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.

- Bioscience Research Center
- Biomaterials Research Center
- Clinical Research Center
- Craniofacial Research Center
- Stem Cell 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:

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

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. Young, 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.
The Biomaterials Research Center specializes in finite 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.

- Thermo-Cycling Test Instrument
- Konica Minolta spectrophotometer CM-5
- Konica Minolta spectrophotometer CM700D
- V-8 Cross Brushing Machine
- V-8 Calibration Meter and Load Cell
- Toothbrush-Dentifrice Assessment Instrument
- Novo-Curve
- Roto Mix
- UltraSonic Cleaner
- Sterngold Restorative System
- Micro-Hardness (Beuhler)
- Micro-Tensile Tester
- Abrasion Brushing Machine
- Oralchroma
- Cultura Vivacare Vivadent
- Curing lights
- Handimet Roll Grinder (Beuhler)

Biomaterials Research Coordinator
Brian Morrow

Taylor Hobson CCI MP
Automated Optical Profiler
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 pH 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)
- Carl Zeiss EVO HD LS15 (LaB6) Scanning Electron Microscope
- Carl Zeiss AxioObserver.Z1 Motorized Inverted Fluorescence Microscope
- Carl Zeiss Axioscope A1
- Color Spectrometer
- DektakXT™ Advanced System Stylus Profiler
- Deluxe 1000 Series Hard Tissue MicroTome
- Gilson Pipettor (0.2-2 μl; 2-20 μl; 20-200 μl; 200-1000 μl)
- ElectroPuls E1000 Test System
- Eppendorf Benchtop Centrifuge 5415
- Eppendorf Repeater-Plus Pipette
- Eppendorf Spectrometer
- Eppendorf Thermomixers
- Gilson Pipettor (0.2-2 μl; 2-20 μl; 20-200 μl; 200-1000 μl)
- Micro-Specimen Former for micro-shear bond strength
- MJ Research PTC-200 Themocycler
- Olympus Polarized Microscope
- Olympus Dissecting Microscope
- PerkinElmer Envision Multimode Plate Reader
- 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 Thermomixers (model 5436)
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 (with imaging camera and computer)
- pH Meter
- Polytron Homogenizer
- Refrigerated Microcentrifuge
- Thermocycler
- Thermomixer
- Tissue Culture Centrifuge
- Top Load Balance
- Cortexer
- Western Blot Equipment

Director for Stem Cells and Regenerative Therapies, Dr. George Huang

Olympus Q
SZX15—3-Dimensional Microscope

Applied Biosystems
Veriti 96 Well Thermal Cycler

Nikon Eclipse
Ti
Fluorescence Microscope
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

Operatory with radiography capabilities.
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/CO₂ 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

**Immuochemical 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/CO₂ incubator
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

Senior Research Assistant, Mary Margaret Jefferson.
The **TMD/Sleep Disorder Clinic** specializes in the treatment and therapy of temporomandibular joint (TMJ) dysfunction known as TMD, and sleep disordered breathing or obstructive sleep apnea. The following is a list of equipment available for use in the TMD/Sleep Disorder Clinic.

- Eccovision (Rhinometer & Pharyngometer)
- Energex
- Fisioline (Lumix 2 Cold Lazer)
- Joint Vibration Analysis (JVA) and Jaw Tracker
- Kodak CS9500 and 9100
- Medibyte (Take Home Sleep Study Screening)

Clinic staff Linda Vincent and Angela Morris practice utilizing the Joint Vibration Analysis and Jaw Tracker.

The Fisoline Lumix 2 supplies therapy for inflammation and pain.