Case Study

Optimizing GPCR assays with chimeric G proteins

Introduction

Cell-based assays represent an important step in understanding the functional effects of GPCR modulation. Having access to high quality cellular tools is critical in driving forward these studies, providing reproducible data and clear insight when you need it most.

One of the major challenges faced when developing robust functional GPCR assays is defining the optimal signalling components to ensure a reliable downstream assay and lead optimization. While some GPCRs signal amicably via endogenous host cell G proteins, other receptros benefit from over-expression of a specific G protein to enable coupling and downstream signalling. Additionally, when developing assay systems for orphan receptors lack of information on the target's signalling mechanism can present a barrier to assay development and receptor de-orphanization.

A comprehensive suite of G protein tools

SB Drug Discovery offers a comprehensive collection of wild-type and chimeric G protein tools to support GPCR assay development and enable hit identification. Providing guidance on G protein selection, cell line generation and assay development to enhance your research, trust SB Drug Discovery's expert team to deliver time-saving, robust solutions for GPCR drug discovery.

Table 1. **SB Drug Discovery's comprehensive collection of G protein tools.**

G Protein	Characteristics	Assay Readout
SB-Gqα15	Wild-type SB-Gqα15	Calcium/ IP1 assays
SB-Gq/s	Gqα15 with c terminus optimized for Gs coupling	Calcium/ IP1 assays
SB-Gq/i	Gqα15 with c terminus optimized for Gi coupling	Calcium/ IP1 assays
SB-Gq/i (short)	Gqα15 with c terminus optimized for Gi coupling	Calcium/ IP1 assays
SB-Gqα12	Gqα15 with c terminus optimized for Gα12 coupling	Calcium/ IP1 assays
SB-Gqα13	Gqα15 with c terminus optimized for Gα13 coupling	Calcium/ IP1 assays
SB-Gs	Wild-type Gs	cAMP signalling assays
SB-Gs/q	Gs with c terminus optimized for Gq coupling	cAMP signalling assays
SB-Gs/i Gs	Gs with c terminus optimized for Gi coupling	cAMP signalling assays
SB-Gs/α12	Gs with c terminus optimized for G α12 coupling	cAMP signalling assays
SB-Gs/α13	Gs with c terminus optimized for G α13 coupling	cAMP signalling assays

Optimizing G Protein Coupling

Using a comprehensive panel of G protein constructs SB Drug Discovery's assay development team quickly identifyies optimal G proteins partners for your GPCR target, delivering robust functional assays for downstream drug discovery screening.

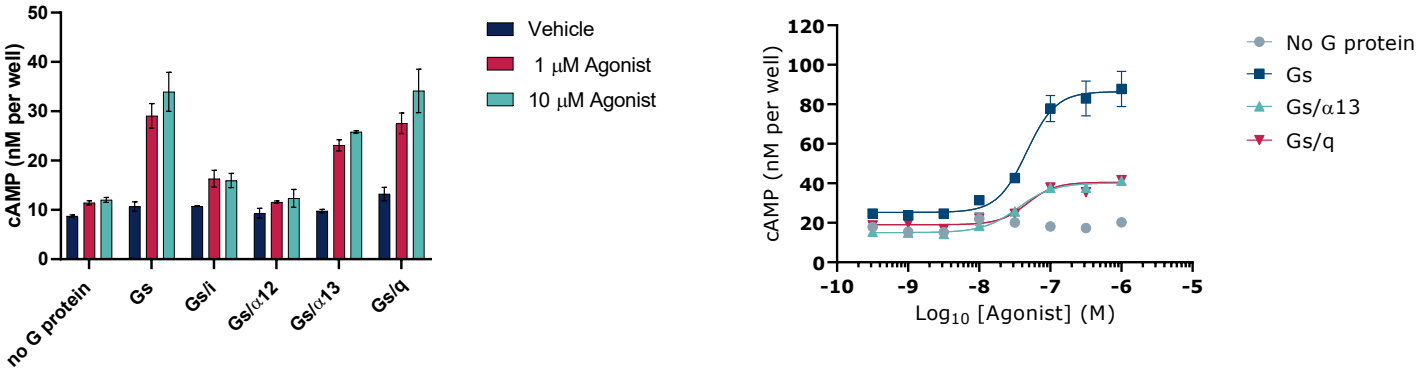

Figure 1. **G protein profiling. Identification of optimal G protein coupling partners for detection of robust functional GPCR responses. A range of G-proteins were co-transfected with taregt receptor to dentify optimal partner for downstream cAMP quantitation assay.**

Convenient Assays Delivered

GPCRs signal via a variety of pathways which may or may not be amenable of high throughput assay formats. Using chimeric G proteins, SB Drug Discovery's assay development team can design robust assay to drive GPCR signalling via pathways and endpoint readouts suited to your preferred screening platforms, resulting in reliable, high-quality data for your drug discovery campaigns.

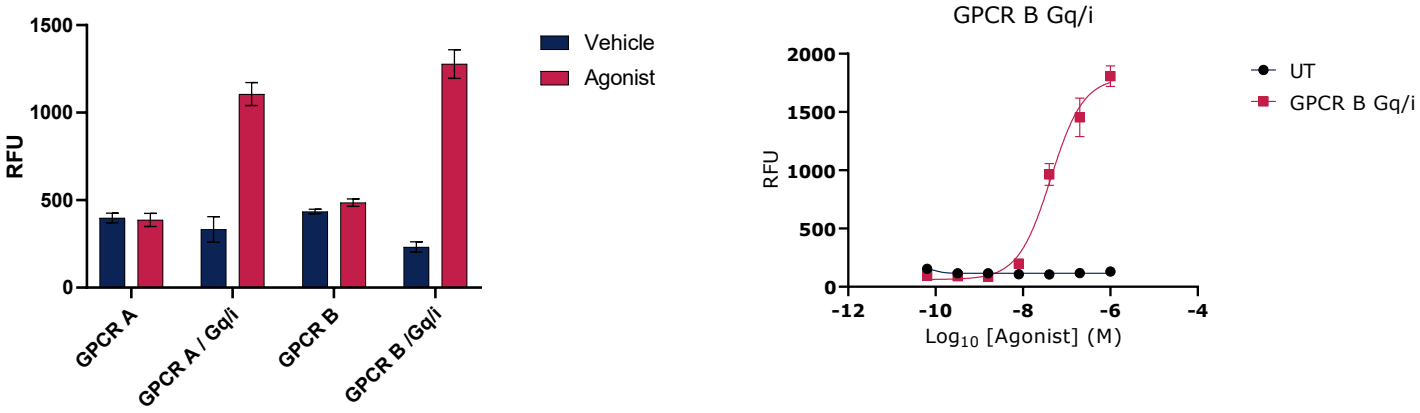

Figure 2. **Gi-coupled GPCR targets driven to signal via Gq pathway using chimeric G proteins to enable high-throughput screening using calcium mobilization assays.**

With over 20 years' experience in GPCR signalling, assay development and cell line generation, trust SB Drug Discovery's expert team to deliver time-saving, robust solutions for your GPCR drug discovery research.

SB Drug Discovery excels in the delivery of challenging cell lines and assay systems to advance your GPCR drug discovery research. Contact us today to discuss how SB Drug Discovery can support your research.

Visit the SB Drug Discovery website.
www.sbdrugdiscovery.com