveraged single cell multiomics to uncover new predictive biomarkers for neurotoxicity, epigenetic targets for CAR T-cell exhaustion, and the role of the tumor microenvironment in driving relapse after CAR T therapy. Team of scientists, led by Dr. Zinaida Good and Dr. Jay Spiegel, found that $T_{reg}$ cells serve as a biomarker for reduced CAR T neurotoxicity.

URL: https://www.10xgenomics.com/blog/a-movement-rises-to-guide-car-t-cell-therapy-development-with-single-cell-multiomics

**10x Genomics Press Release** Apr 4, 2023

Headline: Behind the clinical trial: Advancing CAR T-cell therapies for kids with fatal brain cancer. Author: Natalya Ortolano.

Brief description: A pediatric oncologist, Sneha Ramakrishna, MD, and a computational immunologist, Zinaida Good, PhD, at Stanford University combined their skills to use single cell immune profiling to answer pressing scientific questions about an incurable pediatric cancer — diffuse intrinsic pontine glioma (DIPG).

URL: https://www.10xgenomics.com/blog/behind-the-clinical-trial-advancing-car-t-cell-therapies-for-kids-with-fatal-brain-cancer

**Teiko.bio Press Release** Feb 7, 2023

Headline: Post-infusion CAR $T_{reg}$ cells identify patients resistant to CD19-CAR therapy. Author: Carlos Medina.

Brief description: Good et al. at Stanford School of Medicine used a 37-marker mass cytometry to identify biomarkers associated with disease progression or severe neurotoxicity by profiling post-infusion CAR T cells from 31 patients with large B cell lymphoma treated with axi-cel. They linked a CAR $T_{reg}$ metacluster to progressive disease and validated this finding in a prospective cohort of 31 patients.

URL: https://teiko.bio/publication/good-2022

**STAT News Article** Oct 4, 2022

Headline: CAR-T therapy doesn't work in all cancer cases. Scientists are starting to figure out why. Author: Angus Chen.

Brief description: When CAR-T therapy works against blood cancer, it can work spectacularly, but cancer still returns for many patients. In lymphoma, scientists are just beginning to work out why over half of treated patients don't experience lasting remission, depending on the product. Now two separate research teams have identified a possible culprit in the mix of engineered immune cells in CAR-T therapy.

URL: https://www.statnews.com/2022/10/04/why-car-t-therapy-doesnt-work-in-all-cases

**Australian Broadcasting Corporation Article** Jul 27, 2021

Headline: Pfizer's COVID-19 vaccine is approved for children above 12, but where are we up to with younger kids? Author: Sarah Sedghi.

Brief description: Australia might have become the latest country to approve the Pfizer COVID vaccine for kids as young as 12, but what about the younger age group of kids right down to babies? At just 10 months of age, Soren Good and his 3-year-old brother Andel are among the youngest recipients of the Pfizer vaccine. Their mum Zinaida Good, a research fellow at Stanford University's Cancer Institute, came across the trial when she was looking for ways to protect her children. For her, having the whole family now vaccinated is a relief.

URL: https://www.abc.net.au/news/health/2021-07-28/pfizer-covid-vaccine-trials-in-us-babies-young-children/100324816

**Twin Cities Pioneer Press Article** Apr 15, 2021

Headline: Stanford begins testing Pfizer vaccine in babies and young children. Author: Lisa Krieger.

Brief description: The littlest research volunteers arrived at Stanford University on Wednesday, accompanied by their parents, to participate in a pivotal study of the COVID-19 vaccine in very young children. "We want our kids to be protected from the virus, and not to spread it to others if they do get infected," said Zinaida Good of Palo Alto, whose 3-year-old son Andel sat still for a shot, then went home to play and take a nap. The family's 7-month-old baby Soren is scheduled for a shot next month.

URL: https://www.twincities.com/2021/04/15/stanford-testing-pfizer-vaccine-babies-young-children

**The Iron Den News Article** May 12, 2020

Headline: Anti-aging GH, DHEA, Metformin. Author: Bigtex.

Brief description: Researchers recently published data showing how low-dose growth hormone (hGH) and DHEA combined with metformin (or possibly Berberine) can slow down biological aging and restore the size of the thymus gland. During the first week of the trial, rhGH alone (0.015 mg/kg) was administered to obtain an initial insulin response, and during the second week, rhGH was combined with 50 mg DHEA to evaluate insulin suppression by DHEA alone. During the third week, the same doses of rhGH and DHEA were combined with 500 mg metformin.

URL: https://www.theironden.com/forum/threads/anti-aging-gh-dhea-metformin.41986

## SELECTED MEDIA OUTREACH *(Continued)*

**Stanford Medicine Press Release** Mar 5, 2018

Headline: Researchers identify renegade cells that portend relapse in children with leukemia. Author: Erin Digitale.

Brief description: Analyzing individual cancer cells has enabled Stanford researchers to identify the small population of cells that spur relapse in some children with leukemia.

URL: https://med.stanford.edu/news/all-news/2018/03/researchers-identify-renegade-cells-that-portend-leukemia-relapse.html#:~:text=Researchers%20identify%20renegade%20cells%20that%20portend%20relapse%20in%20children%20with%20leukemia,-share&text=Analyzing%20individual%20cancer%20cells%20has,in%20some%20children%20with%20leukemia.

**Parker Institute for Cancer Immunotherapy Press Release** Mar 5, 2018

Headline: Predicting childhood leukemia relapse using machine learning. Author: PICI.

Brief description: Parker Institute for Cancer Immunotherapy researchers at Stanford University School of Medicine have developed a better way to test early on which childhood leukemia patients will relapse in the future. The method, used at the time of diagnosis, predicts which patients will relapse with 85 percent accuracy – a significant improvement over the traditional method.

URL: https://www.parkerici.org/the-latest/predicting-childhood-leukemia-relapse-using-machine-learning

**Cision PR Newswire Article** Jun 22, 2017

Headline: The Parker Institute for Cancer Immunotherapy trains the next generation of scientific leaders in cancer immunotherapy. Author: PICI.

Brief description: The Parker Institute for Cancer Immunotherapy announced six awards to support talented young researchers in cancer immunotherapy. Three programs provide up to $3.46 million in funding for six young researchers: Zinaida Good, M.S., Alexander Huang, M.D., Scott James, M.D., Ph.D., Andrew Rech, Ph.D., Ansuman Satpathy, M.D., Ph.D., Santosha Vardhana, M.D., Ph.D.

URL: https://www.prnewswire.com/news-releases/the-parker-institute-for-cancer-immunotherapy-trains-the-next-generation-of-scientific-leaders-in-cancer-immunotherapy-300477951.html

**Fast Company Article** Jul 15, 2013

Headline: Here comes the drone: Quadcopter serves as ring bearer in high-tech wedding. Author: Alice Truong.

Brief description: Drone delivery is poised to be a hot business. A quadcopter ceremoniously flew over a pool, bringing a pair of wedding rings for Otavio Good and Zinaida Tebaykina. The drone landed in the hands of the groom to much laughter and applause.

URL: https://www.fastcompany.com/3014302/here-comes-the-drone-quadcopter-serves-as-ring-bearer-in-high-tech-wedding

**Wikimedia Foundation Article** Jun 28, 2013

Headline: Everyone should edit Wikipedia: Zinaida Good profile. Author: Sarah Mitroff. Interview by Victor Grigas.

Brief description: Zinaida Good started editing Wikipedia in 2008, drawn in by an assignment from her cancer genetics professor. “You form what the world thinks by writing Wikipedia,” Good said. “It’s a scary thing, but as an editor, you help decide what the world knows, really. And isn’t that cool?”

URL: https://diff.wikimedia.org/2013/06/28/everyone-edit-wikipedia-zinaida-good-profile

**The Verge Article** Dec 5, 2011

Headline: DARPA challenge to read shredded documents solved. Author: Adi Robertson.

Brief description: A team called All Your Shreds Are Belong To U.S. has won the DARPA challenge to reconstruct shredded documents by using a combination of matching algorithms and human assembly. This information will be used to improve recovery of enemy documents and U.S. military security.

URL: https://www.theverge.com/2011/12/5/2612236/darpa-challenge-shredded-documents-solved

**Wired Article** Dec 2, 2011

Headline: Programmers shred Pentagon's paper puzzle challenge. Author: Katie Drummond.

Brief description: A team of California computer programmers have conquered the Pentagon's latest civilian research challenge. The military's way-out research arm, Darpa, today announced that the team of three, called "All Your Shreds Belong To Us," had scooped up the $50,000 prize.

URL: https://www.wired.com/2011/12/darpa-shredder-challenge-2

**TechCrunch Article** Dec 2, 2011

Headline: “All Your Shreds Are Belong to U.S.” wins $50,000 DARPA Shredder Challenge. Author: Jon Orlin.

Brief description: DARPA, the government agency whose work led to the creation of the Internet, challenged the public to reconstruct five shredded documents. The winning team, called “All Your Shreds Are Belong to U.S.” completed the task in 33 days, spending nearly 600 man-hours building algorithms and piecing together more than 10,000 shreds. 9,000 teams registered to compete. The winning teams gets a $50,000 prize paid for by the U.S. Treasury.

URL: https://techcrunch.com/2011/12/02/all-your-shreds-are-belong-to-u-s-wins-50000-darpa-shredder-challenge