

Matthew Thompson

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EDUCATION

Ph.D. Materials Engineering

Institution: Purdue University

Expected Completion: July 2026

Bachelor of Science Chemical Engineering, Highest Honors Honors Baccalaureate, Summa Cum Laude

Institution: Montana State University (MSU) – Bozeman

Graduated: May 2022

GPA: 4.00

RESEARCH EXPERIENCE

Graduate Research Assistant

- Mentor: Dr. Rod Trice, co-advised by Dr. Carlos Martinez
- Affiliation: Purdue University, Materials Engineering
- Dates: 07/2022-present

Projects:

1) Slurry development for additive manufacturing of high temperature ceramics with UV curable resins on an Admatec 130 digital light projection printer

Research Associate

- Mentor: Dr. Ron June
- Affiliation: Montana State University, Mechanical Engineering
- Dates: 10/2018-05/2019, 08/2019-05/2022

Projects:

- 1) intra-articular drug delivery for synovial joints and primary chondrocytes
- 2) untargeted metabolomics analysis for liquid chromatography-mass spectrometry
- 3) statistical analysis of biomarkers and survey responses from Montana ranchers during calving season
- 4) metabolomics on mouse synovial fluid and mouse fibula extracts for sex and age differences

- Skills: statistical analysis, metabolomics, tissue culture, programming & software
– Python, MATLAB, Minitab, MetaboAnalyst, Microsoft Office, Adobe Illustrator

Publications:

- Mailhiot S, Thompson M, Eguchi A, Dinkel S, Lotz M, Dowdy S, June R. The TAT Protein Transduction Domain as an Intra-articular Drug Delivery Technology. *Cartilage*. December 24, 2021, **13**(2):1637S-1645S. PMID 32954793
- Thompson M, Martin S, Hislop B, Younkin R, Andrews T, Miller K, June R, Adams E. Sex-Specific Effects of Calving Season on Joint Health and Biomarkers in Montana Ranchers. In process

Selected Presentations:

- Thompson M., Hislop B, June RK, Martin S, Adams E. Profiles of Sex-specific Responses for Joint Health and Biomarkers in a Ranching Population. Poster presentation accepted at: Orthopaedic Research Society Annual Meeting; 2022, February 4-8; Tampa, FL.
- Thompson M., Varilek R, June RK, Martin S, Adams E. Clinical Characteristics of Joint Pain, Function, and Biomarkers in a Population of Ranchers. Virtual oral presentation at: Orthopaedic Research Society Annual Meeting; 2021, February 13-16; Long Beach, CA.
- Thompson M., Mailhiot S, June R. The TAT Protein Transduction Domain as an Intra-articular Drug Delivery Technology. National Conference on Undergraduate Research. March 26-28, 2020; Bozeman, MT. Virtual poster presented at: Bobcat Research at Home poster session (MSU Science Math Resource Center).

Summer Undergraduate Research Fellowship (SURF)

- Mentor: Dr. Salah-uddin Ahmed
- Affiliation: Washington State University – Spokane, Pharmacology and Pharmaceutical Sciences
- Dates: 06/2019-08/2019
- Project: evaluated natural compound in mitigating tissue destruction and inflammation in osteoarthritis
- Skills: Western immunoblot, zymography, ELISA, cell viability assays, immunofluorescence, protein estimation, *ex vivo* collagen-I degradation assay

Presentation:

- Thompson M., *Haque M, Singh A, Ahmed S. Pentagalloyl glucose (PGG) suppresses IL-1 β -induced pro-inflammatory cytokine production and matrix metalloproteinase activation in human osteoarthritis synovial fibroblasts. Washington State University College of Pharmacology and Pharmaceutical Sciences Research Day. August 09, 2019; Spokane, WA.*

SCHOLARSHIPS & AWARDS

Engineering Excellence Scholarship

- Affiliation: Purdue University School of Materials Engineering
- Award Date: Fall 2022

Goldwater Scholarship

- Affiliation: Barry Goldwater Scholarship and Excellence in Education Foundation, Department of Defense National Defense Education Programs
- Award Date: March 2021

Presidential Scholarship

- Affiliation: MSU Honors College
- Award Duration: Fall 2018-Spring 2022
- Description: MSU's top scholarship awarded to incoming freshman for scholastic achievement, demonstrated leadership, and exemplary public service

Related Service:

- Selected as a student member on the 2021 Presidential Scholarship Selection Committee reviewing applications and interviewing 50+ finalists
- Student mentor (2019-2022) for Honors floor in the dorms as a tutor and academic advisor, helping freshmen join undergraduate research labs and apply for scholarships. Mentee cohorts have included a number of students from underrepresented groups and rural communities
- Volunteer panelist for 2022 “After College, What’s Next” symposium, providing sample CV, cover letter for a graduate school position, and mock interview
- Chaired 2022 banquet planning committee celebrating graduating seniors and faculty in the MSU Honors College

Honors College Exemplary Leadership and Service Award

- Affiliation: MSU Honors College
- Award Date: April 2022
- Description: recognizes exemplary leadership and service during the recipient’s time at Montana State University

Richard Alan Metz Memorial Scholarship

- Affiliation: MSU Department of Chemical and Biological Engineering
- Award Duration: Fall 2020-Spring 2021
- Description: Awarded based on academic ability and professional promise

Russell J. Holecek Chemical Engineering Scholarship

- Affiliation: MSU Department of Chemical and Biological Engineering
- Award Duration: Fall 2021-Spring 2022

John C. Felton Scholarship

- Affiliation: MSU Norms Asbjornson College of Engineering
- Award Duration: Fall 2021-Spring 2022

Eugene W. Schilling Engineering Memorial Scholarship

- Affiliation: MSU Norms Asbjornson College of Engineering
- Award Duration: Fall 2021-Spring 2022

Arthur A. Klebba Engineering Scholarship

- Affiliation: MSU Norms Asbjornson College of Engineering
- Award Duration: Fall 2020-Spring 2021

1st Place Poster Presentation

- Affiliation: Washington State University – Spokane College of Pharmacology and Pharmaceutical Sciences Research Day
- Award Date: 08/2019

ORGANIZATIONS (MSU)

Society for Biological Engineering

- Role: Secretary (02/2019-08/2021), President (08/2021-05 2022)
- Dates: 10/2018-05/2022
- Duties: communication, recruitment, organizing industry tours, volunteering, designing STEM outreach curriculum for local school audiences, and chairing the 2022 banquet planning committee to celebrate graduating seniors and faculty in the Department of Chemical and Biological Engineering

Musculoskeletal (MSK) Club

- Dates: 05/2021-05/2022
- Description: literature review of biomedical research related to osteoarthritis, bone biology, cartilage, and biomechanics

American Institute of Chemical Engineers

- Dates: 09/2018-05/2022
- Activities: "BobCatalysts" Chem-E Car Team (10/2018-05/2019), researched redox reaction and materials to improve aluminum air battery design

Bio-Engineering Journal Club

- Dates: 10/2018-05/2019
- Description: Literature review of bioengineering research related to microfluidics, tissue engineering, biomimicry, and biomaterials