



Where are they now?

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Illinois State Winner
2003 - 2005



Benevolent Bacteria: Indigenous Bacterial Remediation

What are you doing now?

I am a PhD Candidate in Biomedical Engineering at Northwestern University. After joining the Messersmith Group, I began characterizing and developing gold nanorods with unique surface modifications. Due to their ability to scatter and absorb light in the near-infrared range, gold nanorods may be used for the minimally invasive photothermal ablation of various tumors. However, their tendency to form aggregates in solution limits their utility unless the need for colloidal stability is addressed and optimized. This optimization is achieved with dopamine, a self-polymerizing adhesive inspired by proteins found in the marine mussel. This polydopamine adhesive layer makes it possible to simultaneously functionalize gold nanorod surfaces for specific cancer targeting and stabilize them with polyethylene glycol or albumin derivatives. My research is currently focused on the application of these gold nanorods for the photothermal therapy of breast cancers in vivo.



How did the SJWP competition effect, or influence you?

The SJWP competition has strongly influenced me to continue pursuing a career in research. Although I have strayed quite a bit from researching indigenous bacteria for their bioremedial potential in my SJWP days, I find it quite fulfilling that my current research lends so much of its inspiration from organisms that have adapted unique adhesion strategies in marine environments, allowing our lab to create develop unique bio-inspired nanomedicines and other biomedical technologies.

Would you care to give a testimonial about the SJWP?

The SJWP competitions I attended were all extremely fun, welcoming, and memorable. The opportunity to be surrounded by scientists and like-minded students from all over the US truly fueled me to grow as a researcher. Looking back, this experience opened many doors for me when I began to seriously pursue a research career, and has continued to present me with unique outreach opportunities. Recently, I had the pleasure to serve as a student coach for the 2011 SJWP competition held in Chicago.