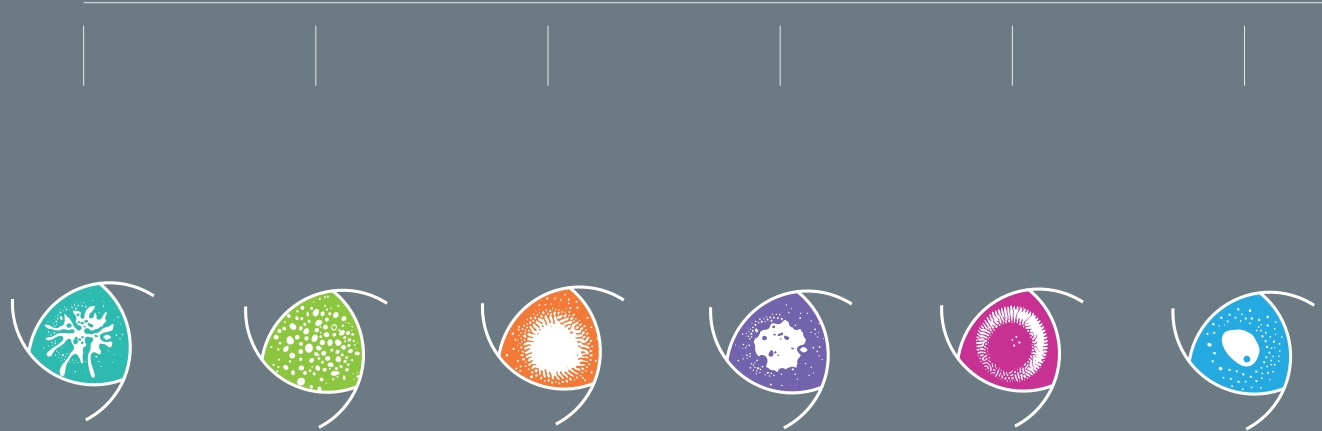




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Ion Channels

G Protein-Coupled Receptors

Phosphodiesterases

Safety Pharmacology

Inflammation

Cell Line Development



SB Drug Discovery is a contract research organization specializing in biochemical and cell-based screening assays against a broad range of drug targets including ion channels, GPCRs and phosphodiesterases.

In addition, SB has extensive expertise in the field of inflammation and offers a full spectrum of assays for inflammation-related drug discovery.

Our experienced team of life science professionals possess a wealth of knowledge and expertise in gene expression, cell line generation, assay development and compound screening, enabling rapid progression of your drug discovery programs. At SB we strive to meet your individual requirements through our flexible approaches to science and business.



Ion Channels



A comprehensive panel of functionally validated ion channel assays & cell lines

SB Drug Discovery has generated an extensive panel of ion channel screening assays comprising more than 100 ion channel targets and over 200 ion channel assays. Our validated assays utilize fluorescence, manual patch clamp and automated electrophysiology platforms and can be customized to meet specific needs.

Whether you are performing HTS or lead optimization against your target of interest, selectivity profiling using a customized panel of your choice or checking for safety liabilities, SB has a validated assay and platform fit for purpose.

SB's flexible service allows for any single channel or combination of channels to be tested as part of a customized panel, using your specified concentration range and assay protocol.

• Electrophysiology • Automated patch-clamp • High throughput screening



Off-the-shelf Cell Lines

SB's ion channel cell lines are available for off-the-shelf purchase. Flexible agreements are available based on proposed usage, including academic research, in-house drug discovery or commercial CRO purposes. All cell lines are provided with validated culture SOPs and are backed up with excellent technical support and customer service.

Custom Ion Channel Cell Line Development

Development of such an extensive panel of ion channel cell lines and assays has provided SB with a wealth of expertise and troubleshooting knowledge to enable development of even the most challenging ion channel cell lines.

SB's custom cell line development services can be tailored to meet your exact requirements, from host cell type to functional characterization of the final cell line.



G Protein-Coupled Receptors

Radioligand binding & cell-based GPCR assays

SB Drug Discovery's GPCR assay panel enables the evaluation of binding and downstream effects of small molecules against a wide variety of GPCR targets. Using radioligand binding to determine affinity and whole-cell or GTPγS assays to distinguish between agonists, antagonists and allosteric modulators, SB provides rapid screening, potency studies and selectivity profiling against a broad panel of GPCR targets.



- Radioligand binding
- Calcium assays
- cAMP signalling
- GTPγS binding assay

Radioligand binding

Binding assays can be used to characterize in great detail the interaction between a receptor and its ligands, such as the affinity of each ligand to the receptor and the association/dissociation rates. SB produces membrane reagents over-expressing a range of recombinant GPCR targets for radioligand binding studies. Assays can be utilized for screening, dose-response studies or selectivity profiling.

Cell-based assays

Following ligand binding analysis, functional cell-based assays can be used to further investigate the characteristics of a chosen target compound. SB utilizes second messenger pathways such as cAMP and calcium signalling to further investigate g protein-mediated effects.

Assay Development

Our assay development team can quickly validate assays or develop recombinant cell lines for alternative GPCR targets, disease-relevant mutants or orthologs to rapidly advance your GPCR discovery programs.



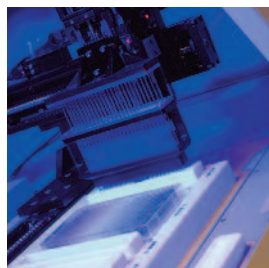
Phosphodiesterases



Experts in PDE drug discovery

SB Drug Discovery has the largest range of commercial PDE assays including an extensive panel of full-length human isoforms, catalytic domains and species variants.

Our recombinant PDE enzymes are expressed in insect cells to ensure high expression and accurate post-translational modification making them perfect for functional, cell-free radiometric and fluorescence-based PDE assays.



• High throughput screening • Selectivity panels • Radiometric assay • Cell-based assays • Cyclic nucleotide signalling



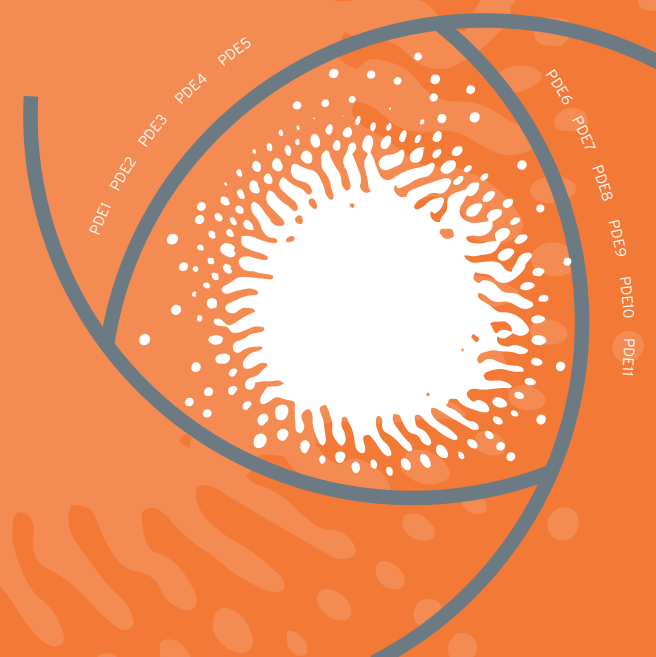
Selectivity Panel

SB's PDE Selectivity Panel is designed for fast, cost-efficient assessment of compound effect on PDE activity. The panel is composed of the most common isoform (full-length or catalytic domain) of each PDE family providing a broad overview of the selectivity profile of your compounds. The panel is also an excellent tool to quickly check for off-target effects of non-PDE targeting compounds.

Cell-based PDE signalling assays

To complement our cell-free assay capabilities, SB's cell-based assays enable in-cell assessment of PDE activity and cAMP/cGMP levels using both recombinant cell lines and primary cells.

With over 20 years experience in phosphodiesterase drug discovery, SB has aided in the development of many novel PDE discovery programs and can modify enzymes, produce cell lines and develop primary cell assays to meet our clients requirements whether pursuing competitive or allosteric approaches.



Safety Pharmacology

Reducing costly safety-related attrition

Identification of potentially undesirable off-target effects is an essential process in any drug discovery campaign. In vitro pharmacological profiling against a broad panel of known potential hazards at an early stage in the discovery process can therefore aid decision-making in lead generation, lead optimization and candidate selection, resulting in significantly reduced downstream safety-related attrition.

SB's safety assessment panel covers ion channel, GPCR and other key target classes and provides a broad pharmacological profile of your compounds and their potential to cause adverse drug reactions. Our flexible service allows you to screen against the complete panel or select only the targets that matter to you.



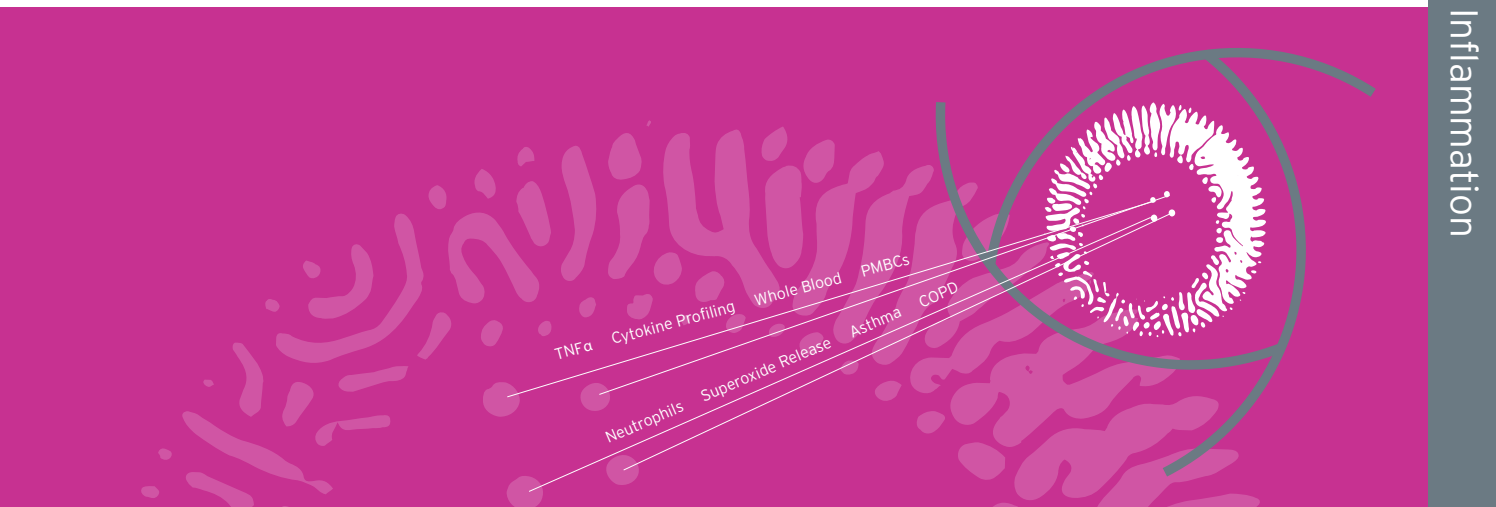
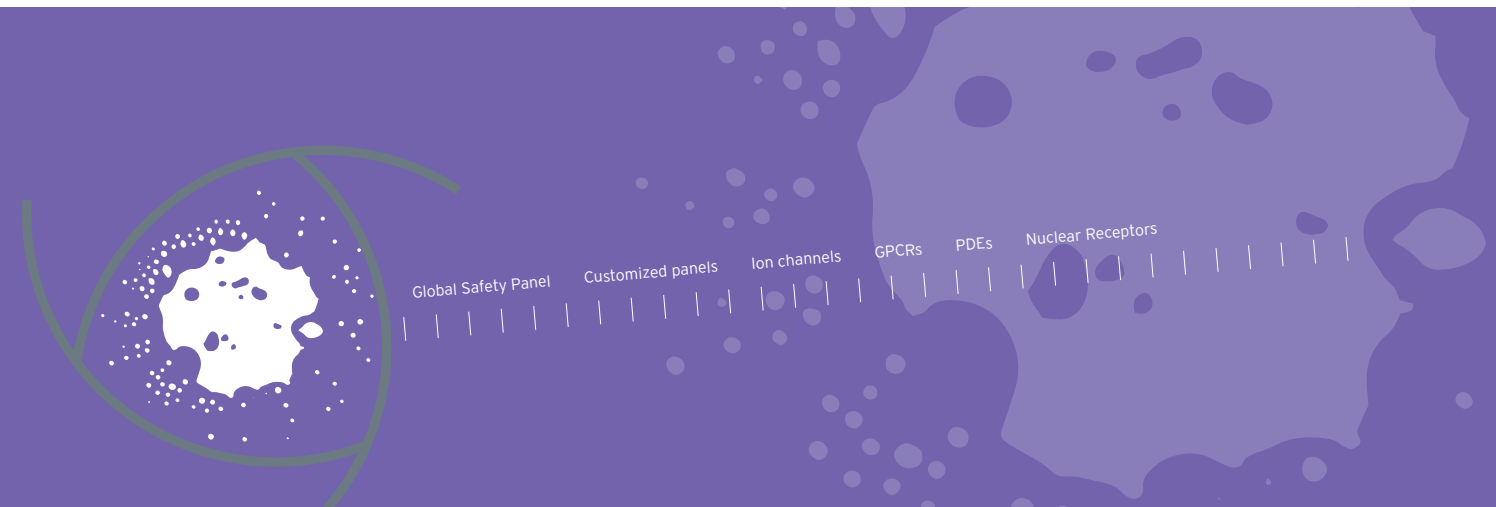
Inflammation

The inflammation specialists

SB Drug Discovery has gained invaluable experience and proficiency within the field of inflammation CRO services throughout more than 20 years of drug discovery research.

SB's cell-based inflammatory assays are performed using fresh human whole blood human, PBMCs, isolated cell types (granulocytes, B cells, T cells (including Th17 cells), monocyte-derived macrophages etc) or primary cells.

In addition to routine, off-the-shelf inflammatory assays, SB is also proficient in the development of complex, customized assays to provide tailored solutions to our clients needs.



Protein expression & cell line development

SB has over 20 years experience in recombinant protein expression and cell line development and has invested heavily in developing efficient processes to enable rapid production of high quality recombinant protein & cell reagents.

Our flexible service and dedicated project leaders ensure a seamless collaboration and successful outcome to your project.



Protein expression

A range of expression systems are employed at SB to ensure production of recombinant proteins for downstream functional studies and structural analysis including bacterial, insect and mammalian systems.

Small scale pilot studies are utilized for method development prior to scale-up and purification to meet the desired quantity and quality.

Cell line development

Stable cell lines expressing recombinant targets such as ion channels and GPCRs are commonly used in a number of research applications including drug discovery screening and safety assessment. SB has overseen generation of more than 200 functionally validated custom cell lines with particular focus on over-expression of membrane proteins. Our cell line generation services can be tailored to your needs including choice of host-cell, constitutive or inducible expression and customized validation.

Transient expression

Transient expression via viral transduction offers an alternative approach for expression of targets in mammalian cells. SB utilizes transient viral transduction as a method of quickly-developing ion channel and GPCR assays when short turnaround times are required.

Assay Targets

TRP Channels

TRPA1	TRPA1 (rat)	TRPA1 (guinea pig)	TRPA1 (sheep)	TRPA1 (monkey)					
TRPC1	TRPC3	TRPC4	TRPC5	TRPC5 (mouse)	TRPC5 (rat)	TRPC6	TRPC6 (mouse)	TRPC6 (rat)	TRPC7
TRPM2	TRPM3	TRPM4	TRPM5	TRPM5 (mouse)	TRPM8				

Voltage-Gated Sodium Channels

Nav1.1	Nav1.2	Nav1.3	Nav1.4	Nav1.5
Nav1.6	Nav1.7	Nav1.7 (dog)	Nav1.7 (monkey)	Nav1.8

Voltage-Gated Calcium Channels

Cav1.2 (α1α2δβ2)	Cav1.2 (α1α2δβ3)	Cav1.4 (α2α2δβ3)	Cav2.1 (Y1245C) (α1α2δβ3)
Cav2.1 (α1α2δβ3)	Cav2.2 (α1α2δβ3)	Cav3.1	Cav3.2

Potassium Channels

Kv1.3	Kv1.5	Kv2.1	Kv2.1/9.3	Kv2.2	Kv3.1a	Kv3.1b	Kv3.2
Kv3.4	Kv4.3	Kv4.3/KChIP2	Kv7.1	Kv7.1/minK	Kv7.2	Kv7.2/7.3	Kv11.1
KCa1.1	KCa2.1	KCa2.2	KCa2.3	KCa3.1	KCa4.1		
TREK1	TRESK	TRAAK	TASK1	TASK3			
Kir2.1	Kir2.2	Kir2.4	Kir4.1				

Ligand-Gated Channels

P2X1	P2X4	P2X5	P2X7	P2X7 (mouse)	ENaC	ENaC (rat)	ENaC (sheep)
Ano1	Ano1 (mouse)	Ano1 (rat)	Ano1 (pig)	Ano1 (sheep)	NMDA	GABA-A	GluR2
nAChR α7	nAChR α4β2	5HT3A					

GPCRs

Adenosine	A1	A2a				
Adrenergic	α1A	α1B	α2A	α2C	β1	β2
Bradykinin	B2					
Cannabinoid	CB1	CB2				
Cholecystokinin	CCK1					
Dopamine	D1	D2	D3	D4		
Endothelin	ET1					
Histamine	H1	H2				
Muscarinic	M1	M2	M3	M4	M5	
Opioid	δ	κ	μ			
Serotonin	5HT1A	5HT2A	5HT2B	5HT2C	5HT6	5HT7
Vasopressin	V1a					

PDEs

PDE1	1CAT	1A3	1B	1C			
PDE2	2CAT	2A3					
PDE3	3CAT	3A	3B				
PDE4	4A1	4A4	4A10	4BCAT	4B1	4B2	4B3
	4D1	4D2	4D3	4D4	4D5	4D7	4C2
PDE5	5CAT	5A1	5A2	5A3			
PDE6	6AB	6C					
PDE7	7CAT	7A	7B				
PDE8	8CAT	8A1	8B				
PDE9	9CAT	9A1	9A2				
PDE10	10CAT	10A1	10A2				
PDE11	11CAT	11A1					