Master Student Handbook

Oral Biology

Division of Oral and Systemic Health Sciences

UCLA School of Dentistry

Professor Paul Krebsbach, Dean

Professor Hung Ton-That, Division Chair

Professor Igor Spigelman, Section Chair

Professor Shen S. Hu, M.S. Program Advisor

SELECTED OFFICES AND PHONE NUMBERS

Arthur Ashe Student Health & Wellness Center (AASHWC) **310-825-4073**

Biomedical Library

Reference questions & Circulation desk/Renewals **310-825-4904**

Campus Information

From on-campus phones **33**

From off-campus phones **310-825-4321**

Dashew Center for International Students & Scholars **310-825-1681**

Financial Aid Office **310-206-0400**

Graduate Division Student & Academic Affairs Office **310-825-3819**

Graduate Student Association **310-206-8512**

Housing Offices

On-campus Housing **310-825-4271**

Off-campus Housing **310-825-4491**

Family Student Housing **310-398-4692**

Oral Biology Graduate Office & SAO **310-825-1955**

Oral Biology Master's Degree Advisor's Office **310-206-8834**

Parking Service **310-825-8299**

Registrar's Office, Enrollment and Registration **310-825-1091**

Student Psychological Services **310-825-0768**

Transcript Request Service ..... **310-825-1091 (ext. 6)**

UCLA Credit Union **310-477-6628**

UCLA Store, Ackerman General Info **310-825-7711**

UCLA Police Evening Van Service **310-825-9800**

UCLA Campus Security Officer **310-794-9255**

The purpose of this handbook is to acquaint you with the various administrative and programmatic policies and procedures for completing the Oral Biology MS program. Although this handbook is far from being exhaustive, we hope it will serve as a reference point during the course of your graduate studies.

REGISTRATION & ENROLLMENT IN CLASSES

Once you have received your official acceptance letter from the UCLA Graduate Division and responded as directed in that letter, you will then come to the University to get your Bruin Card. With the card, you will be able to do all the activities described below.

MyUCLA gives UCLA students, and those who have been students within the past 10 years, real-time access to their University academic records. It is accessed by logging on to https://my.ucla.edu using your UCLA Logon ID and password. Do not give your UCLA Logon ID and password to anyone. If you tamper with another student's enrollment or personal data, you are subject to disciplinary action, up to and including suspension.

MyUCLA is the easiest way to enroll in classes and to gain real-time access to academic, financial, and personal records. The site is designed with an intuitive visual interface that walks you through the different steps of the procedure you are trying to accomplish, whether you are trying to enroll in classes, check your BAR (Billing And Receivables) account, change your address information, view your Study List, or see your term grades. It is essential that you check your BAR account through MyUCLA regularly during the term and during your time at UCLA.

Enrollment: Enrollment in classes is completed through MyUCLA. Students eligible to enroll for the next term are randomly assigned one appointment time and can use MyUCLA from the beginning of the specified appointment time through midnight on Friday of the second week of classes. Students should be enrolled in courses with unit credit by the deadline to avoid the $50 late filing of Study List fee and to avoid having to obtain instructor signatures. All courses, except Oral Biology 260 and Oral Biology 598, must be taken for a letter grade. No exceptions.

Registration: Registration consists of enrolling in classes and paying the fees that are assessed to your BAR Account. You must complete both processes by the established deadlines for each quarter (see this calendar link: http://registrar.ucla.edu/calendar/) to be officially registered and enrolled for the term. If you receive any fellowships or financial aid, they are automatically credited to your BAR account to pay registration fees and other applicable outstanding debts.

Registration fees and other University charges that are assessed to your BAR Account are due the 20th of each month. View your BAR account through MyUCLA.

DEGREE REQUIREMENTS

The M.S. Degree is granted following satisfactory completion of a didactic (**thirty-six units** of coursework) and research requirement. A written thesis approved by the M.S. thesis committee and the UCLA Thesis & Dissertation editor, and its oral presentation and defense constitute the research requirement. The thesis pertains to the systematic description of laboratory or non-laboratory research experiences (depending upon the nature of the study) by the student in a focused domain of science pertaining to oral biology in health and disease. **The first year is mainly devoted to taking course requirements and identifying a suitable research project with a mentor. By the end of the first year, the MS student needs to find a lab/mentor and decide a research project.** The remaining time in the program is devoted to working on your thesis research. It is expected that MS students will defend their thesis in the winter quarter or latest in the spring quarter of their final year in the M.S. Program. Your Student Affairs Officer (located in CHS 53-009) can provide you with a degree planner so that you can plan your schedule accordingly.

Research and Thesis Requirements for the Oral Biology Master's Degree:
The thesis is intended to demonstrate your ability to design and carry out a research project and then to analyze and present the resulting data. Results are expected to be of publishable scientific quality. Your research mentor and the Advisor of the M.S. program must approve the subject of the thesis. The following is a usual process in which a complete thesis is born.

Selection of Research Area*:
You determine this according to your research area of interest and in conversation with the prospective mentor/chair of your thesis committee.

***Note**: The project must be novel, interesting, pertinent to oral biology, and focused. It is recommended that early on in your discussions with your mentor you obtain an outline of the work that will be required for your thesis. The outlined should be discussed between you and your mentor, until a clear understanding is reached about what specifically will need to be done. Even at this early stage, please give a copy of this outline to the Advisor of the M.S. program. It need not be fancy, just a rough draft. Anytime it changes considerably, give the Master's Degree Advisor another copy.

Selection of Thesis Committee:

As the project is developed, in close consultation with your mentor/chair of the thesis committee, **you will identify at least two (or three if necessary) additional members of the committee**. Circulate a preliminary outline and abstract of the proposal to those selected faculty, and ask them if they would serve on your committee. The following are the criteria for a Master's Thesis Committee Membership:

1. A minimum of three faculty members from UCLA who hold one of the following academic ranks:
   -Professor (any rank, regular tenure-track/tenured series)
   -Professor emeritus
   -Professor-in-residence (any rank)
   -Adjunct professor (any rank)
   -Clinical X professor (any rank)
   -Acting professor (any rank)
2. Adjunct professors (any rank) and Clinical X professors (any rank) can serve as your mentor and a member of your thesis committee. But they cannot be the sole chair of your thesis committee. You need to identify the chair of your thesis committee from tenure-track/tenured professors or professor-in-residence.
3. Clinical professors, Visiting professors, or Lecturers can be appointed as an additional member. Thus they can serve as a 4th member of your committee. In that capacity they can only serve as co-chair of your thesis committee. They cannot be part of the minimum three faculty members as mentioned above in #1. You need to identify the chair of your thesis committee from tenure-track/tenured professors or Professor-in-residence.
4. By petition, one of the minimum three members may be a faculty member from another UC campus who holds an appropriate appointment as listed in #1.

Once all professors you have contacted have agreed to be on your committee, please email the Oral Biology Student Affairs Officer (SAO, Jesse Saldana, jsaldana@dentistry.ucla.edu) the names of the committee members, and identify which member will be chair or which members will be co-chairs. The SAO will fill out the **NOMINATION OF MASTER'S COMMITTEE form**, obtain the proper signatures and send it to the Graduate Division for review/approval. When it has been approved, you will receive a formal approval email from the Graduate Division, as will the SAO.

Change in Committee Membership:
Sometimes changes in your Master's Thesis Committee membership are unavoidable. When this happens, you and your mentor must find replacement(s). Once the replacement(s) have been identified, as before, you must send an email to the SAO who will then complete a RECOMMENDATION FOR RECONSTITUTION OF MASTER'S THESIS COMMITTEE form, obtain the appropriate signatures and send it to the Graduate Division for review/approval. As with your original form, both you and the SAO will be emailed formal confirmation of your newly reformed committee.

Advancement to Candidacy Petition:
Once you have taken all 36 units of the course requirements (as outlined in the **degree planner** that you can pick up from the SAO), you will need to email the Oral Biology SAO to request that an ADVANCEMENT TO CANDIDACY PETITION form be completed for you. Your thesis committee must have already been approved before you can file the Advancement to Candidacy Petition.

Thesis Proposal:
From there, the work on the proposal, research and thesis is done in consultation with all members of the committee. It is not your sole responsibility, but that of you and the thesis committee chair to resolve any disagreement among committee members with respect to the direction of the research. The texts of the proposal and the thesis must be prepared according to the Policies and Procedures for Thesis and Dissertation Preparation and Filing (**http://www.gdnet.ucla.edu/gasaa/library/thesisintro.htm**) otherwise it will not be approved.

***Note**: Staff from the University Archives and the UCLA Graduate Division regularly (once a quarter) presents information on university regulations governing manuscript preparation and completion of degree requirements. Students who plan to file a thesis or dissertation during the quarter are encouraged to attend. In addition, the thesis and dissertation advisor can examine the thesis for compliance with bibliographical and physical requirements. Below is the link to the meeting times/locations.*

http://www.gdnet.ucla.edu/gasaa/library/thesismtg.htm
21560 Research Library Building
Monday-Friday 12 noon - 4 p.m., or by appointment Telephone: 310.825.3625

Thesis Manuscript Preparation:
The **research mentor** supervises the intellectual content and scientific contribution, as well as the style and text construction and craftsmanship, including footnote, references, tables and figures. The physical format (e.g. margins, title page, signature page, etc.) must be in conformity with the UCLA Graduate Division and University Archivist's guidelines, Regulations for Thesis and Dissertation Preparation mentioned above.

Showing Thesis to Committee:
Before setting up the Oral Defense presentation* with your committee members, each committee member must be given an electronic copy of your thesis for comments and suggestions about two weeks before the defense takes place. Ask them to return the thesis to you in one week or less to include any changes before the defense. This way, many questions from the committee members can be answered prior to the defense.

***Note**: It is your responsibility to coordinate your Oral Defense meeting with your committee members. Once the date and time of the meeting is determined, please notify the SAO at least two weeks before the meeting so that a room can be reserved on your behalf and so that the appropriate approval paperwork can be prepared in a timely manner.

Oral Defense:
The Oral Defense of the Master's Thesis is an open meeting and is required for all students. At the meeting, you defend your work to the committee using a PowerPoint presentation, followed by questions from the committee and audience about your research. All guests will then be asked to leave the room, so the committee can discuss your research and thesis with you. Then, you will be asked to leave the room while they consult with each other.

Filing the Final Thesis:
The thesis is filed ELECTRONICALLY. The professors will receive an email from the Graduate Division prompting them to log in to their UCLA account to "sign off" on your thesis thus confirming you have passed.

If you are filing the thesis more than a year after you have Advanced to Candidacy, you will need to contact the Student Affairs Officer who will then prepare a Master's Petition for Extension of the Advancement to Candidacy.

Finally, you must provide your Thesis Committee Chair and the Oral Biology Graduate Office with a copy of the thesis. The one provided to the department can be electronic. It is generally courteous to provide your chair with a bound copy and each committee member with your bound thesis as well. All costs involved in the production of the thesis such as typing, copying, media illustrations, etc. are the student's responsibility. The SAO will also have you complete the Exit Interview for the alumni database.

Diploma:
Diplomas are available approximately three months after the last day of the graduating term. Students are contacted by UCLA Registrar (reginfo@registrar.ucla.edu) on how to submit their diploma release instructions. Students can choose pick-up, mail or agent pick up. Note that this only applies for M.S. and Ph.D. students. DDS diplomas are distributed by the School of Dentistry's own registrar.

ADVISING

Upon admission to the Master's Degree program, it is advisable to contact the Advisor of the M.S. Program, who also acts as the faculty graduate advisor for all academic issues pertaining to pursuance of the degree (Dr. Shen S. Hu, contact email: shenhu@ucla.edu).

You will be guided with respect to the course plan, and the most likely faculty member to act as your M.S. mentor and chair of your thesis committee. Once you have identified the research area and your mentor, then he/she will advise you for your thesis research progress.

It is your responsibility to request a regular bi-weekly or at least monthly meeting with your mentor, to ensure satisfactory progress of work. Your will be asked to provide to the SAO, MS Advisor and your mentor a written assessment (an email will suffice) concerning your research progress every 6 months.

The Advisor of the M.S. program will continue to be available to you for guidance and academic counseling in your overall progress in the program. You may also seek guidance and advice about program/course requirements, timeframe to degree, housing and other non-academic issues from the program's Student Affairs Officer (contact email: jsaldana@dentistry.ucla.edu).

TIMETABLE FOR "NORMAL" PROGRESS

As indicated above, students who come into the program following completion of their undergraduate studies are expected to be full time students, and to complete the degree in two academic years. Students who pursue the M.S. Degree during their post-DDS Residency are expected to complete their Residency and Master's curricula at the same time.

It is expected that all full-time graduate students will complete the required course work within three quarters (one academic year). Dental Residents should complete the didactic work in six quarters (two academic years). Elective course work can be taken through the time to degree, up to but excluding the quarter of defense of the thesis.

Moreover, it is expected that, with respect to the timing of the thesis research, the following five principles will be adhered to as much as possible:

a. The research project and the mentor and chair of the thesis committee should be identified no later than the end of the Spring Quarter of your first year. A thesis committee should be formed and approved shortly thereafter.
b. The names of your mentor/committee members and project title/abstract should be submitted to the Advisor of the M.S. Program no later than the end of the Spring Quarter of your first year (3 quarters).
c. Progress assessment will be requested from your research advisor every 6 months. As noted above, progress of the research will be obtained through enrollment in OB596/598.
d. The final draft of your thesis should be submitted to your committee members no later than two weeks before you defend your thesis.
e. For full-time graduate students, the oral defense should occur no later than the Spring Quarter of the second year (6 quarters). Residents should plan to defend their thesis in the winter quarter of their final year in their combined studies (latest by May of their final year), so as to have sufficient time to complete all of the changes and corrections demanded by their committee and by their specific programs.

DISQUALIFICATION AND APPEAL OF DISQUALIFICATION

A student may be recommended for disqualification and dismissal if the student has:

a. Failed to maintain a grade-point average of 3.0 for three or more quarters,
b. Failed to satisfy specified requirements for a conditional admission, or
c. Failed to maintain reasonable progress in research toward the degree.

Appeal Procedures for disqualification can be found in the Standards & Procedures for Graduate Study available online at: http://www.gdnet.ucla.edu/gasaa/library/spfgs.pdf.

GRADUATE COURSES
Number in Parenthesis Indicate Units

OB 201C **Advanced Oral Biology: Pathobiology (3)**
This course is to introduce the students to the molecular basis for pathogenic processes in tissues of the oral cavity. Topics include cell cycle, apoptosis, signal transduction, stem cells, oncogenes, tumor suppressor genes, cancer related bacteria, liquid biopsy for cancer diagnosis, cancer metastasis, Sjogren's syndrome, head and neck cancer and neurocristopathy.

OB 202 **Salivary Diagnostics: Salivaomics, Saliva-Exosomics/Liquid Biopsy (2)**
Focus on basic, translational, and clinical advancements of saliva and its -omics constituents in oral and systemic health, precision, and personalized medicine. Topics covered by active investigators in the field of research. Lectures accompanied by two cutting-edge papers in the field to prime students of exciting and emerging fields. Letter grading.

OB 207 **Development and Regeneration of Craniofacial Complex (2)**
This course explores the cell biology and molecular mechanisms underlying the formation of vertebrate head structures during embryonic development, as well as their regenerative capacity in adulthood. Topics include the genetic and signaling regulation of craniofacial patterning, morphogenesis, cell differentiation, evolution, and stem cell-based organ regeneration. Learning will be facilitated through didactic lectures and critical analysis of primary research literature.

OB 209 **Scientific Ethics (2)**
Introduces various aspects of ethics applicable to contemporary research; the nature of science as a human endeavor; ways of understanding nature and the definition of truth; ethical principles; objectivity in research; responsible performance and reporting of research; ethical decision-making; and available institutional support in cases of ethical dilemmas. Case studies explore different ethical issues in research to stimulate the moral imagination by exposing students to issues and responsibilities they will face throughout their scientific careers.

OB 212 **Proseminar: Oral Biology Research (2)**

The goal of this class is to introduce the students to research areas represented at the UCLA School of Dentistry. Each year a selection of faculty presents their research interests by giving an introduction to their field accompanied by an interactive discussion with the students. Students will be given one to two articles for each session and will be expected to have thoroughly read the material, and to be comfortable discussing it. Students are expected to acquire a fundamental understanding of the materials presented each week and to pay close attention to how the faculty presents and discusses the research/review articles as reflection on improving their own presentation and critical thinking skills.

OB 215A **Fundamentals of Immunology (2)**

The student objective is to understand the basic function of the immune system during health and disease. In particular, it is important to understand the role of inflammation in clearance of infection and establishment of homeostasis. Following topics are important for the understanding of the inflammatory processes and immunity.

OB 215B **Current Advanced Research Topics in Immunology (2)**

Overview of rapidly changing discoveries in very important field of immunology. Directed and student led discussions of current cutting-edge research developments in immunology.

OB 225 **Craniofacial Anomalies (2)**

This course covers topics relevant to craniofacial and special care orthodontics. The course will be organized into a series of presentations given by the course chair on a broad variety of topics relevant to craniofacial orthodontic treatment. The topics include but are not limited to cleft lip and palate, syndromic craniosynostosis and other craniofacial anomalies, craniofacial surgery, nasoalveolar molding, and special care orthodontics.

OB226 **Craniofacial Growth and Development (2)**

The purpose of this course is to gain an understanding of prenatal and postnatal growth and development of the craniofacial complex from the biological and structural perspectives. The principles of prenatal development will be covered as a context for understanding the changes in the craniofacial complex that occur after birth. Students in this course will learn to assess growth patterns in clinical situations, recognize the features of common craniofacial anomalies, summarize the theories of growth control, and integrate this knowledge into orthodontic diagnosis and treatment planning.

OB 229A **Culture, Ethnicity & Health: Implications for Oral Biology & Medicine (2)**
Introduces how medical anthropology's biocultural approach expands the biomedical perspective. Draws upon sociocultural, biological, and ecological anthropology to understand factors that influence health and well-being, the illness experience, the prevention and treatment of sickness, healing processes, social relations of therapy management, and the cultural importance and utilization of pluralistic medical systems.

OB 229B **Anthropological Perspectives Global Health: Implications for Oral Biology & Medicine (2)**
Introduces critical issues in global health, including: the demographic and epidemiologic transitions; the political economy of infectious diseases; child health and nutrition; women's health and reproductive health; the globalization of the pharmaceutical industry; science, technology, and global health.

OB 230A/B **Intro to Contemporary Orthodontics (2)**
The purpose of this course is to gain further understanding of orthodontic therapy from a biologic, anatomical, and biomechanical perspective. Topics include craniofacial/orthodontic biology, diagnosis and treatment planning, and the management of malocclusions in children, adolescents, and adults. Enrollment is open to current residents in the orthodontic residency program. The course confers 2 units of elective credit for Oral Biology students for each quarter it is taken (2 units for 230A and 2 units for 230B).

OB 231 **Fundamentals of Biomechanics (2)**
This course will cover the basic concepts of biomechanics that include the interplay between mechanics, materials, and biology. The different characteristics of a force will be covered, including the addition and resolution of forces into components, the concept of static equilibrium, and orthodontic force systems. An understanding of these principles in individualizing mechanics to achieve optimal results particularly in complex cases will be highlighted.

OB 232 **Advanced Biomechanics (2)**
This course builds upon the foundation of knowledge gained in OB231 to apply complex biomechanics principles to clinical orthodontics. Class members will utilize the biomechanical principles learnt in optimally designing of appliances and springs for force application systems in clinical situations. They will also develop a clear understanding of the interrelationship among basic research, clinical research and patient care through discussions and presentations of peer-reviewed papers.

OB 250 **Introduction & Review of Periodontics for Residents (2)**
This course provides an introduction and review of current concepts of periodontology from disease diagnosis, etiology and pathogenesis of periodontal diseases to non-surgical and surgical periodontal therapy. The course will review periodontal microbiology, antimicrobials and antibiotics. Periodontal surgical therapies will be reviewed including flap surgery, crown lengthening, osseous resection, and periodontal regeneration.

OB 260 **Oral Biology Seminar (1). Must take three times.** This is a seminar class. Students are required to present and discuss peer-reviewed literature readings in basic sciences related to oral biology. S/U grading.

OB 265A **Fundamentals of Dental Research (2)**
Understanding, planning, and conducting research are crucial components during post-doctoral education in dentistry. This course is designed to build fundamental knowledge to begin small studies, and/or participate in small-to-medium sized translational studies at the master student and residency level. Specifically, the course provides a series of showcasing on-going and completed research projects of different expertise and specialties; critical and creative review of scientific papers necessary for master degree and residency research and fundamentals in designing research and writing.

OB 275 **Molecular and Cell Biology (3)**
This course is about the basic principles of molecular and cell biology. The topics include nucleic acids-genetic material, DNA replication, DNA recombination, DNA repair, transcription and post-transcription, translation and post-translation, methods in nucleic acid analysis, qPCR, next generation sequencing, proteomics, protein analysis methods, miRNA biogenesis and function, cell motility, salivary diagnostics, applied molecular biology- nanotechnology, and microbiology.

OB 596 **Directed Individual Study or Research (2 to 8):** Sign up according to your mentor.

OB 598 **Thesis Research and Preparation (2 to 8)**: Sign up according to your mentor.

Please refer to the Course Planner for core courses and elective courses. The following courses by other departments on campus may be taken as elective courses.

BioMath	265A	4
BioMath	265B	2

BioMath	266A	4
BioStats	M220	4
Health Services	237A	6
CHEM	C259A	2
CHEM	C259B	2
MIMG	262A	2
MIMG	262B	2
MIMG	262C	2
MCDB	M220	6
MCDB	224	4
HLTPOL	288	4

AREAS OF EMPHASIS FOR MS STUDIES

The following areas of emphasis reflect the strength of some oral biology/dental research at UCLA SOD. Some other research areas may not be listed here. Please refer to the UCLA SOD research page @ https://dentistry.ucla.edu/research for more information.

Oral Head & Neck Cancer Research (Shen Hu, Yvonne Kapila, Reuben Kim, Yong Kim, Sanjay Mallya, No-Hee Park, David Wong)
Oncology of the oral cavity and its surrounding tissues and structures

Saliva Proteome and Sjögren's Syndrome Research (Shen Hu, Feng Li, Vivek Shetty, Karolina E. Kaczor-Urbanowicz, Yong Kim, Fang Wei, David Wong,)
Cutting-edge research on the biomarkers in human saliva

Microbial pathogenesis (Honghu Liu, Renate Lux, Hung Ton-That, Nini Tran, Reuben Kim)
Focus upon the dynamics of oral infection with emphasis on bacterial and fungal pathogenesis, and biofilm formation.

Calcified tissue metabolism, developmental biology, bone biology and regeneration (Tara Aghaloo, Jia Chang, Jimmy Hu, Sunil Kapila, Yi-Ling Lin, Ichiro Nishimura, Sotirios Tetradis, Xinli Zhang)
This area includes embryogenesis of the oral-facial apparatus developmental biology of the calcified tissues of the teeth and bone, and investigations into bone enhancing factors and the regulation of bone formation.

Immunology (Anahid Jewett, Hung Ton-That)
Role of the myeloid immune system in oral mucosal and periodontal defense. Study of human neutrophil secretion and biochemistry. Identification of cytosolic and lysosomal antimicrobial and inflammatory factors such as defensins, azurocidin, elastase, cathepsin G, and myeloperoxidase. Host bacterial inter-relationships in oral disease.

Biomaterials, tissue engineering and nanomaterials (Min Lee, Reuben Kim, Paul Krebsbach, Alireza Moshaverinia, Takahiro Ogawa, Shen Hu, Eric Sung)
(1) Development of biomimetic polymer systems for tissue regeneration and drug delivery applications. (2) Genetic characterization at bone-titanium interface, titanium implant surface science and technology, nano-designing of biomaterials, detoxification and activation of oxidant-generating materials, and an exploration of osteogenic enhancing molecules. (3) Nanotoxicity and nanomaterial for delivery of nucleic acid drugs.

Neuroscience (Sherwin Arman, Ichiro Nishimura, Igor Spigelman)
Areas of emphasis are: 1) Mechanisms of development and maintenance of inflammatory and neuropathic pain states, and 2) Clinical and pre-clinical testing of promising therapeutics for these disorders.

Periodontitis, peri-implantitis and periodontal diseases (Paulo M. Camargo, Jia Chang, Yvonne Hernandez-Kapila, Yi-Ling Lin, Flavia Pirih, Sotirios Tetradis)
The goal is to develop new strategies to prevent and treat both periodontitis and peri-implantitis conditions. The labs conduct translational research that examines the role of genetics in patients' susceptibility to periodontitis and studies peri-implantitis.

Pharmacology and therapeutics (Shen Hu, No-Hee Park, Christine Quinn, Ki-Hyuk Shin, Igor Spigelman)
Pharmacodynamics and pharmacokinetics of therapeutic agents in dentistry. Quantal analysis of drugs in biologic specimens. Preclinical and clinical trials of new drugs.

*Health Services & Clinical Research (*Honghu Liu, Vinodh Bhoopathi, Paula Ortega-Verdugo, Francisco Ramos-Gomez, Eric Sung, Yan Wang, Fariba Younai)
With a commitment to improve oral health throughout the nation, we're working to understand the needs and decision-making of underserved patients. As part of a nationwide program to develop a stronger dental education system, we're testing new methods of education. Our research projects utilize anthropology, biostatistics, epidemiology, education, behavioral science and more, to inform the needs of the community.

GRADUATE FACULTY AND THEIR RESEARCH

The following list of faculty members may be incomplete. For a complete list of faculty members, please refer to the web page of all sections in UCLA SOD @ https://dentistry.ucla.edu/index.php/academics-admissions/academic-divisions-and-sections

Tara Aghaloo D.D.S., M.D., Ph.D. (taghaloo@dentistry.ucla.edu) – Our main research area is translational and clinical aspects of bone biology with specific focus on; 1) preclinical models of bone healing and regeneration; 2) pathophysiology of medication-related osteonecrosis of the jaws (MRONJ); 3) clinical studies of the long-term success of dental implants; and 4) preclinical models of peri-implantitis and bone regeneration.

Sherwin Arman D.M.D., M.P.H. (sarman@dentistry.ucla.edu) - Our research interests are in the area of temporomandibular dysfunction, neuropathic pain, obstructive sleep apnea, primary headache, and painful oral lesions.

Vinodh Bhoopathi. B.D.S., M.P.H., D.Sc.D. (vbhoopathi@dentistry.ucla.edu) – Research interests include oral health disparities and access to care issues in underserved population groups; nutrition and its impact on oral health; and implementation science and dissemination research. I use the following methods/designs to conduct my studies: survey research, secondary data analyses, and community-based participatory research.

Paulo M. Camargo, D.D.S., M.S., M.B.A. (pcamargo@dentistry.ucla.edu) - Our research program focuses on: (a) elucidating the mechanisms involved in bone loss around dental implants and developing strategies to prevent and treat peri-implantitis. Working on a murine model, we hope to understand the role played by various pro-inflammatory genes and cytokines in bone resorption around dental implant fixtures and to develop novel approaches to modulate the immune response; and (b) examining saliva as vehicle to diagnose and predict the onset and progression of periodontal and peri-implant diseases. Utilizing proteomic- and transcriptomic-based micro array techniques, human saliva is being analyzed for the presence of individual and/or groups of molecules that may alert patients about the need to seek dental care and also aid the clinician in customize preventive and corrective treatment for individuals at risk for periodontal and peri-implant attachment and bone loss.

Jia Chang, D.D.S., Ph.D. (jiachang@dentistry.ucla.edu) – Our research interest covers studies on 1) Molecular control of bone development and inflammation in periodontitis and peri-implantitis; 2) Antidepressants and Oral Health; 3) Epigenetic medication in periodontitis and peri-implantitis treatment.

Yvonne Hernandez-Kapila, D.D.S., Ph.D. (ykapila@dentistry.ucla.edu) – Our research is centered around the cell and molecular biology mechanisms that govern periodontal disease pathogenesis and oral cancer carcinogenesis using in vitro and in vivo models, and human clinical studies.

Jimmy K. Hu, Ph.D. (jhu@dentistry.ucla.edu) Our research aims to extract principal mechanisms of tissue morphogenesis and stem cell regulation in order to design and develop strategies for regenerative medicine.

Shen Hu, Ph.D. (shu@dentistry.ucla.edu) – My lab research is focused on proteomics and metabolomics of head/neck cancer, pancreatic cancer, and autoimmune diseases such as lupus and Sjogren's syndrome. Particularly we are interested in using mass spectrometry and protein array technology to study early malignant transformation and tumor metastasis and to discover target proteins for therapeutic/diagnostic applications. We are also conducting research on nanotoxicity and nanomaterials for drug delivery.

Anahid Jewett, Ph.D., M.P.H. ((ajewett@dentistry.ucla.edu) – Our research interest lies in immunobiology of Oral cancers and Allergic reactions to dental resins, immunobiology of natural killer cells in health and disease. Mechanisms of Oral mucosal immunopathologies as they relate to cancer, allergic and bacterial diseases.

Sunil Kapila, B.D.S., M.S., Ph.D. (skapila@dentistry.ucla.edu) – Our research interest lies in: 1) Pathobiology and Omics of TMJ Degenerative Disorders, 2) Translational Efficacy of Biomolecules in Regulating Tooth Movement and Bone Regeneration, 3) Development of Drug Delivery Systems and Bone Regenerative Medical Devices, and 4) 3D Imaging for Diagnostic Efficacy, Treatment Outcomes, and Virtual Treatment Planning.

Reuben Kim, D.D.S., Ph.D. (rkim@dentistry.ucla.edu) – Our main research area is aging biology with specific focuses on; 1) Role of HPV and epigenetics in Oral cancer, 2) Role of p53 in cellular senescence and organismal aging in normal human keratinocytes, 3) Molecular mechanisms of drug-induced ONJ using mouse models for bisphosphonate and denosumab, and 4) Effects of dental materials in reparative dentin formation in dental pulp stem cells (DPSC).

Yong Kim, Ph.D. (ykim@dentistry.ucla.edu) – Our research interests cover studies on 1) the cellular and molecular functions of p12CDK2-AP1 (cdk2 associated protein 1) in embryonic stem cell differentiation and embryo development; 2) the role of p12CDK2-AP1 and p14CDK2-AP2 in cell cycle regulation and the significance of their differential expression in cellular transformation in relation to check point regulation and apoptosis; 3) epigenetic regulation in embryonic stem cell differentiation and cancer development; and 4) translational application of cell cycle regulatory mechanism for head and neck/oral cancer treatment.

Paul Krebsbach, D.D.S., Ph.D. (pkrebsbach@dentistry.ucla.edu) - Our research focuses on the cell and molecular biology of mineralized tissues and self-renewal of adult and pluripotent stem cells.

Min Lee, Ph.D. (leemin@ucla.edu) - Our research focuses on the development of biomimetic polymer systems for tissue regeneration and drug delivery applications.

Yi-Ling Lin, D.D.S., D.M.Sc. (ylin@dentistry.ucla.edu) - Our research focuses on transcription regulation during osteoclast differentiation. The lab is aiming at developing therapeutic strategies to inhibit osteoclast activity for osteolytic diseases such as periodontitis and cancer bone metastasis.

Honghu Liu, Ph.D. (hhliu@dentistry.ucla.edu) – Our research interests include research design (particularly at clinical, epidemiologic and health services research level), sample size and power analysis, statistical design, sampling and patient recruitment, data and statistical analysis, and complex statistical modeling (e.g., repeated measures mixed effect models).

Renate Lux, Ph.D. (rlux@dentistry.ucla.edu) – The primary focus of our research is to gain an extensive understanding of bacterial interactions with a special emphasis on oral biofilm formation and the implications for oral pathogenesis on a molecular level. In addition, we investigate oral microbial community composition and dynamics in response to environmental changes.

Carl Maida, M.A., Ph.D. (cmaida@dentistry.ucla.edu) - Our research focuses on the prevention and treatment of chronic and epidemic disease, and on the impact of community-scale trauma on children, adolescents, and their families. Recent research studies include assessment of multiple systematic reviews for tissues of the teeth and if left untreated leads to tooth loss. Although bacterial plaque is central in disease pathogenesis, 50% of the disease is heritable. Thus,

discovering genetic traits that correlate with periodontal inflammation and bone loss is important in identifying individuals prone to the disease, as well as in discerning signaling cascades that underlie disease pathophysiology.

Sanjay M. Mallya B.D.S., M.D.S., Ph.D. (smallya@dentistry.ucla.edu) - Our research is focused on the molecular mechanisms of oral precancer and cancer and on parathyroid neoplasia. We are studying the role of vitamin D in modulating the development of oral epithelial dysplasia and neoplasia and its interactions with the cyclin D1 pathway.

Alireza Moshaverinia, D.D.S., M.S., Ph.D., F.A.C.P. (amoshaverinia@dentistry.ucla.edu) – Our research focus is to study Dental Biomaterials, tissue engineering and Stem cell biology, implant dentistry and prosthodontics, and dental materials.

Ichiro Nishimura, D.D.S, D.M.Sc., D.M.D. (inishimura@dentistry.ucla.edu) - Our long-term research goal is to implement new reconstructive treatments for the regeneration of facial defects. The field of study is Tissue Engineering. Fully differentiated adult tissues contain a small population of less differentiated stem cells. It has become increasingly clear that these adult stem cells may be redirected to express various useful phenotypes for tissue regeneration. Our research strategies address the opposite end of this spectrum: how to stop the unwanted tissue differentiation such as scar and fibrosis formation. The current projects focus on the identification and characterization of molecular mechanisms activated during adult tissue wound healing.

Takahiro Ogawa, D.D.S., Ph.D. (togawa@dentistry.ucla.edu) – Our research in biomaterial science and bone biology includes the genetic characterization at bone-titanium interface, titanium implant surface science and technology, nano-designing of biomaterials, detoxification and activation of oxidant-generating materials, and an exploration of osteogenic enhancing molecules.

Paula Ortega-Verdugo, D.D.S., M.S., Ph.D. (portegaverdugo@dentistry.ucla.edu). Our research is focused on minimal intervention dentistry for managing dental caries, dentists' clinical decision-making, oral health care disparities, dental utilization among children, and diversity of the dental workforce.

No-Hee Park, D.M.D., Ph.D. (nhpark@dentistry.ucla.edu) –Our research aims to understand the mechanism of the development of cancer in the region of head and neck. Particularly, we are working with the role of DNA viruses and their oncogenes on the transformation of normal cells into malignant phenotypes. Also, my laboratory is working with DNA repair, tumor suppressor genes, and the development of new therapy modes for cancer.

Flavia Pirih, D.D.S., Ph.D. (fpirih@dentistry.ucla.edu) – Our research focuses on the understanding of the basic and clinical aspects of periodontitis and peri-implantitis, with the ultimate goal of developing new strategies to prevent and treat both conditions. She conducts translational research that examines the role of genetics in patients' susceptibility to periodontitis and is developing an animal model to study experimental peri-implantitis.

Francisco Ramos-Gomez, D.D.S., M.Sc., M.P.H. (frg@dentistry.ucla.edu) – Our oral health disparities research in pediatric dentistry and public health focuses specifically on early

childhood caries (ECC) prevention, health disparities, and community-based interventions to improve oral health for underserved and vulnerable populations. Research emphasizes integrating cultural sensitivity, behavioral change, oral health literacy and education into preventive care, particularly for Latino and low-income communities.

Kumar C. Shah, B.D.S., M.S. (prosthodontist@ucla.edu) – Our research focuses on various aspects of prosthodontics.

Vivek Shetty, D.D.S., D.M.D. (vshetty@dentistry.ucla.edu) - Our research interests are defined by the significant and disproportionate burden of traumatic injury and its sequelae in vulnerable populations (e.g., socioeconomically marginalized racial/ethnic minorities, uninsured, elderly) and sited at the intersection of discovery science and patient care.

Ki-Hyuk Shin, Ph.D. (kshin@dentistry.ucla.edu) - Our research interest has been focused on molecular mechanisms of oral carcinogenesis and cellular senescence, and cancer stem cell biology.

Igor Spigelman, Ph.D. (ispigelman@dentistry.ucla.edu) - Our research focuses on the mechanisms and relief of chronic pain and addiction utilizing various multidisciplinary approaches. This includes studies on the alterations of voltage- and ligand-gated ion channels in orofacial pain and headache, and development of novel biomarkers, pharmacotherapies, and non-viral gene delivery methodologies. Drug development projects include SAR-informed scaffold-based synthesis, in vitro/in vivo screening, target engagement and IND enabling studies for the development of optimized therapeutics.

Sotirios Tetradis, D.D.S., Ph.D. (stetradis@dentistry.ucla.edu) - Our research focuses on mineralized tissue biology as it applies to craniofacial structures. We study the pathophysiology of osteonecrosis of the jaws (ONJ), as well as anabolic and catabolic pathways that regulate osteoblast differentiation and function.

Hung Ton-That, Ph.D. (htonthat@dentistry.ucla.edu) - Our laboratory primarily focuses on three major areas of research, aiming to elucidate the molecular mechanisms of pathogenicity by Gram-negative and Gram-positive pathogens. We employ a multidisciplinary approach combining classical and modern techniques that include genetics, various biochemical methods, electron microscopy, electron cryo-tomography, X-ray crystallography, biophysics, mass spectrometry, cell-based assays, and rodent models of infection.

Nini Tran, D.D.S., Ph.D. (ninic@dentistry.ucla.edu**)** – Our research focuses on diagnostics and therapeutics of early childhood caries (ECC) related to microbiome and host susceptibility. We conduct basic and translational research examining the role of *Streptococcus mutans* and the oral microbial communities in children's susceptibility to ECC.

Fang Wei, Ph.D. (fwei@dentistry.ucla.edu) - My current research focuses on biosensor for early diagnostics of high impact human disease via biomarkers in body fluids, including saliva. Specifically, real-time non-invasive monitoring of exosomal oncogenic mutations in human cancer patients in saliva and other body fluids are emphasized.

Shane White, B.D.Sc., M.S., M.A., Ph.D. (snwhite@dentistry.ucla.edu) – Our research includes natural and artificial dental biomaterials, especially in genetic-structural relationships for enamel and dentin, connecting genes to their resultant proteins, and to the biomechanical function of teeth. Other bodies of work have focused upon dental cements, ceramics, and endodontic materials.

David Wong, D.M.D., D.M.Sc. (dwong@dentistry.ucla.edu) – Our research focuses on the systems approach to oral cancer and Sjögren's syndrome pathogenesis and the development of basic and translational sciences of saliva into a clinical diagnostic fluid.

Fariba Younai, D.D.S. (fyounai@dentistry.ucla.edu) - Our research interests are focused on oral health issues in HIV infection.

Xinli Zhang, M.D., Ph.D. (xzhang@dentistry.ucla.edu) – Our research has been primarily focused on identifying functionalities, delineating the underlying molecular mechanisms, and exploring the translational potentials of an osteogenic factor Nell-1. Other research areas include skin wound healing, craniofacial anomalies, and comparative pathology in general.