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Tendon-to-bone enthesis as a structured nanomaterial

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ABSTRACT

Tendon attaches to bone through a hierarchical and spatial graded structure called the enthesis. Entheses at the rotator cuff of the humeral head are highly resilient against injury in younger adults, but tears are common in older adults. These heal poorly, even following surgery. A central challenge is that potentially important nanoscale features of the material at these enthesis sites are not regenerated following injury or surgery. Our group aims to identify the nanoscale structures that are most important to the resilience of the enthesis, and to develop strategies for reconstituting these during healing. Here, we will present an overview of our recent results on ways that both structured and stochastic features might contribute to the mechanical functioning of the healthy enthesis.