

Human Virome Characterization Center (HVCC) for the Oral–Gut–Brain Axis – Leadership and Personnel –

The following five expert PIs will work collaboratively to lead the HVCC (NIH U54 AG089335 *Human Virome Characterization Center for the Oral-Gut-Brain Axis*)

Yvonne Hernandez-Kapila, D.D.S., Ph.D. (Contact PI), is the Felix and Mildred Yip Endowed Chair in Dentistry and Professor and Associate Dean for Research at UCLA School of Dentistry. She previously served as Founding Director of Global Initiatives at the University of Michigan School of Dentistry, where she worked with large cohorts in a global setting¹²⁹⁻¹³¹. She then served as Chair of Periodontology and the Earl Robinson Endowed Distinguished Professor at the University of California, San Francisco (UCSF) School of Dentistry. As a clinician– scientist with >30 years of clinical, research, teaching/mentoring, and administrative experience, Dr. Hernandez- Kapila has made several important discoveries relating to the microbiome/virome of the oral cavity and its role in the oral–gut–brain axis. She also identified host–microbe interactions and cellular and molecular mechanisms governing oral cancer carcinogenesis and pathogenesis of periodontal disease. Dr. Hernandez-Kapila has been continuously funded by NIH for >30 years and has published >150 peer-reviewed publications in high-impact journals. She has long-term service as a council member and grant reviewer for the NIH/NCI/NIDCR, served on editorial boards for high-impact journals/textbooks, and received national mentoring awards. She is currently PI of two NIH R01s (R01CA269950: Oral Microbiome and Inflammatory Status in Antimicrobially Treated Oral Cancer Patients; 2R01DE025225: Treponema–Host Cell and Tissue Interactions) and a K12 training grant (K12 DE027830 UCLA Dental Specialty PhD Program). In recognition of her contributions to science and mentoring, Dr. Hernandez-Kapila received the American Academy of Periodontology Distinguished Scientist Award in 2019, UCSF Alumni Discovery Award in 2021, Annual Research Lecture for the UCSF School of Dentistry Research and Clinical Excellence Day in 2019, and American Association for Dental Research Irwin D. Mandel Distinguished Mentoring Award in 2019. Further, given Dr. Hernandez-Kapila’s background as a first-generation college student from a historically marginalized community (Mexican/farm worker and low SES background), she understands diversity, equity, and inclusion issues at their core and served on multiple task-forces to enhance diversity in science at all levels, including education/training and subject recruitment. Thus, she has the expertise to serve as Contact PI for this U54 and oversee activities of the HVCC for the Oral–Gut–Brain Axis.

Clara Lajonchere, Ph.D. (MPI), is Deputy Director of the IPH, Co-Director of the Clinical Neurogenomics Research Center, and Adjunct Professor of Neurology at UCLA. Her research focuses on disorders affecting the CNS, with an emphasis on psychiatric genetics and translational medicine. She has held several academic and leadership positions, including as Director of the NIH Center for Genomic and Phenomic Studies in Autism at the USC Keck School of Medicine and Vice President of Clinical Programs for the science and advocacy organization Autism Speaks. Dr. Lajonchere has broad clinical research expertise and has worked in the autism field for over a decade. She was Chief Scientific Officer for Cognoa, Inc., a digital healthcare company, and consulted for several tech start-ups in the autism arena focused on artificial intelligence, robotics, and targeted therapeutics.

Joseph Petrosino, Ph.D. (MPI), is Professor and Chair of Virology and Microbiology, Director of the Alkek Center for Metagenomics and Microbiome Research, and Chief Scientific Innovation Officer at BCM. His research focuses on metagenomic analysis of the microbiome and host–microbe interactions toward the

goal of revealing how microbially encoded functions affect host health to enable the development of therapeutic interventions for human diseases. Dr. Petrosino has broad expertise in applying cutting-edge sequencing technologies and data analysis tools to the study of microbial communities and served as one of the founding members of the HMP.

James Cerhan, M.D., Ph.D. (MPI), is a Professor of Epidemiology and the Ralph S. and Beverly Caulkins Professor of Cancer Research at the Mayo Clinic College of Medicine and Science. He serves as the Enterprise Deputy Director, Population Science and Cancer Control in the Mayo Clinic Comprehensive Cancer Center, Founding Director of the Mayo Clinic Biobank, and Associate Director of the Mayo Clinic Cancer Registry. His research focuses on using epidemiologic approaches to study the causes and outcomes of cancer in humans, and includes co-leading the national Lymphoma Epidemiology of Outcomes (LEO) cohort study of over 18,000 lymphoma patients and the Mayo Clinic Biobank, a longitudinal biobank of over 50,000 Mayo Clinic participants who donate specimens and clinical/risk factor data for use in research. At the Mayo Clinic Cancer Registry, he oversees collection of systematic data on all newly diagnosed cancer patients, which is used for state and national reporting, quality improvement, and research.

Janice Lee, D.D.S., M.D., M.S. (Lead Intramural Co-investigator, unfunded), is NIDCR Clinical Director and Chief of the Craniofacial Anomalies and Regeneration Section, and is the Deputy Director for Intramural Clinical Research at NIH. She is an oral/maxillofacial surgeon with expertise in the treatment and study of craniofacial disorders who oversees large cohort studies at NIDCR, and manages the healthy craniofacial tissues biospecimens studies and data systems.

Administrative Core

In addition to **the Contact PI and four MPIs**, this core will include:

Dr. Elaine Hsiao, Director of the GLMC at UCLA, which will serve as a hub for many HVCC activities, and a content expert on the gut–brain axis. She will serve on the Administrative Core and assist the MPIs in providing oversight for all HVCC activities.

Daniel J. Weisenberger, Ph.D. (HVCC Program Manager): Dr. Weisenberger has over 20 years of experience in scientific writing, program management, and education, with a focus on molecular biology and genomics. He was most recently Director of the USC Norris Molecular Genomics Core Facility, overseeing a \$2 million annual operation and managing laboratory staff, while also serving as an Associate Professor of Research in the Department of Biochemistry and Molecular Medicine. He has co-authored over 175 peer-reviewed scientific manuscripts, showcasing his expertise in molecular biology and genomics. His previous leadership roles have included supervising large-scale research programs, managing laboratory operations, and serving on committees within the USC Comprehensive Cancer Center. Dr. Weisenberger earned his Ph.D. in Biological Chemistry from Wayne State University and dual B.Sc. degrees in Chemistry and Cellular and Molecular Biology from the University of Michigan.

Embedded at the UCLA School of Dentistry and working closely with Dr. Hernandez-Kapila, Dr. Weisenberger will be the liaison to the HVP HVCCs and CODCC to facilitate cross-consortium activities.

Biospecimen Collection Core

Dr. Tien Dong will be the lead contact. He is Director of the Biorepository Core, lead bioinformatician at the GLMC, and a physician–scientist whose work focuses on the gut–liver axis, with emphasis on the role of the gut microbiome in pathogenesis of obesity and nonalcoholic fatty liver disease.

Dr. Sarah Dry is Vice Chair of Biobanking and Research Services and Director of several Pathology Laboratories and Services at UCLA Health. As a senior leader at UCLA Health, she has decades of experience in biobanking.

Drs. Lajonchere, Cerhan, Lee, and Hernandez-Kapila are described above.

Other contributors to biospecimen collection are listed in the table at right.

Biospecimen Analysis Core

Dr. Matthew Clayton Ross will be the lead contact. He is an Assistant Professor of Molecular Virology and Microbiology and Laboratory Director at the Alkek Center for Metagenomics and Microbiome Research at BCM, with content expertise in sequencing platforms for the virome and microbiome.

Dr. Petrosino is described above.

Dr. Sara Joan Javornik Cregeen is an Assistant Professor of Molecular Virology and Microbiology and Bioinformatics Team Lead at the Alkek Center for Metagenomics and Microbiome Research at BCM. She has broad expertise in sequencing platforms, as well as the management and analysis of microbiome/virome data.

Dr. Jonathan Jacobs is Co-Director of the UCLA GLMC and a physician–scientist with expertise studying host–microbe interactions in GI, metabolic, and inflammatory disorders, as well as microbiome/virome sequencing.

Dr. Xinmin Li is the Director of the Technology Center for Genomics and Bioinformatics (TCGB) at UCLA. He has expertise in molecular genetics and all major sequencing platforms.

Contributing member is **Hong Zhou** (UCLA, Biophysics/Structural Biology, Viruses, Director, Electron Imaging Center NanoMachines).

Table 1. Biospecimen Collection Core: Other contributing members (patient cohorts).

Site	Member	Affiliation	Specimens
Oral	Yvonne Hernandez-Kapila	UCLA Periodontics	Advisory; All oral biospecimens
	Yan Wang	UCLA Oral and Public Health	Mother–child dyads saliva
	Francisco Ramos Gomez	UCLA Pediatric Dentistry	Mother–child dyads saliva
	Allan Radaic	UCLA Dentistry	Biospecimen processing (teeth, plaque, tissues, saliva)
	Tara Aghaloo	UCLA Oral Surgery	Extracted adult teeth
	Nini Tran	UCLA Pediatric Dentistry	Extracted primary/baby teeth
	Omai Garner	UCLA Clinical Microbiology Lab	Oro/nasopharyngeal COVID-19–negative biospecimens
	Pachiyappan Kamarajan	UCLA Dentistry	Biospecimen processing (teeth, plaque, tissues, saliva)
	Janice Lee	NIH/NIDCR	Oral biospecimens, teeth
	Mine Cicek	Mayo Clinic	Saliva, blood biospecimens
Samapika Routray	UCLA Visiting Scholar Dentistry	AIIMS; Oral cancer–negative samples	
Gut	Lin Chang	UCLA Microbiome Center	GI biospecimens
	Tien Dong	UCLA Microbiome Center	Liver/GI biospecimens
	Elaine Hsiao	UCLA Microbiome Center	Advisory
	Clara Magyar	UCLA Biospecimen Bank	Letter of Support
	Arpana Church	UCLA Microbiome Center	Stool biospecimens, neuroimaging data
Brain	Nelson Freimer	UCLA Psychiatry	Blood, saliva, brain imaging data
	Chris Giza	UCLA BrainSPORT, Pediatrics	Blood, saliva, brain/neuroimaging data
	Shino Magaki	UCLA Neuropathology	Autopsy biospecimens
	Elaine Hsiao	UCLA Microbiome Center	Advisory
	Clara Lajonchere	UCLA Institute Precision Health	Advisory
	Omai Garner	UCLA Clinical Microbiology Lab	CSF biospecimens

Data Analysis and Submission Core

Dr. Sara Joan Javornik Cregeen will be the lead contact; she is described in the Biospecimen Analysis Core.

Dr. David Elashoff, a Biostatistician at UCLA, is a leading expert in data analysis, management, and submission systems. He has expertise in -omics and biomedical data management and is involved with the Data Management System for the AoURP.

Drs. **Petrosino**, Ross, Jacobs, and Li are described above.

Contributing members with content expertise are in the table at right.

Ethical, Legal, and Social Implications (ELSI) Core:

Dr. Mary Majumder will be the lead contact. She is a Professor of Medical Ethics and Health Policy at BCM and has substantial expertise in medical ethics, health policy, and ELSI of genomics/omics.

Dr. Amy McGuire is a Professor of Biomedical Ethics and Director of the Center for Medical Ethics and Health Policy at BCM. She has expertise in Biomedical Ethics, Health Policy, and ELSI of genomics/human genetics.

Dr. Jennifer Wagner is an Assistant Professor of Law, Policy, and Engineering and Anthropology at Penn State. She has expertise in the ELSI of genomic sciences and policy.

Dr. Nanibaa' Garrison is an Associate Professor at UCLA and has expertise in genetics and bioethics.

Table 2. Data Analysis and Submission Core: Other members.

Site	Contributor	Expertise
BCM	Mike Tisza	Virome metagenomics
UCSD	David Pride	Virome bioinformatics
UCLA	Paul Boutros	SOM Dean of Research; bioinformatics, AI
UCLA	Alex Bui	AI, bioinformatics, machine learning
UCLA	Mehdi Bouhaddou	Virology, host-microbe interactions
UCLA	Arpana Gupta	Neuroimaging
UCLA	Jing Wen	HIV, bioinformatics
UCLA	Nandita Garud	Microbiome ecology and evolution
UCLA	Kosuke Kawai	Biostatistics
UCLA	Allan Radaic	Oral microbiome
UCLA	Hong Zhou	Structural cryo-EM, viral microscopy/tomography
UCLA	Yan Wang	Oral microbiome
USC	Pinghui Feng	Viral metabolism, signal transduction