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## Goodbye Hospitals: Hello Implantable Sensors

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There is an acute shortage of organs due to disease, trauma, congenital defect and most importantly, age related maladies. While tissue engineering (and nanotechnology) has made great strides towards improving tissue growth, infection control has been largely forgotten. Critically, as a consequence, the Centers for Disease Control have predicted more deaths from antibiotic-resistant bacteria than all cancers combined by 2050. Moreover, there has been a lack of translation to real commercial products. This talk will summarize how nanotechnology can be used to increase tissue growth and decrease implant infection without using antibiotics but using sensors (while getting regulatory approval). Our group has shown that nanofeatures, nano-modifications, nanoparticles and most importantly, nanosensors can reduce bacterial growth without using antibiotics. This talk will summarize techniques and efforts to create nanosensors for a wide range of medical and tissue engineering applications, particularly those that have received FDA approval and are currently being implanted in humans.

### Biography:

Thomas J. Webster's (H index: 86) degrees are in chemical engineering from the University of Pittsburgh (B.S., 1995) and in biomedical engineering from Rensselaer Polytechnic Institute (M.S., 1997; Ph.D., 2000). Prof. Webster has graduated/supervised over 149 visiting faculty, clinical fellows, post-doctoral students and thesis completing B.S., M.S. and Ph.D. students. He is the founding editor-in-chief of the *International Journal of Nanomedicine* (pioneering the open-access format). Prof. Webster currently directs or co-directs several centers in the area of biomaterials: The Center for Natural and Tropical Biomaterials (Medellin, Colombia), The Center for Pico and Nanomedicine (Wenzhou China) and The International Materials Research Center (Soochow, China). He regularly appears on NBC, CNN, MSNBC, ABC News, National Geographic, Discovery Channel and BBC News talking about science and medicine. He has received numerous honors and is current a fellow of AANM, AIMBE, BMES, NAI and FSBE.