

ADA Forsyth:  
Today's Research,  
Tomorrow's Care

A microscopic image of neural tissue, showing a dense network of purple-stained fibers and green-stained cells. The background is dark, making the vibrant colors stand out.

## What is AFI?

The ADA Forsyth Institute (AFI) is a non-profit supporting organization to the American Dental Association (ADA) under 501 C(3). In October 2023, the ADA integrated with the Forsyth Institute to form AFI, a world-class leader in oral health research and innovation. With nearly \$30 million in research awards granted in 2024, AFI ranks fourth in the nation and No. 1 on the East Coast in total funding awarded to dental institutions by the National Institute of Dental and Craniofacial Research (NIDCR).

## ADA Forsyth Mission Statement

The Mission of ADA Forsyth is to advance global health, accelerate oral health innovation, and power the profession of dentistry through cutting-edge basic research, creative translational science, innovative clinical techniques, education, and global public health outreach.



# Oral Health Research

## Introduction

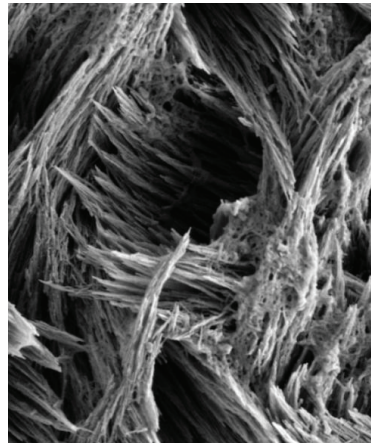
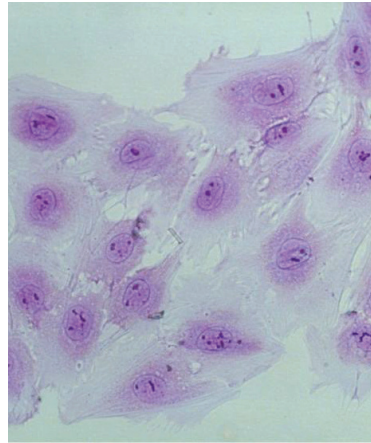
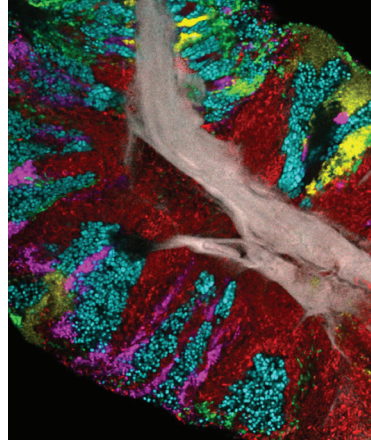
AFI has a long legacy of changing the oral health landscape through cutting-edge research, clinical trials, and training. Our scientists have contributed to the highest impact publications in the oral health field. With expertise spanning basic, translational, and clinical research, our scientists explore the connections between the mouth, the oral microbiome, and the body's systems.

## Microbiology

AFI's department of microbiology is world-renowned. Our research focuses on the oral microbiome — the diverse community of microbes within the mouth — and its broader implications for human health.

- **The Human Oral Microbiome Database (HOMD):** AFI is home to HOMD, a comprehensive catalog of microbes from the oral and nasal microbiome, which serves as an invaluable resource for researchers worldwide.
- **Advances in Cultivating Bacteria:** AFI scientists were the first to cultivate human oral *Saccharibacteria* (TM7), a breakthrough in studying previously uncultivable bacteria, with implications for fields ranging from medicine to biotechnology.
- **Innovative Imaging Techniques:** To gain a deeper understanding of the oral microbiome, AFI researchers are continually developing novel imaging techniques to gain unprecedented detail on the bacteria living in our mouths.

AFI's research continues to explore how the oral microbiome influences both oral and systemic health conditions, placing us at the forefront of microbiome science.





## Inflammation and Immunology

Inflammation and immunology research at AFI explores the critical link between oral inflammation and systemic diseases. Research focuses on how immune responses in the mouth can influence the development of conditions such as cardiovascular disease, diabetes, Sjögren's Syndrome, neurodegenerative diseases and rheumatoid arthritis.

- **Periodontitis and Systemic Health:** Our research examines how inflammation from gum disease impacts overall health, including bone loss and the development of chronic conditions. Recent research at AFI has uncovered links between periodontal disease, Alzheimer's, and cognitive decline.
- **Innovative Therapies:** We are developing targeted therapies to control inflammation, offering non-invasive solutions to treat conditions by resolving inflammation, and promoting tissue regeneration to improve long-term health.

Our work is unlocking new therapeutic pathways to combat chronic diseases driven by inflammation. These advancements provide hope for better treatments and healthier futures.

## Craniofacial Biology and Bioengineering

At AFI, we are pioneering research in craniofacial biology and bioengineering to unlock new possibilities for regenerative medicine. This rapidly growing area focuses on understanding the unique properties of craniofacial tissues and developing innovative strategies for repair and regeneration.

- **Craniofacial Growth and Development:** We investigate the use of stem cells to prevent diseases and regenerate damaged craniofacial tissues, such as enamel, dentin, and cartilage.
- **Smart Dental Materials:** AFI received a \$6.2 million NIH grant to design AI-driven amalgam replacements. This project aims to create self-healing dental composites that autonomously repair microcracks, offering more durable, personalized restorative solutions for patients. AFI scientists develop cutting-edge technology and advanced drug delivery systems to enhance treatments.
- **Understanding What Teeth Can Tell Us:** Researchers at AFI are investigating how genetic factors and interactions with environmental exposures influence tooth formation, including the timing, composition, and properties of tooth enamel.

These groundbreaking efforts are poised to revolutionize dental and craniofacial health, offering innovative solutions for tissue repair, regeneration, and enhanced patient care.

# Public Health Outreach

*Global leader in accessible oral health care*

AFI was founded in 1910 as one of the first pediatric dental infirmaries in the country, offering dental care and education to hundreds of thousands of Boston-area children. Our public health outreach programs continue this legacy, working to improve oral health care and education globally through innovative clinical care and training.



## **ForsythKids**

Consistent with the AFI's founding mission, ForsythKids' mobile dental program meets children's needs in underserved communities. The program visits 70 sites throughout Eastern Massachusetts and offers free services and dental hygiene products. Oral health care during childhood is crucial, as oral disease can lead to academic, social, and developmental challenges.



## **ADA Forsyth Student Scholars**

This summer internship program helps high school students from underserved communities launch a STEM career. For over 30 years, the program has placed students side-by-side in the laboratory with renowned scientists.



## **Forsyth Faculty Associates Dental Clinic**

The ADA Forsyth Faculty Associates Dental Clinic offers patients access to the expertise of the top oral health researchers in the world. AFI practitioners give patients care and advice in a friendly environment.



## Technological Innovation

*Catalyst and hub for advancing novel oral health innovations*

As the hub of oral health discovery, technology, and innovation, AFI is a one-stop-shop connecting basic research with clinical applications and translating discoveries into technology that attacks disease and transforms lives.

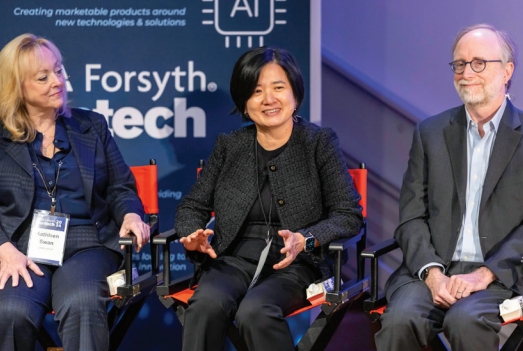
By integrating cutting-edge technology, interdisciplinary collaboration, and global and corporate partnerships, we strive to uncover innovative solutions that promote health, bring innovations from the bench to chairside.

We also provide research, concept development, business development, and other support to companies innovating in the oral health space.

Technological innovations that enter the dental clinic readily and safely allow the world to fight oral and systemic disease. AFI supports innovative technology developers and entrepreneurs through a robust infrastructure that includes:

- **Center for Clinical and Translational Research:** AFI's Center for Clinical and Translational Research (CCTR) is one of the first clinical sites nationwide to conduct innovative and significant translational research and bring new diagnostic and therapeutic ideas to chairside. The CCTR supports clinical trials for a wide range of oral diseases and associated systemic diseases such as diabetes, rheumatoid arthritis, obesity, cardiovascular diseases, and oral cancer.
- **Core Services:** AFI maintains several core facilities that provide specialized equipment and expertise for its investigators and, on a fee-for-service basis, to researchers from other institutions. Our cores are experienced in handling sample types from all research areas and can customize services to fit your project needs.
- **ADA Forsyth Entrepreneurial Science Center:** The ADA Forsyth Entrepreneurial Science Center (FESC) provides modern lab space, offices, administrative services, facilities management, information technology support, and grant writing resources to entrepreneurs. Incubating companies can use AFI's scientific core facilities, preserving capital to prolong the runway of budget-constrained start-ups. The FESC also provides clients with expertise on technology transfer, finance, accounting, intellectual property, and general legal expertise.





## ADA Forsyth dentech

ADA Forsyth dentech is the premier conference for innovation in oral health, convening thought leaders from research, industry, academia, and venture capital to accelerate innovation and launch new ventures in the oral health space. The event features engaging panel discussions and unparalleled networking opportunities with the most influential names in the field. The signature highlight of the conference is the Technology Showcase and Innovation Expo, where early-stage startups and established companies attract an international group of investors eager to explore opportunities in this untapped \$140 billion market.

## AFI's Global Reach

Global collaboration has the power to accelerate technological innovation and implementation of research findings into new technology, products, and clinical practices.

AFI has formed partnerships with international oral healthcare organizations such as Seoul National University and Dubai Health. Sharing technology and research information allows for incredible possibilities for the advancement of oral health throughout the world.

## Product Certification

*Setting the gold standard of safety and efficacy for dental products*

AFI conducts all ADA Seal of Acceptance and ADA Forsyth Certified testing at a state-of-the-art research facility in Somerville, Massachusetts.



## ADA Seal of Acceptance

The ADA Seal of Acceptance evaluates the safety and efficacy of over-the-counter dental products. More than 400 consumer products in 19 product categories have received the ADA Seal.

## ADA Forsyth Certified

The ADA Forsyth Professional Dental Products Certification Program (ADA Forsyth Certified) is a new standard for professional-grade dental products. The ADA Forsyth Certified program will assist dental offices and clinicians in making informed decisions about product selection based on well-established scientific or clinical testing protocols according to ADA standards.

# Get Involved

Whether you are an up-and-coming researcher, a technology startup, or someone looking to help better oral health and oral health education for those in need, there are many ways to get involved with AFI.

- Donate to our impactful community initiatives.
- Apply to one of our world class training programs.
- Check out our upcoming events.
- Don't miss a beat and subscribe to the AFI Newsletter!

