SCHOOL OF MEDICINE
UNIVERSITY OF UTAH

Master of Science in Clinical Investigation

Student Handbook

2022-2023

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I. MS in Clinical Investigation Overview

The MS in Clinical Investigation (MSCI) is a post-graduate program that provides classroom and mentored experience in clinical research and innovation, preparing its trainees for careers in academic medicine, the allied health sciences, and global health related fields. The Program welcomes trainees who have or are pursuing graduate degrees in clinical and translational science (medicine, dentistry, nursing, physical therapy, pharmacy, and the biosciences) and trainees with engineering or business degrees who are involved in health care systems. The MSCI Program prepares trainees to be competitive investigators and team members working broadly within the clinical and translational science realm.

For more information on the MSCI Program, see Program History & Mission.

Candidates for the MSCI degree elect to complete one of three tracks of study: **Track 1 (Med into Grad)** emphasizes the inherited basis of human disease, mechanism-oriented clinical research, and bench-to-bedside translational research. **Track 2 (Clinician Scientist)** emphasizes epidemiology, health services research, and bedside-to-community translational research. **Track 3 (Global Health Innovation and Technology)** emphasizes human-centered design, principles of innovation, and global translational research.

A total of 30 credit hours (20 didactic and 10 masters-level research) are needed to meet graduation requirements for the MSCI degree. The average time to degree completion is two years. While core curricula are specific for each track, all students must complete foundational courses in biostatistics and ethics. The curriculum for the MSCI program begins in fall semester (August) for Track 1 and 3 students. Track 2 students begin with an intensive introductory 4-week session in the summer semester (July). In addition to the core curricula, the MSCI program offers several electives enabling students to reach the 20-credit hour requirement for didactic education. Students are expected to tailor their program of study to fit their interests and goals. In addition to MSCI class offerings, students may wish to include in their programs of study courses offered by other graduate programs with relevant curricula. To be considered part of a student's program of study, out-of-program classes require approval by the Directors.

For more information on MSCI courses, see *Clinical Investigation (Master of Science)* page in the University of Utah Academic Catalog

In addition to classwork, the MSCI program supports mentored research and innovation-applied research experiences at campus sites at the University of Utah School of Medicine and its global partners. Students in all tracks must complete 10 Master's research credit hours. For track 2 and 3 students, the research experience provides the foundation for the Capstone project. For track 1 students, the required clinical rotation provides the foundation for the Capstone project. Track 2 and 3 students must identify a Supervisory Committee by the end of fall semester of their first year in the program, and before starting their research and enrolling in research credit hours.

For more information on forming a Supervisory Committee and planning your Capstone project, see Supervisory Committee and MSCI Capstone Project sections below.

The MSCI program is designed to support mentored research and innovation-applied research experiences at campus sites at the University of Utah School of Medicine and its global collaborators. Students must enroll in at most 10 credits for their Capstone Projects. Before enrolling in these research credits, students must identify a Supervisory Committee who will meet with them regularly (at least quarterly while pursuing the MSCI degree) to provide ongoing mentorship to complete their MSCI Capstone project.

For more on University of Utah Graduate School policies, see *Navigating Grad School*.

The Capstone project should demonstrate the successful application of skills and competencies acquired through core and elective coursework. The Capstone should also reflect 10 credit hours (roughly 450 hours) of research work based on University of Utah credit hour guidelines. Track 1 students must also identify a Supervisory Committee in timely fashion, but their research is mentored by their already-formed PhD committee.

II. Student Expectations

As a post-graduate student, you are ultimately responsible for making progress in your program of study, complying with MSCI Program and University of Utah Graduate School policies, and communicating with Program faculty and with your Supervisory Committee.

Enrollment

To complete the MS program in two years, you will need to complete 15 credit hours per year. In the first year, most credit hours will come from coursework. In the second year you will take fewer courses and earn credits through mentored capstone project hours. MSCI students must enroll for a minimum of 2 credit hours every fall and spring semester from the time you are admitted until you graduate to remain enrolled in the Program. Summer enrollment is optional. If circumstances require you to take a leave of absence, please notify the MSCI Academic Advisor.
***Track 3 note:** the Track 3 course schedule includes additional credit hours and course requirements to permit completion within a 12–18-month schedule. See Track 3 courses for details.

For more on academic conduct expectations, see *University of Utah Code of Student Rights and Responsibilities*.

Class Attendance

The program recognizes that most MSCI students have significant clinical and research responsibilities. The Program has been structured to accommodate students with busy schedules by offering evening classes, making many course lectures available online, and posting course assignments on Canvas. As a graduate student, you are expected to ensure clinical and research responsibilities do not conflict with class attendance. You are also expected to communicate in advance with the course instructor for any class meetings that you will miss. At the discretion of the instructor, class attendance and participation may be a criterion for earning course credit and may contribute to your grade.

Academic Conduct

To ensure the highest standards of academic conduct are promoted and supported at the University, students must adhere to generally accepted standards of academic honesty, including but not limited to refraining from cheating, plagiarizing, and research misconduct. Academic dishonesty is considered both academic misconduct and a violation of professional and ethical standards. This means that a student may, for example, receive a failing grade in a course if the faculty member determines that they cheated. Academic misconduct may also result in dismissal from the Program and includes, but is not limited to, cheating, misrepresenting one's work, inappropriately collaborating, plagiarism, and fabrication or falsification of information. It also includes facilitating academic misconduct by intentionally helping or attempting to help another to commit an act of academic misconduct. Plagiarism is the intentional unacknowledged use or incorporation of any other person's work in, or as a basis for, one's own work offered for academic consideration or credit or for public presentation. Plagiarism includes, but is not limited to representing as one's own, without attribution, any other individual's words, phrasing, ideas, sequence of ideas, information or any other mode or content of expression. The MSCI Program follows University of Utah appeals policies.

For more on MSCI Program meetings and events, see *Translational Research in Progress* and *Translational Research Trainee Symposium.*

Program Meetings and Translational Research Trainee Symposium

Interaction with your peers in the Program and with other researchers on campus is an essential component of your training in clinical investigation. While you are a student, you are expected to regularly participate in Translational Lunch meetings (Track 1) and Translational Research in Progress (T.R.I.P.) meetings (Tracks 2 and 3). Track 2 students are expected to attend 75% of T.R.I.P. meetings each academic year. Students can claim credit for T.R.I.P. attendance by registering for the MDCRC 6410 Seminar Series. Track 2 students are expected to present their research in progress at T.R.I.P. once per academic year. Track 3 students are expected to attend all T.R.I.P. meetings during weeks when in-person Track 3 courses are occurring and should try to participate remotely whenever possible during the remaining months each year but Track 3 students will not register for MDCRC 6410 Seminar Series course credits. Track 1 students can claim credit for translational lunch meetings by registering for MDCRC 6822. All MSCI students can participate in either series.

MSCI Program leadership hosts the annual Translational Research Trainee Symposium each November, and MSCI student participation (all tracks) in this annual event is mandatory. Selected trainees will share their research in a platform format. Trainees who are not presenting orally will be required to present a poster showcasing their research.

For more details on graduate school deadlines and how to apply for graduation, see *Master's Candidate Graduation Overview* and *Apply for Graduate Degree.*

Student Progress Reviews

Each student-mentor team will be asked to meet with their Track Leader annually while enrolled in the Program. The progress review will include a discussion of courses completed, progress toward your MSCI Capstone project, if and if applicable, any changes to your program of study.

Course and Program Evaluations

The MSCI Program conducts ongoing evaluation of its courses and of the Program. These evaluations are required of all University of Utah degree programs that are approved by the Utah Board of Regents. Evaluations are used to assess success of individual courses and as a basis for continuing to improve the curriculum to meet student needs. For faculty, student course evaluations are provided to committees making recommendations about the faculty review, advancement, and tenure actions. Student responses are anonymous, but the Program does track whether evaluations have been completed. MSCI graduates may be contacted after graduation to obtain feedback on the overall value of the Program to their careers. Another way that the MSCI program measures the success of the degree program is by tracking research productivity of former students. The Program obtains information about your research funding and publications through electronic means such as U of U Office of Sponsored Projects, NIH websites, PubMed, and Scopus. After you graduate, the Program may contact you to request an updated biosketch/CV.

Capstone Project and Graduation Deadlines

The University of Utah requires that specific processes be followed as you proceed through forming a supervisory committee, defending your capstone project, and graduating. There are graduate school deadlines for each of these steps. The MSCI program has prepared guidelines for these processes and the MSCI Academic Advisor will provide you with assistance. Ultimately, though, it is your responsibility to take initiative a year in advance of completing your degree to identify your Supervisory Committee, plan your MSCI Capstone Project and formally apply for graduation.

III. Supervisory Committee and MSCI Capstone Project

Supervisory Committee

The graduate school requires each graduate student to identify a Supervisory Committee composed of 3 faculty members. The Supervisory Committee is responsible for approving the student's academic program and helping to prepare and judge qualifying examinations. The qualifying examination for the MSCI is the Capstone Project. For Track 1 students, there will usually be some overlap between the membership of the MSCI Supervisory Committee and the membership of the PhD committee, however, these do not need to be identical. Each Supervisory Committee member should, at minimum, 1) contribute to and approve the research design 2) review and provide sufficient feedback on the draft of the final project 3) attend the final capstone presentation and participate in the discussion. If the final project is a manuscript, committee members should have a level of involvement that merits authorship. The committee chair, and a majority of committee members, must be tenured or tenure-line faculty. If the most suitable committee members do not meet this requirement, the student may seek Program approval to petition for an exception by contacting the MSCI Academic Advisor. For Track 3 students, only 1 international committee member is allowed; they must have a master's degree and must provide a current CV for the graduate school. Other advisors for Track 3 students at

For more on University of Utah Supervisory Committee requirements, see *Supervisory Committees*.

international or global sites may provide input or assistance but the Supervisory Committee itself is limited to 3 faculty members.

The student is responsible for identifying Committee members who have subject matter and methodological expertise that suit the research project. At least one member of the Supervisory Committee should be a faculty member with expertise in research methodology, usually chosen from the MSCI core faculty. An iterative process is recommended (i.e., the student meets with prospective committee members to develop and refine a research project topic and methods, and then finalizes the committee membership). The student will complete the MS Project Plan and Committee Form and obtain signatures from their committee members. This form must be submitted and approved before a student will be provided with permission codes to register for research credits.

MSCI Capstone Project

The MSCI Program emphasizes the development of strong clinical investigation skills based on a solid foundation in research methods. The MSCI Capstone Project should therefore demonstrate application of skills and competencies acquired through the core and elective coursework that the student completed in the Program. Therefore, it is recommended that the student complete one year of course work before defining the MSCI Capstone Project and enrolling for research credit hours. The Capstone should reflect 10 credit hours (roughly 450 hours) of research work based on University of Utah credit hour guidelines. Capstone Projects should either summarize an analysis of preliminary research in support of a grant proposal or a manuscript ready for submission to a peer-reviewed journal. For Track 3 students, Capstone Projects should meet the criteria listed above, or should provide documentation sufficient for Utility (Non-Provisional) Patent application, or for US FDA 510(k) regulatory application, or equivalent work. For students pursuing the MSCI in conjunction with their PhD (Track 1) the Capstone project should be based on their clinical rotation experience. For all other students, the Capstone should be based on a mentored research or innovation project completed while enrolled in the Program

IV. MSCI Faculty

Kristina Allen-Brady
Research Associate Professor
Division of Genetic Epidemiology
PhD in Genetic Epidemiology, University of Utah

Research interests: Underlying genetic causes of chronic diseases

Teaches: Introduction to Genetic Epidemiology

Amanda Bakian
Research Associate Professor
Department of Psychiatry
Divisions of Child Psychiatry and Public Health
PhD in Biology/Ecology

Research interests: Experimental design, geographical and environmental epidemiology, and gene-environment Interaction

Teaches: Translational Research in Progress

Julie Barkmeier-Kraemer
Professor
Division of Otolaryngology-Head and Neck Surgery
PhD, Speech-Language pathology, The University of Iowa

Research interests: voice disorders, swallowing disorders

Teaches: MSCI Research Workshop

Teresa Bell
Associate Professor
Department of Surgery
PhD in Health Outcomes and Policy Research, University of Tennessee at Nashville

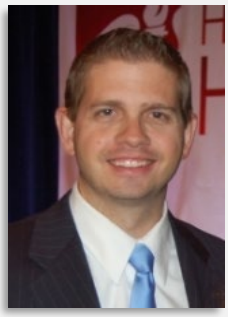
Research interests: Pediatric trauma, surgical outcomes, and adolescent substance use

Teaches: Applied Regression Analysis

Adam Bress
Associate Professor
Department of Population Health Sciences
PharmD in Pharmacy, University of Maryland

Research interests: Prevention and treatment of cardiovascular disease, reducing health disparities, and optimizing medication use.

Teaches: Methods in Comparative Effectiveness



Charlie Casper
Professor
Department of Pediatric Administration
Divisions of Pediatric Critical Care and Public Health
PhD in Statistics, University of Wisconsin-Madison

Research interests: Gene expression, clinical trial design, survival analysis, and longitudinal data.

Teaches: Design and Implementation of Clinical Trials

Nathorn Chaiyakunapruk
Professor
Department of Pharmacotherapy
PharmD in Pharmacy, University of Wisconsin-Madison
PhD in Pharmaceutical Outcomes Research and Policy, University of Washington

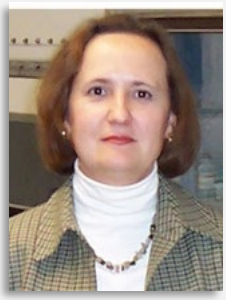
Research interests: infectious and non-communicable diseases, and community pharmacy.

Teaches: Systematic Reviews and Meta Analysis, Methods in Comparative Effectiveness Research

Jonathan Chipman
Assistant Professor
Department of Population Health Sciences
Division of Biostatistics
Division of DFPM Administration
PhD in Biostatistics, Vanderbilt University

Research interests: Development of covariate-adjusted randomization and sample-size adaptive monitoring methods

Teaches: Implementation of Clinical Trials



Elena Enioutina
Research Assistant Professor
Department of Pediatrics
Division of Microbiology and Immunology
Division of Pediatric Clinical Pharmacology
MD, I.M Sechenov First Moscow Institute of Medicine

Research interests:
Immunopharmacology, herbal medicine, myeloid derived suppressor cells, and neonatal infections,

Teaches: Implementation of Clinical Trials

Ramkiran Gouripeddi
Research Assistant Professor
Department of Biomedical Informatics
MS in Biomedical Informatics, Arizona State University
MBBS, Stanley Medical College

Research interests: Clinical research informatics, data mining, machine learning, metadata discovery, and computational modeling

Teaches: Data Management

Amy Hawkins
Assistant Professor (Lecturer)
Department of Biochemistry
PhD in Human Genetics, Virginia Commonwealth University School of Medicine

Research interests:

Teaches: Experiences in Personalized Medicine II, Foundations in Personalized Healthcare

Richard Holubkov
Professor
Department of Pediatrics
Divisions of Biostatistics, Pediatric Critical Care, and Public Health
PhD in Biostatistics, University of Washington

Research interests: Prospective intervention, pediatrics, and cardiology

Teaches: Design and Implementation of Clinical Trials

Sudha Jayaraman
Professor
Department of Surgery
MD, University of California, Davis School of Medicine

Research interests: Global health and medication safety in trauma and critically ill patients

Teaches: Introduction to Global Health and Innovation, Global Health Systems, Policy, Processes, and Financing, and Clinical Problem Solving

Kathleen Job
Research Assistant Professor
Department of Pediatrics
Division of Pediatric Clinical Pharmacology
PhD in Bioengineering, University of Utah

Research interests: Use of drugs and devices in special populations, integrating physiology and pharmacology into clinical trials

Teaches: Implementation of Clinical Trials

Lynn Jorde
Professor
Department of Human Genetics
PhD in Biological Anthropology, University of New Mexico

Research interests: Medical genetics, human population genetics, gene mapping and cloning

Teaches: Genetics of Complex Diseases and Medical Genetics for Clinical Investigation

Allison Judkins
Assistant Professor
Department of Pediatrics
Division of Neonatology
MD, University of Missouri-Kansas City School of Medicine

Research interests: Global health, neonatal nutrition, and optimized family centered care.

Teaches: Introduction to Global Health and Innovation and Introduction to Global Health Systems, Policy, Processes, and Financing

Anthea Letsou
Professor
Department of Human Genetics
Ph.D. in Human Genetics, Yale University Postdoctoral Fellow in Molecular Biology, Princeton University

Research interests: Developmental genetics, Neurobiology, and Signal transduction.

Teaches: Grant Writing, MSCI Bootcamps. Animal Models

Sarah Lombardo
Assistant Professor
General Surgery Department, University of Utah
M.D. Jefferson Medical College

Research Interests: Medical co-morbidities of psoriasis and clinical trials of psoriasis therapeutics.

Teaches: Applied Regression Analysis

Daniel Malone
Professor
Department of Pharmacotherapy
PhD in Health Outcomes, University of Texas

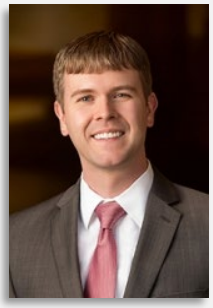
Research interests: Randomized control trials, economic modeling, and outcomes research using observational data

Teaches: Cost-Effective Analysis

Howard Mann
Professor
Department of Radiology
MBBCH University of Witwatersrand

Research interests: Thoracic Cancer

Teaches: Bioethical Issues in Clinical Research



Bryan McRae
Assistant Professor
Department of Surgery
Division of Otolaryngology – Head and Neck Surgery
MD, University of Michigan Medical School

Research interests: Ear, nose, and throat disorders, medical and surgical device innovation

Teaches: Introduction to Clinical Problem Solving

Morgan Millar
Research Instructor
Department of Internal Medicine, Division of Epidemiology
PhD in Sociology, Washington State University

Research interests: Melanoma, Sociology, Social disparities in Cancer, Health disparities, Survey Methodology Research

Teaches: Survey Methods

April Mohanty
Research Assistant Professor
Department of Internal Medicine
Division of Epidemiology
PhD in Epidemiology, University of Washington

Research interests: Improving quality and equity of cardiovascular healthcare

Teaches: Introduction to Epidemiology

Juan Carlos Negrette
Administrative Director of Global Health
MBA, Johns Hopkins University

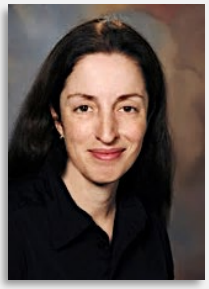
Research interests: health programs design, implementation, and management, global health

Teaches: Introduction to Global Health Systems, Policy, Processes, and Financing

Richard Nelson
Research Assistant Professor
Department of Internal Medicine, Division of Epidemiology
M.A. in Economics, University of Virginia
M.S. in Clinical Investigation, University of Utah

Research interests: Health economics, infection diseases, rural health

Teaches: Cost-Effectiveness Analysis



Julie Shakib
Associate Professor
Department of Pediatrics, Division of General Pediatrics
MPH in Public Health, University of Utah
DO, Des Moines University College of Osteopathic Medicine
MS in Clinical Investigation, University of Utah

Research interests: Maternal immunization to provide passive immunity to infants, neonatal outcomes related to in utero opioid exposure

Teaches: Grant Writing

Greg Stoddard
Adjunct Assistant Professor
Department of Internal Medicine, Division of Epidemiology
Department of Orthopedics
M.B.A. in Business Administration, University ofPhoenix
MPH in Public Health/Epidemiology, University of Utah

Research Interests: Statistical methodsin epidemiology

Teaches: Introduction to Biostatistics, Computer Practicum, Regression Models, and Biostatistics for Basic Science

Carol Sweeney
Professor
Department of Internal Medicine
Division of Epidemiology
Ph.D. in Epidemiology, University of Washington

Research interests: Cancer epidemiology

Teaches: Introduction to Epidemiology and Intermediate Epidemiology

James Tabery
Professor
Department of Philosophy
M.A. in Bioethics, University of Pittsburgh Ph.D. in History and Philosophy of Science, University of Pittsburgh

Research interests: Philosophy of science and applied ethics and intersection between those domains.

Teaches: Bioethical Issues in Clinical Research

Craig Teerlink
Research Assistant Professor
Department of Internal Medicine
Division of Genetic Epidemiology
Division of Public Health
PhD in Biomedical Informatics, University of Utah

Research interests: Gene discovery in complex diseases

Teaches: Genetic Epidemiology

James Thomas
Assistant Professor
Department of Pediatrics
Division of Neonatology
MD, Dartmouth Medical School

Research interests: global health, newborns, and maternal health

Teaches: Introduction to Global Health and Innovation

Kevin Whitehead
Associate Professor
Department of Internal Medicine
Division of Cardiology
MD, University of Alberta

Research Interest: Developmental biology, vascular development, and adult congenital heart disease

Teaches: Utilization of Animal Models in the Development of Clinical Research Projects

V. Safety and Wellness

Your safety is our highest priority. In an emergency, dial 911 or seek a nearby emergency phone (throughout campus). Report any crimes or suspicious people to 801-585-COPS; this number will get you to a dispatch officer at the University of Utah Department of Public Safety (DPS; dps.utah.edu). If at any time, you would like to be escorted by a security officer to or from areas on campus, DPS will help — just give a call.

The University of Utah seeks to provide a safe and healthy experience for students, employees, and others who make use of campus facilities. In support of this goal, the University has established confidential resources and support services to assist students who may have been affected by harassment, abusive relationships, or sexual misconduct. A detailed listing of University Resources for campus safety can be found at https://registrar.utah.edu/handbook/campussafety.php.

Your well-being is key to your personal safety. If you are in crisis, call 801-587-3000; help is close. The University has additional excellent resources to promote emotional and physical wellness, including the Counseling Center (https://counselingcenter.utah.edu/), (the Wellness Center (https://wellness.utah.edu), and the Women's Resource Center (https://womenscenter.utah.edu). Counselors and advocates in these centers can help guide you to other resources to address a range of issues, including substance abuse and addiction.

VI. Useful Links

University of Utah Academic Catalog
All graduate-level University courses are searchable by keyword in the University of Utah General Catalog (https://catalog.utah.edu/#/search?q=mdcrc&&limit=20&skip=0).

MSCI Website
The MSCI Website is a great resource for MSCI information including semester class schedules, upcoming events and more. Click here to visit our website (https://ctsi.utah.edu/education/msci).

Student Forms
You can find important forms on the Student Info section of the MSCI website. (https://ctsi.utah.edu/education/msci/current-student-forms)

MSCI Class Schedules
The schedule for all MSCI courses is available by semester *under Main Campus Class Schedules* by searching "MDCRC" course listings (https://registrar.utah.edu/Catalog-schedules.php).

Tuition and Student Accounts
To view your tuition bill please log into Campus Information Systems (https://go.utah.edu/cas/login) then click on the Student tab and see Finance.
Click here to contact Income Accounting & Student Loan Services (https://fbs.admin.utah.edu/income/)

Employee Tuition Benefit
University employees who are eligible for the 50% tuition benefit must fill out a Tuition Reduction form every enrolled semester to request the benefit (https://www.hr.utah.edu/ebenefits/certify/tuition-reduction/how-to-apply.html)

MSCI Partial Tuition Scholarship
Students in good standing in the MS in Clinical Investigation may apply for a partial tuition scholarship for fall and spring semesters. See the policy regarding eligibility and application on the MSCI Current Student Info page under Tuition & Scholarships.

Registrar
To register for classes please log into Campus Information Systems (https://go.utah.edu/cas/login).
Then click on the "student" tab and see registration.
Click here to contact the registrar office (https://registrar.utah.edu/)

U of U Student Handbook
The University of Utah Student Handbook is the reference for university-wide policies pertaining to students (https://registrar.utah.edu/handbook/index.php).

Graduate School Catalog
Policies that apply to all University of Utah graduate degrees are presented in the University of Utah Graduate School Catalog (https://gradschool.utah.edu/navigating-grad-school/). All students are expected to reference the catalog for deadlines and answers to questions regarding policy.

Masters Graduate Overview
Deadlines to apply for and complete the requirements for graduation are established by the graduate school each semester and posted on the Master's Candidate Graduation Overview page. (https://gradschool.utah.edu/navigating-grad-school/graduation-overview/masters-candidates.php)http://gradschool.utah.edu/current-students/graduation-overview-for-masters-candidates/)

MSCI Research in Progress
For a list of Research in Progress (RIP) and K Club upcoming events, check our website (https://ctsi.utah.edu/education/seminars-events/translational-research-progress).

MSCI Course Descriptions
For course descriptions, visit the Courses page of the General Catalog and type "MDCRC" into the search field. (https://catalog.utah.edu/#/courses)

Contact information
For academic advising and other general questions contact Kellie Brown (kellie.e.brown@hsc.utah.edu)