CURRICULUM VITAE

Daniel Joseph Gomez

Graduate Student (Master's Level) *of Structural Biochemistry*
Department of Biological Sciences
Department of Chemistry and Biochemistry
California State University, East Bay, Hayward, CA, USA
&
Department of Structural Biology
Department of Chemical and Systems Biology
Stanford University School of Medicine, Palo Alto, CA, USA
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Research Interests and Pursuits

I delve into the intricate realm where structural biology, biophysics, biochemistry, and oncology intersect. My primary focus lies in the captivating field of Structural Oncology, where I strive to capture bioimages of macromolecules intricately involved in the hallmarks of cancer. By unraveling the underlying structural characteristics and molecular intricacies that drive tumorigenesis, I aspire to contribute significantly to our comprehension of cancer's development and progression. To accomplish this, I devote myself to mastering advanced imaging techniques, particularly CryoEM, which enables me to obtain near atomic resolution structures. Through this cutting-edge approach, I aim to illuminate the complex interplay between nutrient-sensing, nutrient-trafficking, and cancer signaling pathways, revealing vital insights into the mechanisms of cancer.

As a master's student with a deep interest in the research topic of CryoET in the context of human biology, I am eager to pursue this area for my PhD training. I am driven by the prospect of capturing high-resolution, three-dimensional views of biological macromolecules using cutting-edge imaging techniques. Collaborating with fellow researchers, I aim to contribute to the advancement of methods in this field, ensuring meticulous examination of intricate biological structures. Recognizing the undeniable value of multidisciplinary collaborations, I actively seek to engage with colleagues from diverse faculties and schools. Through these fruitful collaborations, I substantively contribute to the preparation of scholarly papers, placing particular emphasis on the results section. Moreover, I seize every opportunity to present my ongoing work at esteemed academic conferences, driven by a fervent commitment to disseminate knowledge, ignite scientific curiosity, and foster meaningful scientific discourse.

Ultimately, my overarching objective is to inspire structural oncologists and medicinal chemists alike, providing them with valuable mechanistic insights and paving the way for the development of novel small molecules and efficacious drugs. By targeting a wide array of cancers, including sporadic, infection-related, and familial variants, I aspire to make substantial contributions in the realm of cancer prevention and treatment, combating these devastating diseases through scientific innovation and determination.

Education & Research Experiences

Current:

M.S. Structural Molecular Biochemistry *2022/8–present*, **California State University, East Bay**
Department of Biological Sciences
Stanford University School of Medicine

Department of Structural Biology
Department of Chemical and Systems Biology
Stanford Cancer Institute
(Thesis Advisor: Kacper Rogala, PhD)

Image Processing for Cryo-EM
Theory and practices of CryoEM
2023/5, **Stanford-SLAC Cryo-EM Center (S2C2)**
SLAC National Accelerator Laboratory
(Carlos Sorzano, Marcos Cabezudo, Muyuan Chen, Greg Pinitilie, Tom Goddard)

Bioengineering
Biological cryogenic electron microscopy and tomography.
2023/4–2023/12, **Stanford University**
Schools of Engineering & Medicine
Department of Bioengineering
(Professor: Wah Chiu, PhD)

Getting started in Cryo-EM
Certificate Program
2023/3–present, **California Institute of Technology (Caltech)**
Department of Biology and Bioengineering
(Professor: Grant Jensen, PhD)

Virtual Associate Fellow
2022/6–present, **Drexel University**
College of Medicine (DUCOM)
Departments of Microbiology and Immunology, Neurobiology and Anatomy
(Advisor: Pooja Jain, PhD)

***Past*:**

RapiData 2023
Data Collection and Structure Solving Macromolecular X-Ray Diffraction Measurement
2023/3–2023/4, **SLAC National Accelerator Laboratory**
Stanford Synchrotron Radiation Lightsource (SSRL)
Structure Molecular Biology (SMB) program
U.S. Department of Energy (DOE) Office of Science
Stanford University

B.S. Biology:
Cell and Molecular Biology
2020/8–2022/5, **San Francisco State University**
College of Science & Engineering
Department of Biology
(Advisors: Nicole Salazar Velmeshev, PhD; Michael Goldman, PhD; Scott Roy, PhD)

Research Assistant
2020/1–2020/3, **University of Florida**
College of Veterinary Medicine (UFCVM),
Department of Physiological Sciences
(Advisors: Chris Vulpe, MD, PhD; Rola Zeidan, PhD)

R&D Coordinator
2015/12–2016/3, **hmbldt/dosist**

Research Assistant *2014/1–2014/6*, **UCSD School of Medicine**
VA San Diego Health Care
Department of Anesthesia, Division of Neuroanesthesia
(Advisors: Hemal Petal, PhD; Jan Schilling, MD; Brian Head, PhD)

Graduate Coursework *2012/8–2013/6*, **John A. Burns**
Neurosciences, Neurovirology **School of Medicine (JABSOM)**
University of Hawaii at Manoa
Department of Tropical Medicine,
Medical Microbiology, and Pharmacology (DTMMMP)
(Professors: Martin Rayner, PhD; Bruce Shiramizu, MD;
Vivek Nerurkar, PhD; Linda Chang, MD)

Johns Hopkins University School of Medicine (JHUSOM)
Department of Neurology and Neurosurgery
Division of Neuroimmunology and Neurological Infections
(Professors: Amanda Brown, PhD, Avindra Nath, MD)

Research Assistant *2012/8–2013/7*, **JABSOM, DTMMMP**
(Advisors: Bruce Shiramizu, MD; Vivek Nerurkar, PhD)

Molecular Cell Biology *2010/8–2013/6*, **University of Hawaii at Manoa**
Department of Microbiology
(Advisor: Paul Patek, PhD)

Positions & Employment

2023-	Graduate Student Intern, Department of Structural Biology, Stanford University School of Medicine, Stanford Cancer Institute
2023-	VP of STEM Programs, Myplaceisahappy1 (MPH1)
2023	Expert Consultant, Coleman Research
2023-	Chairman, President, Gome Writings Inc, ("Gome-Writer")
2023-	CEO, Director, Gomera Health Inc. ("Gomera")
2022-	Founder/Chief Executive Officer, Gome Bio LLC ("GomeBio")
2022	Founding Board Member, Myplaceisahappy1 (MPH1)
2022	Teaching Associate, Department of Biological Sciences, College of Science, California State University, East Bay
2022	Graduate Student Researcher, Department of Biology, CSUEB
2022-23	Visiting scientist "User", SLAC National Accelerator Laboratory
2022-	Virtual Associate Fellow, Department of Microbiology & Immunology, Neurobiology and Anatomy, Drexel University College of Medicine (DUCOM)
2022	Lab Assistant II/Production Supervisor, Roche Diagnostics (RTD)
2022	Person of Interest, Stanford-SLAC Cryo-EM Center (S^2C^2)
2021-22	Formulations Operator II, TAPP Robotics, Thermo Fisher Scientific
2021	Staff Research Assistant, Department of Bioengineering and Therapeutic Sciences, University of California, San Francisco (UCSF)
2020-21	Research Assistant, Department of Biology, SFSU

2020	Research Assistant, Department of Physiological Sciences, Toxicology, University of Florida College of Veterinary Medicine (UFCVM)
2019	Manufacturing Associate I, Custom Primers, Thermo Fisher Scientific
2018	Client Relationship Manager, Software Developer, PoshProfiles (BAWF)
2015-16	R&D Coordinator, hmbldt/dosist
2015	Assistant General Manager, Amoura International
2014	Research Assistant, Department of Anesthesia, Division of Neuroanesthesia, UCSD School of Medicine, VA Hospital
2013	Research Associate, DTMMMP, JABSOM, UHM
2012-13	Biology Assistant, DTMMMP, JABSOM, UHM
2011	Teaching Assistant, Department of Chemistry, UHM

Honors & Awards

2022	Faculty Member, Graduate, Department of Biological Sciences, CSUEB
2020	DiVERGE Awardee, Scripps Research Institute
2013	Grant Awardee, Undergraduate Research Opportunity Program (UROP), UHM

Poster Presentations

Co-infection and Human Cancer: Viral Oncogenesis leads to Host-Pathogen-Tumor-Body Interactions, *2023/4*, Berkeley, CA. 22nd Annual UC Berkeley Microbiology Student Symposium.

Co-infection and cancer: Viral oncogenesis in humans result in liver, blood, and brain cancer by host-pathogen interactions, *2022/12*, Honolulu, HI. 12th Annual American Association for Cancer Research (AACR) - Japanese Cancer Associate (JCA) Joint Conference.

Oral Presentations

Immunoreagent Design and Production in Vaccine Development: Rational Design, High-Throughput Production, and Integration of Structure and Computation, *2023/06*, Virtual meeting. Vaccines Research 2023 eConference (Vaccines-eCon2023). The Research Catalyst.

Unraveling the Structural Dynamics of HPgV-1 NS5B Using Computational Methods. Grand Slam Graduate Research Presentation Competition, Cal State East Bay Grand Slam 2023, CSU East Bay.

Pioneering organelle structural biology: Golgi apparatus dysfunction and cascades of fatal pathways in cancer, *2023/03*, Virtual meeting. Cells 2023 Conference. MDPI. sciforum.

Landscape of Myeloid and Astrocyte phenotypes in acute MS lesions + Future Technological Directions, *2023/01*, Virtual presentation. Drexel University College of Medicine, Department of Microbiology and Immunology, Neurobiology and Anatomy. (Jain Lab)

Structure-based discovery of RdRp NS5B in HPgV (GBV-C) by macromolecular crystallography (MX), *2022/12*, In-person & Virtual presentation. Cell and Molecular Biology Seminar: CSU East Bay.

Retron Library Recombineering (RLR): Going beyond CRISPR, *2022/11*, In-person & Virtual presentation. Cell and Molecular Biology Journal Club: CSU East Bay.

PathAR 6th Annual Cal State East Bay Hack Day, Hack the Outbreak, CSU East Bay, *Hackathon, and oral presentation*

Ribozyme mechanisms and Clinical Gene Therapy, *2022/10*, Virtual meeting. Chemistry 2022, Global Virtual Summit on Chemistry & Pharmaceutical Chemistry.

A Human Retrovirus in Neuro-Oncology, Interventional Conductome Studies, and Theranostics in Nuclear Medicine, *2022/10*, Virtual meeting. 5th International Webinar on Cancer Research and Oncology.

Cancers: PCNSL outcome in EBV+/HIV Confection and HTLV connection in HIV/AIDS patients, *2022/10*, Virtual presentation. Drexel University College of Medicine, Department of Microbiology and Immunology, Neurobiology and Anatomy. (Jain Lab)

HTLV-1: From neuroimaging to neurosurgery and biomarkers of neuroinflammation and neurodegeneration in HAM/TSP progression, *2022/10*, Virtual seminar. Cell and Molecular Biology Seminar: CSU East Bay.

Hackathon "Hack the Outbreak": PathAR, *2022/10*, In-person & Virtual presentation. CSU East Bay.

An intasome story: Structural basis of host protein hijacking in human T-cell leukemia virus integration, *2022/09*, Virtual seminar. Cell and Molecular Biology Seminar: CSU East Bay.

Deltaretrovirus: HTLV, *2022/09*, Virtual seminar. Cell and Molecular Biology Seminar: CSU East Bay.

Data Driven Discovery of Computational Oncology and Modern Molecular Biology, *2022/5*, Virtual seminar. Data Science Research and Career Seminar: CSU Northridge.

Journal Referee

- *Biology*
- *Cancers*
- *Cells*
- *Healthcare*
- *International Journal of Molecular Sciences (IJMS)*
- *Pharmaceuticals*
- *Viruses*

First/Co-first Author Publications

+:Co-first Author. *: Co-Corresponding Author

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

D.J. Gomez, G. Sandel, R. Kulkarni, J. Joseph, S. Maher, P. Jain***. Epitope-Based Vaccines and Immunotherapy for Infection-Related Cancers in People Living with HIV: Current Status, Challenges, and Future Directions.** *Frontiers in Cellular and Infection Microbiology. 2023* (In preparation)

D. Gomez*. Unraveling the Structural Dynamics of Human Pegivirus-1 RNA-Dependent RNA Polymerase Using Computational Methods. *ResearchGate* 2022. DOI: 10.13140/RG.2.2.11957.35041

D. Gomez*, Pioneering Organelle Structural Biology: Golgi apparatus dysfunction in Parkinson's Disease, Neurodevelopmental Disorders, and Cancer. *Preprints*, 2022, 2022100383. doi: 10.20944/preprints202210.0383.v2.

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.

Teaching, Training, Mentoring Experience

University Service (University of Florida)

Spring 2023 -	UF MHPMP Mentor, Minority Health Professional Mentorship Program (MHPMP), Pre-Health Club

Instructional Activities (CSUEB)

Fall 2022	BIOL230 (Clinical Microbiology), (4 unit course) - 2 sections
Fall 2022	BIOL270 (Human Anatomy & Physiology I), (4 unit course) - 1 section

Instructional Activities (University of Hawaii)

Spring 2011	CHEM161L (General Chemistry I Laboratory), (1 unit course) - 2 sections

University Service (University of Hawaii)

2011	Tutor, Chemistry, Biology, Organic Chemistry (Emporium)

University Service (Modesto Junior College)

2005	Teacher, English Language; Thailand, Laos (Study Abroad)

Undergraduate Student Mentees

2023-	Emmanuel Espinoza, Biochemistry, University of Florida (UF)
2022	Courtney-Jane Lopez, CNA, CSUEB, Pre-Nursing
2022	Daniil Mudrov, CSUEB, Cell and Molecular Biology (RA, MEDGENOME > Genentech)

2022	Yongtao Guan, CSUEB, Ohlone College, Pre-med (MCB)
2022	Arielle Vue, CSUEB, Pre-Nursing

Volunteering

Professional Service

2022-	Founding Board Member, VP of STEM Programs, Myplaceisahappy1 (MPH1)
2022-	Volunteer Reviewer (VR), MDPI
2012	Volunteer, Physician Shadowing, Dr. Thomas Slavin, Pediatrics and Clinical Genetics, Medical Genetics section, City of Hope

Community Service

2022	Volunteer, St. Michael's Church
2022	Lighting Designer, Fountain Church
2014	Market Research, Berkeley Human Society
2014	Community Wellness Advocate, American Cancer Society
2014	Anesthesiology Technician, VA San Diego Health Care, VA Medical-Center

University Service (University of Florida)

2019-20	Scientific Ambassador, Microbiology

University Service (University of Hawaii)

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

Certifications & Licensure

2023	SSRL RapiData 2023: Data Collection and Structure Solving: A Practical Course in Macromolecular X-Ray Diffraction Measurement SLAC SSRL
2023 (*pending*)	Deep Learning with PyTorch for Medical Image Analysis
2023 (*pending*)	Reinforcement Learning beginner to master - AI in Python
2023 (*pending*)	Modern Artificial Intelligence Masterclass: Build 6 Projects
2023 (*pending*)	Deep Learning: Convolutional Neural Networks (CNN) in Python
2023 (*pending*)	A deep understanding of deep learning (DL)
2023	The Complete Quantum Computing Course
2023	Scientific Computing with NumPy - Python Data Science
2023	Writing High Performance Python
2023	Database Design
2023	Beginning C++ Programming - From Beginner to Beyond
2023	Complete linear algebra: theory and implementation in code
2023	Reviewer Certificate (MDPI Journal - *Biology, Cancers, Pharmaceuticals, IJMS, Viruses, Cells, Healthcare*)
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 – Certificate of Achievement

2018	Modern Golang Programming, Packt Publishing
2018	Learning Path: Go: Building Cloud Native Go Applications, Packt
2018	Mastering Go Programming, Packt Publishing
2017	DNA Research with Biopython
2017	Data Science and Machine Learning Bootcamp with R
2017	Google's Go (golang) Programming Language
2017	Python for Data Science and Machine Learning
2016	Intro to SQL for Data Science Course - DataCamp

Professional Trainings & Workshops

2023	Image Processing for Cryo-EM at Stanford-SLAC-Cryo-EM Center
2023	RapiData 2023 at SSRL: Data Collection and Structure Solving: A Practical Course in Macromolecular X-Ray Diffraction Measurement, SLAC National Accelerator Laboratory, Stanford Synchrotron Radiation Lightsource (SSRL), SMB, U.S. Department of Energy, Office of Science
2022	5th Annual Cal State East Back Hack Day (Hack the Outbreak): Created an AR prototype of a epitope based measles vaccine to MV-H:SLAM fusion
2022	The Upside of Downturns Summit, Startup Grind Silicon Valley, SF Bay Area
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)
2022	SSRL/LCLS Users' Meeting | Stanford-SLAC National Accelerator Laboratory
2022-	Stanford-SLAC Cryo-EM Center (S^2C^2), SCSC – Training on Electron Microscopes and Computers (Under the direction of Wah Chiu), cryo-FIB/SEM milling
2022	UW-Madison, Department of Biochemistry, 42nd Steenbock Symposium, Opening Doors to Cryo-EM, Titan Krios G3 and G4 workshop, Cryo-electron tomography, SerialEM

Technical Strength

Languages: English (Native), Spanish (Communicative), French (Novice), Arabic (Novice), Hebrew (Beginner)

Digital Proficiency: Benchling, Photoshop, Illustrator, Biorender, Linux, GitHub, Shell scripting, Shiny

Programming Languages: Go  , R  , Python  , C++  , HTML, MATLAB, Bash.

Bioinformatic Tools and Databases: BioPerl, Biopython, IGV, APE, BLAST, Bedtool, Bioconductor, RNAseq, scRNAseq, Seurat, 10X Genomics pipelines, Proteomics, The Cancer Genome Atlas (TCGA), nucamino, COSMIC, Roche Cancer Genome Database (RCGDB)