

The Jacobs Institute Newsletter

A Dose of Medical Innovation

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Where to find the latest developments emerging at the Jacobs Institute in Buffalo, New York.

Team Science: Transdisciplinary Research at Work



What do concussion, medical simulation, and electromagnetic sensors have in common? They were the focus of the Jacobs Institute's (JI's) three summer college interns, from June 1 through August 4.

The JI was fortunate to have representation from different disciplines within the engineering world--biomedical, mechanical/technical, and electrical. Tessa Ooyama, Matt Donovan, and Brett Bosinski are talented rising senior students that were selected from Niagara County Community College (NCCC) and University at Buffalo (UB). This year, there were 45 applicants from 10 universities up and down the eastern seaboard.

The JI hand-picks projects based on both the intern's interest and the institute's needs. Over the course of the 9-week internship, they roll up their sleeves and dive into projects, utilizing all the JI has to offer. This includes UB research faculty, Gates Vascular Institute physicians, high-tech laboratory equipment, industry relationships, and more.

Matt Donovan, a mechanical technical student at NCCC, used a combination of 3D printing and Hollywood special effects silicone to create a realistic femoral access model to improve the JI's medical simulation. His model will allow endovascular fellows and neurosurgical residents the chance to practice endovascular access and diagnostic angiography skills in a safe and realistic environment.

Brett Bosinski, an electrical engineering student at UB, worked to identify what method and equipment would be ideal for measuring and quantifying rate and pressure of flow through our 3D-printed vascular models. He used his expertise to identify electromagnetic sensors that can clip onto the models, as the best available method for gathering quantifiable data. This helps the JI to assess the realistic feel and accuracy of the models, to understand the current state and to improve models moving forward.

Tessa Ooyama, a biomedical engineering student at UB, conducted a meta-analysis of the current state of diagnostics for concussion, with an eye towards athletic-related injuries. With a wealth of information available, she pored over materials and spoke with both a UB neuroscientist and pediatric neurosurgeon. She also had a personal experience, as a college athlete who sustained a career-ending concussion over a year ago and is still feeling the everyday effects. Tessa's project included recommendations for an ideal state of future diagnostics. She also created a brief to raise awareness about concussion that the JI will utilize in its Brain Boot Camp program, which more than 700 WNY middle and high school students attend each year at the JI.

As part of their internship program, the interns accompanied the JI's high school interns on visits to other institutions located on the Buffalo Niagara Medical Campus such as Roswell Park Cancer Institute, Unyts, and UB's Center of Excellence in Bioinformatics and Life Sciences. They also heard from a variety of physicians, hospital leaders, biomedical engineers, scientists, and entrepreneurs in lunch n' learn presentations.

Please click here for the interns' final presentations:

<https://youtu.be/-jv9W0nFH6g>

Improvements are forthcoming to the JI Summer Internship Program. If you or someone you know is interested in applying, please have them check our new web site for the latest details.

<https://jacobsinstitute.org/programs-services/internships/>

BNMC ACES Summer Camp

Two-Week Program Draws High School Freshman to Inspire Future Careers

Numerous organizations located on the Buffalo Niagara Medical Campus (BNMC) collaborated to provide a wonderful educational opportunity to 9th graders during two weeks in August. The BNMC ACES Program gave students plenty of hands-on experience and opened their eyes to the variety of careers available on the medical campus.

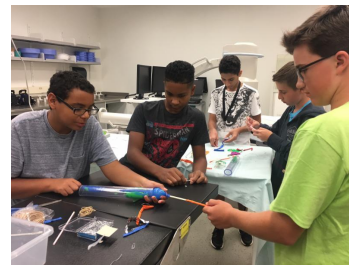
The JI joined with Buffalo Manufacturing Works (BMW), the Innovation Center, Kaleida Health, MAAX, Roswell Park Cancer Institute (RPCI), University at Buffalo Center for Bioinformatics and Life Sciences (UB CBLS), Unyts, and 43North to host the students, many of whom were from Bennett High School's Research Laboratory Program for Bioinformatics and Life Sciences.



While at the JI, the students listened to four staff members explain biomedical engineering, what they do at the JI, and their path that led them here. Next, the ACES students tried their hand at biomedical engineering!

They attempted to construct oversized, mock medical devices

to treat blockages and clots in a simulated blood vessel, which was a large, clear plastic tube. Boys and girls chattered excitedly with each other, discussing their designs and materials. They reached for balloons, paper clips, straws, tape, and wire to build their mock medical devices. They struggled to push or pull the blockages and clots made of "slime" and Play-Doh stuck inside the tubes. The students had fantastic ideas, creatively constructed their devices, and treated the blockages and clots.



The program culminated in a capstone project, where each student constructed a 3D-printed hand for children in need, made at BMW. Students also presented a poster on research they had done regarding a career they might like to pursue. For instance, the poster or slideshow highlighted what schooling is required to become a physical therapist, what the typical salary in Buffalo is for that profession, what they wear to work, what a typical week looks like, and more. It was a treat to hear that two of the students wanted to become biomedical engineers after visiting the JI.



This successful BNMC-wide summer camp was a great success and will continue next year.

The Jacobs Institute mission is to accelerate the development of next-generation technologies in vascular medicine through collisions of physicians, engineers, entrepreneurs, and industry.

Our vision is to improve the treatment of vascular disease in Western New York and the world, while fostering local economic development, and honoring the memory of Lawrence D. Jacobs, MD.

Located in the heart of the Buffalo Niagara Medical Campus (BNMC) in downtown Buffalo, the Jacobs Institute is positioned between University at Buffalo's Clinical and Translational Research Center (CTRC) and Kaleida Health's Gates Vascular Institute (GVI).



The JI is uniquely positioned to foster collaboration of our key partners. We have the right people in the right place at the right time.

Come innovate with us.

Please visit [the JI web site](#)

Sincerely,The Jacobs Institute

