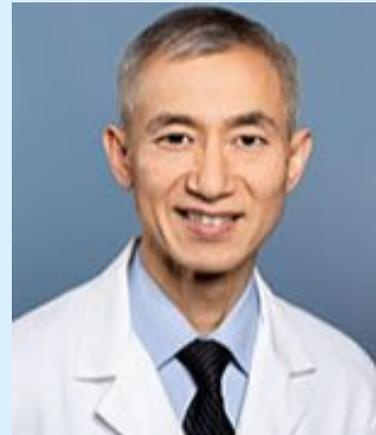




The BMM I-DARE Taskforce is proud to announce our first cohort of the BMM-EEOP Faculty-Mentee program! Thanks to funding from the **Office for Health Equity, Diversity, and Inclusion**, BMM will support three paid positions for undergraduate researchers from the EEOP **Biology Undergraduate Scholars Program** (BUSP) to conduct research with our BMM faculty. The funding will allow these UC Davis students from diverse backgrounds to focus on research and academics without having to work additional jobs for support. We are grateful that we had several BMM faculty members volunteer to be a mentor, providing a great selection for our students. Our mentor-mentee matching process is complete, and we are excited to introduce our faculty-student mentorships. We look forward to following the development of these second-year BUSP students as they enter their first research lab experience beginning in Winter 2023!



As seen from left to right, Bryan Correa Gonzalez (Biological Sciences), Madelynn Yung (Neurobiology, Physiology, and Behavior), and Natalie Chrisman (Biological Sciences), and their faculty mentors, Dr. Alan Lombard, Dr. Flora Tassone, and Dr. Jeremy Chien, respectively.

## A Lookback at Our Annual Retreat

Over 65 faculty, students, and staff gathered at the UC Davis MIND Institute Auditorium for our department's first in-person **retreat** in several years on Friday, October 14.

**Dr. Luis Fernando Santana**, department chair, discussed the state of the department, highlighting the scientific achievements of several faculty members. The I-DARE

committee then reviewed a strategic plan focused on expanding diversity and inclusion and prioritizing retention of all department members. Robust and engaging discussion sessions, highlighted by attendee questions, comments, and suggestions, followed on three key areas of interest: How do we improve diversity at many levels? What would make you feel like you belong to a department? How should we treat each other? The retreat concluded in the afternoon with a **data blitz session**, which provided 16 students and postdoctoral scholars with opportunities to present their projects on research topics spanning from translational research and ontogenetic drivers to small molecule drug development, biosensors, and more.

We appreciated the presence of all those who were able to attend the retreat, and we look forward to hosting more department events in the future. Please look out for a survey to provide feedback about the retreat in the next few weeks.

## An Outreach Program Story

### Prevalence of expanded *FMR1* alleles in Ricaurte, Colombia: *a genetic cluster*



926 participantes  
(502 females and 424 males)



Saldarriaga et al., 2018

	General population	Ricaurte	
Males with the full mutation	1:6000	1:20	~300 fold higher
Females with the full mutation	1:8300	1:46	~200 fold higher
Males with the premutation	1:730	1:85	~9 fold higher
Females with the premutation	1:164	1:25	~7 fold higher



NBS on 17,895 newborns in the US (9,165 males and 8,730 females) revealed 79 premutation carriers – 27 males and 52 females leading to an estimated prevalence of 1:339 males and 1:168 females (Tassone et al. 2012)

As an expert on fragile X syndrome and associated disorders, **Dr. Flora Tassone**, professor of biochemistry and molecular medicine, has been integrally involved for many years in outreach programs in several countries around the world. One such program — **“The Colombian Project of Hope”** — is a mission aimed to build hope for the future. The project began in November 2013 as a collaborative effort between the Universidad del Valle in Cali, Valle del Cauca, Colombia, the Universidad Nacional in Bogotá, Colombia, and the University of California, Davis. During a visit to Colombia, Dr. Tassone met many families with fragile X disorders. She had the “great honor” of visiting Ricaurte, a town of approximately 1,400 people in the Cundinamarca District of Colombia. Ricaurte, which has a very high prevalence of individuals with an intellectual disability, has been unfairly ridiculed as “the town of dummies” in Colombia.

In collaboration with Prof. Wilmar Saldarriaga at the Universidad del Valle in Cali and with several researchers at UC Davis, Dr. Tassone is leading a scientific study to characterize the prevalence of *FMR1*, a fragile X gene mutation, in Ricaurte’s

population. Over a thousand people were screened in Dr. Tassone's laboratory. The study demonstrated that the prevalence of *FMR1*-expanded alleles in the premutation and full mutation range, in both men and women, is respectively 10- and 200- to 300-fold higher than in the overall general population.

Having found a high prevalence of mutations in the fragile X gene, the study identified the town of Ricaurte as a genetic cluster for fragile X syndrome, providing an explanation for the high incidence of intellectual disability in this region. These findings underscored the need for support of medical and clinical treatments in Colombia. Indeed, very importantly, a few years into the program, Ricaurte has now a medical doctor and support staff in place and a location where the population has access to health care. The project has so far generated 10 peer reviewed papers. Dr. Tassone, together with other faculty members at UC Davis, recently returned to Ricaurte to meet with local authorities, medical professionals, and the families that have been followed through these eight years of the study. She participated in a special event that featured a documentary about the efforts titled "*The Colombian Project of Hope*," which was well-received and appreciated by the Ricaurte families with fragile X syndrome. In the near future, this documentary will be released and featured at the UC Davis MIND Institute.

## Faculty, Staff and Student Recognitions

### A Passing of Note

**Dr. Michael F. Seldin, professor emeritus of biochemistry and molecular medicine, passed away on Friday, October 14, 2022.** Michael was a department member for many years since moving to Davis with his family in 1996. In a note to department faculty, Dr. Luis Fernando Santana wrote that Michael was "a dear friend and colleague to many of us" and "an accomplished biochemist, focusing on genetics and genomics of complex diseases. Michael will be sorely missed by his family and friends." His obituary, published in [The Davis Enterprise](#), can be read [here](#).



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### Awards and Grants

**Congratulations to Dr. [Justin Siegel](#), who was named a Fellow of the National Academy of Inventors in recognition of his work on computational enzyme engineering and discovery. Dr. Siegel holds over 100 patents and co-founded 8 startups in the past decade, including [PvP Biologics](#), [Peak B](#), [Digestiva](#), and [VinZymes](#). Read more » [Two UC Davis faculty named Fellows of the National Academy of Inventors](#).**

Congratulations to Dr. [Luis Carvajal-Carmona](#) and his team, who received D43 training grant funding from the National Cancer Institute Center for Global Health to establish a training program for cancer prevention and precision medicine in low- and middle-income countries in Latin America. Dr. Laura Fejerman, professor of population health sciences, is MPI. Read more » [NIH RePORT](#) » [RePORTER site](#).

Congratulations to April Vang, a junior specialist in Dr. [Luis Carvajal-Carmona's](#) laboratory, who was awarded a Diversity Supplement by the National Cancer Institute.

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## In the News

The Graduate School of Management is partnering with the Innovation Institute for Food and Health and the Barnstorm Foundry to evaluate emerging food technologies. Dr. [Justin Siegel](#) — the institute's faculty director — comments on the partnership's "critical role" in this [UC Davis story](#). Read more » [UC Davis and Barnstorm Foundry Announce Partnership to Identify New Markets for Food Tech](#).

As part of an ongoing virtual event series called "Plugged In," Dr. [Justin Siegel](#) spoke to Dr. [Jonna Mazet](#) about how UC Davis is helping to solve the biggest issues in our food system today by developing new products and devices that can guide consumption decisions. Read more » [Faculty experts tackle the world's grand challenges](#).

## Conferences, Seminars and Workshops

### Conference Presentations

Last week, in London, Dr. [Flora Tassone](#) presented "Cis- and trans-activating factors drive somatic instability at FMR1" at the 3<sup>rd</sup> London International Mosaicism Symposium, hosted by the Francis Crick Institute. Read more » [3<sup>rd</sup> London International Mosaicism Symposium](#).

Jason Dong, Akash Pal, and Erin Scott, members of Dr. [Lin Tian's](#) laboratory, presented on their research at the mid-November annual meeting of the Society for Neuroscience in San Diego. Read more » [The Tian Laboratory at SfN](#).

Dr. [Luis Carvajal-Carmona](#) presented "The need to diversify DNA databases and precision medicine tools: Implications for advancing health equity" at the Genome Center's Annual Halloween Symposium. Read more » [Genome Center's Annual Halloween Symposium](#).

Dr. [Flora Tassone](#) presented "La genética de los trastornos del neurodesarroll" (The genetics of neurodevelopmental disorders) at "I Congreso Panamericano de Autismo, Síndrome X-Fragil y Trastornos del Neurodesarrollo" — a conference on autism, fragile X syndrome, and neurodevelopmental disorders — held in Cartagena, Colombia. Read more » [I Congreso Panamericano de Autismo, Síndrome X-Fragil y Trastornos del Neurodesarrollo](#).

Dr. **Luis Carvajal-Carmona** presented “Genetics, Genomics and Precision Medicine of Gastric Cancer in Latinos” at the Sequencing Strategies for Population and Cancer Epidemiology (SeqSPACE) webinar series, hosted by the National Cancer Institute’s Epidemiology and Genomics Research Program, in early October. Read more » [Sequencing Strategies for Population and Cancer Epidemiology Studies \(SeqSPACE\) Webinar Series](#).

Dr. **Luis Carvajal-Carmona** was invited to present on a panel at the American Association of Cancer Institutes annual meeting in Kansas City in early October. His talk at the “Next Generation of Precision Oncology” session focused on diversifying models for pre-clinical research. Read more » [2022 AACI/CCAF Annual Meeting Program](#).

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## Integrated Biomedical Sciences Seminar Series

The Integrated Biomedical Sciences Seminar Series featured two seminars on Tuesday mornings this month: the first on December 6, at 10 a.m. and the second on Tuesday, December 13, also at 10 a.m. Further details about this series can be found by visiting the seminar [calendar](#).

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## BMM Department Seminar Series

The BMM Department Seminar Series welcomed Yiyang Gong, Ph.D., Assistant Professor, Department of Biomedical Engineering, Duke University, hosted by [Lin Tian](#), Ph.D., this past week. For future talks, visit the series [webpage](#).

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## BMM Research in Progress Seminar Series

The BMM Research in Progress Seminar Series will host three BMM faculty — [Hongwu Chen](#), Ph.D., [Colleen Sweeney](#), Ph.D., and [Luis Carvajal-Carmona](#), Ph.D. — over the coming months. Dr. Chen delivered the first of these talks yesterday, Thursday, December 15, from 12-1 p.m. Full details about future talks can be found by visiting the seminar [calendar](#).

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## Frontiers in Pharmacology Seminar Series

The Frontiers in Pharmacology Seminar Series welcomes upcoming speakers throughout 2023. To view scheduled talks, visit the series [webpage](#).

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## Recent Publications

Meyer SN, Simmons EM, **McPherson JD**, Awasthi S, Kiuru M. "[SCALP syndrome with a germline heterozygous DOCK6 mutation and somatic mosaic NRAS Q61R mutation](#)". *Pediatr Dermatol*. 2022 Dec 1.

Morselli M, Farrell C, **Montoya D**, Gören T, Sabırlı R, Türkçüer İ, Kurt Ö, Kösel A, Pellegrini M. "[DNA methylation profiles in pneumonia patients reflect changes in cell types and pneumonia severity](#)". *Epigenetics*. 2022 Dec.

King E, Maxel S, Zhang Y, Kenney KC, Cui Y, Luu E, Siegel JB, Weiss GA, Luo R, Li H. **"Orthogonal glycolytic pathway enables directed evolution of noncanonical cofactor oxidase"**. *Nat Commun.* 2022 Nov 26.

Berry-Kravis E, Hagerman R, Budimirovic D, Erickson C, Heussler H, Tartaglia N, Cohen J, **Tassone F**, Dobbins T, Merikle E, Sebree T, Tich N, Palumbo JM, O'Quinn S. **"A randomized, controlled trial of ZYN002 cannabidiol transdermal gel in children and adolescents with fragile X syndrome (CONNECT-FX)"**. *J Neurodev Disord.* 2022 Nov 25.

Torres-Arteaga I, Blanco-Labra A, Mendiola-Olaya E, García-Gascã, Aguirre-Mancilla C, Ortega-de-Santiago AL, Barboza M, **Lebrilla CB**, Castro-Guillén JL. **"Comparative study, homology modelling and molecular docking with cancer associated glycans of two non-fetuin-binding Tepary bean lectins"**. *Glycoconj J.* 2022 Nov 17.

Couture G, Luthria DL, Chen Y, Bacalzo NP Jr, Tareq FS, Harnly J, Phillips KM, Pehrsson PR, McKillop K, Fukagawa NK, **Lebrilla CB**. **"Multi-Glycomic Characterization of Fiber from AOAC Methods Defines the Carbohydrate Structures"**. *J Agric Food Chem.* 2022 Nov 16.

Hocking DR, Loesch DZ, Stimpson P, **Tassone F**, Atkinson A, Storey E. **"Relationships of Motor Changes with Cognitive and Neuropsychiatric Features in FMR1 Male Carriers Affected with Fragile X-Associated Tremor/Ataxia Syndrome"**. *Brain Sci.* 2022 Nov 15.

Woo XY, Srivastava A, Mack PC, Graber JH, Sanderson BJ, Lloyd MW, Chen M, Domanskyi S, Gandour-Edwards R, Tsai RA, Keck J, Cheng M, Bundy M, Jocoy EL, Riess JW, Holland W, Grubb SC, Peterson JG, Stafford GA, Paisie C, Neuhauser SB, Karuturi RKM, George J, Simons AK, Chavaree M, **Tepper CG**, Goodwin N, Airhart SD, Lara PN, Openshaw TH, Liu ET, Gandara DR, Bult CJ. **"A Genomically and Clinically Annotated Patient-Derived Xenograft Resource for Preclinical Research in Non-Small Cell Lung Cancer"**. *Cancer Res.* 2022 Nov 15.

Wang J, Fite BZ, Kare AJ, Wu B, Raie M, Tumbale SK, Zhang N, Davis RR, **Tepper CG**, Aviran S, Newman AM, King DA, Ferrara KW. **"Multiomic analysis for optimization of combined focal and immunotherapy protocols in murine pancreatic cancer"**. *Theranostics.* 2022 Nov 14.

Oh DL, Meltzer D, Wang K, Canchola AJ, DeRouen MC, McDaniels-Davidson C, Gibbons J, **Carvajal-Carmona L**, Nodora JN, Hill L, Gomez SL, Martinez ME. **"Neighborhood Factors Associated with COVID-19 Cases in California"**. *J Racial Ethn Health Disparities.* 2022 Nov 14.

Grieco SF, Castrén E, Knudsen GM, KwarAC, **Olson DE**, Zuo Y, Holmes TC, Xu X. **"Psychedelics and Neural Plasticity: Therapeutic Implications"**. *J Neurosci.* 2022 Nov 9.

Yu X, Ruan M, Wang Y, Nguyen A, Xiao W, Ajena Y, Solano LN, **Liu R, Lam KS**. **"Site-Specific Albumin-Selective Ligation to Human Serum Albumin under Physiological Conditions"**. *Bioconj Chem.* 2022 Nov 9.

Toal TW, Estrada-Florez AP, Polanco-Echeverry GM, Sahasrabudhe RM, Lott PC, Suarez-Olaya JJ, Guevara-Iñique AA, Rocha S, Morales-Arana A, Castro-Valencia F, Urayama S, Kirane A, Wei D, Rios-Sarabia N, Medrano R, Mantilla A, de Polanco ME,

Torres J, Bohorquez-Lozano ME, Carvajal-Carmona LG. **"Multiregional Sequencing Analysis Reveals Extensive Genetic Heterogeneity in Gastric Tumors from Latinos"**. *Cancer Res Commun*. 2022 Nov 2.

Zhu Z, Ma AH, Zhang H, Lin TY, Xue X, Farrukh H, Zhu S, Shi W, Yuan R, Cao Z, Chittepudi VCSR, Prabhala R, Li Y, Lam KS, Pan CX. **"Phototherapy with Cancer-Specific Nanoporphyrin Potentiates Immunotherapy in Bladder Cancer"**. *Clin Cancer Res*. 2022 Nov 1.

Lu H, Xu J, Yang J, Wang Z, Xu P, Hao Q, Luo W, Li S, Li Z, Xue X, Zheng H, Zhou Z, Wu H, Ma X, Li Y. **"On-demand targeting nanotheranostics with stimuli-responsive releasing property to improve delivery efficiency to cancer"**. *Biomaterials*. 2022 Nov.

Tena J, Maezawa I, Barboza M, Wong M, Zhu C, Alvarez MR, Jin LW, Zivkovic AM, Lebrilla CB. **"Regio-Specific N-Glycome and N-Glycoproteome Map of the Elderly Human Brain With and Without Alzheimer's Disease"**. *Mol Cell Proteomics*. 2022 Nov.

Alvarez MRS, Zhou Q, Tena J, Lebrilla CB, Completo GC, Heralde FM 3rd, Cabanatan M, Barzaga MT, Tan-Liu N, Ladrera GI, Danguilan JL, Rabajante J, Padolina I, Nacario RC. **"N-Glycan and Glycopeptide Serum Biomarkers in Philippine Lung Cancer Patients Identified Using Liquid Chromatography-Tandem Mass Spectrometry"**. *ACS Omega*. 2022 Oct 26.

Tamayo LI, Perez F, Perez A, Hernandez M, Martinez A, Huang X, Zavala VA, Ziv E, Neuhausen SL, Carvajal-Carmona LG, Duron Y, Fejerman L. **"Cancer screening and breast cancer family history in Spanish-speaking Hispanic/Latina women in California"**. *Front Oncol*. 2022 Oct 26.

Li YJ, Zhang L, Yang PP, Zhang K, Gong XF, Hou DY, Cao H, Wu XC, Liu R, Lam KS, Wang L. **"Bioinspired Screening of Anti-Adhesion Peptides against Blood Proteins for Intravenous Delivery of Nanomaterials"**. *Nano Lett*. 2022 Oct 26.

Lemke C, Roach K, Ortega A, Tantillo DJ, Siegel JB, Peters RJ. **"Investigation of Acid-Base Catalysis in Halimadienyl Diphosphate Synthase Involved in *Mycobacterium tuberculosis* Virulence"**. *ACS Bio Med Chem Au*. 2022 Oct 19.

D'Abronzio LS, Lombard AP, Ning S, Armstrong CM, Leslie AR, Sharifi M, Schaaf ZA, Lou W, Gao AC. **"Wntless expression promotes lineage plasticity and is associated with neuroendocrine prostate cancer"**. *Am J Clin Exp Urol*. 2022 Oct 15.

Ning S, Liu C, Lou W, Yang JC, Lombard AP, D'Abronzio LS, Batra N, Yu AM, Leslie AR, Sharifi M, Evans CP, Gao AC. **"Bioengineered BERA-Wnt5a siRNA Targeting Wnt5a/FZD2 Signaling Suppresses Advanced Prostate Cancer Tumor Growth and Enhances Enzalutamide Treatment"**. *Mol Cancer Ther*. 2022 Oct 7.

Jasoliya M, Gu J, AlOlabi RR, Durbin-Johnson B, Chedin F, Tassone F. **"Profiling Genome-Wide DNA Methylation in Children with Autism Spectrum Disorder and in Children with Fragile X Syndrome"**. *Genes (Basel)*. 2022 Oct 4.

Sosicka P, Ng BG, Pepi LE, Shajahan A, Wong M, Scott DA, Matsumoto K, Xia ZJ, Lebrilla CB, Haltiwanger RS, Azadi P, Freeze HH. **"Origin of cytoplasmic GDP-fucose determines its contribution to glycosylation reactions"**. *J Cell Biol*. 2022 Oct 3.

Jing D, Jiang N, Wang F, Mao C, Han S, Ho PY, Xiao W, Li Y, Li JJ, Zhang L, Lam KS. "Nanoradiosensitizer with good tissue penetration and enhances oral cancer radiotherapeutic effect". *Biomaterials*. 2022 Oct.

Maverakis E, Liakos W, Park D, Patel F, Siddiqui F, Kailemia MJ, Ruhaak LR, Marusina AI, Luxardi G, Gudjonsson JE, Le ST, Armstrong AW, Liao W, Merleev AA, Lebrilla CB. "The Psoriasis Glycome: Differential Expression of Cholesterol Particle Glycans and IgA Glycans Linked to Disease Severity". *J Invest Dermatol*. 2022 Oct.

## Open Positions

1. **Assistant Project Scientist — Lo Lab.**
2. **Assistant/Associate Specialist — Yu Lab.**
3. **Junior Specialist — Tian Lab.**
4. **Junior Specialist — Lo Lab.**

## Contribute to the next issue!

**Please send submissions of announcements**, including new members, seminars, conferences, workshops, events, publications, grants, outreach, news, and more, for the next issue of this newsletter to Daniel Erenstein **by January 25**.

You can send questions, comments, and feedback to Daniel anytime as well. We'll be back in your inbox in early February. Until then, take care! Happy New Year!

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