



Dr. Kathryn Whitehead Receives MIT Honor

McGowan Institute for Regenerative Medicine affiliated faculty member [Kathryn Whitehead, PhD](#), assistant professor of chemical and biomedical engineering, Carnegie Mellon University, was named by Massachusetts Institute of Technology (MIT) *Technology Review* as one of the 35 Innovators Under 35 for 2014. Dr. Whitehead was listed as a pioneer doing fundamental work that will spawn future innovations.



After *Technology Review* editors pared the roughly 500 nominees to 80 finalists, outside judges rated the originality and impact, or potential impact, of their work; those scores guided the editors as they crafted this year's list. Dr. Whitehead's nominator, Patrick Doyle, writes:

While still working on her PhD in chemical engineering at the University of California, Santa Barbara, Dr. Kathryn Whitehead created small experimental patches that, when swallowed, adhere to the intestine to deliver insulin. It is a promising alternative to the frequent painful insulin shots that people with diabetes typically need.

More recently, Dr. Whitehead has been focusing on small interfering RNA (siRNA), which can be used to target and shut off gene expression. These molecules have enormous potential for treating cancers and genetic disorders, but it's difficult to deliver them to the appropriate cells. Though embedding siRNA in a protective nanoparticle seems like a promising approach, researchers have had difficulty finding nanoparticles that can both navigate to the desired tissue and deliver the molecule across the cell wall.

Instead of trying to make educated guesses at particles that might work, as others in the field were doing, Dr. Whitehead has systematically tested thousands. While working as a postdoc at MIT's Koch Institute for Integrative Cancer Research, she screened thousands of potential nanoparticles, zeroing in on the handful with the best results. Four biotech companies have since licensed Whitehead's patents in RNA delivery materials.

Now, as an assistant professor of chemical and biomedical engineering at Carnegie Mellon University in Pittsburgh, she is busy analyzing the next batch of nanoparticles and siRNA she'd like to test for various treatments, including some that target lymphoma tumors. Despite her remarkable achievements, she has not had any real "eureka moments" in her lab, she says. "Perseverance is the major theme."

Congratulations, Dr. Whitehead!



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