

# Daniel J. Gomez

Graduate Student, Department of Biological Sciences, California State University, East Bay  
Snyder Lab, Stanford Genetics, Stanford Cancer Institute, Stanford University of School of Medicine

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## SUMMARY

Skilled and knowledgeable Computational Biomedical Data Scientist with a focus on multiomics analysis and single-cell spatial genomics, deep omics profiling, and spatiotemporal patterns in the structural hierarchical tissue organization, cell annotation, next-generation morphology, tumor nests, cell-cell interactions, data science/cloud computing and AI/ML precision medicine.

## Education

### *Predoctoral/Postbaccalaureate*

2022-25	<b>M.S., Biological Sciences</b> ( <i>Anticipated May 2025</i> ) Department of Biological Sciences California State University, Hayward, CA Department of Genetics Stanford University School of Medicine, Stanford, CA (Thesis Advisor: <u>Prof. Michael Snyder</u> )
2023-Present	Research, Genetics, Stanford (Snyder Lab)
Summer 2023	Research, Structural Biology, Stanford (Rogala Lab)
Summer 2022	Research, Biophysics, Stanford (Chiu Lab)
Winter 2025	GENE 211: Genomics Stanford University School of Medicine (Prof. Gavin Sherlock, Prof. Livnat Jerby, Prof. Michael Snyder)
09/2024	Comprehensive Cancer Biology Trainee Program Stanford Cancer Institute Stanford University School of Medicine, Stanford, CA

### *Undergraduate*

2020-22	<b>B.S., Biology: Cell and Molecular Biology</b> San Francisco State University, CA (Advisor: <u>Prof. Michael Goldman, Prof. Nicole Salazar-Velmeshev</u> )
06-08/2020	Research, Genetics, SFSU (Advisor: Scott Roy, PhD)
2010-13	Molecular Cell Biology, University of Hawaii at Manoa, HI

(Advisor: Prof. Paul Patek, Prof. Dr. Bruce Shiramizu)  
 08-05/2012-2013 Research, Tropical Medicine, Medical Microbiology, and Pharmacology  
 (Advisor: Prof. Dr. Bruce Shiramizu, Prof. Dr. Vivek Nerurkar)

2008-10 Communication Studies (Honors, Sigma Chi Eta Chapter), Ohlone  
 College, CA

Summer 2004 Dual Credit (Study Abroad: Thailand (English, Storytelling, Personal  
 Development), Modesto Junior College, CA

2007 Diploma, Modesto High School, Modesto, CA

### **Professional Experience**

2023- Graduate Student Researcher, Snyder Lab, Department of Genetics, Stanford  
 Cancer Institute (SCI), Stanford University School of Medicine

2023/24 Neuroimaging Assistant, Stanford Neurosurgery

2023 Visiting Graduate Student Intern, Rogala Lab, Department of Structural Biology,  
 Department of Chemical and Systems Biology, Stanford Cancer Institute (SCI),  
 Stanford Medicine

2022-23 Visiting scientist “User”, SLAC National Accelerator Laboratory

2022-23 Teaching Associate, Biological Sciences, CSU East Bay

2022-23 Virtual Volunteer Associate Fellow, Microbiology & Immunology,  
 Neurobiology and Anatomy, Drexel University College of Medicine

2022 Guest Speaker, California State University, Northridge

2022 Lab Assistant II of Operations, Roche Diagnostics (Roche Molecular Systems)

2021-22 Formulations Operator II, Robotics, Thermo Fisher Scientific

2020 Research Assistant of Physiological Sciences, Toxicology, University of Florida

2019 Manufacturing Associate Technician, Custom Primers, Thermo Fisher Scientific

2018 Client Relationship Manager, Software Developer, SDR, Poshprofiles (BAWF)

2015-16 R&D Coordinator, dosist (Previously known as hmbldt)

2015 Assistant General Manager, Amoura International

2014 Research Assistant of Anesthesia/Neuroanesthesia, UCSD School of Medicine

2013 Research Assistant of Department of Tropical Medicine, Medical Microbiology,  
 and Pharmacology, JABSOM

2012-13 Biology Assistant of Department of Tropical Medicine, Medical Microbiology,  
 and Pharmacology, John A. Burns School of Medicine (JABSOM)

2011 Teaching Assistant of Chemistry, University of Hawaii at Mānoa

2009 Computer Technical Specialist, NetXperts Inc.

2008 Computer Technician, Robert Half

### **Graduate Research Experience**

06/2024 Contextualizing Cellular Physiology Workshop  
 National Institute of Diabetes and Digestive and Kidney Diseases  
 National Institute of Health (NIH)

- 04/2024      HuBMAP Visible Human  
Luddy School of Informatics, Computing, and Engineering  
Cyberinfrastructure Network for Science Center  
Indiana University
- 02/2024      Certificate, Bioinformatics in Precision Medicine  
Fundamentals of Data Science in Precision Medicine and Cloud Computing  
Department of Genetics, Stanford University School of Medicine  
Stanford Data Ocean, Stanford Deep Data Research Center
- 08/2023      2nd Annual Spatial Biology Workshop (Angelo Lab)  
Department of Pathology, Stanford School of Medicine
- Summer 2023 Graduate Student Intern (SCI Faculty Support)  
Department of Structural Biology, Department of Chemical and Systems Biology  
Stanford Cancer Institute, Stanford University School of Medicine  
(Principal Investigator: Prof. Kacper Rogala)
- 05/2023      Image Processing Workshop for Cryo-Electron Microscopy  
S2C2 | Stanford-SLAC Cryo-EM Center
- Spring 2023      BIOE 320: Biological cryogenic microscopy and tomography  
Stanford Bioengineering, Schools of Engineering & Medicine  
(Professor Wah Chiu)
- 03-04/2023      SSRL RapiData 2023 Certificate: Data Collection and Structure Solving: A  
Practical Course in Macromolecular X-Ray Diffraction Measurement  
Structural Molecular Biology (SMB) Division, Macromolecular Crystallography  
Stanford Synchrotron Radiation Lightsource (SSRL)  
SLAC National Accelerator Laboratory  
(Advisor and Event Coordinator: Dr. Aina Cohen, Clyde Smith)
- 2012-13      Neurosciences, Neurovirology Graduate Courses (CMB606, TRMD607)  
Department of Cell and Molecular Biology  
Department of Tropical Medicine, Medical Microbiology, and Pharmacology  
John A. Burns School of Medicine (JABSOM), Honolulu, HI  
(Advisor: Bruce Shiramizu, MD, Vivek Nerurkar, PhD)
- Fall 2012      Translational Research in NeuroAIDS and Mental Health  
Neuroimmune Pharmacology Graduate Course  
Department of Neurology and Neurosurgery  
Division of Neuroimmunology and Neurological Infections  
Johns Hopkins University School of Medicine  
(Advisor: Avindra Nath, MD, Prof. Amanda Brown, PhD, Dr. Bruce Shiramizu)

## RESEARCH ACTIVITIES

### Research Emphasis

1. Interorgan communication, pathway network analysis and representation learning in omics data for biological insights and cancer knowledge networks
2. Exercise immunology high-dimensional multiplexed imaging interorgan molecular spatial omics mapping and spatiotemporal atlas construction and building
3. AI/ML, Bioinformatics and Computational Biology for precision medicine and health
4. Multiomics and multi-modal omics analysis integrated with spatial atlases and cell map for comprehensive understanding in cancer biology
5. Single-cell multiomics and spatial analysis in Human BioMolecular Atlas Program (HuBMAP) and Human Tumor Atlas Network (HTAN) data utilization for health and disease understanding of cellular and spatial architecture of TME and TLS and TIL scoring
6. Molecular Transducers of Physical Activity Consortium (MoTrPAC) insights integrated with Genotype-Tissue Expression (GTEx) Project data for predictive biomedicine
7. Multi-tissue multi-organ architecture integrative analysis of intra- & intercellular networks
8. Integrative analysis of gene circuits with PsychENCODE Consortium (PEC)

## SCHOLARLY PUBLICATIONS:

Peer Reviewed Publications: \*Co-Authors

1. T.H. Mulherkar\*, **D.J. Gomez\***, G. Sandel, P. Jain. “Co-infection and cancer: Host-Pathogen Interaction between Dendritic Cells and HIV-1, HTLV-1, and Other Oncogenic Viruses.” *Viruses*. 2022 Sep 14;14(9):2037. doi: 10.3390/v14092037. PMID: 36146843; PMCID: PMC9503663.
2. **D.J. Gómez\***. “Untangling the Microscopic World of Organelles, Cells, Tissues, and Organs: A Focus on the Dysfunctional Golgi Apparatus in Disease Research.” *Biology and Life Sciences Forum*. 2023; 21(1):15. <https://doi.org/10.3390/blsf2023021015>

Non peer-reviewed journal articles

1. **D. Gomez\***. Pioneering Organelle Structural Biology: Golgi apparatus dysfunction in Parkinson’s Disease, Neurodevelopmental Disorders, and Cancer. *Preprints*, 2022, 2022100383.

## CONFERENCE ABSTRACTS

1. **Gomez D.J.**, Mulherkar T., Sandel G., Jain P. “Co-infection and cancer: Viral oncogenesis in humans result in liver, blood, and brain cancer by host-pathogen interactions” 12<sup>th</sup> Annual American Association Cancer Research, Japanese Cancer Associate (AACR-JCA) Joint Conference. (2022)

## SYMPOSIUM POSTERS

1. **Gomez D.J.**, Mulherkar T., Sandel G., Jain P. “Co-infection and Human Cancer: Viral Oncogenesis leads to Host-Pathogen-Tumor-Body Interactions” 22<sup>nd</sup> Microbiology Student Group Symposium in Krutch Theater at Clark Kerr UC Berkeley Campus (2023)

## GRANTS

### Prior Funding

Undergraduate Research Opportunities Program (UROP)

04/22/2013 Office of the Vice Provost for Research and Scholarship (OVPRS)

University of Hawaii at Manoa

John A. Burns School of Medicine (PI: Bruce Shiramizu)

Role: Co-Investigator

IL-17 Production in CNS by Infiltrating T Cells and Glial Cells in the HIV-1-Infected Brain

The goal of this study to gain mechanistic insights into fronto-striatal brain wiring of neuroinflammatory pathways in HIV-Associated Neurocognitive Disorders (HAND) for the purpose of overcoming translational mental health roadblocks in precision medicine.

## EDUCATIONAL ACTIVITIES

### **Teaching**

*Classroom Instruction*

Cal State East Bay

Fall 2022 BIOL 230 (Clinical Microbiology) – 2 sections

Fall 2022 BIOL 270 (Human Anatomy & Physiology I) – 1 section

University of Hawaii at Manoa

Spring 2011 CHEM 161L (General Chemistry I Laboratory) – 2 sections

Modesto Junior College

Summer 2005 English Language – Thailand, Laos (Study Abroad)

*Tutoring*

2011 Private Organic Chemistry Tutor, University of Hawaii at Manoa

2011 Chemistry, Biology, Organic Chemistry (Learning Emporium)

### **Workshops/Seminars/Users' Meetings/Symposiums/Conferences/Series**

11/2024 Stanford Spatial Biology Symposium, 10x Genomics, Stanford University

11/2024 Gastric Cancer Summit 2024, National Cancer Institute, Stanford Medicine

10/2024 Spatial Biology Summit 2024, Stanford Pathology

10/2024 Giotto Suite Workshop 2024, Boston University

09/2024 Spatial Biology Summit 2024 (Angelo Lab), Stanford Pathology

09/2024 Comprehensive Cancer Biology Training Program, Stanford Cancer Institute, Stanford Medicine

08/2024 Global Immunotalks 2024

06/2024 Contextualizing Cellular Physiology Workshop, NIH, National Institute of Diabetes and Digestive and Kidney Diseases (NIDDK)

05/2024 AI in IO: Computational Immuno-oncology SITC-NCI Webinar Series

05/2024 2nd Annual Stanford RNA Program Symposium, Stanford Medicine

05/2024 Genomics and Personalized Medicine Symposium, Stanford Genetics

04/2024 Pediatric & Maternal Innovation Showcase 2024, Stanford Medicine, Children's

	Health, Stanford Healthcare Center
03/2024	Metabolic Health Center Annual Symposium, Stanford
03/2024	National Institute of Mental Health (NIMH) 75th Anniversary Symposium, NIMH's symposium Amplifying Voice and Building Bridges: Towards a More Inclusive Future
11/2023	IEDB Virtual User Workshop, La Jolla Institute for Immunology, Immune Epitope Database and Analysis Resource
09/2023	Stanford Genetics Structural Variants and DNA Repeats
08/2023	Global Immunotalks 2023
08/2023	Spatial Biology Workshop 2023 (Angelo Lab), Stanford Pathology
05/2023	Image Processing for Cryo-EM at S2C2-Stanford-Cryo-EM Center (SLAC)
10/2022	5 <sup>th</sup> Annual Cal State East Bay Hack Day (Hack the Outbreak)
10/2022	IEDB Virtual User Workshop. La Jolla Institute for Immunology. Immune Epitope Database and Analysis Resource. Funded by the National Institute of Allergy and Infectious Diseases (NIAID)
09/2022	Predicting cancer immunotherapy response by highly multiplexed tumor imaging (Certification)
09/2022	SSRL/LCLS Users' Meeting (Stanford-SLAC)
06/2022	UW-Madison, 42 <sup>nd</sup> Steenbock Symposium, "Opening Doors to Cryo-EM" Titan Krios G3 and G4 Workshop, Cryo-electron tomography, SerialEM
05/2022	Invited Speaker, CSU Northridge, "Data-Driven Discovery of Computational Oncology and Modern Molecular Biology"
08/2021	Global Immunotalks 2021
08/2020	Global Immunotalks 2020

### **Professional Societies**

2020-	The American Society for Cell Biology (ASCB)
2024-	Society for Immunotherapy of Cancer (SITC)
2023	Genetics Society of America (GSA)
2023-	American Society of Human Genetics (ASHG)
2022-	ISCB: International Society for Computational Biology
2022	ACA: The Structural Science Society
2022-	American Associate for Cancer Research (AACR)
2022-	Society for Neuro-Oncology (SNO)
2022	American Society for Virology (ASV)
2020	The American Society for Cell Biology (ASCB)
2020	American Society Biochemistry and Molecular Biology (ASBMB)
2013-	The American Association of Immunologist (AAI)
2012	Society of NeuroImmune Pharmacology (SNIP)

### **AREAS OF EXPERTISE**

#### Data Science & Analysis in Omics

- Biomedical Data Science
- Data Analysis
- Computational Biology
- Bioinformatics
- Bioimage Informatics
- Integration of Omics Data
- Precision Medicine

- Spatial Omics
- Single-cell Analysis
- Deep Profiling and Multiomics

### Biological Understanding

- Molecular Cell Biology
- Neuroscience
- Immunology
- Exercise Biology
- Physiological Sciences
- Cellular-level Understanding

- Multimodal DL/ML
- Predictive modeling
- Data integration

- Spatial Biology
- Biomarker Discovery
- Genetics and Genomics
- Developmental Biology
- Embryology (Maternal-Fetal Interface)
- Aging
- Cancer Biology

## **TECHNICAL SKILLS**

### **Biomedical Imaging & Image Analysis**

- Immunohistochemistry (IHC) assays
- Digital Pathology
- Immunofluorescence (IF) with confocal image analysis
- In Situ Hybridization / In Situ Imaging
- Spatial Biology (Spatial Multi-Omics) Pipelines
- Pathogenomics (Histology / Genetics)

- Neuroimaging (CT, MRI, PET)
- Annotation, Segmentation, Transforms
- Community, Cell Neighborhood Analysis
- Optical Imaging (Cryo-EM, Cryo-ET, Macromolecular Crystallography)
- Single-Cell Data Science and Spatial Bioinformatics

### **Molecular/Biotechnology Techniques**

- PCR/qPCR
- Animal Husbandry (Mus musculus)
- Molecular Cloning (Restriction Enzymes, Plasmids)
- Transformation/Transfection/Transduction
- Nanobiotechnology Protein Bioconjugation Tools Bioengineering
- Cell culture and metabolomics analysis

- Protein harvests (protein production from genome-engineered cells, select plasmids)
- Protein purification by column chromatography (affinity assays)
- Bradford assays for protein concentration
- SDS-PAGE Gel Electrophoresis
- Next-Generation Sequencing
- Attention to detail

### **Automation**

- Robotics Operation (Hamilton Microlab Star, Bravo Velocity)
- Handle and work with biological and

- chemical reagents
- Space Ranger and Loupe Browser (10x Genomics)

- High-throughput platforms

### Soft Skills

- Presentations
- Communication
- Work ethic
- Problem-solving
- Teamwork
- Adaptability
- Conflict management
- Time management
- Creativity
- Critical Thinking

### RECOGNITION

#### Invited Talks, Panels, Seminars

- 04/2023 Speaker, Grand Slam Graduate Research Presentation, “Virophysics and Structural Dynamics of HPgV-1 NS5B Using Computational Methods,” Hayward, CA
- 03/2023 Speaker, Cells 2023 Conference of MDPI/sciforum, “Pioneering organelle structural biology: Golgi apparatus dysfunction and cascades of fatal pathways in cancer,” Virtual.
- 01/2023 Speaker, Drexel Medicine, “Landscape of myeloid and astrocyte phenotypes in acute MS lesions and future technological directions,” Virtual. (Jain Lab)
- 10/2022 Speaker, Chemistry 2022: Global Virtual Summit on Chemistry & Pharmaceutical Chemistry, “Ribozyme mechanisms and Clinical Gene Therapy,” Virtual.
- 10/2022 Speaker, Cancer Webinar 2022: 5<sup>th</sup> International Webinar on Cancer Research and Oncology, “A human retrovirus in Neuro-Oncology, interventional conductome studies, and theranostics in Nuclear Medicine,” Virtual.

### OTHER PROFESSIONAL ACCOMPLISHMENTS

#### Oral Presentations

- 10/22 Microbiology & Immunology, Neurobiology & Anatomy, Drexel Medicine, Philadelphia, PA; **Gomez D.J.** Cancers: PCNSL outcome in EBV+/HIV Coinfection and HTLV connection in HIV/AIDS patients.
- 10/22 California State University, East Bay, Hayward, CA; **Gomez D.** HTLV-1: From neuroimaging to neurosurgery and biomarkers of neuroinflammation and neurodegeneration in HAM/TSP progression.
- 10/22 Hack the Outbreak. California State University, East Bay, Hayward, CA; **Gomez D.** PathAR.
- 09/22 California State University, East Bay, Hayward, CA; **Gomez D.** Deltaretrovirus: HTLV.
- 09/22 California State University, East Bay, Hayward, CA; **Gomez D.** “An intasome story: Structural basis of host protein hijacking in human T-cell leukemia virus integration.



## **Certifications**

01/2025	Fundamentals in AI/ML for Precision Medicine, Stanford Deep Data Research Center, Department of Genetics, Stanford University School of Medicine Stanford Data Ocean
08/2024-	CITI Group 7: IRB BioMed/GCP Research
05/2024	Artificial Intelligence in Clinical Digital Pathology, BrightTALK
05/2024	Computational pathology & Quantitative Biomarkers of the Tumor Microenvironment, BrightTALK
02/2024	Fundamentals of Data Science in Precision Medicine and Cloud Computing, Stanford Deep Data Research Center, Department of Genetics, Stanford University School of Medicine, Stanford Data Ocean
06/2023	Ergonomics – Computer Workstation, Stanford
04/2023	SSRL RapiData 2023: Data Collection and Structure Solving: A Practical Course in Macromolecular X-Ray Diffraction Measurement (Stanford/SLAC)
02/2023	Cells 2023 Conference, Cells MDPI Presentation
01/2023	MDPI Reviewer Certificate
10/2022	Cancer Webinar 2022 Presentation
10/2022	Chemistry 2022 Presentation
09/2022	Predicting cancer immunotherapy response by highly multiplexed tumor imaging
09/2022	Cyber Security for Lab Users, SLAC National Accelerator Laboratory
03/2019	IRB Training
03/2019	Life Sciences Responsible Conduct of Research Course (RCR)
06/2018	Medical School Pathology (192 hours)
06/2018	DNA Research with Biopython, Udemy
10/2017	Data Science and Machine Learning Bootcamp with R, Udemy
10/2017	Learn How To Code: Google's Go (golang) Programming Language, Udemy
09/2017	Python for Data Science and Machine Learning, Udemy