

SCHOOLS OF MEDICINE, VETERINARY MEDICINE, AND DENTAL MEDICINE

The University of Pennsylvania presents a uniquely vibrant environment for research in the biomedical sciences, with outstanding schools of medicine, veterinary medicine, and dental medicine all on a single campus, along with strong departments in bioengineering and the basic sciences.

SCHOOL OF MEDICINE

Penn Medicine is a world-leading institution in the three equally valued and interrelated missions of patient care, education, and research. The strength of our research training programs can be attributed to the breadth and depth of research expertise among our faculty, superior training programs in all contemporary areas of biomedical science, and the diversity of our student body. Physicians and scientists at Penn Medicine are leaders in searching for new treatments and in investigating the underlying molecular mechanisms of a broad spectrum of diseases. Our faculty conduct innovative basic science and clinical research in all contemporary fields of biomedicine including cardiovascular disease, diabetes, obesity, neurodegenerative disease, genetics, cancer, and HIV/AIDS. Central to our research effort is the translation of laboratory discoveries into new treatment interventions and clinical trials.

VETERINARY MEDICINE

The School of Veterinary Medicine of the University of Pennsylvania, an integral part of a comprehensive, multi-disciplinary university, exists to better the health and welfare of animals and humans. The synergy generated by the School's interaction with the University community and the biomedical establishment in the Delaware Valley creates unique challenges and opportunities to excel in teaching, research, and service. To fulfill this mandate, we are committed to innovative educational programs to train veterinarians and biomedical scientists, pioneer research and the discovery of new knowledge in the basic and applied sciences, and specialized veterinary medical care and service.

DENTAL MEDICINE

Penn Dental views scholarship as a central component of excellence in instruction and patient care, and places a high priority on research. The presence of both a strong basic science faculty and clinical faculty at Penn Dental has encouraged the development of a robust research program. Collaborative research relationships involving faculty across the University abound at the School of Dental Medicine (SDM). In addition, as a WHO-designated Collaborating Center for Oral Infectious Diseases, SDM has an extensive network of international collaborations.



Vision Statement

The University of Pennsylvania Health System (UPHS) is committed to remain a world-leading institution in three equally valued and inter-related missions of patient care, education, and research. The success of these missions requires the integration of the School of Medicine and Health Services and a shared destiny with the University of Pennsylvania. By recruiting and retaining a world-class faculty and staff who strive for excellence, innovation, quality and professionalism, we will accomplish our missions. Our goal is to be recognized nationally as the most accomplished and respected School of Medicine and Health System.

Patient Care

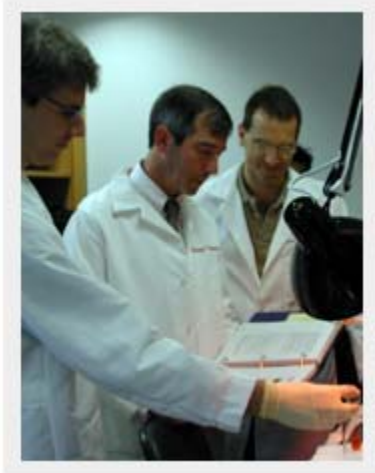
A team of interdisciplinary professionals will provide excellent care and service to their patients and communities in a compassionate and respectful environment. The Clinical Practices of the University of Pennsylvania (CPUP) will remain the core of the Health System. This core maintains excellent programs in major disciplines and strives to be the market leader in select services. The core will be supported by a health services network that includes owned or affiliated hospitals and ambulatory practices. The health services network will be selectively integrated with the core to support signature services and patient satisfaction.

Education

Our education programs develop the next generations of leaders in medicine and biomedical research. To attract the most qualified students and trainees, the School of Medicine and CPUP will engage the most outstanding educators and researchers in teaching and training; develop and implement innovative methods of instruction; provide state-of-the-art facilities and foster educational relationships with the University and UPHS network. We will recruit, retain and reward outstanding educators by providing an environment that promotes creativity and rewards teaching excellence. The School of Medicine, its faculty, and its alumni will be known for a shared commitment to lifelong learning.

Research

UPHS will enhance its status as a world leader in advancing medical science by continually improving the quality and impact of its research. The areas UPHS will emphasize are the fundamental mechanisms of biology and human disease; the translation of discoveries into new approaches for the diagnosis, treatment, and prevention of disease; and the evaluation of medicine's impact on the health of the public. The research enterprise will be supported by peer-reviewed external funding and innovative non-traditional funding sources. Attracting and retaining outstanding basic and physician scientists will be a key strategy for success. To help faculty develop pre-eminence in their fields, UPHS will provide excellent facilities, outstanding trainees, an effective research administration, and collegial interactions across the School of Medicine and the University.



Departments

Basic Science Departments

Biochemistry and Biophysics
Biostatistics and Epidemiology
Cancer Biology
Cell and Developmental Biology
Genetics

Medical Ethics
Microbiology
Neuroscience
Pharmacology
Physiology

Clinical Departments

Anesthesia
Dermatology
Emergency Medicine
Family Practice and Community Medicine
Medicine
Neurology
Neurosurgery
Obstetrics and Gynecology
Ophthalmology

Orthopaedic Surgery
Otorhinolaryngology
Pathology and Laboratory Medicine
Pediatrics
Psychiatry
Radiation Oncology
Radiology
Rehabilitation Medicine
Surgery

Reference <http://www.med.upenn.edu/departments>



Centers & Institutes

Included here are free-standing, interdisciplinary centers and institutes. Other centers can be found within the [Other Centers and Institutes](#) link or on our [Academic Departments](#) list under their home departments.

- [Center for AIDS Research](#)
- [Abramson Cancer Center](#)
- [Institute on Aging](#)
- [Center for Bioethics](#)
- [Center for Clinical Epidemiology and Biostatistics](#)
- [General Clinical Research Center](#)
- [Center for Developmental Biology](#)
- [Penn Diabetes Center](#)
- [Institute for Environmental Medicine](#)
- [Center for Experimental Therapeutics](#)
- [Leonard Davis Institute of Health Economics](#)
- [Human Genetics Center](#)
- [Eldridge Reeves Johnson Foundation](#)
- [Institute for Medicine and Engineering](#)
- [Pennsylvania Muscle Institute](#)
- [Mahoney Institute of Neurological Sciences](#)
- [Center for Research on Reproduction and Women's Health](#)
- [Center for Sleep & Respiratory Neurobiology](#)

- [Other Centers and Institutes](#)
- [Research Core Facilities](#)

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RESEARCH CENTERS & OPPORTUNITIES

- [Center for Animal Health and Productivity](#)
The Center implements teaching, research, and service programs directed toward the improvement of health and productivity of dairy, swine, and poultry production systems in Pennsylvania. The Center focuses on the maintenance of physical and economic health in the whole animal population rather than clinical treatment of individual sick animals.
- [Center for Animal Transgenesis and Germ Cell Research](#)
The Center was established with the primary mission of performing innovative research on stem cell biology, nuclear reprogramming by transplantation, and animal transgenesis. A major objective of the research is to improve the health and productivity of domestic animals by genetic modification.
- **Center for Aquatic Animal Medicine and Pathology**
The Center aims to improve the technology and profitability of aquaculture, further the scientific study of aquatic animals, and develop an active educational focus on fish health and productivity. The Center interacts with Aquavet®, the aquatic veterinary medical program established by the School and offered at the Marine Biological Laboratory at Woods Hole, Massachusetts.
- **Allam Center for Equine Sports Medicine and Imaging**
The interdisciplinary Center provides comprehensive clinical service and integrates research, clinical practice, and education as they relate to the sport horse. The Center comprises four research laboratories.
- **Center for Infectious Disease Research and Food Safety**
The Center is committed to research and training that will increase the ability to control and prevent bacterial, viral, and parasitic diseases that threaten the health and well-being of animals and humans.
- [Center for Interaction of Animals and Society](#)
The Center provides an interdisciplinary and scholarly forum for research, education, and public service programs concerned with human–animal relationships. Its aims are to study the effects of interactions with animals on people at different stages of the life cycle, to explore the impact of our use of animals on their behavior and welfare, and to use knowledge gained to enhance human well-being and promote the humane use and treatment of animals in society.
- [Walter Flato Goodman Center for Comparative Medical Genetics](#)
The Center is dedicated to clinical and basic research on companion animals with diseases that are counterparts of human diseases, with the major emphasis on inherited disorders. Researchers at the Center identify and characterize new models, investigate disease causing genes, study mechanisms of pathology, and develop novel therapeutic approaches.
- [Mari Lowe Center for Comparative Oncology Research](#)
The Center is devoted to cancer research and to developing new diagnostic and treatment modalities for cancer in animals. Its researchers and clinicians, in close alliance with the Cancer Center at the University of Pennsylvania, work to formulate preventive, diagnostic, and treatment measures to control the disease in animals.
- [Center for Veterinary Critical Care](#)
The Center was established to enhance and advance veterinary critical care at the Matthew J. Ryan Veterinary Hospital. The Center fosters close interaction among clinicians and nurses from Anesthesia, Emergency Services, and the Intensive Care Unit and facilitates a smooth transfer of cases from one service to another.



Research

- [VMD/PhD Program](#)
- [NIH/Merck Summer Research](#)
- [Recent Research](#)
- [Research Centers](#)



Faculty, Administration & Departments
Faculty
Administrative Areas & Office of the Dean
Academic Departments

Related Info
Research at Penn Dental

Faculty, Administration & Departments

The School of Dental Medicine maintains a reputation as one of the premier teaching and research facilities in the nation and the world - a reputation that reflects the caliber of its faculty. As one of only a few U.S. dental schools with its own basic science faculty, Penn Dental has unique strengths in basic research. In addition, the faculty has a strong record in clinical practice and scholarship, reflected through their publications, invited lectures, and sponsored research activities.

Faculty

An index of all standing & associated faculty at Penn Dental.

Administrative Staff & Office of the Dean

A listing of key staff members by department.

Academic Departments

Providing links for further information on each of the School's twelve departments.

Research at Penn Dental

An overview of research activity at the School.

Reference <http://www.dental.upenn.edu/>



Research at Penn Dental

The following is an overview of selected areas being addressed by Penn Dental researchers:

Bone, Teeth, and Extracellular Matrix. Networks of proteins and polysaccharides form a connective tissue matrix for tissues and organs of the body. SDM scientists working in this area aim to understand the biology of connective tissues at cellular, biochemical, and molecular levels. Cartilage and bone, elastin, and tooth enamel are the major subjects of these investigations. This basic research program is providing an understanding of normal growth mechanisms and may elucidate biological defects leading to osteoarthritis, cleft palate formation, and osteoporosis.

Cranio-facial Genetic Anomalies. The investigation of the DNA and polypeptide sequences that code for the proteins of human enamel (enamelin and amelogenin) will continue to explore the genetic determinants of the more common inherited anomalies of dental enamel, and similar investigations of metabolic and genetic factors influencing osteogenesis.

Heavy Metal Toxicity/Bone Metabolism. Current studies are exploring the effect of low-level metal toxins on immunologic function, metabolic, and genetic factors influencing osteogenesis, gene expression and cartilage mineralization, osteoclast function, and new therapies for Paget's disease and osteoporosis.

HIV/AIDS. The SDM HIV/AIDS initiative will continue with investigation of lingual tonsillar tissue biopsy as a source of lymphoid tissue for estimating HIV load, as well as continuation of studies of oral candidiasis in AIDS, salivary inhibitors of HIV, and clinical trials of new topical oral antifungal agents and novel delivery methods.

Infection and the Host Response. The ability of bacteria to colonize and viruses to infect cells represents a dynamic balance between virulence of the infectious agent and host responses. SDM faculty are utilizing a wide range of techniques in cell and molecular biology to characterize the interaction of host-derived defense mechanisms with bacterial and viral virulence factors. Protein chemistry, gene cloning, immunobiology, and electron microscopic techniques are being employed to dissect the molecular mechanisms involved in these processes.

Saliva, GCF, and the SDM-GCRC Core Oral Fluids Laboratory. Studies are continuing on specific salivary components to determine the molecular mechanisms involved in bacterial aggregation in the oral cavity and its role in susceptibility to chronic dental diseases such as caries and periodontitis; and on the mechanisms involved in salivary inhibition of HIV and its significance in preventing oral transmission of HIV and the progression of HIV/AIDS.

Reference <http://www.dental.upenn.edu/research/>