Message from Dean Thomas

Research, the organized quest for new information that ultimately benefits humankind, has been a fundamental component of life at Tufts University School of Dental Medicine (TUSDM) for most of its existence. Our advancement of knowledge is particularly relevant this year, our one hundred and fiftieth, as we look back at the excellence of our research heritage, its impact on the oral and general health of people, and plan for our future endeavors.

As one example of our impact, consider one of our graduates from the Class of 1945, Michael G. Buonocore. His research showing that adhesive bonds could be used to seal tooth enamel, thereby preventing tooth decay and the formation of cavities, earned him the moniker “Father of Adhesive Dentistry”. His further investigations, using ultraviolet light and weak acids to adhere plastic sealants to teeth, paved the way for future research in restorative and esthetic dentistry.

Current research opportunities at TUSDM are many and varied and in the past decade have primarily focused on materials, public health and basic biological science research, with significant funding from both federal and corporate sources. More recently, we have broadened our portfolio by adding behavioral, outcomes, and pedagogical research opportunities for our faculty and students alike. We are fortunate to have an outstanding, inquisitive student body and an exemplary faculty who devote their time to the students’ education. That we are housed in a student-centered research University that has a unique combination of Schools and promotes interdisciplinary research, affords us an enviable opportunity for our next 150 years!

Huw F. Thomas, B.D.S., M.S., Ph.D.
Dean and Professor of Pediatric Dentistry
Dental Research Administration

Dental Research Administration (DRA) at TUSDM can partner on any dental research study you are looking to perform. We are equipped with a clinical research center, a dedicated material research lab, an established Practice Based Network (PBRN), a simulation lab, and a student travel program where students travel to your facility to conduct a research study. The possibilities are endless!

Our experienced and highly trained staff will help you every step of the way. From proposal development, sample size calculation, budget creation, IRB submission, and contract negotiations. Once the study has been approved we have highly qualified research technicians, research coordinators, and faculty members to conduct the research.

The mission of DRA is to promote the research enterprise at TUSDM, reduce administrative burden and support research productivity and compliance.

We are here to support you from start to finish. Please look through this brochure for more information on what we can offer.

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Contact Information

Dr. Gerard Kugel

Associate Dean for Dental Research & Professor of Comprehensive Care

Dr. Kugel has been conducting research at the Dental School for 25 years which has contributed to his expertise in Clinical Research and Esthetic Dentistry. He is a reviewer and board member for many dental journals and is a Fellow in the American and International Colleges of Dentistry, the Academy of General Dentistry, and the Academy of Dental Materials. Dr. Kugel has published over 120 articles and over 200 abstracts in the field of restorative materials and techniques. He was given over 300 lectures both nationally and internationally.

Gerard.Kugel@tufts.edu or 617 636-0870

Pamela Corrado

Director of Dental Research

As the Director of Dental Research Administration, Pam is responsible for overseeing financial and regulatory compliance and all research operations at TUSDM. Pam acts as the main research liaison to federal, corporate and foundation funding agencies and Tufts central Research Administration and budget center offices. The Director is charged with providing education, training and support for departmental research coordinators and staff throughout the Dental School as well as for faculty and students interested in research. She is responsible for managing the TUSDM Shared Labs; and shaping the evolving research program at TUSDM.

Pamela.Corrado@tufts.edu or 617 636-0389

Katie Dunn

Program Manager

Katie manages the administrative processes for the Dental Research department and Gavel Research Center. She coordinates administrative process of the pre-doctoral Student Research Program, oversees the International Research Program, coordinates travel for the AADR/IADR Annual Meeting and supervises the department Administrative Assistant and the Gavel Center Sr. Research Tech. Katie also acts as liaison to other School and University offices, assists with research budget management/planning, and submitting grant applications.

Katie.Dunn@tufts.edu or 617 636-2745
Industry Collaborations

Tufts University School of Dental Medicine (TUSDM) welcomes the many valuable contributions corporations and foundations make to its mission of extraordinary education, research and community service. As the third largest dental school in the nation, Tufts offers a variety of opportunities for both community investment and research with diverse populations. Researchers at Tufts University School of Dental Medicine conduct research for corporate sponsors in many areas, including:

- Bench studies in dental materials
- Clinical studies of dental devices, tooth whitening products, restorative materials, pharmaceuticals, and adhesive systems
- Basic science research in tissue engineering, wound healing, and dry-eye syndrome

The TUSDM research community welcomes inquiries from potential corporate partners. To learn more about the wealth of research resources available at Tufts, please contact:

Dental Research Administration: 617-636-2745

Corporate & Foundation Relations: 617-636-2775

TUSDM Major Areas of Research

- Behavioral, Epidemiologic & Health Services
- Cariology Research
- Craniofacial Biology
- Dental Materials: Adhesion, Ceramics, Polymers, Instruments, Equipment, Biocompatibility, Clinical Trials
- Diagnostic Sciences
- Education Research
- Geriatric Oral Research
- Implantology
- Microbiology, Immunology & Infection Control
- Mineralized Tissue
- Neuroscience
- Nutrition
- Oral & Maxillofacial Surgery
- Oral Health Research
- Oral Medicine & Pathology: Oral Tumor Progression, Cellular Differentiation, & Wound Healing
- Pediatric Dentistry
- Periodontal Research
- Pharmacology, Therapeutics & Toxicology
- Pulp Biology & Regeneration
- Prosthodontics Research
- Salivary Research

Opportunities abound for interdisciplinary and collaborative research with the Tufts University Schools of Bioengineering, Nutrition, Medicine, and Veterinary Medicine.

The TUSDM research community welcomes inquiries from potential corporate partners. To learn more about the wealth of research resources available at TUSDM, please contact:

Dental Research Administration: 617-636-2745
TUSDM Clinical Research Center

Located on the 14th floor of the Tufts University School of Dental Medicine, the TUSDM Research Clinic contains seven fully equipped dental bays with air water syringes, dental lights and peninsula sink cabinets. An adjacent 100 sq. ft. room is fully equipped for private patient consultations and research coordination.

Our staff is dedicated to protecting research participant safety and confidentiality, and ensuring protocol compliance, in order to provide our sponsors with high quality data.

Site Capabilities

- 6 full-time experienced research coordinators
- Access to phlebotomists, research nurses, and physicians of all specialties (through affiliation with Tufts Medical Center)
- Private consenting room
- Private monitoring rooms
- Double locked storage area for study documents
- Capable of submitting to local and central IRBs
- Experienced in a wide range of clinical trials

Facilities and Equipment

- 7 fully equipped dental bays
- Double locked drug storage area with temperature monitoring
- Full mouth x-ray capabilities
- Temperature regulated 4°C refrigerator
- Temperature regulated –20°C and –80°C freezers
- Backup generator
- Live broadcasting, intraoral Production VIEW HD camera console
- 4 overhanging HD Sony cameras
- Weight calibrated equipment—saliva, weight, thermometers, blood pressure
- Dispensary on the floor
- Laboratory processing area

The TUSDM research community welcomes inquiries from potential corporate partners. To learn more about the wealth of research resources available at TUSDM, please contact:

Dental Research Administration:
617-636-2745
Basic Science Research

Our faculty are at the forefront of dental research using new technology, inventing innovative approaches and finding new ways to improve dental procedures and education. Please find a list of the Divisions and Centers within Tufts University School of Dental Medicine.

Divisions and Centers

- Cancer Center Tissue Engineering Core
  - Director: Addy Alt-Holland - 617 636-4072
- Center for Integrated Tissue Engineering (CITE)
  - Director: Jonathan Garlick - 617 636-2444
- Dental Materials Lab-Gavel Center
  - Director: Dr. Gerard Kugel - 617 636-2745
- Division of Oral Biology Laboratory
  - Director: Jake Jinkun Chen - 617 636-2729
- Division of Craniofacial and Molecular Genetics
  - Director: Pamela Yelick - 617 636-2430
- Division of Biostatistics & Experimental Design
  - Dr. Matthew Finkelman - 617 636-3449
- Dry Eye Research Laboratory
  - Director: Driss Zoukhri - 617 636-3914
- Dry Mouth Clinic
  - Director: Athena Papas - 617 636-3932
- Facial Animation Laboratory
  - Director: Carroll-Ann Trotman - 617 636-0347
- The Craniofacial Pain Center
  - Director: Shuchi Dhadwal - 617 636-0813
- Tufts Dental Facilities – Vulnerable Populations
  - Hogan Regional Center (Hathorne)
    978-774-5000 x510
  - Northwoods Medical Center (Taunton)
    508-823-7323
  - Pappas Rehab. Hospital for Children (Canton)
    781-562-0349
  - Seven Hills Pediatric Center (Groton)
    978-732-5400
  - West Springfield  413-363-1345
  - Worcester 508-796-1555
  - Wrentham Developmental Center 508-384-8987
Established in 1992, the Dr. J. Murray Gavel Center for Restorative Dental Research has a long history of performing high quality bench studies in the area of dental materials research. The center is located at Tufts University School of Dental Medicine in the heart of downtown Boston, MA. The university welcomes the many valuable contributions from agencies, corporations, foundations, and individuals which makes its mission of extraordinary education, research, and community service possible.

### Common Testing Methods
- Compressive Strength
- Shear Bond Strength
- Tensile Strength
- Spectrophotometry
- Thermocycling
- Hydroxyapatite Formation
- Scanning Electron Microscopy (SEM)
- Water Absorption & Solubility
- Microleakage
- Three-Point Bend
- Fluoride Release
- Influence of pH on Dental Materials
- Demineralization
- Vickers Hardness Testing

### Commonly Tested Materials
- Dental Cements
- Dental Base/Liners
- Dental Composites
- Dental Implants
- Adhesive Systems
- Tissue Management Materials
- Various Indirect Restorative Materials
- Impression Materials
- Provisional Materials
- Glass Ionomers and RMGCl
- Prosthetic Materials
- Endodontic Materials
- Orthodontic Materials

The TUSDM research community welcomes inquiries from potential corporate partners. To learn more about the wealth of research resources available at TUSDM, please contact:

Dental Research Administration
617.636.2115

The compression testing of dental cements occurring on the universal testing machine, Instron® 5566A. Shear Bond testing occurring on the universal testing machine, Instron® 5566A. pH readings are recorded on the Orion™ star A214.
The Tufts University School of Dental Medicine (TUSDM) PBRN is a network of TUSDM alumnus private practitioners who conduct clinical studies in the course of routine patient care. TUSDM PBRN practitioners are located across the country and have all completed training and preparation to certify their practices for clinical research. TUSDM is the administrative center for the projects and provides training, research certifications, quality control, administrative oversight as well as fiscal and regulatory oversight. All projects are approved via a Tufts IRB.

TUSDM PBRN studies originate with ideas submitted by corporate sponsors that seek to answer questions of immediate interest to the dental profession. PBRN has access to a wide geographic range, and diverse patient populations of varying ages, backgrounds and dental needs. The network is well suited to handle a variety of research projects, particularly those centered on over-the-counter products and consumer reaction.

**Benefits to Sponsors**
- Diversity of study participants
- Expedited recruitment and high retention rates
- One contract for all sites
- Centralized, experienced research administration team
- Highly skilled private practitioners trained in clinical research

**Benefits to Sites**
- Faculty appointment at TUSDM
- Bring new products and treatments to your patients
- Help advance the science of dentistry
- Work with pre-market products
- Per-patient payment
- Possibility for publishing and presentations
- Research experience for CV

“The patients see that you are not only doing general practice, which we love, but you are taking the time to go above and beyond, to influence the products of the future. They appreciate that.”

Dr. Kistama Naidu, D02, DG04
Market Research and Product Evaluation

The only thing that is predictable about the dental industry is that it will change. A new product will come out tomorrow that might affect your bottom line. Tufts University School of Dental Medicine now offers market research and product evaluations. These studies can help you determine which of two potential formulas is preferred by practicing dentists, if your instructions for use are effective, name recognition, handling properties, and many other possibilities. TUSDM is here to help you solidify your place in the ever growing market.

Types of Studies

- Blind Handling Studies
- Comparison Studies
  - Mixing Tips
  - Cements
  - Bonding Agents
  - Polishing Kits
- Focus Groups
- Packaging Evaluation
- Survey Studies

Benefits to Sponsors

- Diversity of study participants
- Expedited recruitment and high retention rates
- One contract for all sites
- Centralized, experienced research administration team
- Quickly approved by Institutional Review Board (IRB)
- Data can be published in peer reviewed journal
- Certified Focus Group Leader on staff
- Review by practicing and future dentists
Division of Biostatistics and Experimental Design

The primary mission of the Division is to collaborate with investigators at TUSDM on novel research. We are also active in teaching, conducting independent research, and seeking external funding.

### Services

The Division is available for consultation on all aspects of research, including:

- Grant development
- Protocol development
- Study design
- Sample size calculation
- Randomization
- Statistical analysis
- Dissemination of results

### Benefits to Sponsors

- Helps develop study design and protocol
- Achieve best value for investment, by only testing the needed sample size
- Control sources of variation and detect outlier
- Conduct rigorous data analysis to support sound conclusions
- Provide insightful interpretation of results

For additional information, contact:

Dr. Matthew Finkelman, Director of the Division of Biostatistics and Experimental Design, Matthew.Finkelman@tufts.edu, 617-636-3449.
Each year a selected number of dental students are awarded the research fellowships on a competitive basis by our internal Research Committee. These fellowships are to support the student’s research project, under the supervision of TUSDM Faculty members. The School of Dental Medicine is committed to providing all interested students with opportunities to do research. Students are encouraged to get involved in research projects being conducted at the School.

Students are able to conduct research in a wide variety of disciplines and dental specialties. You can read the abstracts from past student and faculty research [here](https://dental.tufts.edu/sites/default/files/pdf/research_BatesAndrewsAbstracts_2015-2016.pdf).

Application to the Student Research Fellowship Program involves the submission of a complete research proposal which includes enough description to allow for objective evaluation of the project.

TUSDM provides a stipend for students awarded the research fellowship. Acceptance of the award requires participation in the Bates-Andrews Student Research Day. Only one student will be funded per project. Students can also be funded by corporate sponsors. It is with the support of our corporate sponsors that this program has been able to be so successful.

Students participating in the program also attend a mini-course designed to enhance learning, broaden the students’ skills, scientific thinking, satisfaction in their research experience and promote camaraderie among the group.

For additional information, contact:

Eileen Doherty, Director of Predoctoral Student Research, Eileen.Doherty@tufts.edu, 617-636-6870
Research Travel Program

In recent years, TUSDM faculty and students travelled to Germany, California, Delaware and Australia to collaborate on dental research studies. Some of the projects involved research on glass ionomer restorative cements, bone grafting materials, antimicrobial agents, composite systems, impression and provisional materials, and tissue management devices. There are many opportunities to expand this program to other sites in concert with additional corporate sponsors.

Industrial Appeal

Corporate research and development teams benefit greatly from the presence of talented student and faculty researchers in their labs. From sharing clinical perspectives and marketing ideas to collaborating on protocol design and execution, industry partners can find endless ways to utilize the skills of Tufts dental researchers during a week-long visit.

The program creates lasting relationships and future partnerships in both research and clinical dentistry. It also offers the industry sponsor opportunities to educate and inform current and future opinion leaders. Projects and programs are customized to meet the business objectives of the corporate host.

Educational Appeal

Tufts students and faculty value opportunities to visit the headquarters of leading dental manufacturers and conduct research with industry scientists. Rarely do dentists and educators gain insight into the multi-faceted and interdisciplinary world of dental product manufacturing. The TUSDM Research Travel Program offers educators, researchers and clinicians unique access to the industrial partners upon whose success they depend for their own professional achievement. The experience fosters understanding and shared information which benefits the participants, their patients, the Tufts community and the profession at large.

Summer 2017

Southern Dental Industries - Melbourne, Australia

“The Research Travel Program provided the opportunity to travel to the SDI in Melbourne, Australia. It was a great experience that allowed us to learn more about the manufacturing of different dental materials and delivery systems as well as the massive amount of research that goes into developing these materials and getting them into the hands of clinicians. Everyone at SDI was very welcoming and friendly, and we enjoyed getting to know each other while working together to provide critical data and research for the newest, cutting-edge dental materials and equipment. We were able to collect data, analyze it, and complete abstracts for multiple studies by working efficiently and effectively. When we weren’t working, we got to explore Melbourne and the surrounding areas, including the Yarra Valley and Phillip Island. It was one of the most rewarding opportunities of my career at TUSDM and I highly recommend it.”

Aaron Lalonde, D18

3M Oral Care - Seefeld, Germany

Participating in the Research Travel Program at 3M Oral Care in Seefeld, Germany was one of the most memorable experiences I’ve had in dental school. I got to work in the impression materials lab testing different types of materials, including a newly developed product by 3M. It was very exciting to be able to visit and conduct research at a company that produces so many of the materials we use in clinic everyday. I am very grateful to be able to work with a group of such wonderful mentors whom I learned so much from in just one short week. Throughout my time there, I not only received a great level of support on my research project, I also got many tips on living in Germany. We even received a fascinating tour of Munich and got to experience traditional Bavarian food together. When we were not at 3M, we spent our time exploring and experiencing the local culture on our own, everything from visiting famous castles to trying to find the best fitting traditional clothing!

Sunny Gaudet, D18
Summer 2016

Southern Dental Industries - Melbourne, Australia

“I was fortunate enough to have the opportunity to travel with a fellow student to Southern Dental Industries main headquarters in Melbourne, Australia through the Travel Program. Not really knowing what to expect from the experience, I was amazed by the friendliness of those we worked with at the facility, the level of research we were able to accomplish and the beauty of the country. We gained invaluable insight into how dental materials (including the amalgam we use in the clinic) are made and worked first hand in testing products recently released to the market. We were on the cutting edge of a product that is just becoming popular in the United States and I have had some fun teaching faculty about the material when I returned to Tufts. We also had a great time exploring Melbourne, driving the Great Ocean Road and watching Australian Rules Football. Overall the trip was an invaluable experience that will make me a better clinician going forward and one that I will reminisce on for a long time.”

Tim Reichheld D’18

3M Oral Care - Seefeld, Germany

“I was delighted when I first found out that I would have the chance to work with 3M since we use many of their products in the pre-clinical and clinical settings. It was wonderful to have a chance to be able to participate in corporate research. I was pleased to see that many of the techniques and equipment used at 3M are also used at Tufts. This experience was absolutely wonderful and has increased my interest in dental materials.”

Alisha Anand D’18

Summer 2015

3M Oral Care - Seefeld, Germany

“The Travel Research Fellowship has been one of the most rewarding aspects of my dental school experience. During the summer of 2015, I traveled with a classmate to Seefeld, Germany to perform a dental materials research project at 3M ESPE. In addition to completing a project evaluating the ease of handling of glass ionomer restorative materials, I worked alongside brilliant scientists and technicians and had the opportunity to explore the manufacturing and product development departments at 3M ESPE, a company whose products we learn about and utilize at TUSDM. I had no idea how much I was going to learn from this experience or how much I would be able to teach the scientists at the company about what is important about a given material to dental professionals. After work each day and on the weekends, my classmate and I traveled to the surrounding areas and immersed ourselves in the Bavarian culture. I highly recommend this program to any adventurous dental student with a passion for research, learning, and traveling. It is truly an unparalleled experience.”

Rachel Cohen, D’16

Kerr Corporation - Anaheim, CA

“I travelled to Kerr Corporation in Anaheim, CA with a fellow student, and it was one of the best experiences of dental school. Looking back, I can see how fortunate I was to perform research on the newest products and see first hand everything that goes into producing the materials we use on a daily basis. While at Kerr, I learned how products were created starting from the raw materials stage through the shipping stage. One gains a great appreciation for just how vast the profession is. On off hours, we had the opportunity to try great restaurants, go to Disneyland, drive to Los Angeles, and catch an Angels game. I highly recommend this experience to anyone who is interested in gaining a greater appreciation for dental materials, while having a blast.”

William Brown, D’16

Dentsply - Milford, DE

“The research travel program allowed me to experience the structure and methods of corporate dental research that I had never been exposed to previously. While working at Dentsply, I was able to interact with staff daily from multiple departments. I learned how ideas transformed into products and the magnitude of these products in dental offices. It was amazing to see how highly valued the dentists’ opinions were throughout the research process. Delawre also had beautiful sunsets and beaches to explore in the evenings! Michelle Ta, D’17
Message From Dr. Gerard Kugel

The research mission of Tufts University School of Dental Medicine promotes integration of innovative studies in basic science, clinical practice, and public health. This brochure is evidence of the progress we have made and will continue to make at the Dental School.

TUSDM welcomes the valuable partnerships and contributions of corporations, foundations, the NIH, and the NIDCR’s tour mission. Working together, we have the means to perform ethical, meaningful research in oral and general healthcare that can be applied for the benefit of the scientific community and the public at large.

Researchers at TUSDM conduct studies in many areas, including bench and clinical studies in dental materials, devices, and pharmaceuticals. We are presently pursuing groundbreaking techniques in tissue engineering, bone remodeling, and Sjögren’s syndrome. Tufts also provides a wealth of opportunities for interdisciplinary research with our schools of nutrition, biomedical sciences, veterinary medicine, and engineering.

The combination of disciplines and talent at Tufts University provides the ideal environment for collaborative research and materials testing. Our record of contributions to the sciences and our potential to influence the future of dental medicine are extensive.

As we continue to promote oral health and improve the quality of life for the general population, we remain aware that strategic partnerships are vital to our efforts. We recognize the power of shared knowledge and are always looking to share resources and ideas.

Gerard Kugel, D.M.D., M.S., Ph.D.
Professor and Associate Dean for Research