Daniel Joseph Gomez

Biological Sciences, Graduate Student, <u>California State University, East Bay</u>
Computational Biology (DS/CC/ML/AI/DL), <u>Snyder Lab</u>, <u>Stanford Genetics</u>, <u>Stanford Medicine</u>

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SUMMARY

Biomedical Data Scientist/Engineer with a focus on Computational Biology and Bioinformatics, specializing in Precision Medicine, Spatial Omics, and Microscopy. Experienced in leveraging multimodal data to drive personalized interventions and therapeutic strategies.

RESEARCH ACTIVITIES

Research Focus: Multiomics, Multi-modal omics analysis, exerkine mapping, inter-organismal (human and preclinical models), predictive biomedicine, Molecular Transducers of Physical Activity Consortium (MoTrPAC), Genotype-Tissue Expression (GTEx) Project, Human BioMolecular Atlas Program (HuBMAP), Human Tumor Atlas Network (HTAN), spatial maps at the single-cell level, multi-tissue architecture, deep omics profiling, predictive modeling, multimodal modeling, deep learning, data integration

Research Thesis Project: Leading a collaborative effort at Stanford University to map exercise-induced exerkines across organs using deep omics profiling and spatial omics. Integrate data from preclinical models and humans, analyzing multi-omics datasets to elucidate therapeutic implications for tissue microenvironments. Contribute to precision medicine research by exploring novel insights into the molecular mechanisms underlying exercise physiology.

Education and Training

Graduate

2022-	M.S., Biological Sciences: Genomics & Computational Biology/Bioinformatics
	Department of Biological Sciences
	California State University, Hayward, CA
	Department of Genetics
	Stanford University School of Medicine, Palo Alto, CA
	(Thesis Advisor: <u>Prof. Michael Snyder</u>)
2024-	HuBMAP Visible Human MOOC
	Department of Cyberinfrastructure for Network Science Center
	Indiana University
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

2023 2nd Annual Spatial Biology Workshop (Angelo Lab)
Department of Pathology, Stanford School of Medicine

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
(Advisor: Prof. Kacper Rogala)

2023 Image Processing Workshop for Cryo-Electron Microscopy
S2C2 | Stanford-SLAC Cryo-EM Center

2023 Biological cryogenic microscopy and tomography (BioE 320)
Stanford Bioengineering, Schools of Engineering & Medicine
(Advisor: Prof. Wah Chiu)

2023 Certificate, SSRL RapiData 2023: 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: Dr. Aina Cohen)

2012-13 Neurosciences, Neurovirology Graduate Courses
Department of Cell and Molecular Biology (CMB)
Department of Tropical Medicine, Medical Microbiology, and Pharmacology
(DTMMMP), John A. Burns School of Medicine (JABSOM), Honolulu, HI
(Advisor: Prof. Dr. Bruce Shiramizu, Prof. Vivek Nerurkar)

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: Dr. Avindra Nath, Prof. Amanda Brown, Prof. Dr. Bruce Shiramizu)

Undergraduate
2020-22 B.S., Cell and Molecular Biology, San Francisco State University, CA
(Advisor: Prof. Michael Goldman, Prof. Nicole Salazar-Velmeshev)
2010-13 Molecular Cell Biology, University of Hawaii at Manoa, HI
(Advisor: Prof. Paul Patek, Prof. Dr. Bruce Shiramizu)
2008-10 Communication Studies (Honors, Sigma Chi Eta Chapter), Ohlone College, CA

2003-09   Dual Credit (Study Abroad), Modesto Junior College, CA

Professional Experience
2023-   Graduate Student Researcher, Snyder Lab, Stanford Genetics
2023   Neuroimaging Data Scientist, Steinberg Lab, Stanford Neurosurgery
2023-   Vice President of STEM Programs, Myplaceisahappy1 (MPH1)
2023   Graduate Student Intern, Stanford Cancer Institute (SCI), Stanford Medicine
2022-23   Visiting scientist "User", SLAC National Accelerator Laboratory
2022-23   Teaching Associate of Biological Sciences, CSU East Bay
2022   Virtual Volunteer Associate Fellow, Microbiology & Immunology,
               Neurobiology and Anatomy, Drexel University College of Medicine
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, Poshprofiles
2015-16   R&D Coordinator, dosist
2015   Assistant General Manager, Amoura International Inc.
2014   Research Assistant of Anesthesia/Neuroanesthesia, UCSD SoM
2013   Research Assistant of DTMMMP, JABSOM
2012-13   Biology Assistant of DTMMMP, JABSOM
2011   Teaching Assistant of Chemistry, University of Hawaii at Mānoa

SCHOLARLY PUBLICATIONS:
Peer Reviewed Publications: *Co-Authors
1. **D.J. Gomez***, T.H. Mulherkar*, 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.
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

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.
2. **D. Gomez***. Unraveling the Structural Dynamics of Human Pegivirus-1 RNA- Dependent RNA Polymerase Using Computational Methods. *ResearchGate*, 2022.

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" 12th 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" 22nd Microbiology Student Group Symposium in Krutch Theater at Clark Kerr UC Berkeley Campus (2023)

GRANTS
<u>**Prior Funding**</u>
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
<u>IL-17 Production in CNS by Infiltrating T Cells and Glial Cells in the HIV-1-Infected Brain</u>

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 ACTIVITES
Teaching
Classroom Instruction
<u>Cal State East Bay</u>
Fall 2022   BIOL 230 (Clinical Microbiology) – 2 sections
Fall 2022   BIOL 270 (Human Anatomy & Physiology I) – 1 section

<u>University of Hawaii at Manoa</u>
Spring 2011   CHEM 161L (General Chemistry I Laboratory) – 2 sections

<u>Modesto Junior College</u>
Summer 2005   English Language – Thailand, Laos (Study Abroad)

Tutoring
2011   Private Organic Chemistry Tutor
2011   Chemistry, Biology, Organic Chemistry (Learning Emporium)

Workshops/Seminars/Users' Meetings/Symposiums/Conferences/Series
05/24   AI in IO: Computational Immuno-oncology SITC-NCI Webinar Series
05/24   2nd Annual Stanford RNA Program Symposium, Stanford Medicine
04/24   Pediatric & Maternal Innovation Showcase 2024, Stanford Medicine Children's Health
03/24   Metabolic Health Center Annual Symposium, Stanford
03/24   National Institute of Mental Health (NIMH) 75th Anniversary Symposium NIMH's symposium Amplifying Voice and Building Bridges: Towards a More

11/23	Inclusive Future
11/23	IEDB Virtual User Workshop. La Jolla Institute for Immunology. Immune Epitope Database and Analysis Resource
09/23	Beyond blotting: Boosting protein analysis with cell-based immunofluorescent assays
09/23	Stanford Genetics Structural Variants and DNA Repeats
05/23	Image Processing for Cryo-EM at S2C2-Stanford-Cryo-EM Center (SLAC)
10/22	5th Annual Cal State East Bay Hack Day (Hack the Outbreak)
10/22	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)
09/22	Predicting cancer immunotherapy response by highly multiplexed tumor imaging (Certified)
09/22	SSRL/LCLS Users' Meeting (Stanford-SLAC)
06/22	UW-Madison, 42nd Steenbock Symposium, "Opening Doors to Cryo-EM" Titan Krios G3 and G4 workshop, Cryo-electron tomography, SerialEM.
05/22	Invited Speaker, CSU Northridge, "Data-Driven Discovery of Computational Oncology and Modern Molecular Biology"

Mentoring (Advisees) — Graduate Students

2022	Daniil Mudrov, Cell and Molecular Biology, BS, CSUEB Biochemistry, Next-generation sequencing, Pharmacogenetics Now at MEDGENOME, Genentech, Biochemistry MS Student at St. Joseph's

Mentoring (Advisees) — Undergraduate Students

2023	Andreea Radu, Nursing Program, (CSUEB) Premed; Pathophysiology; Pediatrics
2023	UF Minority Health Professional Mentorship Program (MHPMP) Emmanuel Espinoza, Biochemistry, University of Florida (UF) Inorganic chemistry; Quantitative Chemistry, Biochemistry
2022	Courtney-Jane Lopez, CNA, Pre-Nursing (CSUEB) Clinical Microbiology; Nursing
2022	Anika Acharya, Pre-Nursing (CSUEB) Human Anatomy and Physiology; Nursing
2022	Yongtao Guan (Pre-med, CSUEB, Ohlone College) Clinical Microbiology; Nursing

Professional Societies

2024-	Society for Immunotherapy of Cancer (SITC)
2023	Genetics Society of America (GSEA)

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	American Society Biochemistry and Molecular Biology (ASBMB)
2013	The American Association of Immunologist (AAI)
2012	Society of NeuroImmune Pharmacology (SNIP)

RECOGINITION

Invited Talks, Panels

04/23	Speaker, Grand Slam Graduate Research Presentation, "Virophysics and Structural Dynamics of HPgV-1 NS5B Using Computational Methods," Hayward, CA
03/23	Speaker, Cells 2023 Conference of MDPI/sciforum, "Pioneering organelle structural biology: Golgi apparatus dysfunction and cascades of fatal pathways in cancer," Virtual.
01/23	Speaker, Drexel Medicine, "Landscape of myeloid and astrocyte phenotypes in acute MS lesions and future technological directions," Virtual. (Jain Lab)
10/22	Speaker, Chemistry 2022: Global Virtual Summit on Chemistry & Pharmaceutical Chemistry, "Ribozyme mechanisms and Clinical Gene Therapy," Virtual.
10/22	Speaker, Cancer Webinar 2022: 5th International Webinar on Cancer Research and Oncology, "A human retrovirus in Neuro-Oncology, interventional conductome studies, and theranostics in Nuclear Medicine," Virtual.

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
- Multimodal DL/ML
- Predictive modeling
- Data integration

Biological Understanding
- Molecular Cell Biology
- Neuroscience
- Immunology
- Exercise Biology

- Physiological Sciences
- Cellular-level Understanding
- Spatial Biology
- Biomarker Discovery
- Genetics and Genomics

- Developmental Biology
- Embryology (Maternal-Fetal Interface)
- Aging
- Cancer Biology

OTHER PROFESSIONAL ACCOMPLISHMENTS
Oral Presentations

10/22   Microbiology Control, 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

2024   Fundamentals of Data Science in Precision Medicine and Cloud Computing

2023   SSRL RapiData 2023: Data Collection and Structure Solving: A Practical Course in Macromolecular X-Ray Diffraction Measurement (Stanford/SLAC)

2022   Predicting cancer immunotherapy response by highly multiplexed tumor imaging

2022   Cyber Security for Lab Users, SLAC National Accelerator Laboratory

2019   IRB Training

2019   Life Sciences Responsible Conduct of Research Course (RCR)

2018   Medical School Pathology (192 hours)

2017   Python for Data Science and Machine Learning Bootcamp

2017   Data Science and Machine Learning Bootcamp with R