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Scientists in Hong Kong develop 3D-printable bioactive material to treat large-to-massive tendon injuries

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Biomaterial possesses highly robust mechanical properties that closely mimic natural tendon

A research team led by Professor Elmer Ker, Assistant Professor in the School of Biomedical Sciences at The Chinese University of Hong Kong (CUHK)'s Faculty of Medicine (CU Medicine), who is also a member of the CUHK's Institute for Tissue Engineering and Regenerative Medicine, has developed a 3D-printable bioactive material for the repair of severe tears of the shoulder tendons, also known as the rotator cuff.

This newly developed material provides adequate mechanical support to sustain normal shoulder movement and with the inclusion of bioactive molecules such as growth factors, is able to enhance tissue regeneration.

The fact that it can be 3D-printed not only facilitates economical on-demand fabrication but can also allow the material to be personalised for treating irregular, patient-specific tendon tear shapes. Thus, there is a high potential to apply this invention as a new treatment option in repairing rotator cuff injuries including large-to-massive tears.

Professor Ker stated, "Our work has achieved the goal of developing an easily manufactured, mechanically robust, pro-regenerative tendon biomaterial that addresses mechanical and biological deficits in rotator cuff injuries while avoiding a complex and laborious production process. We will continue to prove the significant potential of this newly developed material for the repair of large-to-massive rotator cuff injuries, as well as other soft tissue injuries, in a clinical setting."