The Art of Falling Apart

Adah Almutairi

Associate Professor, Skaggs School of Pharmacy and Pharmaceutical Sciences, Secondary appointments in the Departments of NanoEngineering and Bioengineering and in the Materials Science ProgramCo-Director, Center of Excellence in Nanomedicine and Engineering

CURRENT RESEARCH

How controlled disassembly of materials can be used for localized disease detection and treatment

Light- and disease-responsive materials hold tremendous potential to transform medicine and biological research. Both classes of materials could also allow selective delivery of drugs to disease sites, enhancing their efficacy and reducing side effects, and disease-responsive materials could enable detection of heart disease, cancer, and other common, serious conditions at much earlier stages, so that treatment would be more effective. The work of Prof. Adah Almutairi, Associate Professor in the Skaggs School of Pharmacy and Pharmaceutical Sciences at the University of California, San Diego, in this area is especially exciting because of their efforts to find clinical applications for these futuristic materials.

Prof. Almutairi's research group designs nano- and microparticles that degrade on demand in a highly controlled fashion. These include light-responsive materials that degrade when a specific wavelength of light is applied, causing release of molecules, such as drugs, contained within the material. While her group has made impressive strides in creating materials that respond to wavelengths of light that penetrate tissue, their most feasible applications are those in which release is triggered near the body's surface. One such application is as a light-responsive depot, which would reduce the frequency of drug injections.

A second class of materials under development in the Almutairi lab are those that degrade in response to inflammation, specifically to the chemicals that cause oxidative stress. They were the first to create a material that can respond to levels of these chemicals found in inflamed tissue, which are only slightly higher than levels in normal conditions. These could be used...

Read More at benefunder.com/

AFFILIATION

University of California, San Diego

EDUCATION

- Postdoc in Department of Chemistry 2008,University of California, Berkeley
- Ph.D. in Department of Chemistry 2005,University of California, Riverside
- A.B. in Chemistry 2000,Occidental College

AWARDS

- Young Investigator, 2014
- ChemComm Emerging Investigator, 2014
- NIH New Innovator Award, 2009-2014
- Young Investigator Award, 2012
- Polymer Science Award, 2012

RESEARCH AREAS

Life Science, Diagnostics, Immunology / Inflammatory, Regenerative Medicine

FUNDING REQUEST

Your contributions will allow Prof. Almutairi to recruit enthusiastic and talented chemists and materials scientists to work in her lab. Not surprisingly, materials are a large portion of her budget, and funding will enable her to acquire the materials necessary for her research. Contributions will allow for the further development of light-responsive and inflammation-responsive materials and enable animal studies exploring their use for detection and drug delivery.