

Innovation Opportunities in Medical Device Development



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Room EC 1115
10555 West Flagler Street
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Biography

Dr. Maltese has been developing biomedical technology for 25 years in academic, clinical and government settings. Trained in bioengineering and mechanical engineering, his research is widely published and has led to the development of anthropomorphic test devices for car crash testing, phantoms for medical device development, medical simulation manikins and test procedures for automotive safety and consumer devices. He has worked on 100+ med tech research and development projects in his career, including developing algorithms that merge biomechanical data collected in real-time to improve clinician performance during cardio-pulmonary resuscitations, analytical techniques to empirically derive mechanical properties of the human chest, and finite element and animal models to predict brain motion and injury secondary to experimental blunt impact. Dr. Maltese is the founding Executive Director of the Philadelphia (now Pennsylvania) Pediatric Medical Device Consortium, an FDA-funded endeavor established in 2013 to spawn development of pediatric medical devices. In 2019, Dr. Maltese stepped away from his full-time faculty position at the Children's Hospital of Philadelphia (CHOP) and University of Pennsylvania to join X-Biomedical – a CHOP spinout commercializing holographic stereoscopic surgical microscopy technology he co-invented - as Chief Innovation Officer. Dr. Maltese lectures regularly worldwide on medical devices and injury biomechanics and teaches brain injury biomechanics and medical device development at Drexel University and the University of Pennsylvania, respectively. He is an Associate Editor of the journal Traffic Injury Prevention, sits on the Board of Directors of the Association for the Advancement of Automotive Medicine, and is frequently retained as a consultant to the automotive and medical device industries. Dr. Maltese holds bachelor's and master's degrees in mechanical engineering, and a doctorate in bioengineering from the University of Pennsylvania.

Abstract

Medical devices have long been common soil to grow physician-engineer collaborations and innovations, bringing together medicine and engineering to form great discoveries that help millions of sick patients. Modern misconceptions cause innovators and investors to shy away from medical devices despite substantial unmet clinical need. In this talk, Dr. Maltese will review historical examples of remarkable medical device discoveries that revolutionized medicine. Then, he will provide a brief overview of current medical device landscape and show evidence that should cause us to be enthusiastic about med tech development. Finally, he will conclude with a survey of new global trends and opportunities for innovative engineer-clinician teams to bring new medical devices to market.