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Fracture of biological tissues: observations, mechanisms and concepts

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Mechanics plays a prominent role in the analysis and modeling of the biological systems. Modeling the mechanics of a biological system and its interaction with the biological processes can advance the understanding of physiological and pathological mechanisms and may open a door to the development of new treatment options and medical devices. Though classical mechanical concepts of course hold, they are challenged by quite a few aspects when applied to problems that incorporate living materials. Specifically, with the application to fracture, mechanical modeling faces numerous unsolved challenges. The large uncertainty and variation in (highly nonlinear and anisotropic) material properties, the multiscale nature of biological tissues, a lack of access to samples for experimental testing, and the mechano-biochemical interplay, are just a few of such challenges. Robust and efficient fracture mechanical concepts are needed that appropriately address such challenges to progress our understanding of fracture in biological tissues. Therefore, this minisymposium welcomes contributions that reports experimental observations, mechanisms and concepts, each of which related to fracture in biological tissues. The integration of such aspects is necessary for the fundamental understanding and modeling of fractures in biological tissues.