

## Enhanced Stability of Heterologous Proteins by Supramolecular Self-assembly

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In this study, using deletion mutants of Mycoplasma arginine deiminase (ADI) and enhanced green fluorescent protein (EGFP) as reporter proteins, we confirmed through TEM image analysis that the recombinant fusion proteins (FTN-H::ADI132-410 and FTN-H::EGFP) formed intracellular spherical particles with nano-scale diameter (~10 nm), i.e. non-covalently cross-linked supramolecules, due to self-assembly function of FTN-H. Surprisingly, the supramolecular ADI and EGFP showed much enhanced stability in bioactivity. That is, the activity level was much more stably maintained for the prolonged period of time even at high temperature, at high concentration of Gdn-HCl, and in wide range of pH. Owing to the stability enhancement by supramolecular self-assembly, the protein supramolecules may be utilized as novel means for drug delivery, enzymatic material conversion (biotransformation), protein chip/sensor, etc. where the maintenance of protein/enzyme stability is strictly required.