**Functionalized lipid-like nanoparticles for mRNA delivery**

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Messenger RNA (mRNA) therapeutics have been explored to treat various genetic disorders. Lipid-derived nanomaterials are currently one of the most promising biomaterials that mediate effective mRNA delivery. However, efficiency and safety of this nanomaterial-based mRNA delivery remains a challenge for clinical applications. Here, we constructed a series of lipid-like nanomaterials (LLNs), named functionalized TT derivatives (FTT), for mRNA based therapeutic applications. After screenings on the materials, we identified FTT5 as a lead material for efficient delivery of mRNA. As a proof-of-concept study, we investigated the delivery of hFVIII mRNA *in vivo* using FTT5 LLNs for hemophilia A treatment. Consequently, FTT5 LLNs showed efficient delivery of FVIII mRNA and potent expression of hFVIII protein in both WT mice and hemophilia A mice and restored the hFVIII level.