BioSensAll™

β-arrestin Biosensor

TECHNICAL NOTE

BioSens-All™

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Arrestins play a central role in GPCR desensitization/resensitization, receptor sequestration and in G-protein-independent aspect of GPCR signaling by acting as scaffold proteins. Moreover, agonist stimulation of many GPCRs promotes receptor phosphorylation and subsequent interaction with arrestins. The BioSens-All™ β-arrestin biosensors are unimolecular BRET-based biosensors that monitor conformational changes occurring within the arrestin proteins upon activation of GPCRs. In this biosensor, the β-arrestin (1 or 2) protein is double tagged with a green fluorescence protein (GFP) at its N-terminus and with a Renilla luciferase (*R*Luc) at its C-terminus (Figure 1). Following GPCR activation, recruitment of β-arrestins to an activated GPCR leads to a structural change in the β-arrestin protein which separates the two dyes resulting in a BRET signal decrease (Figure 1-2).

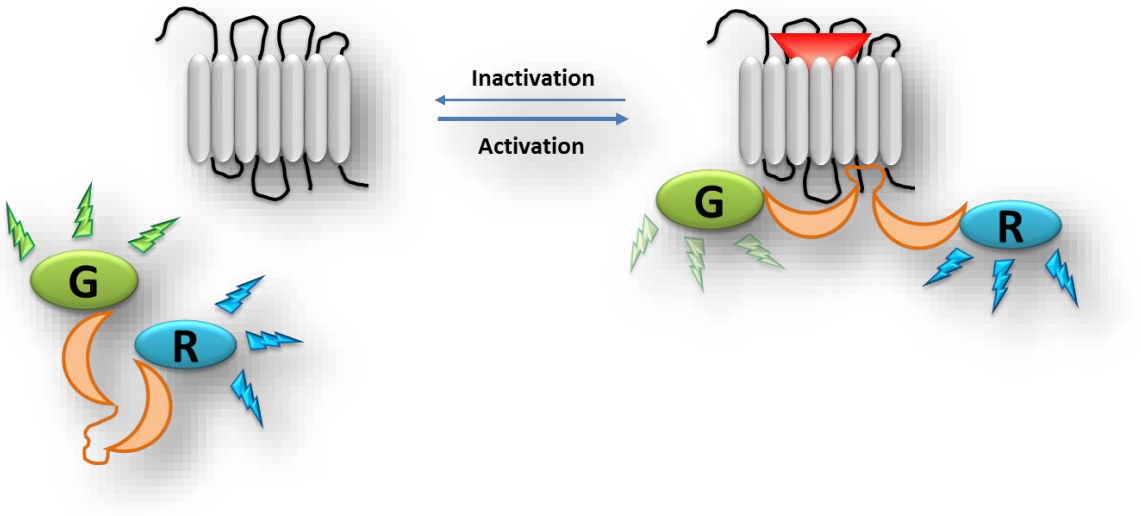
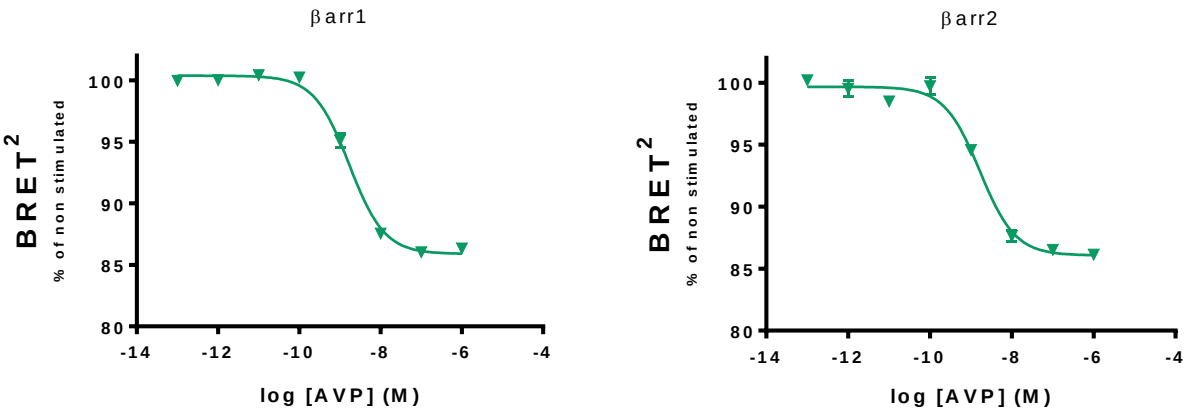


Figure 1. Structure of the BioSens-All™ arrestin biosensor. G= GFP, R= *R*Luc, orange= arrestin protein, and dark red= ligand (orthosteric or allosteric).

DOMAIN THERAPEUTICS

A



B

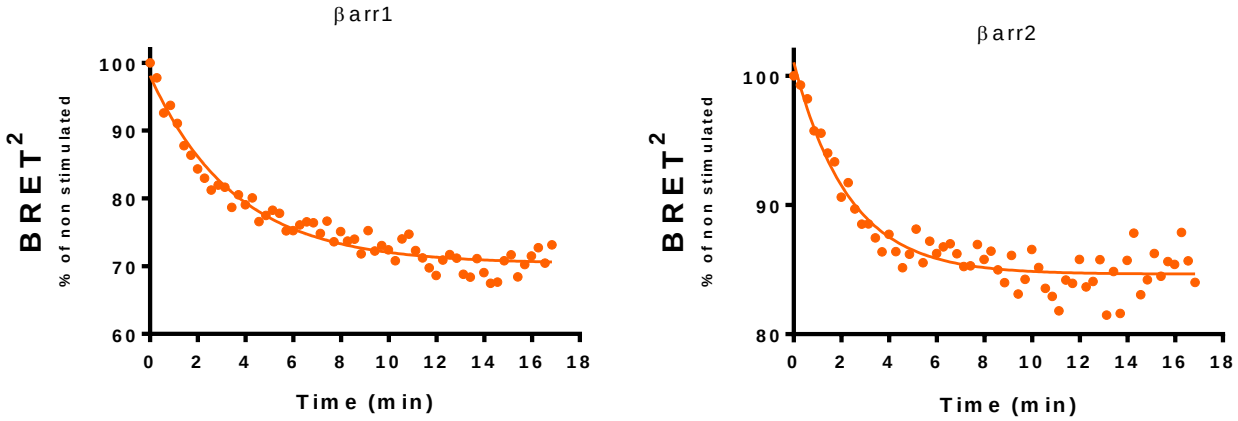


Figure 2. Detection of arginine-vasopressin (AVP) induced arrestin 1 and 2 recruitment.

A) Cells transiently overexpressing the vasopressin type-2 receptor and the β- arrestin 1 or 2 biosensor were subjected to increasing concentration of AVP to allow measuring the relative affinity of the ligand for its receptor (around 2 nM). B) Time course of the effect of AVP where activation of the arrestin biosensor is observed by the decrease in BRET signal following agonist addition.