

Women In Science and Engineering (WISE): A Program for Mentoring High School Girls in Research

The WISE Program is the outcome of a groundbreaking partnership between The Johns Hopkins University and a local private high school for girls, Garrison Forest School, to establish a critically needed mentoring program. It aims to encourage young women from Baltimore and around the country to pursue their interest in science and engineering. Garrison Forest School is recruiting young women from its own student body as well as locally, nationally, and internationally, to spend one semester of their junior or senior year in residence at Garrison Forest. WISE students participate in a customized junior or senior-year curriculum at Garrison Forest and spend several afternoons a week on the Johns Hopkins campus in hands-on research, intensive science immersion experiences, and mentoring.

The WISE program is designed to dramatically increase the scientific literacy of its participants through providing hands-on interactive opportunities with accomplished scientists - most of them women - at Johns Hopkins in a one-on-one mentoring relationship. Participants are paired with real-life role models and mentors to help them with the first steps in careers in science and engineering. Johns Hopkins faculty members and graduate student mentors introduce WISE students to the Johns Hopkins labs where they participate directly in research efforts. Students gain hands-on exposure to and experience in world-class science and research lab work. Johns Hopkins faculty members also provide students with lectures and sessions designed to expose them to a range of science and engineering disciplines.

Several WISE students are performing research in the CISST ERC in this inaugural year of the program. One WISE student is Rebecca Ringle, a boarding junior at Garrison Forest who is mentored by graduate student Carol Reiley in Professor Allison Okamura's Haptic Exploration Laboratory. The goal of Rebecca's project is to study how haptics (the sense of touch) can be used in robot-assisted surgery. She is comparing the effects of direct haptic feedback to the hands of the surgeon with sensory substitution methods in that provide a visual display of haptic information. Rebecca meets with her JHU faculty advisor once a week and spends six hours a week working closely with her graduate student mentor. To date, she has completed a literature review, assisted in experiments with the da Vinci surgical system at the Johns Hopkins Medical Institutions, and developed a protocol for her own experiment in collaboration with her mentor. For the remainder of spring semester, she will perform experiments, analyze the resulting data, and work with her mentor to write a conference paper. Rebecca keeps a weekly online research journal that can be accessed by both her mentors at JHU and her teachers at Garrison Forest.



Figure: WISE student Rebecca Ringle and her graduate student mentor, Carol Reiley, stand next to the robotic devices that they are using to study the effects of haptic feedback in surgery.