



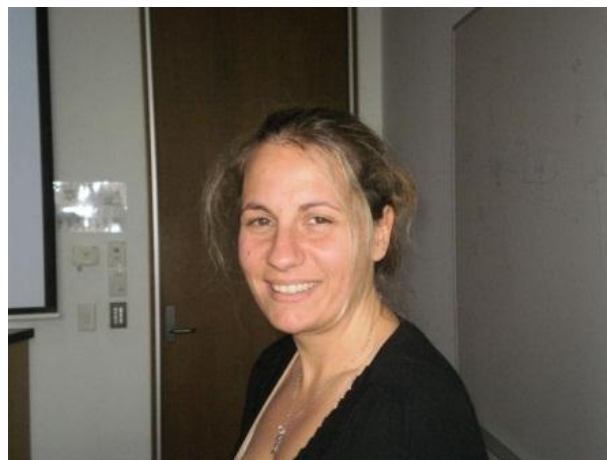
Each month ACN asks a team member to provide a profile of themselves that takes us behind the scene on what are the influences that encouraged their career choices.

June/July 2012

Q&A with Sharon Sagnella

Sharon received her PhD in biomedical engineering from Case Western Reserve University in Cleveland, OH. Her PhD studies focused on the development of artificial blood vessels by designing biomimetic extracellular matrix-like polymers capable of supporting endothelial cell adhesion and growth. Upon completion of her PhD studies, she spent 6 months in Thailand at the National Metal and Materials Technology Center as a consultant assisting in the set-up of a tissue engineering research facility within the institute.

In 2005, Sharon received a CSIRO post-doctoral fellowship and made the move from the United States to Australia. Under the mentorship of Dr. Calum Drummond, her work at CSIRO involved controlling the self-assembly behaviour of lipid based amphiphiles through rationale design for delivery applications to treat a variety of diseases. While at CSIRO, she was integrally involved in a large number of projects including the development of novel tumour-activated prodrug nanoparticles for the treatment of



breast cancer. This technology was patented in 2009.

In March 2011, Sharon left CSIRO to join the newly formed Australian Centre for Nanomedicine as research fellow under the mentorship of Professor Maria Kavallaris. Due to her cross disciplinary background, Sharon brings a unique skill set to the ACN. Her current research focuses on overcoming systemic toxicity of traditional chemotherapeutics through the development of drug delivery systems which can home to and deliver drugs specifically to the tumour site. Through the ACN, she is currently co-supervising a PhD student as well as assisting in bridging the communication gap between chemists and biologists within the centre.

What was your inspiration in becoming a biomedical engineer?

As a child I always enjoyed math and science above all other subjects. I was also always building things, taking things apart and putting them back together and always wanting to understand how things worked. In school, I found chemistry, biology and medicine fascinating and in high school was initially inclined towards medicine, however I knew it wasn't exactly the right fit for me. When it was time for me to go to University, a small number of Universities in the US had recently begun undergraduate programs in biomedical engineering and the whole field seemed like a perfect fit for me. I was drawn into the area of biomaterials due to my love of chemistry and

during my 2nd year of undergrad received a summer research fellowship in a clinical hematology laboratory examining blood compatibility of polymers. From my first research experience that summer, I was completely hooked. I was finally able to combine all of the disciplines I enjoyed by applying chemistry and biological towards the design and development of medical devices. I found the biological complexity involved in cell material interactions the most fascinating and am constantly striving to fully understand the biological events that result from interactions at the cell/material interface. I truly believe that a solid understanding the biology of a particular disease combined with an understanding of how these disease cells respond to different materials will allow us to develop smart materials/devices that are able to effectively treat these diseases.

What inspired you about the ACN?

Having spent my entire research career navigating the interface between chemistry and biology, I have been vitally aware of the major communication gap that exists across these disciplines. One of the main reasons that I joined the ACN is that it is trying to address this issue and conduct true translational research which involves cancer biologist, chemists, and clinicians towards a common goal of finding better ways to treat a wide variety of cancers. I have always believed that a concerted effort amongst these diverse disciplines would be necessary for the successful development of nanomedicines and it is exciting to be an important part of this effort.

