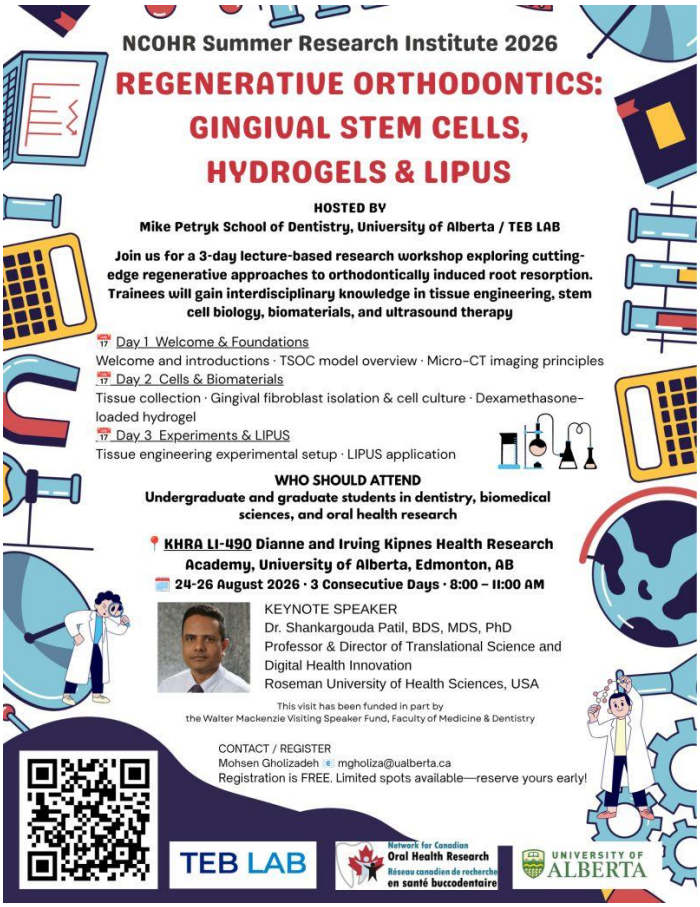
NCOHR SUMMER RESEARCH INSTITUTE 2026

# EVENT REPORT

## Regenerative Orthodontics: Gingival Stem Cells, Hydrogels & LIPUS




**24-26 August 2026 | KHRA LI-490 | University of Alberta, Edmonton**

Hosted by the Mike Petryk School of Dentistry / TEB Lab
Funded with the Network for Canadian Oral Health Research (NCOHR)


## Executive summary

The NCOHR Summer Research Institute 2026 was a three-day, hybrid research workshop focused on regenerative approaches to orthodontically induced root resorption. Hosted by the TEB Lab and the Mike Petryk School of Dentistry at the University of Alberta, the institute connected students, faculty members, researchers, clinicians and industry participants with invited and local speakers working across orthodontics, stem-cell biology, biomaterials, imaging, tissue engineering, low-intensity pulsed ultrasound (LIPUS), research communication and artificial intelligence in dentistry.

The event combined short expert lectures, trainee presentations, question-and-answer periods, networking breakfasts and online access. It was designed both to help emerging researchers build foundational knowledge and presentation experience, and to create a structured setting in which experienced researchers could transfer specialized knowledge to the next generation.

| 43 | 50-70 | 10 | 3 |
|---|---|---|---|
| registered | in-person visits* | online participants | consecutive days |

### Key outcomes

- 43 formal registrations, with estimated in-person attendance of 50-70 visits across the three days and 10 online participants.
- Broad learning value: content served undergraduate and graduate students, faculty, staff, researchers, clinicians, alumni and industry participants.
- Professional recognition: the event was registered for continuing education (CE) credit; attendance and end-of-session confirmation procedures supported certificate issuance.

- Knowledge mobilization: senior researchers and visiting experts shared current methods and perspectives, while trainees gained experience presenting research-oriented material.

# Part 1 - Event overview and delivery

## Purpose and academic focus

The institute explored regenerative orthodontics through three connected themes: (1) root resorption and Micro-CT, (2) tissue collection, primary cells and hydrogels, and (3) tissue engineering and LIPUS. The format moved from foundational concepts to experimental applications, while also incorporating publication strategy, clinical cases, patient experience and emerging uses of AI in dentistry.

## Schedule and participant experience

Programming ran from 8:00 to 11:00 a.m. MDT on August 24, 25 and 26. Catering service began at 7:30 a.m. with coffee and cookies/light refreshments, followed by the scheduled networking breakfast around 9:15 a.m. each day. This arrangement supported early arrival, informal discussion and networking among speakers, trainees and attendees.

A team-and-speaker dinner was held on August 23 at 6:30 p.m. at Pampa Brazilian Steakhouse. The gathering supported speaker welcome, team coordination and relationship-building before the institute began.

## Speakers and contributors

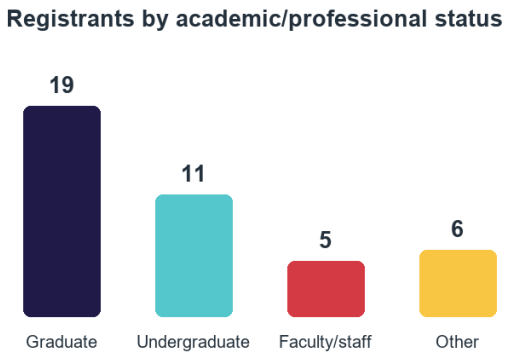
| Contributor | Role / topic | Affiliation |
|---|---|---|
| Dr. Tarek El-Bialy | Host; professor of orthodontics and biomedical engineering | Mike Petryk School of Dentistry, University of Alberta / TEB Lab |
| Dr. Shankargouda Patil | Keynote speaker; translational science, digital health, publication success and AI | Roseman University of Health Sciences, USA |
| Dr. Leigha Rock | Welcome address; Chair, Department of Dentistry | Mike Petryk School of Dentistry, University of Alberta |
| Dr. Tejas R. Pol | Mechanobiology of root resorption | YMT Dental College and Hospital, India |
| Dr. Brian Webb | Hydrogel-cell integration and autologous cell sources | University of Toronto |
| Dr. Andrew Willoughby | Nano-metallic silver oxide hydrogel applications in regenerative dentistry | Dentist, Vancouver, BC. |
| Cristian Scurtescu | LIPUS technology and operation | SmileSonica Inc. |
| TEB Lab trainees and collaborators | Research presentations, recaps, previews and patient experience | University of Alberta and collaborating institutions |

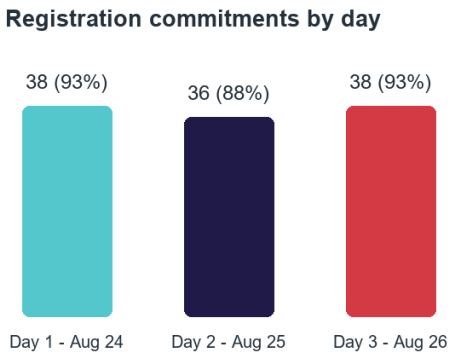
## Promotion, access and administration

- The event banner and flyer were distributed on university posting walls and through university email channels.

- Promotion included undergraduate and graduate email lists, School of Dentistry research news, departmental communications and administrative networks.
- A public Zoom link enabled interested participants who could not attend in person to join online.
- All registered participants received name tags. In-person participants were asked to sign the attendance sheet manually each morning and scan the end-of-session QR code for CE credit and certificates.
- Certificates were prepared for speakers and the execution team, and speaker gifts were provided in recognition of their contributions.
- A tour of Dr. El-Bialy's lab (TEB LAB) was organized for attendees and speakers to demonstrate step by step how our team is performing regenerative and tissue engineering in medicine and dentistry.
- High-quality videos of each experiment were recorded, documenting the procedures step by step. These videos were shown to participants to provide clear demonstrations of the experimental methods and reinforce their understanding.
- A dedicated mobile app supported participant communication throughout the institute by providing timely notifications, event updates, presentation schedules and real-time information on presentation status. https://luma.com/ra6cq9ws

## Registration profile




Graduate students were the largest group (19; 46.3%), followed by undergraduate students (11; 26.8%), faculty/staff (5; 12.2%) and other professional or interested participants (6; 14.6%). Thirty registrants (73.2%) identified the University of Alberta as their primary affiliation; the remaining 11 represented 11 other listed institutions or organizations, demonstrating local depth and external reach.

Dietary responses included nine halal requests, two vegan requests, one vegetarian request, one gluten-free request and one nut-allergy declaration. Twenty-seven respondents selected none, left the field blank or provided no specific restriction. These responses underline the value of early dietary screening and clear allergen labeling.

## Event strengths

- The connected three-day structure created a coherent learning pathway from biological foundations to translational and clinical applications.
- The mix of invited expertise and trainee-led presentations supported both knowledge transfer and professional-development experience.
- Hybrid access broadened participation and reduced barriers for those unable to attend in person.

NCOHR Summer Research Institute 2026

# REGENERATIVE ORTHODONTICS: GINGIVAL STEM CELLS, HYDROGELS & LIPUS

**HOSTED BY**
**Mike Petryk School of Dentistry, University of Alberta / TEB LAB**

**Join us for a 3-day lecture-based research workshop exploring cutting-edge regenerative approaches to orthodontically induced root resorption. Trainees will gain interdisciplinary knowledge in tissue engineering, stem cell biology, biomaterials, and ultrasound therapy**

🗓️ Day 1 Welcome & Foundations
Welcome and introductions · TSOC model overview · Micro-CT imaging principles
🗓️ Day 2 Cells & Biomaterials
Tissue collection · Gingival fibroblast isolation & cell culture · Dexamethasone-loaded hydrogel
🗓️ Day 3 Experiments & LIPUS
Tissue engineering experimental setup · LIPUS application

📍 **KHRA LI-490 Dianne and Irving Kipnes Health Research Academy, University of Alberta, Edmonton, AB**
🗓️ **24-26 August 2026 · 3 Consecutive Days · 8:00 – 11:00 AM**

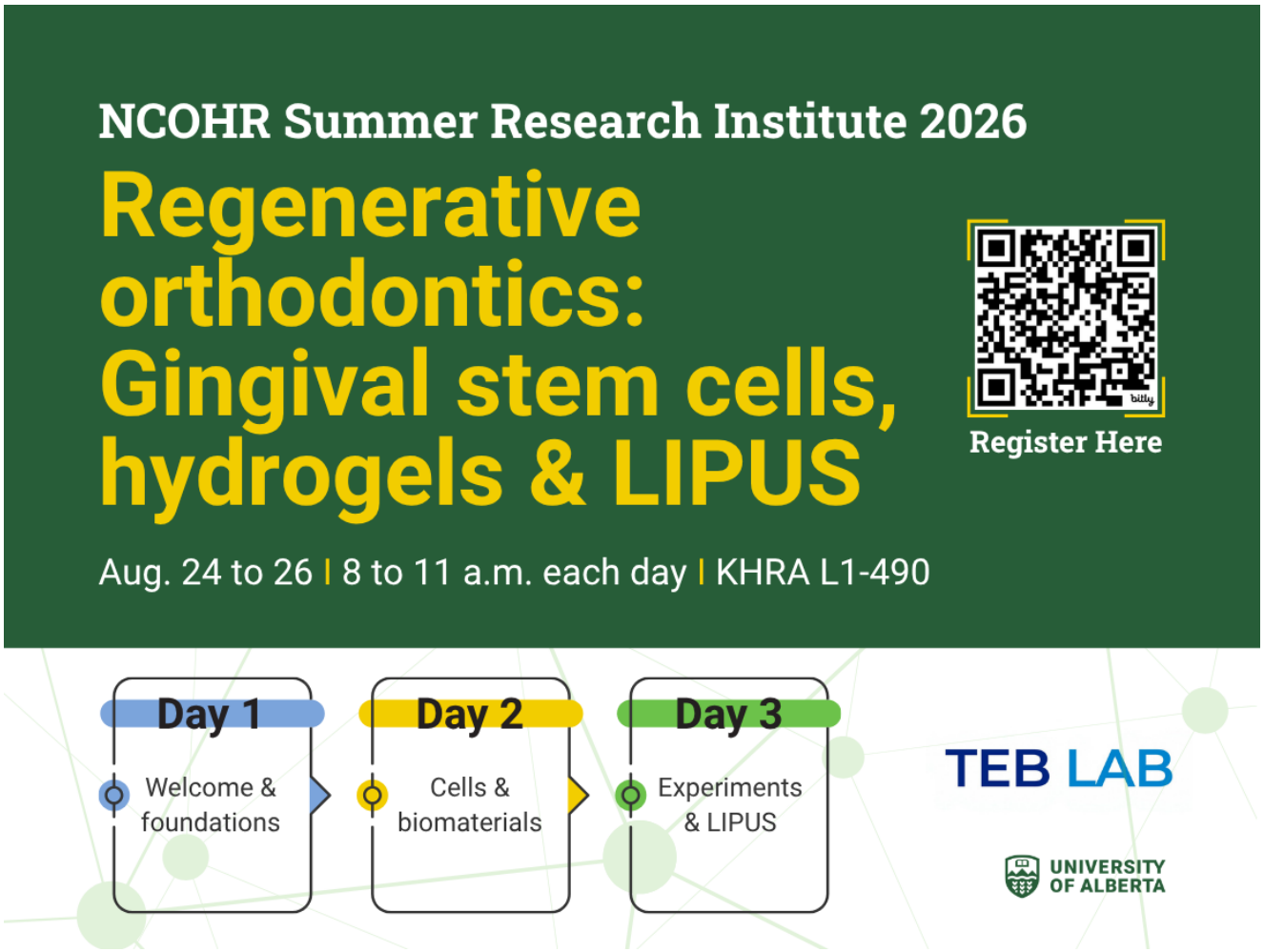
Host
Dr. Tarek El-Bialy, PhD, EMBA, Dr. Med. Dent.' ABO, FRCED(C)
Professor of Orthodontics and Biomedical Engineering
Mike Petryk School of Dentistry,
University of Alberta, Canada

KEYNOTE SPEAKER
Dr. Shankargouda Patil, BDS, MDS, PhD
Professor & Director of Translational Science and Digital Health Innovation
Roseman University of Health Sciences, USA

TEB LAB

Network for Canadian Oral Health Research
Réseau canadien de recherche en santé buccodentaire

UNIVERSITY OF ALBERTA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Regenerative orthodontics: Gingival stem cells, hydrogels & LIPUS
Aug. 24 to 26 | 8 to 11 a.m. each day | KHRA L1-490
Register Here
Day 1
Welcome & foundations
Day 2
Cells & biomaterials
Day 3
Experiments & LIPUS
TEB LAB
UNIVERSITY OF ALBERTA