

Daniel Joseph Gomez

Cell and Molecular Biology, Graduate Student, California State University, East Bay
Computational Biology and Bioinformatics, Snyder Lab, Stanford Genetics, Stanford Medicine

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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.

AREAS OF EXPERTISE

Data Science & Analysis

Biomedical Data Science, Multimodal Analysis, Computational Biology, Bioinformatics, Bioimage Informatics, Integration of Omics Data

Expertise in Omics

Precision Medicine, Multiomics Analysis, Spatial Omics, Single-cell Analysis, Deep Profiling

Biological Understanding

Molecular Cell Biology, Exercise Biology, Spatial Profiling, Cellular-level Understanding, Biomarker Discovery, Bioengineering, Biophysics, Physiological Sciences

Drug Discovery & Development

Preclinical Drug Discovery, Drug Repurposing, Diagnostics Development, Therapeutics Development

Innovative Strategies

Engineering Principles, Innovative Strategies, Translational Research

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 single-cell multi-tissue architecture, deep omics profiling, human variation, 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: Computational Biology and Bioinformatics
Department of Biological Sciences
California State University, Hayward, CA
Department of Genetics
Stanford University School of Medicine, Palo Alto, CA
(Thesis Advisor: Prof. Michael Snyder)
- 2024- HuBMAP Visible Human MOOC
Department of Cyberinfrastructure for Network Science Center
Indiana University
- 2024 Fundamentals of Data Science in Precision Medicine and Cloud Computing
Certificate, Bioinformatics
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 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

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

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

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

2023- Matthew Williamson, Biological Sciences, MS, CSUEB
Cell and Molecular Biology, BS, CSUEB

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; Data science, Precision Medicine

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)

RECOGNITION

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.

Journal Reviewer

Biology

Cancers

Cells

Healthcare

International Journal of Molecular Sciences (IJMS)

Pharmaceuticals

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 DNA Research with Biopython
- 2017 Python for Data Science and Machine Learning Bootcamp
- Data Science and Machine Learning Bootcamp with R