CATALOGUE of

EQUIPMENT & RESOURCES

Equipment and resources available for dental research on the University of Tennessee Health Science Center campus in Memphis, Tennessee
The College of Dentistry at the University of Tennessee has six designated dental research centers on the Health Science Center campus, located in Memphis.

- Biomaterials Research Center
- Bioscience Research Center
- Stem Cell Research Center
- Clinical Research Center
- Craniofacial Research Center
- TMD/Sleep Disorder Clinic

Each of these centers is fully-equipped with state-of-the-art equipment and technologies. Every center is set with computers and internet access.

These laboratories and equipment allow for a variety of research projects, including but not limited to biomaterials development, product trials and analysis, proteomic analysis, molecular assays, craniofacial pain-treatment and therapy testing, and tissue regeneration.

In addition to the resources specific to the College of Dentistry, the University of Tennessee Health Science Center also offers a variety of campus-wide research resources, including:

- Laboratory Animal Care Unit
- Drosophila Core
- Flow Cytometry and Cell Sorting Facility
- Genomics and Bioinformatics Cores
- Imtek MicroCat/SPECT System
- University of Memphis Integrated Microscopy Center
- Laser Capture Microdissection
- Mass Spectrometry Core Laboratory
- Molecular Resource Center
- Neuroscience Imaging

These facilities, and specialized personnel, are available to assist faculty conducting research at the University of Tennessee Health Science Center.
EQUIPMENT in the COLLEGE of DENTISTRY RESEARCH CENTERS

The following section lists the equipment that is available at each of the dental research centers on campus.
Senior Executive Associate Dean for Research
Franklin Garcia-Godoy, D.D.S., M.S., Ph.D., Ph.D.
Chair, Department of Bioscience Research
Director, Bioscience Research Center
Professor, Department of Physiology, University of Tennessee Health Science Center
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

Research Manager—Grants & Contracts
Laura C. Rush, MPH
As Research Manager Laura is responsible for logistical oversight of dental research, which includes managing research grants and contracts; supervising clinical research studies; serving as a technical editor; developing communication materials for the research program; and working with sponsors, institutional committees, and faculty to successful execute research projects.
Biomaterials Research Center
N102 Dunn Dental Building | 875 Union Avenue

The Biomaterials Research Center specializes in infinite element stress analysis, shrinkage testing, wear/erosion measurement and analysis, 3D optical scanning, and cusp flexure and tooth deformation measurement, as well as various other biomaterials and clinical testing. The following equipment is available for use in the Biomaterials Research Center.

- Analytical Balance
- Finite Element Analysis
- Mobile dental hand-piece station
- Nano Indenter
- Optical Scanner (Comet xS): Graphics processing station
- pH meter
- Polishing Machine
- Scanning electron microscope (SEM)
- Stereo Microscope: CCD camera & image analysis software
- Strain Gauge Measurement Set-up
- Total Shrinkage Measurement
- Ultrasonic Cleaner

Instron E1000 — Static & Fatigue

Novo Cure — Gloss Measure

Zeiss A1 Microscope

Buehler Hardness Tester (Vickers & Knoop)

Director of Biomaterials: Dr. Anthenuis Versluis

Biomaterials Research Coordinator
Brian Morrow

Taylor Hobson CCI MP Automated Optical

Novo Cure — Gloss Measure
The Bioscience Research Center specializes in remineralization and demineralization, in vivo cytotoxicity and biocompatibility, plaque glycolysis, and osteogenesis and chondrogenesis of dental stem cells. The following is a list of equipment available for use in the Bioscience Research Center.

- Actis 5 MicroCT (with computer control and separate construction unit)
- Accu-Jet® Pro-Pipette Controller
- Apparatus to standardize cavity preparations
- Beckman-Coulter pH meter (model pH1 510 with electrodes)
- Bio-Rad Power Pac 300 Power Supplier
- Bio-Rad Sub-Cell® GT Agarose Gel Electrophoresis Systems
- Buekler Hardness Tester (Vickers and Knoop)
- Color Spectrometer
- Gilson Pipettor (0.2-2 μl; 2-20 μl; 20-200 μl; 200-1000 μl)
- Eppendorf Benchtop Centrifuge 5415
- Eppendorf Repeater-Plus Pipette
- Eppendorf Spectrometer
- Eppendorf Thermostories
- Instron Universal Testing Machine
- Micro-Specimen Former for micro-shear bond strength
- MJ Research PTC-200 Thermocycler
- Olympus Polarized Microscope
- Olympus Dissecting Microscope
- Single Unit Toothbrushing Machine
- Staining Device
- Taylor Hard Tissue Microtome
- VG Studio Max 3D Visualization SW on MacPro
- VWR Pulse-Chasing Vortexer (with different tube holders)
- VWR Thermostories (model 5436)
- V8 Toothbrushing Machine

Carl Zeiss EVO LS15 Scanning Electron Microscope (SEM)
The Stem Cell and Regenerative Therapies Research Center is part of the interdisciplinary basic translational cancer research that is being conducted by College of Dentistry, College of Medicine, and the College of Pharmacy. Current research in the Stem Cells and Regenerative Therapies Research Center consists of neurotrophins and nerve cell survival and injury, and dental stem cell use for Parkinson’s and other neuroscience diseases.

- -80°C Freezer
- -20°C Freezer
- 4°C Refrigerator
- Analytical Balance
- Anesthesia Machine (for small animals)
- Class II Biosafety Cabinet
- Cryostat
- Electrophoresis Equipment
- Gel Imaging System (with computer)
- Heating Block
- Isotemp Incubator for Bacterial Plates
- IR CO₂ Incubator
- Leitz Compound Microscope
- Microcentrifuge
- Olympus SZX16—3-Dimensional Dissection Microscope (with video camera)
- Nikon Fluorescent Microscope (imaging camera & computer)
- pH Meter
- Polytron Homogenizer
- Refrigerated Microcentrifuge
- Thermocycler
- Thermomixer
- Tissue Culture Centrifuge
- Top Load Balance
- Cortexer
- Western Blot Equipment
The Clinical Research Center* is an area designated specifically for clinical research and oral product testing. Recent studies include mouth rinse and dentifrice effects on plaque glycolysis, vital teeth whitening, and oral epidemiological studies. The following is a list of equipment available for use in the Clinical Research Center. Associates in the Clinical Research Center are available to assist on projects in a variety of ways, including subject recruitment, conducting dental exams and prophylaxis, and project logistics (i.e., purchasing, product management).

- 4 private, fully-equipped dental units
- Computers and printers
- Oratec BANA-Zyme Processor
- Polymer Cheek Retractors (frosted and unfrosted)
- Private consultation area
- Private work station with 4 computers (for sponsor representatives, etc.)
- Vita Classical A1-D4 shade guides
- Radiography
The Craniofacial Research Center has equipment for basic laboratory research studies. Equipment is available for microbiological, molecular biological, and biochemical research, among many other basic science procedures and studies. The following equipment is available for use in the Craniofacial Research Center.

**Cell Culture Research Equipment:**
- Biological Safety Cabinets
- Inverted stage microscopes
- Low-temperature (-150°C) storage for cells
- Low-temperature (-80°C) for temperature-sensitive biological materials
- Water-jacketed air/CO\textsubscript{2} incubators

**General Analytical Equipment:**
- HPLC chromatographic system - ultraviolet, visible, fluorescence detectors
- Microcentrifuges
- Millipore water deionizer
- pH Meters
- Photometer for chemiluminescent assays
- Scanning and fixed wavelength ultraviolet and visible spectrometers
- Vertical and horizontal gel electrophoresis cells and power supplies

**Immunochemical Analysis:**
- Electrophoretic transfer units for Western blot analysis
- ELISA microplate spectrophotometer
- Microplate fluorescence reader

**Microbiology Equipment:**
- Automated microbial colony counter
- Biological safety equipment
- Containers for culture of anaerobic bacteria
- Environmental and water-bath incubator-shakers
- Environmental incubators
- Microscopes
- Water-jacketed air/CO\textsubscript{2} incubator

**Microscopy:**
- Cytocentrifuge
Microscopy:
- Cytocentrifuge

Preparative Equipment:
- Amicon ultrafiltration cells
- Centrifugal evaporator
- Cold room
- Fume hood
- High-and low-speed centrifuges
- Homogenizers
- Lyophilizers (freeze-driers)
- Preparative scale chromatography system
- Sonicator

Proteomic Analysis:
- Fluorescent gel scanner -system for c spot-matching, densitometry, statistical analysis
- Robotic spot cutter
- Rotofor preparative electrophoresis cell
- SELDI-TOF mass spectrometer
- Two-dimensional isoelectric focusing and gel electrophoresis system
- Ultraviolet light box

Radiochemical Analysis:
- Liquid scintillation spectrometer