

Ryan Daniel Cordner

Phone: 801-422-8757

E-mail: ryan_cordner@byu.edu

Education

- Cedars-Sinai Medical Center, PhD 2016
- Biomedical Sciences and Translational Medicine
 - Dissertation: "The role of *CD8 T cell sialylation in glioma immunity and neurodegeneration*"
- Brigham Young University, BS 2010
- Major: Clinical Laboratory Science

Professional Experience

Teaching Experience

- Brigham Young University, Associate Teaching Professor 2023-Present
- Brigham Young University, Medical Laboratory Science Program Director 2022-Present
- Brigham Young University, Assistant Teaching Professor 2016-2023
- Brigham Young University, MLS Clinical Internship Coordinator 2016-2022

Clinical Experience

- Brigham Young University Student Health Center, COVID-19 PCR Lab Supervisor 2020-2022
- Primary Children's Medical Center, Medical Laboratory Scientist 2010-2011

Teaching

Courses Taught

- MMBIO 102 – Introduction to Clinical Laboratory Techniques
- MMBIO 294R – Mentored Research
- MMBIO 392 – Hematology
- MMBIO 393 – Immunohematology and Coagulation Theory
- MMBIO 394 – Practical Hematology
- MMBIO 395 – Practical Immunohematology and Coagulation Theory
- MMBIO 406 – Clinical Chemistry
- MMBio 407 – Clinical Microbiology
- MMBIO 409 - Hematology
- MMBIO 410 – Hematology Laboratory
- MMBIO 411 – Molecular Diagnostics

MMBIO 422 – Pathophysiology and Laboratory Diagnostics in Clinical Chemistry
MMBIO 423 – Pathophysiology and Laboratory Diagnostics in Clinical Chemistry and Molecular Biology
MMBIO 424 – Diagnostic Techniques in Clinical Chemistry
MMBIO 425 – Diagnostic Techniques in Clinical Chemistry and Molecular Biology
MMBIO 491 – Applications in Laboratory Medicine
MMBIO 496R – Clinical Experience
MMBIO 551R – Current Topics in Microbiology and Molecular Biology
NURS 505 – Interprofessional Education for Health Professionals

Student Mentoring

Graduate Student Committees

Jennifer Brereton – MS Student

-MS Thesis: “Is Urinary Ferritin a Valid Surrogate for Serum Ferritin in a Newborn Intensive Care Neonate? A Pilot Study

Undergraduate Students Mentored

Research Lab

Sabina Keenan – White Blood Cell Identification Model

Avery Squires – Causes of White Blood Cell Misidentification

Erin Peterson – Chromatin Pattern Analysis in Mature Leukocytes

Malcon Alvarez – Fractal Fibrin Patterns

Ivy Cuthbert – Fractal Fibrin Patterns

Henry Tullis – Fractal Fibrin Patterns in Factor Deficiencies (Honors Student)

Abigail Gordhamer – Chromatin Pattern Analysis in Blasts

Paul Young – Chromatin Pattern Analysis in White Blood Cells

Kirsten Van Dam – Causes of White Blood Cell Misidentification by Medical Laboratory Scientists

Alexandra “Xan” Allen – White Blood Cell Identification Model

Jane Whiting – White Blood Cell Identification Model

Austin Snow – Whole Blood Fibrin Pattern Analysis

Dylan Tanner – White Blood Cell Identification Model

Audrey Memmott – White Blood Cell Identification Model

Kristen Skinner – Fibrin Pattern Analysis in Factor Deficiencies

Chandler Hatch – Differential Eosinophil Granulation

Sarah Hegerhorst – Differential Eosinophil Granulation

Austin Ralphs – Decision Based Learning Model for White Blood Cell Identification

Lauren Brooksby – Decision Based Learning Model for White Blood Cell Identification

Jemma Skabelund – Decision Based Learning Model for White Blood Cell Identification

Tara Blanc – Decision Based Learning Model for White Blood Cell Identification

Joshua Adams – The Education Gap in Medical Laboratory Science

Celeste Dunn – The Education Gap in Medical Laboratory Science

Caisa Blau – The Education Gap in Medical Laboratory Science

Mekeli Nelson – The Education Gap in Medical Laboratory Science

MMBIO 491 Concept Applications in Laboratory Medicine Student Research Projects*

*This is a required course in the Medical Laboratory Science program where, among other things, students complete a one semester mentored group research project.

Development and Validation of a Machine Learning Algorithm to Distinguish Reactive Lymphocytes and Monocytes

Blake Averett
Ivy Cuthbert
Erin Peterson

Comparative Analysis of Manual Versus Automated Testing with Albumin, Calcium, and Creatinine Procedures

McKay Cornelius
Adryann Frewing
Rowan Guptill
Sehi Kim

Evaluating BYU Testing Practices and Impacts on Student Mental Health and Personal Well-being

Noah Emery
Katie Hamilton
Malcon Alvarez

Alterations in CBC parameters Based on Blood Storage Time and Vacutainer Additives

Daniel Mikulecky
Jade Smith
Brooklyn Spear

Impact of MLS per Capita on Societal Health

Brett Andersen
Rylee Petersen
Aleksi Solorio
Elli Keister

Evaluating the BYU MLS Program for Efficacy in Career Preparation

Emma Christensen
Kaytee Crook
Jessica Long
Elza Otani

Analysis of Nosocomial Infections in Utah

Hannah Crawford
Heemin Lee
Kalie Sorenson
Trina Yeo

Key Discoveries Leading to the Development of the Field of Laboratory Medicine

Courtney Hall
Lauren Holmstead
Johanna Lockett
Kyler Wade

Clinical Laboratory Mentoring – Student Health Center COVID-19 PCR Lab

Maddie Gardner
Ashley Sweetnam
Emili Hartwell
Evan Jalaty
Cassidy Swain
Cassie Child
Rachel Brown
Andrew Sheffield
Thomas Klingonsmith
Alice Gunn
Chandler Hatch
Sarah Hegerhorst
Jen Dacayanan
Brianna Thomas Saxey
Mariah May
Hoi Kiu Woo

Abstracts, Publications and Presentations

Abstracts

1. Gordhamer A, Young P, **Cordner R**. Distinguishing Leukemic Cells Using Fractal Chromatin Patterns and Machine Learning. Abstract for poster presentation, Undergraduate Research Symposium, Brigham Young University, Provo, UT. 2024
2. Gordhamer A, Young P, **Cordner R**. Distinguishing Leukemic Cells Using Fractal Chromatin Patterns and Machine Learning. Abstract for poster presentation, Roseman University Research Symposium, South Jordan, UT. 2024
3. Young P, Gordhamer A, **Cordner R**. Chromatin Pattern Quantification for the Differentiation of White Blood Cells. Abstract for poster presentation, Roseman University Research Symposium, South Jordan, UT. 2024.
4. Van Dam K, **Cordner R**. Factors leading to White Blood Cell Misidentification. Abstract for poster presentation, Roseman University Research Symposium, South Jordan, UT. 2024.
5. Memmott A, Tanner D, **Cordner R**. Improving White Blood Cell Morphology Education Through Standardized Questions. Abstract for poster presentation, American Physiology Summit, 2023, Long Beach, CA. 2023.
6. Snow A, **Cordner R**. Glucose Induced Alterations in Fractal Fibrin Patterns. Abstract for poster presentation, American Physiology Summit, 2023, Long Beach, CA. 2023.
7. Skinner K, **Cordner R**. Detecting Alterations in Fractal Fibrin Patterns Using Light Microscopy. Abstract for poster presentation, Experimental Biology 2022, Philadelphia, PA. 2022.

8. **Cordner** R, Dunn C, Davis M. The Education Gap in Clinical Microbiology. Abstract for poster presentation, American Society for Clinical Laboratory Science Annual Meeting, San Diego, CA. 2018.
9. Adams J, Davis M, **Cordner** R. Evaluating the Gap between Training Programs and Hospitals in Medical Laboratory Science Chemistry Testing. Abstract for poster presentation, American Society for Clinical Laboratory Science Annual Meeting, San Diego, CA. 2018.
10. **Cordner** R, Jhun M, Panwar A, Wang H, Yeager N, Murali R, McAbee J, Mardiros A, Takei A, Fan X, Jouanneau E, Black K, Wheeler C. IDH1 Modulates the CD8 T cell Response to Glioma. Abstract for oral and poster presentation, St. Jude National Graduate Student Symposium, Memphis, TN. 2016.
11. **Cordner** R, Jhun M, Panwar A, Wang H, Yeager N, Butte P, McAbee J, Mardiros A, Takei A, Fan X, Jouanneau E, Black K, Wheeler CJ. IDH1 Modulates the Immune Response to Glioblastoma. Abstract for oral presentation, Immunology LA 2014, Los Angeles, CA. 2013.
12. **Cordner** R, Jhun M, Panwar A, Wang H, Yeager N, Butte P, McAbee J, Mardiros A, Takei A, Fan X, Jouanneau E, Black K, Wheeler C. IDH1 Modulates the Immune Response to Glioblastoma. Abstract for poster presentation, Society for Neuroscience Annual Meeting, San Diego, CA. 2013.
13. **Cordner** R, Jhun M, Panwar A, Wang H, Yeager N, McAbee J, Mardiros A, Takei A, Fan X, Jouanneau E, Black K, Wheeler C. IDH1 Modulates the Immune Response to Glioblastoma. Abstract for poster presentation, AACR Annual Meeting, Washington D.C. 2013.
14. **Cordner** R, Ventura JS, Blickenstaff JW, Walther CK, Mayo JL, Felin JE, Andreason B, Wallace NB, Barrow JR, Edwards JG, Capecchi MR, Bridgewater LC. Mice Bearing a Targeted Mutation of nBmp2 Display Decreased Memory Capabilities. Abstract for poster presentation, Experimental Biology, Anaheim, CA. 2010.
15. **Cordner** R, Karyampudi L, Knutson KL. Efficacy of PD-1 Blockade in a Breast Cancer Vaccine Model. Abstract for Oral Presentation, Mayo Clinic, Rochester, MN. 2009.
16. **Cordner** R, Loos TJ, McCune BC, Bridgewater LC. ROC1 and ROC2: Interactions with the Nuclear Variant of Bmp4. Abstract for poster presentation, Experimental Biology, New Orleans, LA. 2009.
17. **Cordner** R, Loos TJ, Bridgewater LC. ROC1 and ROC2: Interactions with the Nuclear Variant of Bmp4. Abstract for poster presentation, Utah Conference of Undergraduate Research, Salt Lake City, UT. 2009.

Publications

1. Gordhamer A, Tullis H, **Cordner** R. Distinguishing Reactive Lymphocytes From Blasts Using Fractal Chromatin Patterns. 2025. *International Journal of Laboratory Hematology*. <https://doi.org/10.1111/ijlh.14541>.

2. Memmott A, Tanner D, **Cordner R**. A Seven Parameter Approach to White Blood Cell Identification. 2024. *Clinical Laboratory Science*. 37(1): 18-23.
3. Panwar A, Rentsendorj A, Jhun M, Cohen RM, **Cordner R**, Gull N, Pechnick RN, Duvall G, Mardiros A, Golchian D, Schubloom H, Jin L, Van Dam D, Vermeriren Y, De Reu H, De Deyn PP, Raskatov JA, Black KL, Irvin DK, Williams BA, Wheeler CJ. Antigen-Specific Age-Related Memory CD8 T Cells Induce and Track Alzheimer's-Like Neurodegeneration. 2024. *PNAS* 121 (29) e2401420121.
4. **Cordner R**, Jhun M, Panwar A, Wang H, Gull N, Murali R, McAbee JH, Mardiros A, Sanchez-Takei A, Mazer MW, Fan X, Jouanneau E, Yu JS, Black KL, Wheeler CJ. Glioma Immunotherapy Enhancement and CD8-specific Sialic Acid Cleavage by Isocitrate Dehydrogenase (IDH)-1. 2023. *OncoGene* 42(25):2088-2098.
5. Jhun M, Panwar A, **Cordner R**, Irvin DK, Veiga L, Yeager N, Pechnick R, Schubloom H, Black KL, Wheeler CJ. CD103 Deficiency Promotes Autism (ASD) and Attention-Deficit Hyperactivity Disorder (ADHD) Behavioral Spectra and Reduces Age-Related Cognitive Decline. 2020. *Frontiers in Neurology* 11:557269.
6. Panwar A, Jhun M, Rentsendorj A, Mardiros A, **Cordner R**, Birch K, Yeager N, Duvall G, Koronyo-Hamaoui M, Cohen RM, Ley E, Black KL, Wheeler CJ. Functional recreation of age-related CD8 T cells in young mice identifies drivers of aging- and human-specific tissue pathology. 2020. *Mechanisms of Ageing and Development* 191:111351.
7. **Cordner RD**, Friend LN, Mayo JL, Badgley C, Wallmann A, Stallings CN, Young PL, Miles DR, Edwards JG, Bridgewater LC. The BMP2 nuclear variant, nBMP2, is expressed in mouse hippocampus and impacts memory. 2017. *Scientific Reports* 7:46464.
8. Junes-Gill KS, Lawrence CE, Wheeler CJ, **Cordner R**, Gill TG, Mar V, Shiri L, Basile LA. Human hematopoietic signal peptide-containing secreted 1 (hHSS1) modulates genes and pathways in glioma: implications for the regulation of tumorigenicity and angiogenesis. 2014. *BMC Cancer* 14:1920.
9. Jouanneau E, Black KL, Veiga L, **Cordner R**, Goverdhana S, Zhai Y, Zhang X, Panwar A, Mardiros A, Wang H, Gragg A, Zandian M, Irvin DK, Wheeler CJ. Intrinsically de-sialyated CD103⁺ CD8 T cells mediate beneficial anti-glioma immune responses. 2014. *Cancer Immunology and Immunotherapy*. 63(9):911-24.
10. **Cordner R**, Black KL, Wheeler CW. The Exploitation of Adaptive Evolution in Glioma Treatment. 2013. *CNS Oncology* 2(2), 171-179.

Presentations

1. Brigham Young University College of Life Sciences Faith and Science Seminar, September 2023.
2. Innovations in Medical Laboratory Science Education. BYU MMBio Seminary Series, October 2022.
3. Online Analyzers for Online Internships. Clinical Laboratory Educators' Conference, February 2021.

4. Improving Educational Practices in Medical Laboratory Science Courses. BYU MMBio Seminar Series, March 2020.
5. Using and Creating Open Educational Resources for MLS/MLT Programs. Medical Laboratory Educators Network Symposium, May 2019.
6. Molecular Diagnostics in the BYU MLS Program. Medical Laboratory Educators Network Symposium, November 2018.
7. Clinical Internship Site Location and Recruitment in the BYU MLS Program. Medical Laboratory Educators Network Symposium, November 2018.
8. White Blood Cell Morphology and Clinical Laboratory Centralization. BYU MMBio Seminar Series, October 2018.

Grants

1. CURA Grant, College of Life Sciences, Brigham Young University, 2025. Predicting genetic bleeding disorders using machine learning and fractal fibrin patterns. \$4,000
2. Teaching Development Grant, College of Life Sciences, Brigham Young University, 2022. Innovative approach to nucleated blood cell identification using standardized questions and Bayesian probability. \$9,600

Committees

College and Department Committees

MLS Committee, Chair – 2025 - Present

MMBio Executive Committee, Member – 2022 - Present

MMBio Faculty Search Committee, Member – 2022 - 2023

MLS Faculty Search Committee, Chair – 2021 – 2022

Department Strategic Planning Committee, Member – 2021

Ad Hoc CURA Grant Review Committee, Member – 2021

College of Life Sciences Curriculum Committee, Member – 2020 – Present

MMBio Undergraduate Curriculum Committee, Member – 2020 – Present

Ad Hoc MMBio 122 Course Design and Implementation Committee, Member – 2019

Department Awards and Resources Committee, Member – 2018 – 2020

Medical Laboratory Educators Network Symposium Planning Committee – 2018 – 2019

College of Life Sciences Career Advisement Coordinating Council – 2017 – 2018

Meeting Planning Committees

Medical Laboratory Educators Network Symposium Planning Committee, Member - 2018
Medical Laboratory Educators Network Symposium Planning Committee, Member - 2019

Certifications

Medical Laboratory Scientist (American Society for Clinical Pathology) 2011
MLS Certification # 237964

Society Memberships

American Society for Clinical Pathology 2020 - Present
American Physiology Society 2022 - 2023
American Society for Clinical Laboratory Science 2017 - 2021

Society Leadership

ASCLS – Utah Treasurer 2018-2021

Awards

Early Career Teaching Award, Brigham Young University 2023
Spiritually Strengthening Faculty Award, College of Life Sciences 2022