

## Development of Polyelectrolyte Complex for Exogenous Growth Factor Delivery in Tissue Regeneration

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Successful delivery of exogenous growth factor (GF) could improve the quality and quantity of regenerated musculoskeletal tissues. In order to engineer functional delivery platforms, polycation-mediated coacervates have been investigated. A tertiary mixture of biodegradable polycation, anionic heparin, and cargo therapeutic GFs, is simultaneously created in aqueous solution via coacervation. Due to a facile fabrication process, a high GF loading efficiency, and subsequent enhanced bioactivity of cargo GF in a physiological microenvironment, our polycation (i.e., poly(ethylene argininy laspartate diglyceride) (PEAD)) and its PEGylated derivative could be utilized for GF delivery system in various tissue engineering applications. This versatile platform could be applied in (1) skin tissue regeneration for scarless wound healing, (2) guided bone regeneration in craniofacial skull bone, and (3) chondrogenesis of damaged cartilage tissue, especially when combined with stem cell population. Therefore, it is speculated that our GF delivery platform could facilitate dynamic cellular activities and eventually augment a regenerative level of damaged musculoskeletal tissues.