Department of Biomedical Sciences Newsletter

Congratulations to **Dr. Eliza Grlickova-Duzevik** on being named the OMS1 Faculty of the Year for academic year 2024-2025 at the end of year celebration on April 17th, 2025.

Congratulations to **Dr. Doug Spicer** in winning the award for best medical education research poster at the Association of Biochemistry Educators 2025 Annual Meeting with a poster titled "Getting to clerkship and beyond: Creation of a new set of medical biochemistry learning objectives that connect and integrate basic science concepts with clinical application."

DBMS Faculty meeting dates:

- June 25, 2025; 1-2 pm
- July, 2025 – TBD given the move to Portland
- August, 2025 – TBD given the move to Portland

Feel free to send any agenda items for discussion at our faculty meeting to Angela Morse.

2025 UNE COM Seminars:

All seminars hosted by the department will be posted on our seminar link on our site: https://sites.une.edu/biomedicalsciences/seminar-series/

Shared Governance Meetings:

COMFA

Wednesday, July 2
11:30 am -12:30 pm

Wednesay, August 6
11:30 am -12:30 pm

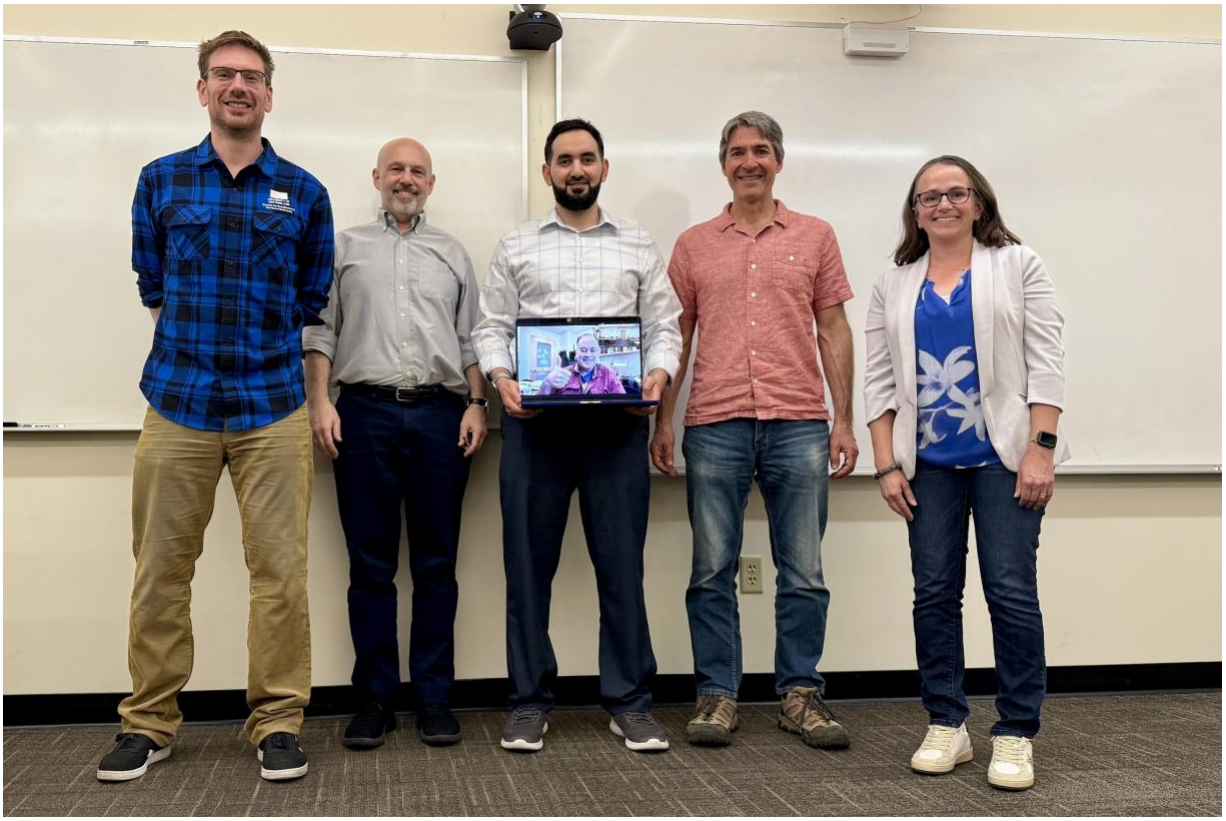
Wednesay, September 3
11:30 am -12:30 pm

NOTE: Publication costs for papers which have COM students as authors are eligible to be considered for up to $250/student by the SGA's educational enhancement fund (link enabled). These requests are vetted by the finance committee of the SGA and processed by RSAS.

Faculty / Student / Staff Highlights:

Dr. Katie Becker served on an NIH Special Emphasis Panel study section (ZRG1 MSOS-E(03) M), on 3/25/25. This panel primarily reviewed member-conflict applications for the Skeletal Biology Development and Disease Study Section (SBDD), the Skeletal Biology Structure and Regeneration Study Section (SBSR) and the Musculoskeletal Tissue Engineering Study Section (MTE).

GSBSE student **Zaid Al-Abbasi** successfully defended his thesis in the laboratory of **Dr. Derek Molliver** on May 29th. The title of his thesis was "Transcriptomic and Functional Characterization of Gαs-Coupled Receptor Signaling in Human and Mouse Nociceptor Models: A Novel Approach to Study Pain Mechanisms". The photo below (courtesy of Derek Molliver) shows Dr. Al-Abbasi with his thesis committee, which included DBMS faculty members, **Dr. Ben Harrison** and **Dr. Ian Meng**.



New Peer-Reviewed Publications (from PubMed (links enabled below))

WAS 2024 Fall Series Push and Pull: Navigating Strains in Health Education.
McKell D, Naik AR, Ausel E, Brenneman A, Ely S, Garwood S, Gathu C, Hernandez M, Ikonne U, Ly K, **Rowe R**, Taylor TAH, Thesen T.
Med Sci Educ. 2025 Jan 22;35(2):1149-1153
doi: 10.1007/s40670-024-02277-5

Microfluidic chip-based co-culture system for modeling human joint inflammation in osteoarthritis research.
Mirazi H, **Wood ST**.
Front Pharmacol. 2025 Apr 9;16:1579228.
doi: 10.3389/fphar.2025.1579228

The RNA-binding protein CELF4 is a negative regulator of sensory neuron excitability and mechanical and heat behavioral sensitivity.
Madison G. Mueth, Peter Neufeld, Merilla Michael, Aidan McGrath-Conwell, **Eliza Grlickova-Duzevik**, **Tamara King**, Christoph Straub, **Benjamin J. Harrison**.
Neurobiology of Pain, Volume 18, 2025,100184
https://doi.org/10.1016/j.ynpai.2025.100184

D_1 dopamine / mu opioid receptor interactions in operant conditioning assays of pain-depressed responding and drug-induced rate suppression, and a conditioned place preference procedure: assessment of therapeutic index in male Sprague Dawley rats.
LaCourse H, Bennett L, Falstad A, Asmus F, Smith M, Davis R, Harrington K, Giuvelis D, **King T**, Stevenson GW.
Psychopharmacology (Berl). 2025 Apr;242(4):751-762
doi: 10.1007/s00213-025-06743-9

Annual Peter Morgane, Carmen Pettapiece, and Kahn Family Foundation Fellowship winners (with their mentors from DBMS)

Peter Morgane Fellowship awardees:

Shelley Chen
Cannabis Usage Across U.S. States and Potential influence by State Cannabis Legalization Status
Mentor: **Dr. Ling Cao**

Morgan Cheney, Sandhya Vellayappan and Suzanne Ellis
Food Insecurity in University of New England Medical Students
Mentor: **Dr. Kyle Scully**

Albert Kim
The role of Dock7 in the Osteoclast function and Bone Resorption
Mentor: **Dr. Katie Becker**

Varsha Medidi
Investigating the role of NAD metabolism in Tuberous Sclerosis Complex
Mentor: **Dr. Harry Filippakis**

Vishva Patel
Inhibiting MPC to suppress kidney cystogenesis in Tuberous Sclerosis Complex
Mentor: **Dr. Harry Filippakis**

Carleigh Rosenberg
Targeting the Kynurenine Pathway in Tuberous Sclerosis Complex: A Novel Therapeutic Strategy to Inhibit Renal Angiomyolipoma Growth and Cystogenesis
Mentor: **Dr. Harry Filippakis**

Vivian Tran
Developing a Landmark-Based Brain Atlas for Mapping the Parabrachial Nucleus and Trigeminal Nucleus Caudalis
Mentor: **Dr. Ian Meng**

Carmen Pettapiece Fellowship awardees:

Samantha Blau
The Role of Dock7 in Wnt/Beta-Catenin Signaling and Osteoblast Function
Mentor: **Dr. Katie Becker**

Chase Sisk
Teaching Behind Bars: Investigating Empathy Growth in Medical Students
Mentor: **Dr. Kyle Scully**

Shama Varghese
Effectiveness and potential long-term impact of a social determinants of health-oriented interprofessional education program.
Mentor: **Dr. Ling Cao**

Kahn Family Fellowship awardees:

Riley Cott
Chemotherapy Regimens Influence CD4+ T Cells and Peripheral Nerve Loss in CIPN
Mentor: **Dr. Diana Goode**

Marina Farag
Significance of Reorganizational Processes in the VMH on Epileptogenesis
Mentor: **Dr. Russ Ferland**

Kaci McLaughlin
Neuronal activity map changes in mice with forebrain-clonic compared to those with forebrain->brainstem seizures following exposure to the repeated flurothyl model
Mentor: **Dr. Russ Ferland**

Luu Pham, Josef Khalifeh, Kathryn Cama Huamani and Sarah Stevens
Optimizing and Validation of Intraoperative Fresh Gas Flow and Delivered Anesthetic Concentration to Enhance Cost Efficiency and Environmental Sustainability Using Gas Man® Simulation
Mentor: **Dr. Kyle Scully**

Katharina Roese
HIV Tat-induced changes in lumbar spinal cord TRAF2 expression in a mouse HIV neuropathy model
Mentor: **Dr. Ling Cao**

Sarah Savoy
Labeling neurons receiving direct input from corneal primary afferents in mouse brain
Mentor: **Dr. Ian Meng**

SungJin Shin
Investigation of EPG5 Missense Mutations and Their Relationship with Chronic Pain Diagnosis and Perceived Pain Intensity
Mentor: **Dr. Ling Cao**

Avery Stilley
Anatomical and Histological analysis of the T3 Sympathetic Ganglion and Rami Communicantes: Optimizing Endoscopic Thoracic Sympathectomy (ETS) and Autonomic Nerve Preservation
Mentor: **Dr. Joel Talsma**

Regional/National/International Presentations

Workshops:

Drs. **Frank Willard** and **Tyler Redway**, Professor **Joel Talsma**, and the COM Anatomy Fellows presented a workshop at the 2025 AAO Annual Meeting in Orlando

Florida on March 27th-29th. The three-day workshop focused on Entrapment Neuropathies of the Upper Extremity.

Dr. Douglas Spicer ran a workshop titled "Relaunching the Association of Biochemistry Educators (ABE) question bank: Introducing expert-vetted AI question generation guided by the recently developed ABE integrated clinical learning objectives – an Educational Resource Development Committee (ERDC) workshop" along with co-authors (L Myers, J Baleja, D Gardner, P Huwe, A Kesari, S King, D Pearson, R Ritchie, A Solitro, D Spicer) at the Association of Biochemistry Educators 2025 Annual Meeting (April 27th-May 1st) in Santa Fe, NM.

Research Talks:

Dr. Frank Willard presented two talks at the American Academy of Pain Medicine annual meeting on April 4th in Austin TX.
The first talk was titled "Trigeminocervical Complex and Head Pain."
The second talk was done with Charles DeMesa, DO and was titled "Vertebral Compression Fracture: Where is the Pain Coming From?"

Dr. Geoffrey McCullen was the keynote speaker and presented a talk titled" Translating Research into Clinical Practice" at the Northeast Osteopathic Medical Education Network (NEOMEN) Annual Symposium on May 1, 2025.

Dr. Geoffrey McCullen presented a talk titled "Lumbar Surgical Procedures: Anatomical Implications" for the Advanced Osteopathic Institute (Italy) via ZOOM on March 7, 2025.

Poster Presentations:

Association of Biochemistry Educators 2025 Annual Meeting (April 27-May 1) in Santa Fe, NM

D. Spicer, E Abali, J Baleja, J Binstock, M Faner, S Fong, Z Gromley, M Henshaw, V Joshi, A Kesari, R LeClair, P Manzerra, L Myers, R Ritchie, D Rogstad, J Yodh, B Zhang.
Getting to clerkship and beyond: Creation of a new set of medical biochemistry learning objectives that connect and integrate basic science concepts with clinical application.
*** This poster won the award for best medical education research poster***

J Yodh, E Abali, J Baleja, G Deevska, Z Gromley, M Henshaw, V Joshi, A Kesari, S Mamillapalli, M Metzstein, L Myers, R Ritchie, P Ronner, **D Spicer**, A Zaidi, B Zhang. Exploring the Biochemistry That Underlies Patient Presentations: The Clinical-Biochemistry Thread Map - A Novel Educational Tool for Teaching, Learning, and Curricular Mapping in Health Professions Education.

NEOMEN Annual Symposium (May 1, 2025) in Portland, ME

Brunet T, **McCullen G**.
Anatomical Relationship Between the Iliolumbar Artery and L5 nerve root at the Lumbosacral junction: Implications for L5-S1 discectomy.

Thomas A, Bartlett A, **McCullen G**.
The role of artificial intelligence-based tools in melanoma detection: A comparison of clinical diagnostic performance across care settings.

Yong C, Brunet T, **McCullen G**.
Defining failure of meniscus allograft transplants.

The American Association of Immunologists Annal Meeting (May 3rd - May 7th) in Honolulu, HI

D.N. Canonico, PJ Donnelly, E.N. Bean, **L. Cao**.
Lumbar spinal cord expression of Tollip, a Toll-like receptor pathway regulator, and associated downstream molecules in HIV Tat-associated peripheral neuropathy.

A. Kelly, S. Harcharan, E.N. Bean, **L. Cao**.
Phenotype of lumbar spinal cord Tollip+ cells in HIV Tat-associated peripheral neuropathy, a potential new role of tyrosine hydroxylase positive neurons.

The Society for Biomaterials 2025 50th Anniversary Annual Meeting & Exposition in Chicago, IL

Dr. Scott Wood presented a poster titled “Human Joint-on-a-Chip: A Microfluidic Co-Culture Model Integrating Osteoblasts, Chondrocytes, Fibroblasts, and Macrophages for Osteoarthritis Research.”

The 52nd Maine Biological and Medical Sciences Symposium (MBMSS), MDI Biological Laboratory, Bar Harbor, ME

UMaine GSBSE students Tiyasha Banerjee and William Sampson, in the laboratory of **Dr. Scott Wood** presented a poster titled “CellWell Platform to Model Aging and Changes in Integrin-mediated Mechanotransduction in Chondrocytes.

The United States Association for the Study of Pain 2025 Annual Meeting (April 29th - May 2nd) in Chicago, IL

Pictured below are UNECOM attendees at the USASP Annual Meeting

Ames, J, Addleson, E, Bonet, I, Levine, JD, and **Molliver, DC** (2025)
Bioenergetic regulation of signaling in nociceptors using mouse and a human sensory neuron-derived cell line.

Al-Abbasi#, Z and **Molliver, DC** (2025)
Comparison of cAMP-dependent Pathways in mouse sensory neurons and the HD10.6 human sensory neuron-derived cell line.
#GSBSE student

Havelin, JJ, **King, TE**, and **Molliver, DC** (2025)
Peripheral opioid receptor signaling masks cAMP-induced nociceptive hypersensitivity through KATP channel activation.

Guzzetti, A, Giunta, P Gurrala, S, **Goode, D**, and **King, T** (2025)
Synovial Immune Cell and Growth Factor Differences Between Sexes in Osteoarthritis Pain States.

French, A, Preece#, L, and **Queme, LF** (2025)
Machine Learning- Based Behavioral Analysis of Pain Related Behaviors Detects Changes Missed By Manual Scoring.
#GSBSE student

Preece#, L, French, A, and **Queme, LF** (2025)
Loss of Environmental Enrichment Induces Prolonged Pain Behaviors After Ischemia with Reperfusion Injury and Transcriptomic Changes in Satellite Glial Cells.
#GSBSE student

Ferreira, KG, Cott^, RC, and **Goode, DJ** (2025)
Chemotherapy Regimens Differentially Modulate CD4+ T cells and Nerve Loss in Peripheral Tissue in Chemotherapy-Induced Peripheral Neuropathy.
^UNE COM medical student

Faculty Notes

Dr. Scott Wood admitted a second Graduate School of Biomedical Science and Engineering (GSBSE - UMaine) PhD student, William Sampson, into his lab following a successful rotation period.

Dr. Tyler Redway provided this Program Review of his AORTA program for academic year 2024-2025:

The AORTA program experienced a highly successful cycle during the 2024-2025 academic year. The program hosted 30 events, including our standard on-campus sessions and booths at the UNE Brain and Wellness Fair and Maine Science Festival in Bangor, Maine. Additionally, the program collaborated closely with COM's Office of Recruitment, Student, & Alumni Services to offer educational sessions for the Wabanaki Public Health Summer Intern Program, UNECOM Networking Fair, and OsteoBlast!

The AORTA program's primary objective is to provide hands-on educational programming to high school students with an interest in medicine or other health-related fields. At the beginning of the year, Dr. Redway set a goal to host between 20 and 30 high schools and reach 500 participants during that year. AORTA successfully cleared that goal by hosting 23 sessions for high school groups, with a total of 547 participants. This was the first visit to UNECOM for 16 of the high schools. Including the other events AORTA hosted throughout the year, the total number of participants exceeds 750.

This academic year, the AORTA program also began conducting research on our most essential populations: our participants and facilitators. Participants from 17 different high schools completed surveys about their experiences in AORTA sessions, focusing on their perceptions of anatomy, osteopathic medicine, and careers in those fields. Another longitudinal project is underway, intending to examine the impact these experiences have on our medical student facilitators and their comfort and confidence in communicating scientific information to the general public. Next, the program shifts its focus to assessing the state of outreach programs at osteopathic medical schools nationwide.

Dr. Redway would like to express his sincere gratitude to everyone who contributed to this year's success: Dr. Kiran Mangalam, who helped lead several sessions; Dr. Frank Daly and Jannika Coons for their support of the program and managing the lab spaces; the Department of Biomedical Sciences for providing snacks and water for all our participants; and the 2024-25 OMM Fellows. Perhaps most importantly, every one of the 134 medical students who volunteered for this program: thank you for sharing your time, knowledge, and passion for science, education, and healthcare.

The AORTA Program will begin its 2025-2026 cycle in October in UNECOM's new home, the Harold and Bibby Alfond Center for Health Sciences in Portland, Maine.