p115 RhoGEF, a GTPase Activating Protein for $G\alpha_{12}$ and $G\alpha_{13}$

Tohru Kozasa *et al.*   1998
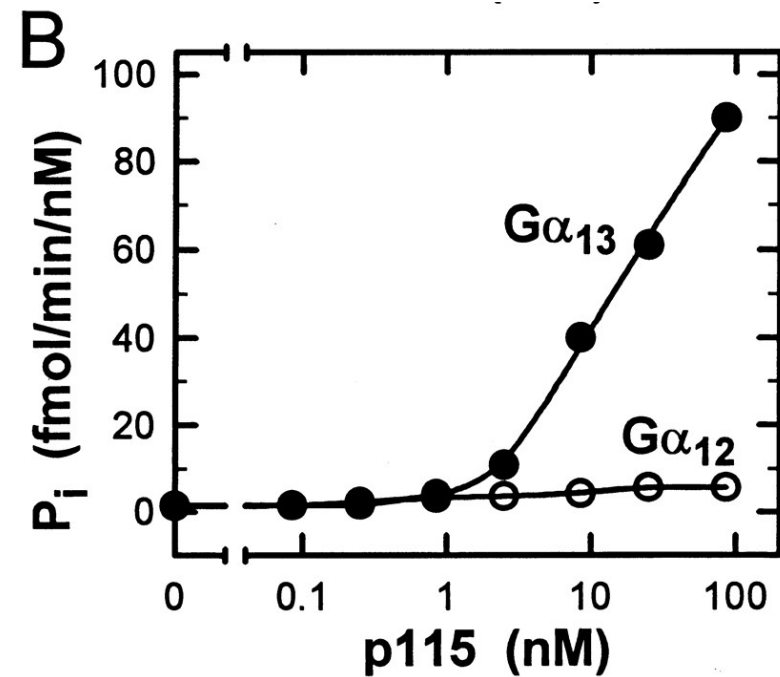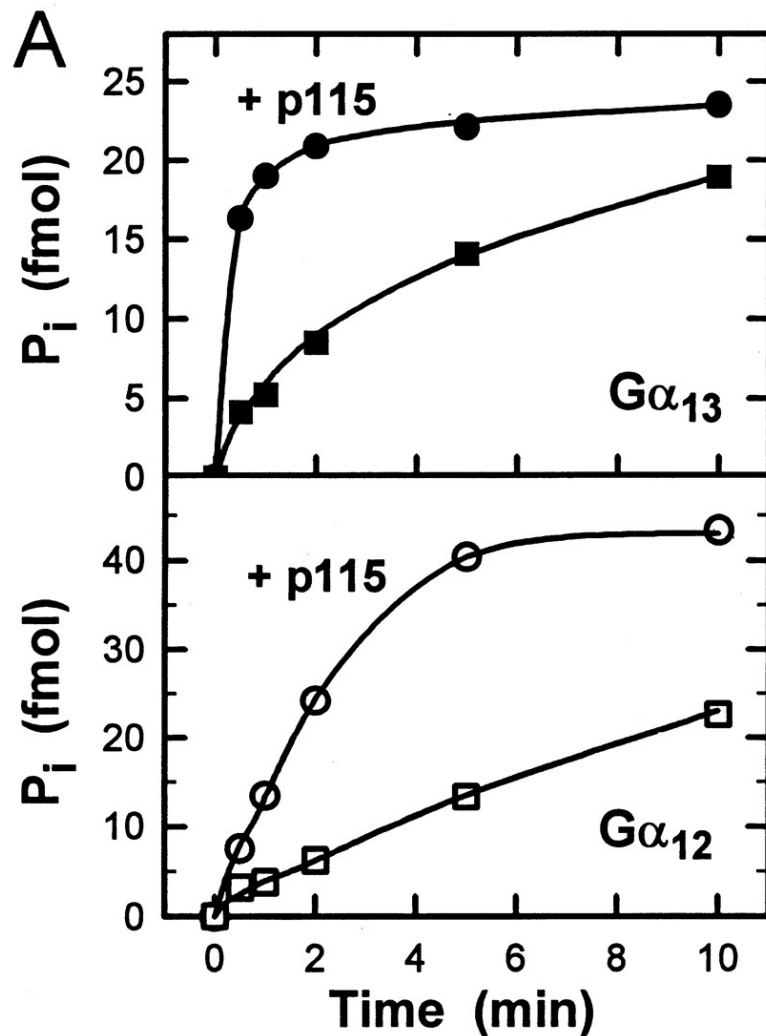
Present by Liang

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Before this study …

- GPCRs, heptahelical receptors, transduces signals for G proteins.

- Each heterotrimeric G protein has α, β, γ subunits.

- Gα subunits are groups into four subfamilies: G_s, G_i, G_q & G_{12}.

- Rho, a small GTPase, mediates the formation of actin stress fibers and the assembly of focal adhesion complexes.

- Functional core (GTPase activating) of the RGS box contains nine alpha helices.

- P115 is a GEF specific for Rho.

- $G\alpha_{12}$ and $G\alpha_{13}$ activate Rho in vivo. A physical interaction between p115 and $G\alpha_{13}$ was detected.

- P115 RhoGEF stimulates only the intrinsic GTPase activity of $G\alpha_{12}$ and $G\alpha_{13}$, not other $G\alpha$s.
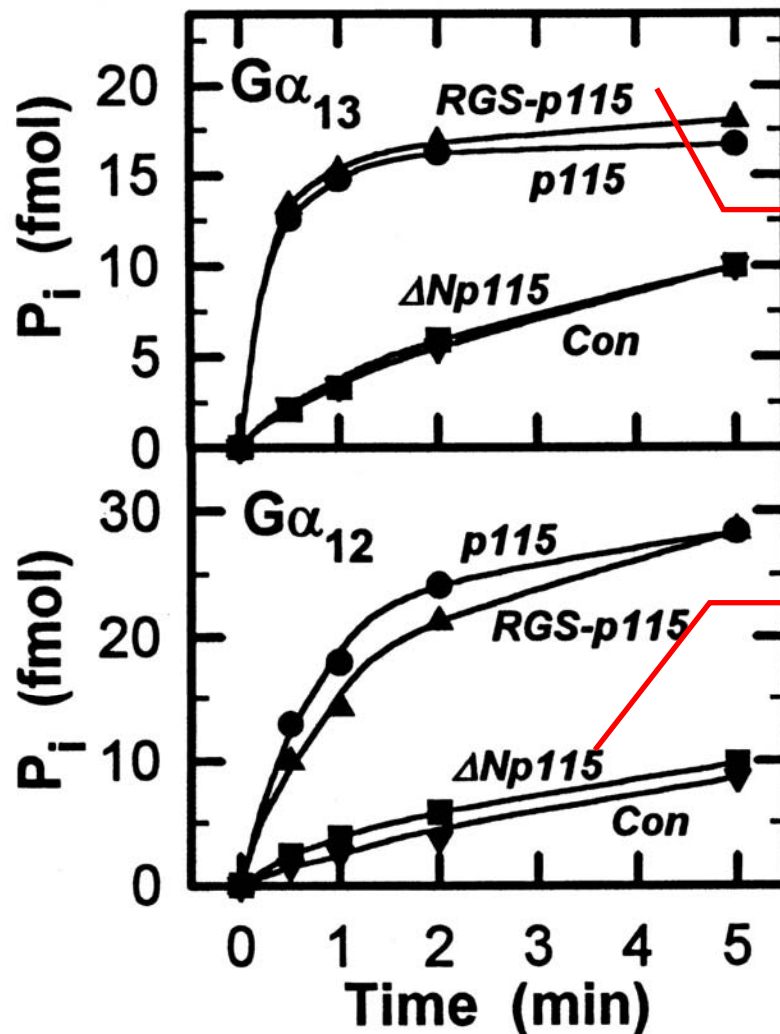
RGS sequence alignments

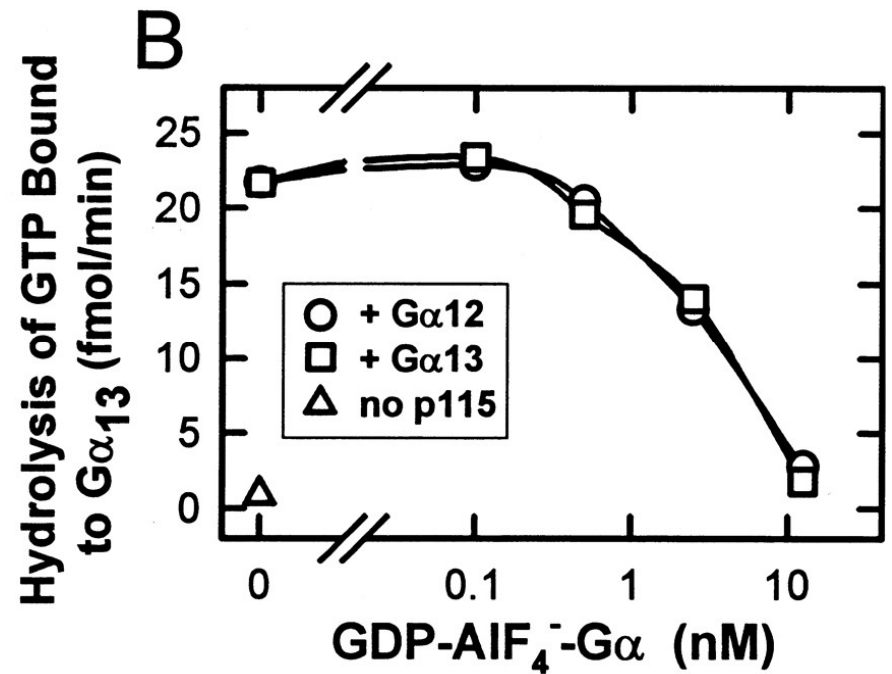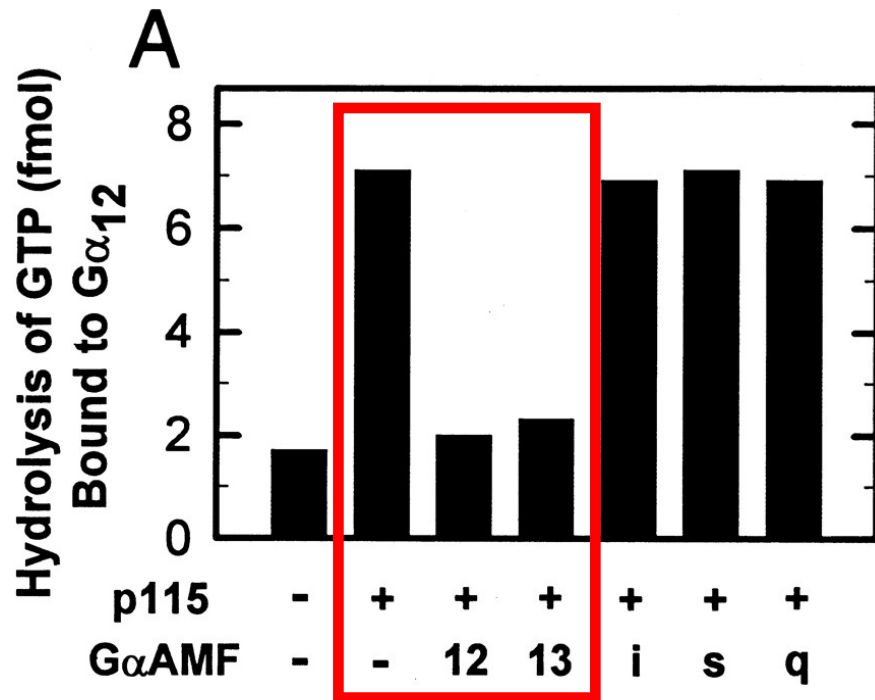# GTPase activity stimulates by p115 RhoGEF

GTPase activity stimulates by the NH$_2$-terminus of p115 RhoGEF

Fusion protein contains the RGS region of p115, not the DH or PH domains.

P115 truncates at the N terminus to eliminate the RGS region.

Specific Gα inhibits p115 RhoGEF GAP activity

RGS sequence alignments

Q & A

Thanks.