THE UNIVERSITY of TENNESSEE
HEALTH SCIENCE CENTER

COLLEGE of DENTISTRY
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  *Dean, College of Dentistry*

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  *Senior Executive Associate Dean for Research*

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Increased emphasis has been placed on research in the College of Dentistry. Although our primary mission is to train successful general dentists, dental research is an important part of the educational process.

With the successful hiring of several research-oriented faculty, the University of Tennessee College of Dentistry has appeared in publications ranging from the Dental Products Reports to texts like “Cancer Metastasis – Biology and Treatment.” We are poised to become a leader in dental research with new industry support and multiple new research grants, covering areas from sealants to stem cells.

For this, I would like to thank those who have supported faculty and student research efforts to advance the dental profession – with a special thanks to our alumni.

Timothy L. Hottel, D.D.S., M.S., M.B.A.

Dean, College of Dentistry
The purpose of this compendium of current research efforts in the College of Dentistry at the University of Tennessee Health Science Center is to facilitate communication and collaboration in research among faculty; to assist students in selecting areas of research and mentors for their student research projects; and, to inform the alumni and other health professionals in the Mid-South and the dental industry of the expertise and assistance that is available to prospective researchers in the UT College of Dentistry.

Franklin Garcia-Godoy, D.D.S., M.S., Ph.D., Ph.D.

Senior Executive Associate Dean for Research
Chair, Department of Bioscience Research
Director, Bioscience Research Center
Professor, Department of Physiology
## Administration

**Dean**
Timothy L. Hottel, D.D.S., M.S., M.B.A. (901) 448-6200

**Associate Deans**
- Academic and Institutional Affairs
  Mark R. Patters, D.D.S., Ph.D. (901) 448-7886
- Admissions & Student Affairs (Interim Associate Dean)
  John S. Covington, III, D.D.S., M.S., F.R.S.M. (901) 448-6268
- Clinical Affairs
  Lloyd A. George, D.D.S., M.Ed., J.D. (901) 448-6413
- Research
  Franklin Garcia-Godoy, D.D.S., M.S. (901) 448-6333

## Department Chairs

### Biological & Diagnostic Sciences
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### Bioscience Research
Franklin Garcia-Godoy, D.D.S., M.S. (901) 448-6333

### Endodontics
Adam Lloyd, B.D.S., M.S. (901) 448-1793

### Oral & Maxillofacial Surgery
Lawrence W. Weeda, Jr., D.D.S. (901) 448-6236

### Orthodontics
Terry M. Trojan, D.D.S., M.S. (Interim Chair) (901) 448-6214

### Pediatric Dentistry & Community Oral Health
Steven P. Hackmyer, D.D.S. (Interim Chair) (901) 448-6206

### Periodontology
Paul S. Bland, D.D.S. (901) 448-6242

### Prosthodontics
Russell A. Wicks, D.D.S. (901) 448-6380

### Restorative
Janet Harrison, D.D.S. (901) 448-6692
Dental research is being conducted at a variety of laboratories and clinics across the University of Tennessee Health Science Center campus, as well as at regional medical and public health centers in Tennessee and Arkansas. However, the designated campus dental research centers are listed below.

- **Biomaterials Research Center**
  138 Nash Research Building
  894 Union Avenue

- **Bioscience Research Center**
  N102 Dunn Dental Building
  875 Union Avenue

- **Stem Cell Research Center**
  222 Cancer Research Building
  19 S. Manassas Street

- **Clinical Research Center**
  Dunn Dental Building, 3rd Floor
  875 Union Avenue

- **Craniofacial Research Center**
  429/B12 Boling Center
  711 Jefferson Avenue

- **TMD/Sleep Disorder Clinic**
  Dunn Dental Building, 3rd Floor
  875 Union Avenue
Listed below is a summary of the different types of research currently being conducted by faculty in the **College of Dentistry at the University of Tennessee Health Science Center**. This list is not exhaustive.

**Biomaterials Research**

*Biomaterials Development*
- Microtensile fracture strength testing
- Profilometer fracture mode testing
- Fatigue, thermocycling and load testing
- Scanning electron microscope evaluation
- Confocal electron microscope evaluation
- Leakage testing
- Hybrid layer evaluation
- Remineralization and demineralization studies
- Color and gloss analysis
- Implant coatings

*Clinical Testing*
- Whitening kits
- Restorative materials
- Endodontic materials
- Periodontal therapies
- Prosthodontic devices
- Toothpaste
- Mouthwash
- Adhesives
- Disinfectants
- Analgesics
- Drugs
- Lasers
- Dental instruments and devices
- Toothbrushes (manual or power)
- Ortho appliances/devices
- Dental floss
- Implants
- Plaque and gingivitis
**Toothbrushing**
- Dentifrice testing
- Abrasion testing
- Wear testing
- Clinical testing
- Biofilm

**Biocompatibility Testing**
- Drugs and biomaterials
- In vitro cytotoxicity
- In vivo biocompatibility
- Histological assessment
- Genotoxicity assessment

**Molecular Assays**
- Protein/Gene activation
- PCR
- Gene silencing
- Gene isolation
- Molecular pathway elucidation
- Stem cells

**CRANIOFACIAL RESEARCH**

**Inflammation Research**
- Tissue alterations in periodontal diseases
- Cellular response to anti-inflammatory drugs (i.e., COX inhibitors, transcription factor inhibitors), natural products (i.e., myrrh oil, tea tree oil, cranberry components), and oral rinses
- Levels of arachidonic acid metabolites in gingival crevicular fluid in gingivitis/periodontitis
- Role of fibroblast production of matrix metalloproteinases and inflammatory mediators in periodontal diseases and inflammatory TMJ destruction
- Effects of methamphetamine on gingival fibroblasts and neutrophils in periodontitis

**Innate Immunity**
- Role of peroxidase enzymes of leukocytes and saliva in producing antimicrobial oxidizing agents that protect tissues against microbial infection and inflammation
- Antibiotic peptides produced by human leukocytes, oral epithelial cells, and the salivary glands. Mechanisms of antimicrobial activity and the molecular basis for microbial resistance
Oral Cancer
- Analysis of tumor cell invasion and metastatic potential
- Testing therapeutic potential of anti-tumor agents
- Immunolocalization of specific tumor antigens in cells and tissue

Proteomic Analysis and Protein Expression Patterns
- Proteomic analysis of cells and tissues
- Tumor marker identification, characterization, and prognostic value

Bone Metabolism
- Effects of drugs (i.e., bisphosphonates and statins) and natural products (i.e., cranberry components) on soft tissue cell (gingival fibroblast and epithelial cell) production of mediators of bone metabolism (i.e., IL-6, RANKL, OPG)

Gingival Fibroses
- Gingival fibroblast production/regulation of extracellular matrix molecules and matrix metalloproteinases in gingival fibroses (hereditary/idiopathic, drug-induced)

Molecular Assays
- PCR
- Bacterial gene isolation and gene product identification
- Protein expression from isolated gene
- DNA analysis

Clinical Testing
- Assay for efficacy of mouthwash and toothpaste, using in vitro analysis
- Evaluation of periodontal therapy products
- Effects of natural products such as cannabidiol
- Testing for biofilm in dental waterline (screening and enumeration of microbial populations in dental waterlines; culturing anaerobic bacteria)

Biomaterials Testing
- Cellular and tissue response to implant materials and other biomaterials
- Cytotoxicity of implant and other biomaterials
- Genotoxicity testing
- Biofilm formation

Craniofacial Pain
- Therapy and treatment of neck and facial pain that is associated with temporomandibular joint disorders (TMD)
- Treatment of sleep apnea and other sleep disordered breathing conditions through development and use of oral appliances
SECTION I: Faculty in Research
PART A: Department of Bioscience Research

The Department of Bioscience Research houses the College of Dentistry’s Research Faculty, or faculty whose majority effort is dedicated to conducting dental research.
JEGDISH P. BABU, M.SC., M.S., PH.D.

Associate Professor, Department of Bioscience Research

Education:
Ph.D., 1981, Michigan State University
M.S., 1974, West Virginia University
M.Sc., 1971, Osmania University, India

Office Phone: (901) 448-4342
Email: jbabu@uthsc.edu

Research Interests:
- Bacterial pathogenesis
- Biofilm
- Genomics of oral pathogens
- Monocyte interactions with LPS of periodontal pathogens

Research Funding:
- Private Industry
- University of Tennessee College of Dentistry Alumni Endowment Fund

Selected Publications:
- Babu JP, Ofek I. Cranberry high molecular weight constituent affect selectively metabolic activity of Streptococcus sanguis in biofilm. Microbios. 2010 (accepted for publication).
JOEL D. BUMGARDNER, PH.D.

Adjunct Professor, Department of Bioscience Research
Associate Professor, Joint Biomedical Engineering Program
(UTHSC and University of Memphis)

Education:
• Fullbright Fellowship, 1993-1994, Umeå University, Umeå, Sweden
• Ph.D., 1988, University of Alabama at Birmingham
• M.S., 1988, University of Alabama at Birmingham
• B.S., 1988, University of Alabama at Birmingham
• B.S., 1984, Florida State University

Office Phone: (901) 678-5243
Email: jbmgrdnr@memphis.edu / jbumgard@uthsc.edu

Research Interests:
• Bone tissue engineering/Guided bone regeneration
• Biomaterials development; corrosion/degradation of biomaterials.
• Drug delivery
• Dental implants and restorative alloys
• Cell biomechanics

Research Funding:
• National Institutes of Health
• National Science Foundation
• Private Industry and Research Foundations

Selected Publications:
• Martin HJ, Schultz KH, Bumgardner JD, Walters KB. XPS study on the use of 3-Aminopropyltriethoxysilane to bond chitosan to a titanium surface. Lanmuir. 2007;23(12):6645-6651
• Lin HY, Bumgardner JD. Changes in the surface oxide composition of Co-Cr-Mo implant alloy by macrophage cells and their released reactive chemical species. Biomat. 2004;25(7-8):1233-1238
MUSTAF A KH. DABBous, Ph.D.

Professor, Department of Bioscience Research
Professor, Department of Microbiology and Immunology, College of Medicine
Professor (Hon.), College of Medicine, University of Tanta, Egypt

Education:
Ph.D., 1967, University of Tennessee Medical Units, Memphis, TN
M.Sc., 1965, Massachusetts Institute of Technology (MIT)

Office Phone: (901) 448-6167
Email: mdabbous@uthsc.edu

Research Interests:
- Connective tissue alterations in periodontal disease (the matrix
collagens and matrix metalloproteinases)
- Tumor invasion and metastasis; the role of matrix metalloproteinases in metastatic spread
- Tumor-specific cytokines in cell motility and their correlation with metastatic potential
- Tumor markers and metastatic potential of tumor cells

Research Funding:
- National Institutes of Health
- Private Industry
- Private Foundations

Selected Publications:
FRANKLIN GARCIA-GODOY, D.D.S., M.S., PH.D., PH.D.

Senior Executive Associate Dean of Research  
Chair, Department of Bioscience Research  
Director, Bioscience Research Center  
Professor, Department of Physiology, UTHSC  
Adjunct Professor, Department of Biomedical Engineering,  
University of Memphis  
Adjunct Professor, Department of Biomedical Engineering,  
Florida International University  
Senior Clinical Investigator, The Forsyth Institute, Boston, Massachusetts  
Adjunct Professor, Department of Conservative Dentistry and Periodontology,  
University of Munich

Education:  
M.S., 1979, University of Illinois, Chicago  
D.D.S. 1976, Autonomous University of Santo Domingo (Dominican Republic)

Office Phone: (901) 448-6333  
Email: godoy@uthsc.edu

Research Interests:  
• Stem cell and tissue engineering  
• Biomaterials development and biocompatibility testing methods  
• Demineralization and remineralization  
• Dental erosion  
• Biofilm virulence

Research Funding:  
• National Institutes of Health  
• Private Industry

Selected Publications:  
EDWARD F. HARRIS, PH.D.

Professor, Department of Bioscience Research
Professor, Department of Orthodontics
Professor, Department of Pediatric Dentistry

Education:
NIH Postdoctoral Fellow, 1977-1980, University of Connecticut
Ph.D., 1977, Arizona State University, Tempe

Office Phone: (901) 448-6265
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Research Interests:
- Effects of age, sex, race, and environment on growth of the cranial complexes
- Tooth mineralization
- Tooth size, odontometrics
- External apical root resorption

Research Funding:
- University of Tennessee College of Dentistry Alumni Endowment Fund

Selected Publications:

Professor, Department of Bioscience Research
Director for Stem Cells and Regenerative Therapies (UTHSC)
Professor, Department of Anatomy and Neurobiology, College of Medicine (UTHSC)

Education:
Doctor of Science (D.Sc.), 1992, in Oral Biology, Boston University
Master of Science in Dentistry (M.S.D.), 1989, Endodontics, Boston University
Certificate in Endodontics, 1988, Boston University
Doctor of Dental Surgery (D.D.S.), 1983, Taipei Medical College

Office Phone: (901) 448-1490
Email: ghuang4@uthsc.edu

Research Interests:
- Dental tissue regeneration
- Stem cell biology
- Neurogenesis
- Induced pluripotent stem (iPS) cells
- Bone regeneration

Research Funding:
- National Institutes of Health (NIH)
- American Association of Endodontists

Selected Publications:
MARK SCARBECZ, M.A., PH.D.

Director, Planning and Assessment
Professor, Department of Bioscience Research
Faculty (Dental Science), College of Graduate Health Sciences

Education:
Ph.D., 1991, University of Arizona, Tucson
M.A., 1983, University of Arizona, Tucson
B.A., 1981, University of New York at Buffalo

Office Phone:  (901) 448-1211
Email:  mscarbecz@uthsc.edu

Research Interests:
- Demographic trends in the dental profession
- Women in the dental profession
- Dentist-patient relations
- Relationship between subjective general health and subjective oral health
- Scholarship of Teaching and Learning (SoTL)

Research Funding:
- None at present

Selected Publications:
EDWIN L. THOMAS, M.S., PH.D.

Professor, Department of Bioscience Research
Professor, Department of Microbiology, Immunology, and Biochemistry

Education:
Ph.D., 1970, University of Michigan, Ann Arbor
M.S., 1966, University of Michigan, Ann Arbor

Office Phone: (901) 448-4879
Email: elthomas@uthsc.edu

Research Interests:
- Innate immunity
- Antimicrobial peptides of saliva, leukocytes, and epithelial cells
- Peroxidase enzymes of leukocytes and saliva
- Proteomics and biomarkers of human disease
- Calcium-binding molecules and resistance of the teeth to damage by acid

Research Funding:
- University of Tennessee College of Dentistry Alumni Endowment Fund

Selected Publications:
DAVID A. TIPTON, D.D.S., PH.D.

Professor, Department of Bioscience Research
Professor, Department of Periodontology

Education:
Ph.D., 1988, University of Memphis
D.D.S., 1978, University of Tennessee College of Dentistry
B.A., 1975, Vanderbilt University

Office Phone: (901) 448-7200
Email: dtipton@uthsc.edu

Research Interests:
- MMPs and inflammatory mediators in periodontal and TMJ disease
- Effects of drugs and natural products on soft tissue cell production of mediators of bone metabolism
- Cellular response to anti-inflammatory drugs and natural products
- Gingival fibroblast production/regulation of ECM molecules and MMPs in gingival fibroses
- Cellular response to dental biomaterials

Research Funding:
- Private industry
- University of Tennessee College of Dentistry Alumni Endowment Fund

Selected Publications:


- **Tipton DA**, Hamman NR, Dabbous MKh. Effect of myrrh oil on IL-1β stimulation of NF-κB activation and PGE2 production in human gingival fibroblasts and epithelial cells. *Toxicol In Vitro* 2006; 20:248-255.
**ANTHEUNIS VERSLUIS, PH.D.**

*Director, Biomaterials  
Professor, Department of Bioscience Research*

**Education:**  
Ph.D., 1994, University of Greenwich, London  
Ingenieur, 1988. Delft University of Technology, Delft, The Netherlands

**Office Phone:** (901) 448-6263  
**Email:** averslui@uthsc.edu

**Research Interests:**  
- Biomechanics (stress-strain analysis) applied to dental tissues, such as:  
  - Restoration techniques  
  - Polymerization shrinkage and hygroscopic expansion  
  - Wear, failure, fracture, and fatigue of teeth, restorations, roots, and instruments  
  - Orthodontic forces and tooth movement  
  - Testing methods used in dental research

**Research Funding:**  
- Private Industry

**Selected Publications:**

YANHUI ZHANG, M.S., PH.D.

Assistant Professor, Department of Bioscience Research

Education:
Ph.D., 2003, The Chinese Academy of Sciences, Beijing, China - Microbiology
M.S., 1999, Xiamen University, China - Microbiology

Office Phone: (901) 448-3751
Email: yzhang36@uthsc.edu

Research Interests:
- Oral microbiology
  - Plaque and saliva research, Antimicrobial and anti-plaque tests, Plaque glycolysis and regrowth method (PGRM), Toothbrush, toothpaste and mouthrinse studies
- Biocompatibility of dental material
  - Genotoxicity and cytotoxicity, Cell culture, MTT, Agar diffusion test, cell proliferation, cell migration
- Oral cancer molecular and cellular biology
  - qRT-PCR, gene profiling, molecular cloning, cell invasion, IP, fluorescence, imaging, confocal microscopy

Research Funding:
- Private Industry

Selected Publications:
DENTAL RESEARCH STAFF

ADMINISTRATION

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The following is a list of funded research faculty. The first section lists all faculty who hold federal, industrial, or foundation research grants. The second section lists all faculty who hold Dental Alumni research grants. Contact information and project titles are provided.
The following is a list of faculty members who are principal investigators on federal, industrial, or foundation research grants. Titles, sponsors, expirations, and abstracts are provided for each grant. Faculty are listed alphabetically by last name.

**JEGDISH BABU, B.S., M.S., PH.D.**  
*Professor, Department of Bioscience Research*

**Phone:** (901) 448-4342  
**Email:** jbabu@uthsc.edu

**Influence of cranberry components on gingival epithelial cell production of bone resorptive mediators and adherence of periodontal pathogens’**

**Sponsor:** Cranberry Institute  
**Until:** June 30, 2014  
**Abstract:** Influence of Cranberry Juice Components on Denture-related Stomatitis and Inflammatory Reactions of Gingival Fibroblasts.

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**PAUL BLAND, D.D.S.**  
*Associate Professor, Department of Periodontology  
Chair, Department of Periodontology*

**Phone:** (901) 448-6242  
**Email:** pbland@uthsc.edu

**Multi-center phase 3 trial of minocycline hcl1 mg microspheres for use in subjects with peri-implantitis: clinical and microbiological evaluations.**

**Sponsor:** Orapharma, Inc.  
**Until:** December 31, 2014  
**Abstract:** To demonstrate the ability of Minocycline HCl Microspheres, 1mg to improve peri-implantitis: clinical and microbiological evaluations.
Plaque pH analysis project
Sponsor: The Procter & Gamble Company
Until: December 31, 2014
Abstract: To improve the sensitivity of our laboratory and clinical methods used in plaque analysis and advance the prevention of oral disease including dental caries.

Hinman Student Research Symposium
Sponsor: NIH/NDICR (R13)
Until: Spring 2015
Abstract: To support the annual Hinman Student Research Symposium.

Colgate Research Fund
Sponsor: Colgate
Until: December 31, 2047
Abstract: To support research efforts within the Department of Bioscience Research.

Biofilm Analysis Support Fund
Sponsor: The Procter & Gamble Company
Until: December 31, 2047
Abstract: To screen and assess the oral health of the population in and around Memphis, Tennessee.
Liang Hong, D.D.S., M.S., Ph.D.
Associate Professor, Department of Pediatric Dentistry and Community Oral Health
Director, Community Oral Health

Phone: (901) 448-6206
Email: lhong3@uthsc.edu

Development of a miniature plasma brush for dental clinical applications

Sponsor: NIH-NIDCR (R44 – SBIR Phase II)/Nanova, Inc
Until: June 30, 2014
Abstract: The main objective of this project is to develop a miniature atmospheric cold plasma brush (m-ACPB) for dental clinical applications.

George Huang
Professor, Department of Bioscience Research

Phone: (901) 448-1490
Email: ghuang4@uthsc.edu

Stem cell-based therapy for regenerative endodontics

Sponsor: NIH-NIDCD (R01)
Until: November 30th, 2014
Abstract: The long-term goal of this proposal is to regenerate and repair dental pulp/dentin thereby reducing the need of endodontic procedures. There have been no other effective ways to repair the infected or injured pulp tissue besides complete amputation.

Stem cell-mediated periodontal ligament regeneration for avulsed teeth

Sponsor: American Association of Endodontists
Until: September 30, 2014
Abstract: PDL-like tissue around an engineered bio-root is formed in minipig’s jaws. Based on these premises, we hypothesize that using PDLSCs, PDL can be regenerated in vivo on avulsed teeth.
Osteonecrosis of the jaw (ONJ) case registry

Sponsor: Amgen, Inc
Until: July 31, 2018
Abstract: The Osteonecrosis of the Jaw (ONJ) case registry is part of the denosumab post-marketing pharmacovigilance program. This ONJ case registry will describe the natural history of positively-adjudicated ONJ in subjects with cancer with an observation period of 5 years.

A clinical evaluation of NobelProcera™ implant bar overdenture in the mandible or maxilla on 4NobelProcera™ CC Implants

Sponsor: Nobel Biocare
Until: January 1, 2018
Abstract: To determine the bone behavior and survival rates of the NobelProcera™ implants, the bar, and the overdenture evaluating its clinical behavior.
The following is a list of active UT Dental Alumni Endowment Grants. Projects are listed alphabetically by title, with faculty names and email addresses, and project expirations.

- Synergistic effect of fluoride and calcium phosphate on remineralization of softened enamel

**Principal Investigator:** MOJDEH DEGHAN, D.D.S.
*Assistant Professor, Department of Restorative Dentistry*

**Co-Investigators:** Drs James Simon, Antheunis Versluis, Daranee Tantbirojn-Versluis

**Phone:** (901) 448-6172  
**Email:** mdehghan@uthsc.edu  
**Project Ends:** September 2014

- Synergistic effect of fluoride and calcium phosphate on remineralization of softened enamel

**Principal Investigator:** MARTIN DONALDSON, D.D.S.
*Associate Professor, Department of Pediatric Dent.-Comm. Oral Health*

**Co-Investigators:** Drs Larry Reiter and Ryan Wilson

**Phone:** (901) 448-6206  
**Email:** mdonald1@uthsc.edu  
**Project Ends:** September 2014
Decontamination of dental implant surfaces by chemical agents

Principal Investigator: CIMARA FORTES FERREIRA, D.D.S.
Assistant Professor, Department of Periodontology

Co-Investigators: Dr. Jegdish Babu
Phone: (901) 448-4494
Email: cferrair@uthsc.edu
Project Ends: September 2014

Remineralization effects of chitosan-ACP-based biomaterial for dental applications

Principal Investigator: LIANG HONG, D.D.S., PH.D.
Associate Professor, Department of Pediatric Dent.-Comm. Oral Health

Co-Investigators: Drs Franklin Garcia-Godoy, Timothy Hottel, and Yanhui Zhang
Phone: (901) 448-2369
Email: lhong2@uthsc.edu
Project Ends: September 2014

Antimicrobial effect of polyphosphate-based materials on oral bacteria

Principal Investigator: LIANG HONG, D.D.S., PH.D.
Associate Professor, Department of Pediatric Dent.-Comm. Oral Health

Co-Investigators: Drs T. Liu, Franklin Garcia-Godoy, and Timothy Hottel
Phone: (901) 448-2369
Email: lhong2@uthsc.edu
Project Ends: September 2014
**Oral stem cells for craniofacial bone regeneration**

**Principal Investigator:** GEORGE T-J HUANG, D.D.S., M.S.D., D.Sc.  
Professor & Director for Stem Cells & Regenerative Therapies

**Co-Investigators:** Dr. Franklin Garcia-Godoy  
**Phone:** (901) 448-1490  
**Email:** ghuang4@uthsc.edu  
**Project Ends:** September 2014

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**Isolation and characterization of periodontal ligament stem cells of human deciduous teeth.**

**Principal Investigator:** GEORGE T-J HUANG, D.D.S., M.S.D., D.Sc.  
Professor & Director for Stem Cells & Regenerative Therapies

**Co-Investigators:** Dr. Yu Owusu, Dr. Ikable Ayachi, Dr. Martin Donaldson  
**Phone:** (901) 448-1490  
**Email:** ghuang4@uthsc.edu  
**Project Ends:** September 2014

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**Evaluation of the effectiveness of the disinfection protocol of the electric handpieces at the UTHSC COD predoctoral clinic.**

**Principal Investigator:** ANASTASIOS KARYDIS D.D.S., M.S., PH.D.  
Professor, Department of Periodontology

**Co-Investigators:** Drs Jegdish Babu, Franklin Garcia-Godoy, Lloyd George, Janet Harrison and Yanhui Zhang  
**Phone:** (901) 448-6242  
**Email:** akarydis@uthsc.edu  
**Project Ends:** September 2014
An ultra-structural evaluation of the resin-dentin bond in root canals conditioned with phosphoric acid and ethylenediamine tetra-acetic acid

Principal Investigator: **BARRY MARK OWENS, D.D.S., B.S.**
Associate Professor, Department of Restorative Dentistry

Co-Investigators: Drs Jeffrey Phebus and Jeffrey Kalmowicz
Phone: (901) 448-6437
Email: bowens@uthsc.edu
Project Ends: September 2014

Developing inhibitors of bacterial protease enzymes for periodontal therapy

Principal Investigator: **EDWIN THOMAS, M.S., PH.D.**
Professor, Department of Bioscience Research

Co-investigators: Dr. Khaled Aboul-Hosn
Phone: (901) 448-4879
Email: bowens@uthsc.edu
Project Ends: September 2014

Effects of Vitamin D and a Vitamin D analog on wound healing via induction of human cathelicidin II-37.

Principal Investigator: **DAVID TIPTON, D.D.S., PH.D.**
Professor, Department of Bioscience Research

Co-investigators: Drs Amjad Nazzal, Andrzej Slominski, Sidney Stein, and Anastasios Karydis
Phone: (901) 448-7220
Email: dtipton@uthsc.edu
Project Ends: September 2014
- Cuspal flexure, depth-of-cure, and bond integrity of bulk-fill composites.

**Principal Investigator:** ANTHEUNIS VERSLUIS, PH.D.
Professor, Department of Bioscience Research

**Co-investigators:** Drs Thudung Do, James Simon and Daranee Tantbirojn-Versluis

**Phone:** (901) 448-6372
**Email:** antheun@uthsc.edu

**Project Ends:** September 2014

- Effects of Vitamin D and a Vitamin D analog on wound healing via induction of human

**Principal Investigator:** MATHA WELLS, D.D.S., M.S.
Assistant Professor, Department of Pediatric Dent.-Comm. Oral Health

**Co-investigators:** Drs Thudung Do, James Simon and Daranee Tantbirojn-Versluis

**Phone:** (901) 448-2897
**Email:** mwells18@uthsc.edu

**Project Ends:** September 2014
SECTION II: Students in Research
STUDENTS IN Dental Research
The College of Dentistry uses a variety of tools to improve human oral health, two of which are education and research. In recent years, the College has worked to expand its student research opportunities, creating an overlap between education and research, and helping students to better prepare for their future in dentistry.

Whereas research is more common in post-doctoral and residency programs, in the pre-doctoral program, there are many opportunities for students to enjoy research training and receive hands-on experience conducting research in one of the dental research laboratories and clinics on campus (for a list of Dental Research Centers, please refer to page 7).

For most UT dental students, the first opportunity to get involved in research will be during the summer after the first year of dental school (end of D1). During this summer session, students will have the most time to dedicate to research. However, limited time is also available at the end of the second year (D2) with varying amounts of additional time allotted in the following year to writing abstracts and presenting posters at meetings (such as the Hinman Student Research Symposium and IADR/AADR annual meetings). For students in their third and fourth year (D3 and D4) who are interested in participating in research, individual research electives can also be arranged for the duration of one semester.

In regards to funding for research, a modest stipend is available for a limited number of students to participate in the Student Summer Research Program, which is funded by the UT Dental Alumni Research Training Award (see Alumni Research Training Award section for more information about this program). Students are encouraged to apply for private and federal grants and fellowships as well.
At the University of Tennessee College of Dentistry (CoD), student research is a highly valuable scholarly activity, viewed as an integral component of the academic experience. Therefore, College administrators make it a priority to provide students with a variety of research opportunities, and, starting at new student orientation, faculty stress the important of engaging in research during at least one of the four years on campus.

The CoD Student Research Program for pre-doctoral students provides funding for student research projects. This program was initiated in 1974, at which time limited funding was available to two students through the L.G. Noel Foundation. Over the next several years, interest in this program grew and attracted 18-20% of incoming students each year.

To provide more funded research opportunities and promote student participation in research, College administrators established the Summer Research Training Program. This program was supported by an NIH training grant awarded to UT CoD by the National Institute of Dental and Craniofacial Research (NIDCR). This T35 grant continued for ten years before it was phased out in 2005.

In the wake of the loss of NIDCR funding, the UT Dental Alumni Association, in recognizing the importance of this student research program, committed funds for the Summer Student Research Training Program, for a period of ten (10) years. This current program for pre-doctoral students has been described by reviewers at NIDCR as a “model program” for other dental schools.

This program provides stipends for ten (10) dental students per year. During the summer, students receiving funding will engage in individualized research projects under the guidance and expertise of a faculty investigator who specializes in basic science, clinical science, or translational research. Students will work with their faculty mentor in his/her laboratory or clinic for the duration of eight (8) to ten (10) weeks. After this time, students will be required to present their research data in an oral presentation to their colleagues, faculty, and dental alumni. Student researchers will also be encouraged to present their research at national and international forums (including AADR/IADR meetings and the Hinman Student Research Symposium). All student researchers will be required to present their research as table clinics or posters at the annual Student Research Day held on campus each February.
DETAILS OF THE PROGRAM:

The Alumni Student Research Training program provides an opportunity for dental students to participate in cutting edge research experiences. The research training which the students receive individually allows the students to have an excellent opportunity for professional and academic growth, and it introduces students to different career opportunities in dental research and academic dentistry.

DETAILS ON THE PROGRAM:

**Stipend:** $1,200 per month*

**Duration:** 1-2 months (summer)

**Eligibility:** Any UTHSC dental student in good academic standing

**Application:** Available in the Craniofacial or Bioscience Research Center

**Deadline:** Annually by February 1st

FOR MORE INFORMATION, PLEASE CONTACT:

Craniofacial Research Center  
(901) 448-6167

- Or -

Bioscience Research Center  
(901) 448-6333

* A travel allowance will be provided to students for presenting their abstracts at the AADR/IADR annual meetings.
SELECTING A RESEARCH MENTOR:

The first step to engaging in research in the College of Dentistry is to explore research topics and project ideas. It is important to find research that not only has practical value, but also fascinates you. Keep in mind that it is not necessary to narrow your interests to one specific topic – your faculty research mentor can help you further develop the details of your research proposal.

In order to find a faculty research mentor whose interests align with your own, use these hints for selecting a research mentor:

1) Review Section I: Faculty in Bioscience Research of this handbook. Faculty who are currently engaged in research are listed alphabetically with a brief synopsis of their research interests. Thoroughly read through each individual’s research interests and use the contact information provided to set a meeting to discuss your interests further. Also, review the list of the previous summer’s mentors for your potential mentor.

2) Set up a consultation with Dr. Franklin Garcia-Godoy, Senior Executive Associate Dean for Research (901-448-6333 or godoy@uthsc.edu), to discuss your research interests and receive feedback from him regarding the feasibility of your research topic and suggestions for which faculty might best serve as your mentor.

3) Talk to a D2, D3, or D4 student and ask for references. Seek out those students who have participated in the program in previous years.

4) Talk to your faculty, particularly those for the classes that you enjoy or in areas where you feel your interests reside.

5) Do a little background research into your topic; read journal articles related to your topic and arm yourself with support for your research.
**STEPS TO FOLLOW:**

Now that you know that you want to participate in research, follow the steps listed below to begin the process:

1) Make an appointment with the Senior Executive Associate Dean for Research, Dr. Franklin Garcia-Godoy, to discuss research interests and possible faculty mentors.

2) Contact the Grants & Clinical Research Manager (448-2210) or the Craniofacial Research Center (448-6167) to pick up the application guidelines.

3) Call your prospective mentor to arrange for a meeting to discuss your interest in research and ask him/her for input on research topics. This should be completed between September and January before the summer in which you want to do research.

4) Work with your mentor to develop a simple proposal.

5) Submit your application by February 1st (annually).

6) An ad hoc committee will review all applications and will choose the ten (10) grant recipients according to the following criteria:
   - Scientific merit
   - Feasibility of project completion during project period
   - Clarity and conciseness

7) Award notifications will be sent by March 15th (annually).

8) For those who receive an award: You will be responsible for arranging the start date with your mentor and the schedule for your summer research – make sure to build flexibility into that schedule and keep in consideration major holidays and/or vacations.
The College of Dentistry hosts an annual Student Research Day, which provides dental students, who are engaged in research projects, with an opportunity to present their work on a local platform. Classes are canceled and the clinics are closed in the afternoon to encourage all students and faculty to attend the event and benefit from a rich, educational experience.

The annual event is held in mid-February, in the Schreir Auditorium, located in the Students Activity Center (SAC) on Madison Avenue.

The program includes a key note lecture by a world-class speaker in Oral Translational Research. The lecture is followed by an afternoon of presentations. Students may choose to present their work in table clinic or poster form.

Presentations are judged by a panel of faculty and alumni representatives. Students compete for several honors to be awarded.

Honors include:

- The Student Clinician Award for the Most Outstanding Presentation (sponsored by Dentsply/ADA)
  The student who receives this honor will be awarded a trip to the ADA annual meeting to present his/her research project
- The Harold Cloogman Award for the Best Summer Research Program project
- The James C. Ragain Awards for Student Summer Research Program projects in 2nd, 3rd, 4th, and 5th places.

Also presenting at the Student Research Day are Graduate Medical Education Students. These advanced students will compete for the Graduate Program Research Award.
The Hinman Student Research Symposium was established in 1995 to highlight student achievements in research. The Hinman is co-sponsored by the Thomas P. Hinman Dental Society and the University of Tennessee College of Dentistry, with participation of the National Institute of Dental and Craniofacial Research, the ADEAGies Foundation, the Procter & Gamble Company, Colgate, and the Tennessee Dental Association Foundation.

The Hinman Student Research Symposium is held every year at the Historic Peabody Hotel in Memphis, which is centrally located in the Mid-South, right along the Mississippi.

The Symposium consists of competitive, scientific sessions with awards for the best presentations, a banquet with a nationally acclaimed key-note speaker, exhibits, and numerous networking opportunities as well as touring the “beautiful Bluff City.”

The Hinman begins on a Friday at noon, consisting of registration and poster set-up. This is followed by a reception and welcome banquet. The Symposium continues on Saturday with both morning and afternoon scientific sessions and many opportunities for fun and more networking.

But the Hinman isn’t all academia. Following a tour of Elvis Presley’s Graceland Mansion, you’ll be on your own for the evening on Beale Street, “Home of the Blues.”

On Sunday, the scientific sessions will continue in the morning and close with the presentation of awards.

Outside of the Hinman Student Research Symposium, and the activities listed above, Memphis offers many more opportunities for exploration – from the Pyramid to Sun Studios to boat tours on the Mississippi to the lesser known but worthwhile National Civil Rights Museum, Pink Palace Museum, Brooks Art Gallery, Dixon Gardens, and the unique Ornamental Metal Museum. Tree-shaded parks and neighborhoods, good food, and warm Southern hospitality await you.

For further information, please visit the Hinman Symposium online at: www.uthsc.edu/dentistry/admission/hinman
HINMAN STUDENT RESEARCH SYMPOSIUM
OCTOBER 25-27TH, 2013