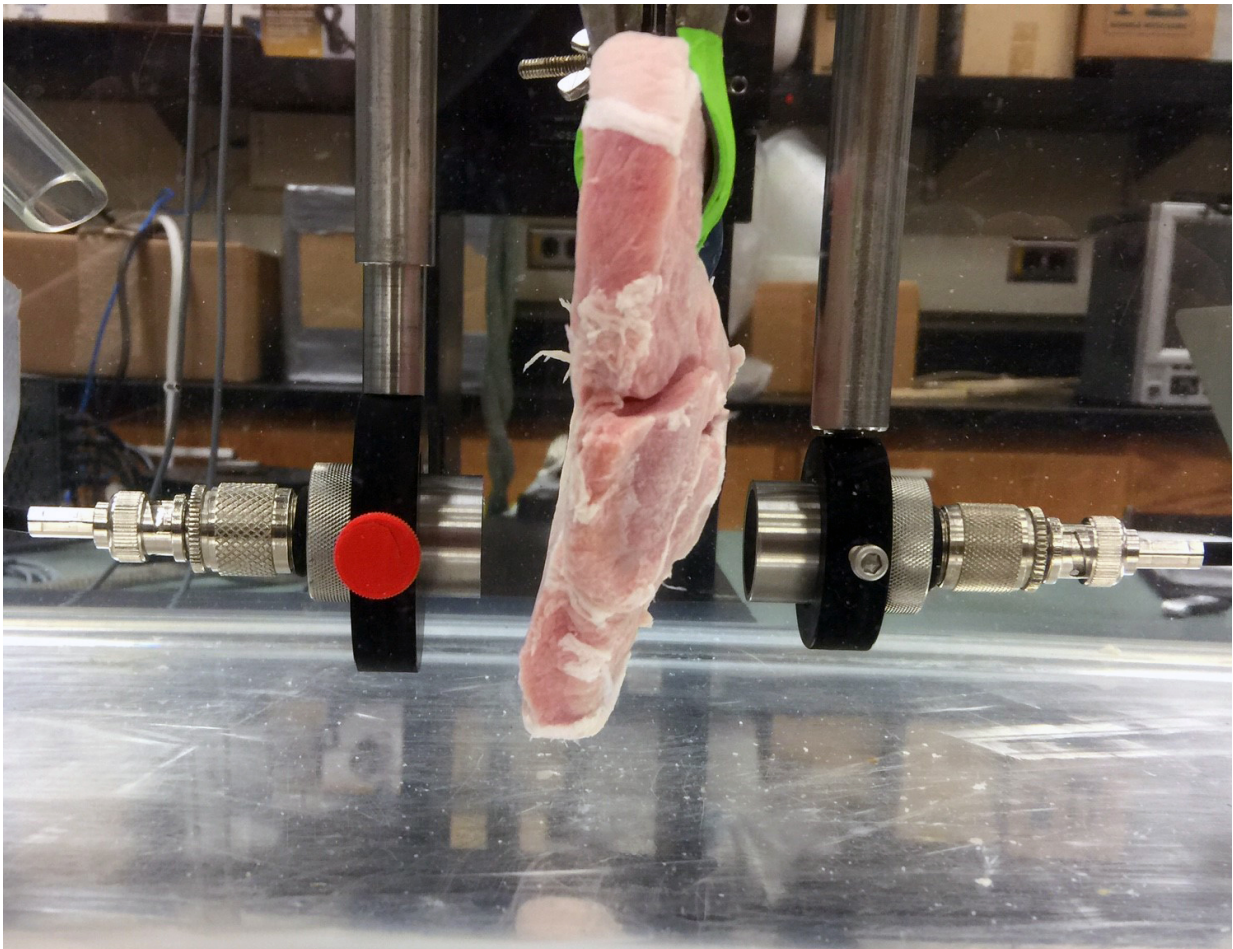


Researchers transmit data through animal tissues at HD video rates via ultrasound

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Using samples of store-bought meat, researchers demonstrated how real-time HD video could be transmitted through tissue for in-body ultrasonic communications with implanted medical devices. Credit: University of Illinois

Using animal tissue samples—store-bought pork loin and beef liver—researchers from the University of Illinois at Urbana-Champaign have demonstrated the possibility of real-time video-rate data transmission through tissue for in-body ultrasonic communications with implanted medical devices.

"Using ultrasonic signals, we envision the ability to not only control implanted [medical devices](#) in the [body](#) but to provide live streaming of [high-definition video](#) from devices inside the body," explained Andrew Singer, the Fox Family Professor in the Department of Electrical and Computer Engineering at Illinois. "You can imagine a device that is swallowed for the purposes of imaging the [digestive tract](#) but with the capability for the HD video to be continuously streamed live to an external screen and the orientation of the device controlled wirelessly and externally by the physician. This may seem like [science fiction](#) today, but at the root of science fiction are questions about what is possible. We wanted to show that it was possible, and engineering is about always reaching toward that adjacent possible."

In this study—reported in a paper, "Mbps Experimental Acoustic Through-Tissue Communications: MEAT-COMMS" posted on arXiv.org—the researchers demonstrated that improved signal processing techniques can provide high data rates (>30Mbps) with low error rates through tissues at frequencies that would allow propagation through the body (

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