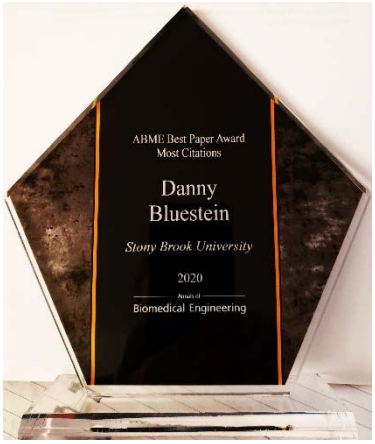
Danny Bluestein PhD - Annals of Biomedical Engineering Best Paper Award for 2020



ABME Best Paper of the Year Award for (awarded at the BMES 2020 conference during the BMES journals awards ceremony). The paper was selected out of 200 papers published in 2019, it had the most citations of any paper.

Rotman OM, Kovarovic B, Chiu W-C, Bianchi M, Marom G, Slepian MJ, Bluestein D (2019)
Novel Polymeric Valve for Transcatheter Aortic Valve Replacement Applications – In Vitro Hemodynamic Study. *Annals of Biomedical Engineering*, Volume 47, Issue 1, pp 113–125, https://doi.org/10.1007/s10439-018-02119-7

Authors Rotman and Marom were postdocs. and Kovarovic, Chiu and Bianchi BME graduate students in my Biofluids Research Group (BFRG)

Transcatheter aortic valve replacement (TAVR) is a minimally-invasive approach that became very successful in recent years for treating patients who suffer from severe aortic stenosis. All clinically-used TAVR valves to date utilize chemically-fixed tissue valves that suffer from inherent limitations such as limited durability, calcific degeneration, and risk of thrombosis and may lead to poor clinical outcomes and complications for the patients. This motivated the search for alternative valve material. A novel polymeric TAVR valve was designed and optimized to address the limitations of tissue-valves. Its hemodynamic performance, thrombogenicity, and calcification profile were experimentally evaluated and compared to clinically-used valves: a gold standard surgical tissue valve, and a tissue TAVR valve. The experiments were performed in ISO standard FDA approved experimental system as well is a specially designed system that incorporated patient-specific replicas obtained from severe aortic stenosis patients who were scanned with CT imaging before the TAVR procedure. The TAVR polymeric valve rigorous comparative studies strongly indicated that it can outperform tissue valves- demonstrating that it is a viable long-term solution for such patients.