CURRICULUM VITAE

Daniel Joseph Gómez Santos

Structural Molecular Biology Graduate Student of Biological Sciences
California State University, East Bay, USA
Stanford Synchrotron Radiation Lightsource (SSRL)
SLAC National Accelerator Laboratory, USA
and
Director of Multiomics, ML Scientist/AI Engineer, Gomera Health Inc.
and
Neuroendovascular Researcher of Neurosurgery
College of Medicine, University of Florida, USA
and
Research Associate of Microbiology and Immunology, Neurobiology and Anatomy
College of Medicine, Drexel University, USA

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Research Interests

With over a decade of experience in neurology and immunology, I am excited to pursue a Master's degree in Biology with a concentration in Structural Immunology to further advance my knowledge and research capabilities in this field. My research interests lie in investigating the molecular mechanisms underlying immune responses in the context of neurological diseases, including neurodegeneration and neuro-oncology. Specifically, I am interested in exploring the role of neuroinflammation and inflammageing, as well as the acute neuroinflammation associated with neuro-oncology by means of inflammasomes such as AIM2 assembly and signaling.

Furthermore, I am keen to investigate the potential of the ESX-1 secretion system in *Listeria monocytogenes (Lm)* and associated secreted proteins as molecular targets for immunotherapeutic interventions. My ultimate goal is to develop a combinatorial approach to cancer medicine that targets multiple mechanisms in a single treatment, such as a combination of therapies that target the AIM2 inflammasome, ESX-1 secretion system, and immune checkpoint inhibitors (ICIs) to address immune evasion in brain cancers like glioblastomas.

Through my graduate studies, I aim to contribute to the development of effective and personalized immunotherapeutic approaches for neurological diseases, leveraging my expertise in neurovirology, co-infection, and cancer, as well as my strong background in clinical neuroimmunology, structural molecular biology, and computational biophysics.

Education & Research Experiences

Biomedical Neuroscience
Graduate Certificate Program
(Anticipated) 2023/8–2024/12, **University of Florida**
College of Medicine (UFCOM)
Department of Neuroscience

Bioengineering
Non-Degree Graduate Student
Biological cryogenic electron microscopy and tomography
(Anticipated) 2023/4–2023/12, **Stanford University**
Schools of Engineering & Medicine
Department of Bioengineering

Medical Microbiology and Biochemistry
Non-Degree Graduate Student
(Anticipated) 2023/7–2024/1, **University of Florida**
College of Agriculture and Life Sciences
Department of Microbiology and Cell Science

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
Stanford University

Research Assistant
2023/1–present, **University of Florida**
College of Medicine (UFCOM)
Lillian S. Wells Department of Neurosurgery
(Advisor/Co-author): Neurosurgery Resident, Brandon Lucke-Wold, MD, PhD

M.S. Biological Sciences:
Structural Biochemistry
SMB program: RapiData 2023 at SSRL
2022/8–present, **California State University, East Bay**
SSRL, SLAC National Laboratory
UCSF Crystallography Facility
Thesis Committee: Aina Cohen, PhD (Stanford),
James Hurley, PhD (UC Berkeley),
Monika Sommerhalter, PhD (CSUEB)

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

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*, **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 *2013/6–2012/8*, **John A. Burns**
Neurosciences, Neurovirology **School of Medicine (JABSOM)**
University of Hawaii at Manoa
Department of Tropical Medicine,
Medical Microbiology, and Pharmacology (DTMMMP)

Johns Hopkins University
School of Medicine (JHUSOM),
Department of Neurology and Neurosurgery,
Division of Neuroimmunology and Neurological Infections

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-	Director of Multiomics, Biomedical Research Engineering-Scientist (ML Scientist/ AI Engineer), Gomera Health
2023-	Head of Neuroinformatics and Clinical Biomarkers Program, GomeBio
2023-	VP of STEM Programs, Myplaceisahappy1 (MPH1)

2023-	Research Assistant (co-author), Department of Neurosurgery, UF College of Medicine (Dr. Hoh's Cerebrovascular Research Lab)
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-	Visiting scientist"user", SLAC National Laboratory
2022-	Research Associate, 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

Editorial Team

Academic Editor
- *Cancers: Neuro-oncology and neurotrauma*
- *Cancers: Diagnostic imaging in lung cancer*

Editorial Board Member
- *Bioengineering*

Journal Referee

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

First/Co-first Author Publications

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

D.J. Gomez**. Immunoreagent Design and Production in Vaccine Development: Rational Design, High-Throughput Production, and Integration of Structure and Computation.** *Vaccines*. 2023 (In preparation)

D.J. Gomez, B. Lucke-Wold, K. Hosaka, B. Hoh**. Neuroendovascular embolization procedure optimization for aneurysm subarachnoid hemorrhage healing by drug eluting biomedical devices, robotics, and artificial intelligence.** *Bioengineering*. 2023 (In preparation)

D. Gomez, G. Sandel, R. Kulkarni, J. Joseph, P. Jain**. Epitope discovery, structure-based antigen design, and immunotherapy applications against infectious diseases and cancer.** (In preparation)

D. Gomez* and M. Borja. **Ribozymes as Precision Weapons: Revolutionizing Gene Therapy for Incurable Diseases.** *International Journal of Molecular Sciences*. 2023 (In preparation)

D.J. Gomez*. **Structural Predictions of HPgV-1 (NS5B).** *ResearchGate* 2022.

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.

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.

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.

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.

Poster Presentations

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.

Teaching, Training, Mentoring Experience

University Service (University of Florida)

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)

Interns

2023- Salma Maher, CMB & Physical Biochemistry Intern at Gomera Health Inc.
2022 Chier Hu, PhD, Computer Engineer Intern at Gome Bio LLC

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

2023- Editorial Board Member, *Bioengineering* MDPI,
2023- Academic Editor, *Cancers* MDPI, Special Issue: Diagnostic imaging and lung cancer
2023- Academic Editor, *Cancers* MDPI, Special Issue: Neuro-oncology and neurotrauma
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 (*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 - *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	Vaccine Technology Workshop. World Vaccine Congress, Washington, DC.
2023	HIV Workshop. World Vaccine Congress, Washington, DC.
2023	Biodefense: Vaccines & Antibodies. World Vaccine Congress, Washington, DC.
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).

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)
Other Skills: Benchling, Photoshop, Illustrator, Biorender, Linux, GitHub, Shell scripting, Shiny, Communication, Time management, Problem solving, Listening, Critical thinking, Collaboration, Leadership

References

Professor Amanda Brown
Neurovirology Professor and Director, Advisor
Associate Professor of Neurology and Neuroscience
Department of Neurology - Neuroimmunology and Neurological Infections, Neuroscience Johns Hopkins Medicine
Phone number: +1 (410) 614-2429
Email: abrown76@jhmi.edu

Professor Michael Goldman
Genetics & Honors Genetics Professor and Advisor
Former Chair, Department of Biology, San Francisco State University
Phone number: +1 (415) 388-7671
Email: goldman@sfsu.edu

Avindra Nath, M.D.
Professor, Advisor
Senior Investigator, Section of Infections of the Nervous System
Clinical Director, NINDS/NIH
Phone number: +1 (301) 496-1561
Email: natha@mail.nih.gov

Professor Nicole Salazar Velmeshev
Cancer Biology Professor and Advisor
Assistant Professor, Department of Biology, San Francisco State University
Phone number: +1 (415) 388-1184
Email: nsave@sfsu.edu