



Thomas J. Webster

Interstellar Therapeutics, USA

Thomas J. Webster, Gen Med (Los Angeles) 2022, Volume 10

4D printing: A 25 year history of advances in nanomedicine, COVID-19 therapies, drug delivery, regenerative medicine and more

While advances in biomaterials have helped the lives of millions over the past century, it is clear that we are at a crossroads for the future of global healthcare. Considering the COVID-19 pandemic, constant struggles with cancer, and an emerging crisis in antibiotic resistant bacteria, to just name a few on-going healthcare problems, we need innovative ideas. Non-medical fields have advanced considerably in new material design, from using sensors to drive cars and touch screen pads for electronics. Innovation in biomaterials has been lagging behind. This presentation will cover some of the more innovative biomaterials than can meet today's challenges including the use of implantable sensors, 4D printed materials in which material shape can be controlled remotely after implantation, smart nanomaterials that can seek out and passivate viruses and bacteria, and so much more. This presentation will also lay the foundation for what is needed for future biomaterial design, especially obtaining regulatory approval for interactive biomaterials. This presentation will cover over 25 years of commercializing nanomaterials from an academic lab to real medical devices currently implanted into humans to aid in health (Figure 1).



Figure 1. Example of a 4Dprinted material: A material is 3D printed into a flower and when embedded with graphene nanoparticles, near infrared (NIR) is able to change its shape from a distance, such as opening petals of a flower.

22nd World Congress on Pharmaceutical Sciences and Innovations in Pharma Industry

June 24-25, 2022

WEBINAR

14th Euro-Global Conference on Infectious Diseases

10th International Conference on

Mental Health and Human Resilience

Biography

Thomas J. Webster's (H index: 108; Google Scholar) degrees are in chemical engineering from the University of Pittsburgh (B.S., 1995; USA) and in biomedical engineering from RPI (Ph.D., 2000; USA). He has served as a professor at Purdue (2000-2005), Brown (2005-2012), and Northeastern (2012-2021; serving as Chemical Engineering Department Chair from 2012 - 2019) Universities and has formed over a dozen companies who have numerous FDA approved medical products currently improving human health. Dr. Webster has numerous awards including: 2020, World Top 2% Scientist by Citations (PLOS); 2020, SCOPUS Highly Cited Research (Top 1% Materials Science and Mixed Fields); 2021, Clarivate Top 0.1% Most Influential Researchers (Pharmacology and Toxicology); and is a fellow of over 8 societies.

Received: June 03, 2022; **Accepted:** June 06, 2022; **Published:** June 24, 2022
