Ribosomal protein L29 enhances protein expression in bacteria by increasing translated mRNA transcript

Sang Hyun Ju, Seung Hee Cho and Lydia M. Contreras

Among the four types of ribosomal exit tunnel proteins: L4, L22, L23, and L29, we focused on the non-essential L29 to enhance cellular expression levels of Fcγ receptors. L29 showed much stronger effects when compared to other fusion partner proteins such as MBP or TrxA, especially in difficult-to-express proteins. Among FcγIIa, FcγIIb, and FcγIIIa, only L29-FcγIIIa showed enhanced levels compared to wild type FcγIIIa. qRT-PCR confirmed that total mRNA levels did not change while actively translated mRNA amounts did increase. To understand the mechanism, we are currently in the process of testing affinity towards ribosomes in L29, TrxA, and MBP by expressing them side by side in two separate PET vectors.