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DESIGN OF AFFINITY- CONTROLLED PROTEIN DELIVERY VEHICLES FOR TISSUE REPAIR

Recombinant protein delivery is a promising approach to stimulate tissue regeneration following traumatic injury or disease. Yet, limited strategies are available to adequately localize sufficient quantities of bioactive, therapeutic proteins within injury sites to stimulate healing. Biomaterials that leverage noncovalent affinity interactions between proteins and materials can enable tunable control over protein localization and release in vivo. The Hettiaratchi lab aims to engineer affinity interactions between therapeutic proteins and biomaterials to create delivery vehicles that can exert precise, independent control over the delivery and bioactivity of multiple proteins simultaneously. This seminar will demonstrate how novel approaches in protein engineering, computational modeling, and directed evolution can be used to overcome the limitations of traditional biomaterial delivery vehicles and advance clinically relevant treatment strategies for a variety of injuries.