Student Art Exhibit and Awards Ceremony

Wednesday July 26, 2017
10:30am - 11:45am

Marquette University
Todd Wehr Chemistry Bldg, 2nd floor

Light refreshments and ice cream served

All are welcome!
The project will involve science and engineering faculty at Marquette and the Visual Arts students and staff at the Milwaukee High School of the Arts (MHSA). This project aims to engage the students at MHSA in science through their passion—art—as well as help Marquette researchers by producing visually appealing art related to their research.

Students will work with research groups at Marquette to produce art related to their research, such as artistic representations/renderings of scientific concepts, methods and results. The resulting art will later be incorporated into presentations, posters, research group websites, graphical abstracts for scientific papers and other places where the research groups publish their research. This direct engagement with the scientific process will not only deepen the students’ understanding of STEM disciplines, but it will also make them engage with the sciences in a cross-disciplinary, collaborative manner.

Students will travel to Marquette at least once a week, for a total of 5–7 times during the summer session; one of the first edit will include a campus tour including a visit at the Haggerty Museum of Art. One to three students will be paired with a research group at Marquette to work on a piece of art for that research group. This will include discussion of the research project (at the level appropriate for the student knowledge), as well as planning the art pieces the students will be working on (with assistance of the coordinators, C.H. and Q.T.). While at the high school, students will receive instruction in the basics of watercolor paint and acrylic paint. They will take time to explore those media, especially in regards to how it might apply to scientific illustration or more abstract representations of scientific concepts. At the later stage, the students will finish their work using Adobe Creative Suite.
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<tr>
<th>Date</th>
<th>Location</th>
<th>Activity</th>
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<tr>
<td><strong>Monday, June 26</strong></td>
<td>Obama SCTE</td>
<td>First day of classes</td>
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| **Tuesday, June 27** | Marquette University | Orientation  
Campus tour, including Haggerty Museum and participating departments |
| **June 27-July 5** | Obama SCTE     | Art instruction                                                          |
| **Thursday, July 6** | Marquette University | Meeting with researchers: 2-3 student teams are assigned to work with one research group  
Lab tour with the assigned research group, discussion of the project |
| **July 7-July 11** | Obama SCTE     | Art instruction/student teams work on draft sketches for their projects  |
| **Wednesday, July 12** | Marquette University | Students and researchers discuss initial draft sketches                  |
| **July 13-July 19** | Obama SCTE     | Art instruction; student teams work start working on the project paintings |
| **Thursday, July 20** | Marquette University | Students and researchers discuss the project progress                    |
| **July 21-July 26** | Obama SCTE     | Art instruction; student teams finalize the project paintings and digitally post-process them using Adobe Creative Suite |
| **Wednesday, July 26** | Marquette University | Final exhibit                                                           |
STEAM Collaborative Proposal

Science through Art / Art for Science

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Long-Term Project Vision

The objective is to create a collaborative STEAM (Science, Technology, Engineering, Arts, and Mathematics) relationship between Milwaukee High School of the Arts (MHSA) and Marquette University. The proposed project would involve science and engineering faculty at Marquette and the Visual Arts students and staff at MHSA. While there is an increasing demand for technically skilled and scientifically literate workforce, there is an achievement gap in the fields of math and science, especially in Title I schools such as Milwaukee Public Schools. This gap is even more evident for students with artistic inclinations; for instance, the current math proficiency rate at MHSA is mere 26%. This project aims to engage the art students at MHSA in science through their passion—the art.

The students will work with research groups at Marquette to produce art related to the research, such as artistic representation/rendering of the scientific concepts, schemes and illustrations, etc., through various art forms, including computer graphics/design, a variety of painting media, and sculpture forms, potentially including mold making and three-dimensional printing. This art could be later used presentations, posters, graphical abstracts for scientific papers, journal cover pictures, etc. This direct engagement with the scientific process would not only to deepen the high school students’ understanding of STEM disciplines, but also the way they view these disciplines in general.

Successful completion of the pilot project described below will provide necessary preliminary results that will enable us to seek external funding for this project.
Benefits of the Program

This partnership would have numerous long lasting benefits for high school students, including exposure to a college campus and college experience, a deeper level of instruction in the sciences, and the opportunity to gain a working knowledge of new media including digital drawing processes and three-dimensional printing. It is well known that people learn by teaching others and by doing; thus our assumption is that by illustrating scientific concepts the students will develop deeper understanding and—more importantly—interest as a result of engaging in graphical representation of these concepts. Having their work published, for example, on a cover of a science journal, would not only help the students to build their artistic portfolio but also change their perception of science and engineering.

Besides providing Marquette research groups with an excellent opportunity to reach an underserved population through an original and innovative program, this project will also help the researchers to disseminate their work. Dissemination of the research will greatly benefit from the help of students well adept in a range of drawing and painting media who will assist in creating visually appealing graphical materials to be used in presentations, publications, and grant proposals. In particular, a growing number of sci-
Scientific journals provide the researchers with opportunities to showcase their research through graphical abstracts and cover pictures that greatly benefit from an artistic touch and expressiveness. An excellent example here is a painting by a MHSA senior Caroline Kenwood that will appear on the front cover of *ChemBioChem* to accompany a paper from the Timerghazin group at Marquette.

**School Demographics**

Milwaukee High School of the Arts is racially diverse, with African Americans making up the largest percentage of the student body at 59%, while Latino students account for 18%, Caucasian students make up 12%, and Asian/other are the remaining 11%. In the student body, 69% is considered to have a low enough income to qualify for free and reduced lunch. There is a rapidly growing refugee population in the school, as well as is also considerable, and rising LGBTQ population. 24% percent of the students are able to read at their grade level proficiently, while 26% of students are able to do the math considered appropriate for their grade level at a proficient level.

**Pilot Program, Summer 2017**

We propose a pilot program meant to set the stage for a sustainable collaborative relationship between Marquette University and MHSA, including seeking external funding from a variety of sources. The program will occur over the summer of 2017 in the period of June 26 to July 28.

Students will travel to Marquette at least once a week, for a total of 5–7 times during the summer session; one of the first edit will include a campus tour including a visit at the Haggerty Museum of Art. One to three students will be paired with a research group at Marquette to work on a piece of art for that research group. This will include discussion of the research project (at the level appropriate for the student knowledge), as well as planning the art pieces the students will be working on (with assistance of the coordinators, C.H. and Q.T.). While at the designated Milwaukee Public Schools high school site, students will receive instruction in the basics of watercolor paint and acrylic paint. They will take time to explore those media, especially in regards to how it might apply to scientific illustration or more abstract representations of scientific concepts. At the later stage, the students will finish their work in a computer lab on campus using Adobe Creative Suite.

The project will conclude with an exhibit where the students will present their work, present what did they learn about the underlying science, and explain their artistic interpretation of it. Besides the final exhibit, the results will be evaluated using a questionnaire administered in the beginning and at the end of the project to gauge the change of students’ attitude toward higher education, science, and career goals.