VIPC Awards Technology Commercialization Grant to UVA Engineering to Revolutionize Wrist Replacement Options with 3D-Printed Implant

Dr. Ji Ma's novel advancement addresses shortcomings of current joint treatment with long-term pain relief, improved mobility, and fewer impact-related complications.

RICHMOND, VA, UNITED STATES, January 22, 2025 /EINPresswire.com/ -- The Virginia Innovation Partnership Corporation (VIPC) today announced that UVA Engineering has been awarded a Commonwealth Commercialization Fund (CCF) grant for $100,000 to expand research conducted by Dr. Ji Ma. Ma's innovation in wrist replacement technology empowers arthritic patients to regain movement and use their joint normally with less discomfort and financial burden.

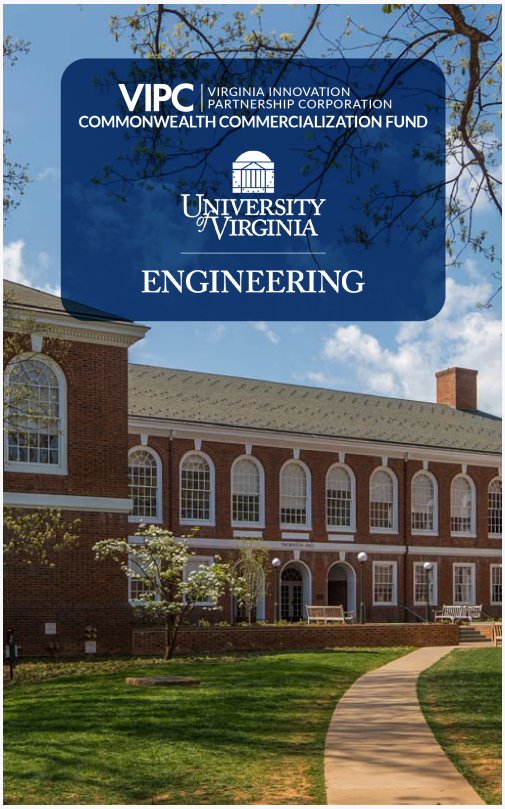
> "We're excited to be developing a long-term option that addresses the shortcomings of current treatments and offers permanent pain relief akin to total knee, hip, and/or shoulder replacements."
> *Ji Ma, Assistant Professor, UVA Engineering*

Wrist arthritis is a common and debilitating condition affecting more than 13% of the U.S. population. Unlike the knee or hip, the wrist is not conducive to joint replacement because of high failure rates. Instead, patients are encouraged to cope using non-operative management tactics until the pain and swelling become significant enough that they are willing to undergo surgery to partially or completely fuse the wrist, a procedure that while providing relief from pain, permanently sacrifices wrist motion.

Ma, alongside his collaborator Dr. Brent DeGeorge of the University of Virginia Department of Plastic Surgery, has created a total wrist replacement system inspired by the squid beak, which gradually changes in stiffness throughout its structure, eliminating stiffness mismatch and excessive stress. Made with titanium that is flexible, aligns with bone movement, and mimics actual bone stiffness gradients, Ma's 3D-printed implant solves for frequent failures due to bone erosion and implant loosening that has prevented wider adoption of wrist replacement to date.

"The wrist is the only major joint in the human body without a permanent motion-preserving

surgical treatment option. There is a clear need for an improved solution beyond pain management and joint fusion for those suffering from arthritis in the wrist," said Ma, Assistant Professor, Department of Materials Science and Engineering. "We're excited to be developing a long-term option that addresses the shortcomings of current treatments and offers permanent pain relief akin to total knee, hip, and/or shoulder replacements by reducing excessive stress on the bone."



VIPC President and CEO, Joe Benevento, said, "R&D commercialization is thriving in Virginia thanks to unique collaborations and advancing technologies across our colleges and universities. VIPC is pleased to support Dr. Ma and team as they bring to market an innovative product solution that serves a $1.7 billion healthcare segment and can significantly improve the quality of life for arthritic patients."

The CCF grant will help Ma and team complete a thorough customer discovery process, generate "knock-out" data to build a persuasive case for surgical early-adopters, formulate a credible FDA 510(k) strategy, and establish a surgeon advisory group to carry out first-in-human trials of the implant. The team's goal is to have a commercially ready product on the market within four years.

The University of Virginia is a public research university based in Charlottesville, Virginia.

About UVA Engineering
UVA Engineering is a highly ranked engineering school within the top-ranked University of Virginia, offering vibrant and diverse opportunities for faculty and students alike. Our mission is to make the world a better place by creating and disseminating knowledge and by preparing engineering leaders to solve global challenges. We will be a leader among engineering schools in seizing opportunities to benefit humanity through bold research and world-class education. To learn more, visit www.engineering.virginia.edu.

About Virginia Innovation Partnership Corporation (VIPC)
Connecting innovators with opportunities. VIPC operates as the nonprofit corporation on behalf of the Virginia Innovation Partnership Authority (VIPA). VIPA / VIPC is Virginia's designated authority for leading innovation and economic development in the Commonwealth of Virginia through research, commercialization, and technology advancement; entrepreneurship, startup, and venture capital growth; and regional ecosystem, innovation network, and industry sector expansion. As part of its operations, VIPC helps attract and catalyze private investment into early-stage startup companies, provides research and technology commercialization grants to

universities and entrepreneurs, and offers resource and funding support for entrepreneurial ecosystems, innovation networks, and public-private partnerships at local, state, federal levels.

VIPC's programs include: Virginia Invests | Virginia Venture Partners (VVP) | Commonwealth Commercialization Fund (CCF) | Entrepreneurial Ecosystems Development | Regional Innovation Fund (RIF) | Smart Communities | The Virginia Smart Community Testbed | The Virginia Unmanned Systems Center | Virginia Advanced Air Mobility Alliance (VAAMA) | The Public Safety Innovation Center (PSIC) | Federal Funding Assistance Program (FFAP) for SBIR & STTR | University Partnerships | Startup Company Mentoring & Engagement.

For more information, please visit www.VIPC.org. Explore the latest news from VIPC and images from VIPC-supported stakeholder events. Follow VIPC on Facebook, X, and LinkedIn.

About the Commonwealth Commercialization Fund (CCF)
VIPC's Commonwealth Commercialization Fund (CCF) accepts applications and awards funding to university research partners and entrepreneurial startups at the earliest stages of technology commercialization along the innovation continuum. These commercialization grants support R&D and early technology and market validation efforts such as the development of prototypes or minimum viable products (MVPs), customer pilots, and intellectual property protection. For more information on CCF funding opportunities and eligibility requirements, or to apply, visit www.VIPC.org.

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