Oral Biology and Pathology Department

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Degrees Awarded
M.S. in Basic Health Sciences and Ph.D. in Oral Biology and Pathology

Department of Oral Biology and Pathology Department

The Graduate Program in Oral Biology and Pathology, within the Health Sciences Center, offers a program of study and research leading to the M.S. and Ph.D. degrees. The M.S. curriculum is of approximately two years’ duration and is particularly suited for those dental graduates who wish to obtain further basic science training before entering or while obtaining a clinical specialty. The Graduate Program in Oral Biology and Pathology is also of particular interest to industrial-based scientists seeking additional training and advanced degrees. While the Department is interested in all aspects of oral biology, active programs of research presently being conducted include the following: development, metabolism, and control of the oral microflora on the teeth and various epithelial surfaces; oral putrefaction, malodor, and gingivitis; pathogenesis of periodontitis; interrelationship between systemic and oral diseases; mechanisms and therapy of dental hypersensitivity; ultrastructure and metabolism of healthy and diseased periodontal tissues with an emphasis on remodeling and matrix metalloproteinases; chemistry and crystallography of the biological calcium phosphates; biology of epithelial growth and differentiation; epithelial gene therapy; mechanisms of epidermal and oral carcinogenesis; wound repair; biology of skin and mucosal grafting; acquired and innate immunity; inflammation and fibrosis, and cancer. Further details may be obtained from the graduate program director.

Admission requirements of Oral Biology and Pathology Department

In addition to the minimum Graduate School requirements, the following are required:

A. A bachelor’s degree and grade point average of 3.3 in the sciences and 3.0 overall

B Original transcripts with three letters of recommendation

C. Proof of satisfactory performance on the General Aptitude and Advanced parts of the Graduate Record Examination (GRE).

All applicants are carefully screened by the credentials committee of the department. Interviews and discussions are arranged with faculty members and graduate students where possible. Formal approval for acceptance into the program is given by the Graduate School.

Facilities of Oral Biology and Pathology Department

The Department of Oral Biology and Pathology currently occupies 18,000 square feet of research space. Facilities include isotope counters and preparative and analytical ultracentrifuges; infrared, atomic absorption, ultraviolet/visible spectrophotometers; an offactometer; gas and high-pressure liquid chromatography systems; high-voltage, particle-free flow, and polyacrylamide gel electrophoresis systems; computer equipment of various types; fluorescence densitometer, spectrophotometers, microscopes, thermocyclers, ELISA readers, microdensitometers; automated colony counter; amino acid analyzer, autoclaves and ethylene oxide sterilizer, specialized anaerobic chambers, animal, and clinical laboratories; fully equipped tissue culture facilities,

The Living Skin Bank, which will provide a core facility for the production of clinical grade cell based therapies in a newly installed “clean room” (cGMP facility), is housed in the Department of Oral Biology and Pathology, under the direction of Dr. Marcia Simon. Research operatories are available in the Dental Care Center for clinical research projects. Graduate students have access to the University central computer facility as well as high-speed Ethernet links connecting the department to E-mail, Medline, and the Internet through servers located in the University Hospital.

Requirements of Oral Biology and Pathology Department

In addition to the minimum degree requirements of the Graduate School:

A. All students must complete all or part of the Oral Biology and Pathology Oral Systems course.

B. M.S. students must complete two graduate courses selected from offerings within and outside the Department.

C. Ph.D. students are generally required to complete four to six course offerings at the graduate level and advance to candidacy by preparing a detailed written proposal in the format of a National Institutes of Health research grant application. A public seminar is presented by the student to members of his or her advisory committee, the department, and the University community at large, in which the student defends the proposal. This is followed by a further defense by the student before his or her advisory committee. A determination for advancement to candidacy is then made and forwarded to the Graduate School for official approval.
D. An original research thesis is required for completion of both the M.S. and Ph.D. degrees. For the Ph.D., a public defense followed by an examination of the student’s dissertation by the Thesis Committee is required. For the M.S. degree, the student defends the thesis only to the student’s dissertation committee. If the thesis is recommended for approval, the determination is submitted to the Graduate School for final decisions to award the degree.

Faculty of Oral Biology and Pathology Department

Distinguished Professors
Kleinberg, Israel, Chairperson. D.D.S. 1952, University of Toronto, Canada; Ph.D., 1958, University of Durham, Newcastle upon Tyne, England: Identification of peptides and salivary factors involved in the growth and metabolism of oral mixed bacterial populations; pharmaceutical application of salivary components in the control of dental caries and oral malodor; mechanisms of dental plaque formation; control of microbial populations (oral, gastrointestinal, vaginal) with growth factors and growth inhibitors; new diagnostic techniques and therapeutics, technology transfer.


Professors

Ryan, Maria E., D.D.S., 1989, Ph.D. 1998, Stony Brook University; Cert. Periodontology, 1993, University of Connecticut: Connective tissue biology; the role of growth factors in connective tissue metabolism; diagnostic technology as it applies to preventative and therapeutic measures in dentistry; host modulatory therapies.


Associate Professors
Brouxhon, Sabine M.D. 1998, University of Rochester: research focuses on the mechanism(s) by which E-cadherin, a cell-cell adhesion protein is downregulated to induce the progression of skin and breast cancers. Included are studies on its endocytosis, trafficking, and sorting to the lysosomal and proteasomal pathways for degradation and how ubiquitination and the cyclooxygenase-prostaglandin E2 system is involved in this process.

Ghazizadeh, Soosan, Ph.D. 1994, Stony Brook University: Epithelial stem cell biology; hair follicle development; immunological responses in gene therapy; cutaneous gene therapy.


Walker, Stephen G., M.Sc., 1987, University of Guelph, Canada; Ph.D. 1994, University of British Columbia, Canada. The analysis of the cell surface proteins and carbohydrates of Treponema pectinovorum and how these molecules interact with the environment. T. pectinovorum is an anaerobic spirochete that flourishes in the diseased periodontal pocket of humans and may contribute to periodontitis.

Assistant Professors

Adjunct Professors
Cutler, Christopher D.D.S., 1986, Emory University School of Dentistry Ph.D. 1990, Emory University School of Medicine, Certificate of Periodontics, 1990, Emory University School of Post-graduate Dentistry: Innate immunity, inflammation, pathogenesis of chronic periodontitis, dendritic cells/langerhans cells, anaerobic microbiology, Porphyromonas gingivalis.

Stephanos Kyranides, D.D.S., M.S., Ph.D., University of Athens 1991, University of Rochester, 1997, 1999: Research focuses on the cross-talk between peripheral inflammatory conditions, such as arthritis, and brain inflammation, including pain.

Rafailovich, Miriam, Ph.D., 1981, Stony Brook University: Properties of polymers in confinement at surfaces and interfaces, organic/ inorganic nanocomposites, flame retardant polymers, electrospun scaffolds, cell/surface interactions, templated biomineralization, nanorheological measurements, neutron and x-ray scattering and reflectivity from organic thin films.
Professors Emeritus
Kaufman, Hershall W., D.M.D., 1963, Ph.D., 1967, University of Manitoba, Canada: Calcium phosphate chemistry as it relates to dental hypersensitivity, dental caries, and calculus formation and prevention; rheological properties of saliva and their relation to oral health; design, management, and statistical analysis of clinical research trials.

McNamara, Thomas F., Ph.D., 1959, Catholic University of America: Microbial etiology of dental caries and periodontal disease; immune mechanisms involved in dental pathogenesis; viral infection in oral microorganisms; significance of secretory IgA in caries prevention.

Pollock, Jerry J., M.Sc. 1966, University of Toronto, Canada; Ph.D. 1969, Weizmann Institute of Science, Rehovot, Israel. Salivary host defense systems; free radicals, anti-oxidants and nutritional therapy in dental and systemic disease.

Ramamurthy, Nungavarm S., Research Professor. MVSc., 1965, University of Agra, India; Ph.D., 1970, University of Manitoba, Canada: Collagen synthesis and remodeling in health and systemic disease; leukocyte metabolism and chemotaxis in diabetes; regulation of mammalian metallo-proteinases (MMPS) and development of synthetic inhibitors for MMPS.


Research Faculty
Gao, Jay G., Ph.D. 1989, Institute of Genetics, Fudan University, China Shanghai. Cutaneous and hepatic retinoid metabolism, regulation of lipolysis and lipogenesis.

Lee, His-Ming, Ph.D. 1996, SUNY at Stony Brook: #Proteinase Inhibitors in Periodontal Disease: Serpinolytic Inhibition by Doxycycline.


Clinical Adjunct Faculty
Barry Cooper, D.D.S.
Arthur Goren, D.D.S.
Irving Kittay, D.D.S.
Joan Phelan, D.D.S.
George Westbay, D.D.S.
Mark Wolff, D.D.S. Ph.D
Ling Xu, D.D.S., Ph.D.

NOTE: The course descriptions for this program can be found in the corresponding program PDF or at COURSE SEARCH.