

Consortium Connections

Connecting campuses to promote excellence in science and mathematics

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Mark your calendar for upcoming 2020 events (see newsletter section for information)

- March 16, 2020 Janet Andersen Award nominations due
- April 24-25, 2020 Executive Committee Meeting, Minneapolis
- June 5-7, 2020 Mid-career Workshop, St. Olaf College
- July 31-August 3, 2020 Early Career Workshop, Gustavus Adolphus College
- October 30-31, 2020 Biological & Psychological Sciences Symposium in Chicago
- Nov. 13-14, 2020 Physical Sciences, Math and Computer Science Symposium in St. Louis

Comments from the Director



Sketches by Uriya Jankurazova, Lawrence University

At the research symposium in Chicago last November I noticed a student who looked like she was taking some notes while she quietly watched participants moving about during a poster session in the atrium. When I walked past her, I saw that the notebook had some sketches, so I asked if I could have a closer look. The picture to the left is a drawing she had made at a student presentation. While Uriya certainly has an aptitude for drawing, her ability to make careful observations reminded me of the central importance of observation in all of the scientific research that is presented at the meeting. In another part of this newsletter there is a photo of a student presenting a poster, which is which are a very different form of observation than that done by Uriya. Observations made with

human senses, such as sight, touch, hearing and smell, are subjective and qualitative, making them difficult to reproduce. When a scientific observation is made with an instrument, such as a thermometer, scale, camera or pH meter, the observed parameter (data) can be compared to a standard and subsequently quantified. If the experimental process is carefully followed, data collection by another observer can be done reproducibly, which is a key part of any scientific discovery. However, observations made with instruments require that the operator of the instrument not only “observes” all the correct calibration and operational parameters, but also recognizes the limitations of the instrument and the measurement process itself.

Once a researcher is confident that their observations have resulted in accurate data, there is typically some type of data processing that will be needed before conclusions can be drawn from the experiment. At this point the observer needs to be aware of any confirmation bias they might have, which is the tendency to have the data and conclusions presented in a manner that supports their initial experimental hypothesis. As our students begin to build their professional careers, it is important that they understand the importance of accurate and unbiased observations in their experimental work. It is good to see this understanding in the research presented by our students.



*Mike Seymour
MCMS Director*

Undergraduate Research Symposium in the Biological and Psychological Sciences, Washington University in St. Louis, November 1-2, 2019



Symposium participants after Friday dinner at the Eric P. Newman Educational Center

The 2019 Midstates Undergraduate Research Symposium in Biological Sciences and Psychology was held at the Eric P. Newman Educational Center (EPNEC) on the Medical Campus of Washington



Keynote presentation by Dr. Jason Weber

University in St. Louis. The Friday evening program began with a buffet dinner followed by an interactive presentation with members of the Young Scientist Program, a group of graduate students involved with educational outreach and community involvement. The keynote address entitled “Adding Tools to Your Toolbox: The Discovery of Novel Targets in Cancer” was given by Dr. Jason Weber from the Department of Medicine Oncology Division at the Washington University of School of Medicine.

He spoke about the work of his group in the area of triple negative breast cancer and told students the importance of trusting their data when they plan the next step in their research.

After Saturday breakfast at EPNEC the 89 student participants and 14 faculty commenced with the first group of 11 oral presentations in three parallel sessions. After a short break there were two 1-hour poster sessions with 23 posters displayed during each session. The



Graduate School Panel

lunch break was a sandwich and salad bar that provided the opportunity for students to enjoy their lunch while attending a panel discussion on Applying to Graduate School moderated by Dr. Steve Mennerick from the WUSL Department of Psychiatry. The panel included several current WUSL graduate students who had attended Midstates member colleges. During the lunch break there was also a panel discussion on Careers at Liberal Arts Colleges where WUSL graduate students and post-docs met with Midstates faculty members.

The afternoon program included a poster session with 22 students sharing their work and another group of 10 speakers giving talks in three parallel sessions. With breaks and refreshments between each of set

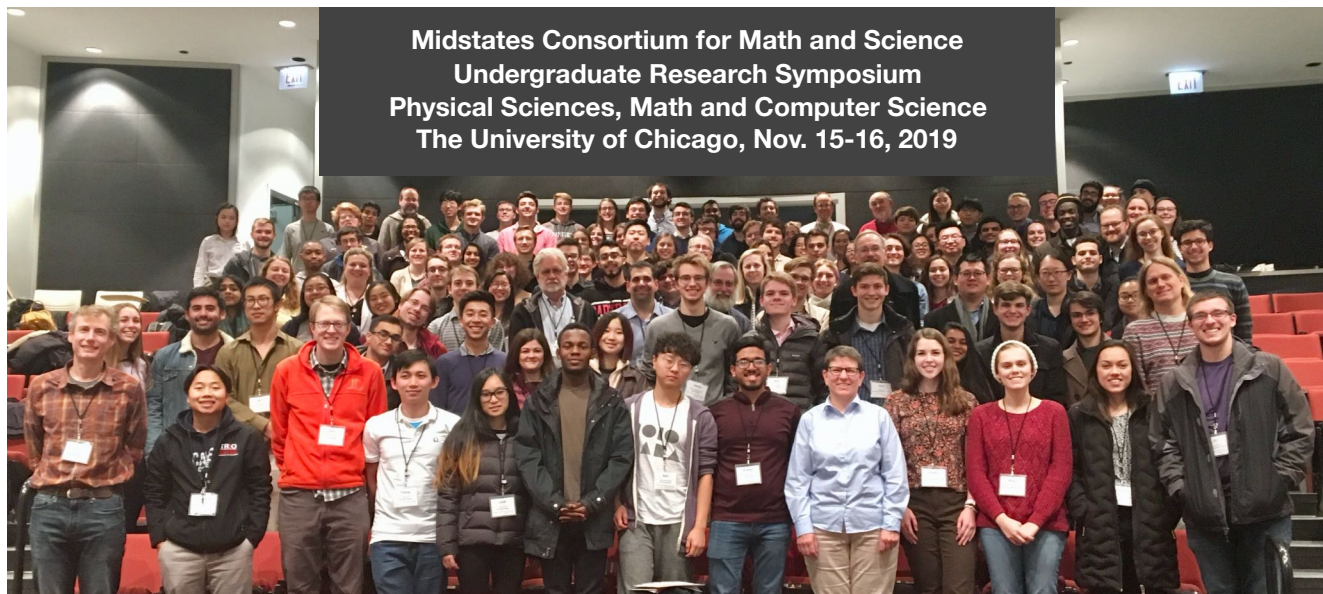


Poster session discussion with faculty

of posters and talks throughout the day there was ample time for informal discussion among the participants. The symposium concluded at 4:15pm and everyone was sent an online survey that they could complete on their mobile device. Participants who were traveling back to their home campus picked up box dinners. Those who could not reasonably travel home on Saturday had dinner at a local restaurant of their choosing and departed from the Parkway Hotel on Sunday morning.

The goals that students had identified for the meeting included experience in presenting their research, learning what type of research is being carried out by students at other schools and networking with faculty and students from different schools. Feedback on the evaluation indicated that these goals were clearly achieved.

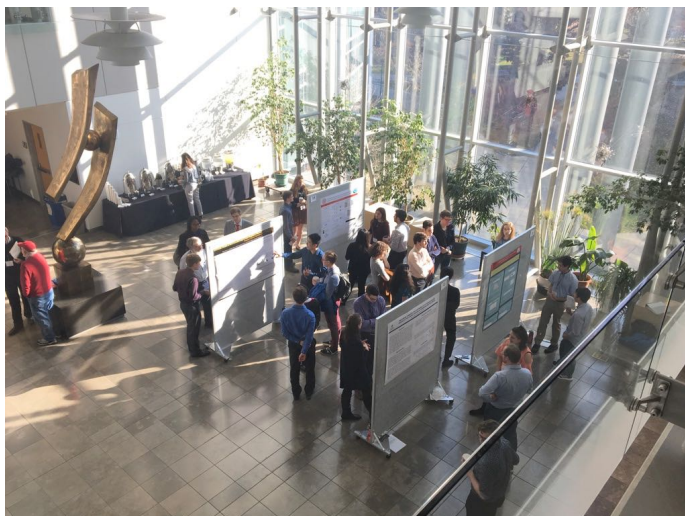
Undergraduate Research Symposium in the Physical Sciences, Mathematics and Computer Science, November 15-16, 2019



Symposium participants after the Janet Andersen Memorial Lecture

The 2019 Physical Sciences, Math and Computer Sciences Symposium at the University of Chicago was attended by 116 students and 20 faculty from all of the member schools. There was an option on Friday afternoon to attend a pre-meeting Graduate School Exploration Seminar that was hosted by the Graduate School. The symposium opened with a keynote lecture by Dr. David Cash, University of Chicago

Department of Computer Science, entitled “Cryptography from Caesar to Snowden”. His presentation included examples of very early forms of cryptography and introduced how mathematics is used in developing the cryptography systems that we routinely depend on today, along with discussion of the current political and technical debates on how cryptograph should be restricted. The seminar was followed by dinner in the atrium of the Gordon Center for Integrative Science (GCIS). After dinner the Janet Andersen Memorial Lecture “Exercise, eat right, and study linear algebra” was presented by Professor Jill Dietz, St. Olaf College Department of Mathematics, Statistics and Computer Science. She showed how delving into the abstract theory of vector spaces can be useful beyond just row reducing matrices, leading to a better understanding of complex systems in areas such as neuroscience, computer science and neurology. The evening concluded with participants walking or taking a shuttle to the nearby Hyatt Place Hotel in Hyde Park.



Posters in the GCIS atrium

On Saturday, participants had breakfast at the hotel and reconvened at the GCIS for the day-long scientific program. The opening session with 24 posters was followed by oral presentations that included 20 papers in four parallel sessions. After each 15-minute talk there was a 5-minute break so that students could easily move between talks. From 11:30 am - 1:00 pm students had time to enjoy lunch at the Baker Dining Hall and to explore campus along the way.



Discussion of research at a poster session

Overall, the response to the on-line survey indicated the symposium was very well received by both students and faculty. Many students remarked that they enjoyed meeting like-minded students from peer institutions who are engaged in research, along with the opportunity to discuss their work in a supportive and empowering environment. They also enjoyed seeing the scenic University of Chicago campus.

The afternoon program featured another series of oral presentations with four parallel sessions in adjoining rooms (15 total presentations) and two 60-minute poster sessions in the GCIS atrium (43 total posters). The meeting concluded at 4:45 pm as students gathered their posters and picked up box meals for their trip home. Shuttles had been scheduled for trips to either O’Hare or Midway airports.



Students preparing for their talk

The 2020 Janet Andersen Lecture Award Nominations

Nominations for the 2020 Janet Andersen Lecture Award are due March 16, 2020. See the link on the Midstates website (<http://mathsciconsortium.org>) for complete information regarding nomination criteria and the information to be submitted. Congratulations to Dr. Jill Dietz, Grace A. Whittier Endowed Chair in Science, Department of Mathematics, Statistics and Computer Science, St. Olaf College, for being selected as the 2019 Janet Andersen Lecture Award recipient. The September 2019 newsletter (Vol. 12, No. 2) has her biographical information.

Upcoming Consortium Events in 2020

- *March 16, 2020: Janet Andersen Award* nominations due. See the Consortium website for additional information regarding the nomination process (<http://mathsciconsortium.org>).
- *April 25, 2020: Executive Committee Meeting*, Minneapolis. This one-day session is when Consortium campus representatives meet in person to review current activities and programs, propose new ideas, and discuss the financial status. If you would like to provide input on how the Consortium operates or suggest future directions, we look forward to hearing from you. Contact your campus representative or the Director (midstatesdirector@gmail.com).
- *June 5-7, 2020: Mid-career Faculty Development Workshop*, St. Olaf College. The middle-career stage, the time between earning tenure and verbalizing a retirement timeline, can be the longest and most challenging stage for many faculty. This workshop will provide structured time for faculty to reflect on the middle stages of their career and to identify future professional opportunities related to teaching, scholarship and service. Through discussion, reflection and interaction with each other, participants will set goals, shape strategies and develop an action-oriented agenda for the next 3 to 5 years. The MCMS homepage (<http://mathsciconsortium.org>) has further information. The on-line application will be open from March 30 - April 21.
- *July 31-August 2, 2020: Workshop for Early Career Success*, Gustavus Adolphus College. Details of the program, which is open to early career faculty, post-docs and senior graduate students, is on the MCMS homepage (<http://mathsciconsortium.org>). The on-line application will be open from May 8 - June 15.
- *October 30-31, 2020: The Biological and Psychological Sciences Undergraduate Research Symposium* at the University of Chicago. The on-line application will be available on the Consortium web site (<http://mathsciconsortium.org>) from August 24 – September 25.
- *November 13-14, 2020: The Physical Sciences, Mathematics and Computer Science Undergraduate Research Symposium* at Washington University in St. Louis. The on-line application will be available on the Consortium web site (<http://mathsciconsortium.org>) from August 24 - September 25.

Short Term Consultations and Seminar Speakers for 2019-20 program year

The following seminar visits and consultations have been approved as of February 2020.

Professor Matthew Zorn, Carthage College, Department of Geospatial Science, visit-with Hope College faculty Brian Yurk (Mathematics) and Ed Hansen (Geology) to discuss their use of small unmanned aerial systems (sUAS) for dune research and how sUAS could be effectively incorporated into the Geospatial program at Carthage College.

- Professor Marc Chamberland, Grinnell College, presentation to Department of Mathematics, Statistics and Computer Science at St. Olaf College, “The Computer's Role in Mathematical Discovery and Proof.”
- Professor Kevin Moeller, Washington University in St. Louis, presentation to the Chemistry Department at Gustavus Adolphus College, "From Molecules to Molecular Surfaces. Exploiting the Synergy Between Electrochemistry and Synthesis."
- Professor Paul Fischer, Macalester College, presentation to Chemistry Department at Hope College, “Seventeen-Electron Chromium(I)tricarbonyltris(phosphine) Complexes Supported by Tris(phosphinomethyl)phenylborates.”
- Professor William Case, Grinnell College, presentation to the Physics Department at St. Olaf College, “The Quantum World Through Wigner Functions.”

Summer Workshop on Preparing Open Textbooks July 16-17, 2020

Have you ever wondered about getting into free open textbooks? Hope College was recently awarded funds as part of the Open Textbooks Pilot Program through the Department of Education. The local program coordinators, Hope chemistry faculty Brent Krueger and Justin Shorb, are looking for people who are excited to learn more about this area! [Click here for more information](#) and the application form for the upcoming workshop at Hope College. As part of this workshop you'll get an expenses-paid visit to Holland, MI (in the summer when the beaches are actually usable!). *And* funds for travel to a national conference of your choice will be provided for those willing to become a workshop leader.

Welcome to New Midstates Director

Last fall, after current Midstates Director Mike Seymour informed the Executive Committee that he would be stepping down from his position at the end of June 2020, a search committee comprised of campus representatives Paul Fischer (Macalester College, committee chair), Deanna Byrnes (Carthage College) and John Bleeke (Washington University in St. Louis) moved ahead with the search process. The search committee is pleased to announce that Dr. Edward Hansen will take over Consortium leadership beginning July 1, 2020.

Ed will retire this spring from the Geology Department at Hope College after a 36-year career of teaching and research at Hope. Ed received his PhD in Geophysical Sciences from the University of Chicago in 1983 and after 1 year as a post-doctoral fellow at the University of Chicago he took a faculty position at Hope College. Since then, Ed has maintained a strong research program that has engaged 64 undergraduate students in summer research (many more during the academic year) and has resulted in 20 papers with undergraduate co-authors being published in peer-reviewed journals. His research has involved collaborations with colleagues at many different universities across the country and several in Europe. Ed was Chair of the Geological and Environmental Science Department at Hope for eight years and served on numerous other College committees, including being the first coordinator for the General Education in Math and Science Program. Ed's leadership beyond Hope College includes 5 terms (15 years) as a geoscience councilor with The Council on Undergraduate Research (CUR), with two years as Chair of the CUR Geosciences Division. He was a member of the Executive Committee of the Michigan Academy of Science, Arts and Letters for five years and served as the Academy President for two years.