Incoming UK College of Dentistry students interested in taking part in an intensive research experience in conjunction with their dental curriculum have the option of applying for the UK College of Dentistry Research Track program of study.

Students do not need to apply to the Research Track in order to perform research while in dental school. In many cases, students participating in the Research Track will look to pursue an academic career. In addition to completing required courses for the DMD degree, selected students will also focus their efforts on one or more UK College of Dentistry research focus areas.

Students enrolled in the Research Track option will gain valuable experience in research, have the opportunity to take part in meaningful studies, and receive scholarship funds to help offset UK College of Dentistry tuition fees each year they participate in, and fully meet Research Track requirements.

To apply to the Research Track, incoming dental students must include a completed Research Track application with their acceptance materials.

**Research Focus Areas**

**Chronic Oral Diseases**

The two major diseases of the oral cavity are related to infections that cause dental caries (cavities) and periodontal disease. These diseases affect a large portion of the global population, represent chronic infections acquired early in life, and are risk-factors for these diseases throughout the lifespan. In addition, a substantial portion of the population has to deal with oral fungal infections, eg. Candida albicans and viral infections, primarily related to the human herpesviruses.

This area of research focus in the College of Dentistry is the target of a number of faculty with expertise in infections, inflammation, immunity, genetics/genomics, and cell biology. Specific areas of research funding include studies of the oral microbiome, inflammation and innate immunity in oral mucosal tissues, adaptive immune responses in regulating oral infections and disease, genetic contribution to altered risk for disease and developmental abnormalities, and investigations of regulatory processes in bone biology. This research includes bench-to-bedside basic, clinical, and translational research using in vitro, animal, and human models of disease causation and treatment.

The research faculty are housed in the Center for Oral Health Research, Periodontics, Orthodontics, Oral Diagnosis/Oral Medicine, Pediatric Dentistry, and Restorative Dentistry.
Research Focus Areas

Cancer
Oral cancer remains a growing problem in the U.S. population, with one of the lowest 5-year survival rates of any cancer. As importantly, etiologic factors for oral cancer, including tobacco use, alcohol, and risk behaviors, contribute to Kentucky having a high incidence of this disease.

This area of research is an emerging target in the college and will include both basic biologic studies in the disease, as well as clinical/translational, and even public health approaches to earlier identification of ‘at-risk’ individuals and cellular changes that presage development of cancer.

Faculty in this area are housed in the Center for Oral Health Research, Orthodontics, and Oral Diagnosis/Oral Medicine. This program will be intimately linked to the activities and growth of the research portfolio in the NCI Markey Cancer Center, the Center for Clinical and Translational Research, and the UK Cancer Control Program.

Health Services Research
Health services research (HSR) is a multidisciplinary scientific field that examines how people get access to health care practitioners and health care services, how much care costs, and what happens to patients as a result of this care. The College of Dentistry has a history from its founding of extensive outreach and engagement programs to improve the oral health of Kentuckians. Originally this focused on underserved populations in eastern Appalachian Kentucky, but over the last two decades has expanded to include the rural counties of western and far-west Kentucky to the Mississippi River. This includes developing and overseeing fixed dental safety-net clinics, school-based outreach programs, and mobile dental van programs.

These programs of service and research are also based on extensive collaborative partnerships with community health programs, including Public Health Departments, Primary Care Centers, and Federally Qualified Health Centers across the state. The programs are based upon support through contracts from the Kentucky Cabinet of Health and Family Services, as well as federal support for studies of dental workforces, access to dental services in at-risk populations, changing demographics of the population with the state, economic, societal, behavioral, and educational impacts of poor oral health, and developing improved oral health literacy campaigns.

This research area engages faculty in the Center for Oral Health Research, Dental Public Health, Pediatric Dentistry, and Oral Health Practice. This research area is closely linked to the Center for Health Services Research in the College of Medicine and the Center for Population Research in the College of Public Health.

Orofacial Pain
Orofacial pain can be a chronic and debilitating condition for a large number of individuals with complex etiology and clinical presentation. It occurs from both musculoskeletal and neurogenic etiologies.

The Division of Orofacial Pain in the College of Dentistry is internationally recognized for its clinical and graduate program and draws patients from across the U.S., and globally, for leading-edge approaches to therapy.

Various investigations focusing on creative therapeutics, behavioral modification, and prevention are conducted by the faculty in Dentistry, Medicine, and Clinical Psychology.