CARNA BIOSCIENCES

PRODUCTS AND SERVICES

Drug Discovery Tools from Carna Biosciences

~your kinase company~

Contents

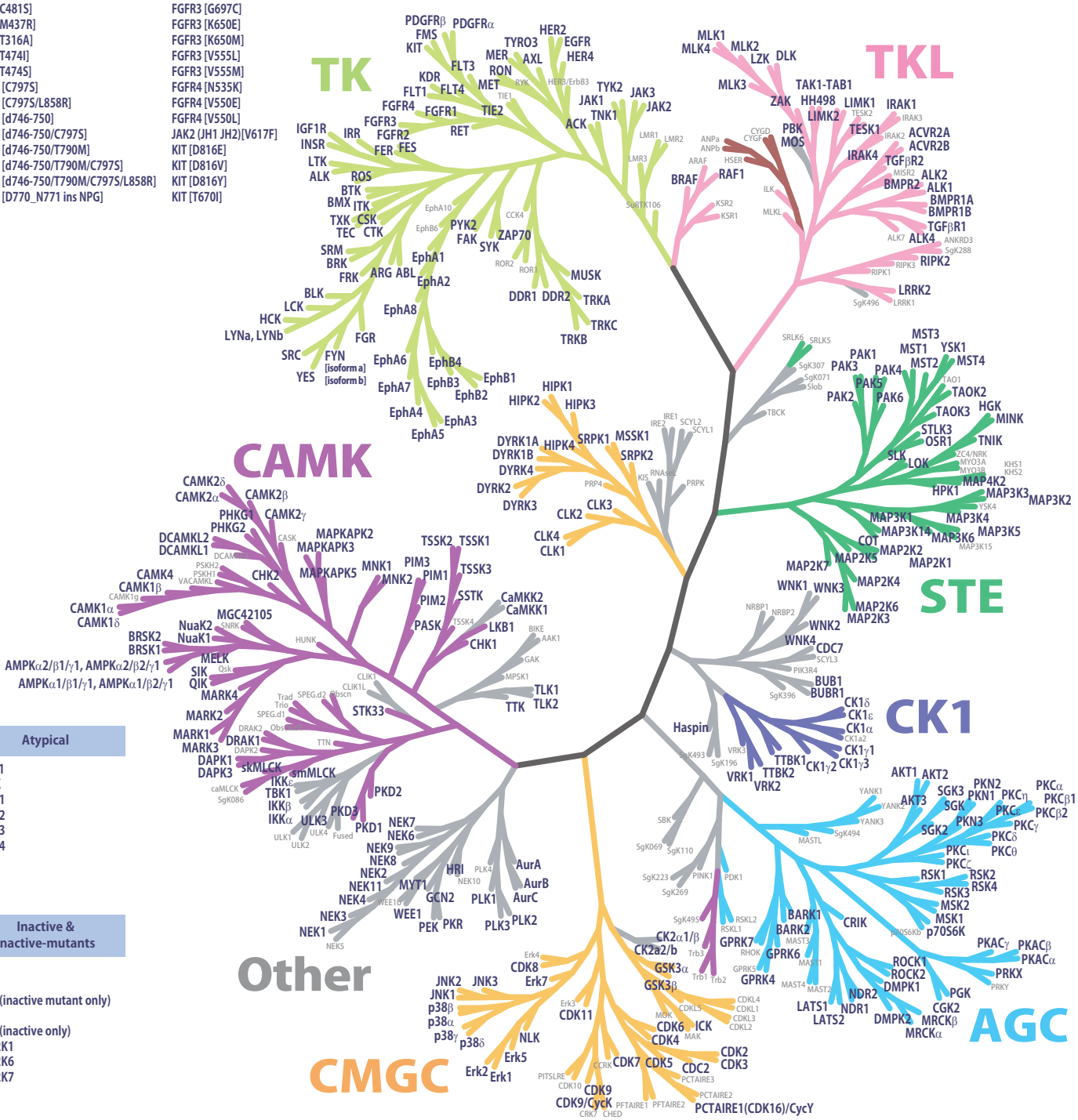
Kinases ~Available from Carna Biosciences~

Mutants

ABL [E255K]
ABL [T315I]
ALK [C1156Y]
ALK [D1203N]
ALK [F1174L]
ALK [F1174L/G1202R]
ALK [G1202R]
ALK [G1269A]
ALK [I1171N]
ALK [I1171N/L1198F]
ALK [I1171S]
ALK [I1171T]
ALK [L1196M]
ALK [L1196M/G1202R]
ALK [L1198F]
ALK [L1198F/G1202R]
ALK [R1275Q]
ALK [V1180L]
ALK [T1151_L1152insT]
ALK2 [Q207D]
ALK2 [R206H]
BRAF [T599 V600insT]
BRAF [V600E]
BTK [C481S]
BTK [M437R]
BTK [T316A]
BTK [T474I]
BTK [T474S]
EGFR [C797S]
EGFR [C797S/L858R]
EGFR [d746-750]
EGFR [d746-750/C797S]
EGFR [d746-750/T790M]
EGFR [d746-750/T790M/C797S]
EGFR [d746-750/T790M/C797S/L858R]
EGFR [D770_N771 ins NPG]
EGFR [L718M/T790M/C797S/L858R]
EGFR [L718Q/T790M/C797S/L858R]
EGFR [L718V/T790M/C797S/L858R]
EGFR [L747P]
EGFR [L792H]
EGFR [L858R]
EGFR [L861Q]
EGFR [S768I]
EGFR [T790M]
EGFR [T790M/C797S/L858R]
EGFR [T790M/L858R]
EML4-ALK
FGFR1 [V561M]
FGFR2 [C491A]
FGFR2 [C491A/V564I]
FGFR2 [C491A/V564L]
FGFR2 [E565A]
FGFR2 [N549D]
FGFR2 [N549H]
FGFR2 [N549K]
FGFR2 [V564F]
FGFR2 [V564I]
FGFR2 [V564L]
FGFR3 [G697C]
FGFR3 [K650E]
FGFR3 [K650M]
FGFR3 [V555L]
FGFR3 [V555M]
FGFR4 [N535K]
FGFR4 [V550E]
FGFR4 [V550L]
JAK2 (JH1 JH2)[V617F]
KIT [D816E]
KIT [D816V]
KIT [D816Y]
KIT [T670I]
KIT [T670I/D816V]
KIT [V560G]
KIT [V560G/D816V]
KIT [V654A/D816V]
LRRK2 [G2019S]
LTK [I565N]
LTK [L590M]
LTK [L592F]
LTK [L650F]
MAP2K1 [F129L]
MAP2K1 [P124L]
MET [D1228H]
MET [D1228N]
MET [M1250T]
MET [Y1230C]
MET [Y1230H]
MET [Y1235D]
NPM1-ALK
PDGFRa [D842V]
PDGFRa [T674I]
PDGFRa [V561D]
RET [G691S]
RET [G810C]
RET [G810C/M918T]
RET [G810R]
RET [G810S]
RET [M918T]
RET [S891A]
RET [Y791F]
RET [V804M]
ROS(ROS1) [G2032R]
ROS(ROS1) [G2032R/L2086F]
ROS(ROS1) [L2086F]
YES(YES1) [T348I]

Lipid Kinases

DGK α (DGKA)
DGK β (DGKB)
DGK γ (DGKG)
DGK δ (DGKD)
DGK ε (DGKE)
DGK η (DGKH)
DGK ι (DGKI)
DGK κ (DGKK)
DGK θ (DGKQ)
DGK ζ (DGKZ)
MTOR(FRAP) / MLST8
PI4KB
PIK3C3
PIK3CA / PIK3R1
PIK3CA[E542K] / PIK3R1
PIK3CA[E545K] / PIK3R1
PIK3CA[H1047R] / PIK3R1
PIK3CA[P539R] / PIK3R1
PIK3CA[R88Q] / PIK3R1
PIK3CB / PIK3R1
PIK3CD / PIK3R1
PIK3CG
PIKFYVE(PIP5K3)
PIP4K2A
PIP4K2B
PIP4K2C
PIP5K1A
PIP5K1B
PIP5K1C
PIP5KL1
SPHK1
SPHK2



Atypical

CHAK1
EEF2K
PDHK1
PDHK2
PDHK3
PDHK4

Inactive & Inactive-mutants

Erk2
Erk5
IKK α (inactive mutant only)
JNK1
JNK2 (inactive only)
MAP2K1
MAP2K6
MAP2K7
p38a

High Quality Active Kinases

Carna offers an expanded portfolio of high purity, active human kinases and related products. All of our >450 kinases and products are developed and produced entirely in-house from gene cloning, expression and purification, and undergo rigorous quality control. All products are available in various sizes starting from 5μg up to bulk production, are delivered to you with a lot specific data sheet.

*Target lists: Please refer to the attachment.

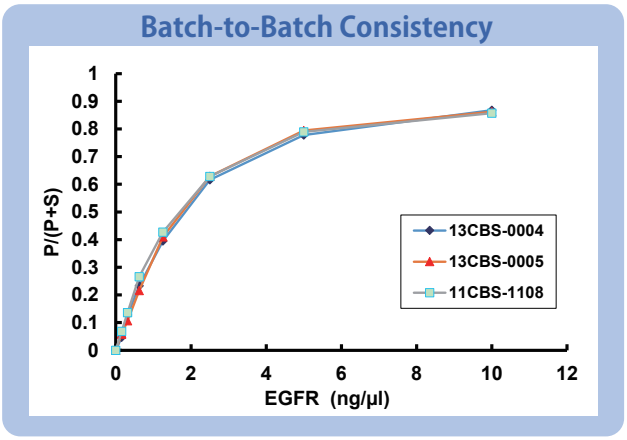
Industry Leading Production and Quality Control Methods

- Proprietary Production Methods ensure batch-to-batch consistency (Fig.1)
- Relevant kinase specific substrate(s) measure activity of each batch
- Target kinase activity maximized to minimize literature documented host cell activity
- Kinase constructs are carefully selected from published literature
- DNA sequence confirmed prior to protein expression
- Amino acid sequence confirmed by Peptide Mass Fingerprinting(PMF)

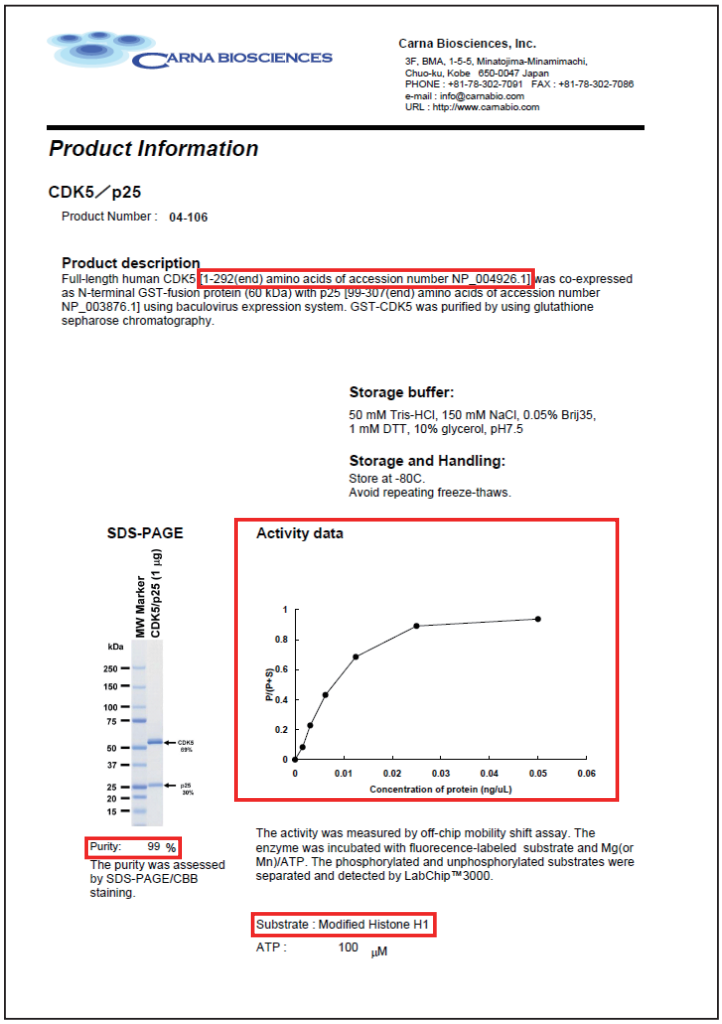
Unparalleled Kinase Activity

Production process yields highly active kinases.
Some kinases are activated further by :

- Expression with upstream kinase(s)
- Tag removal
- ATP treatment



[Fig.1]



Lipid Kinases and Related Products

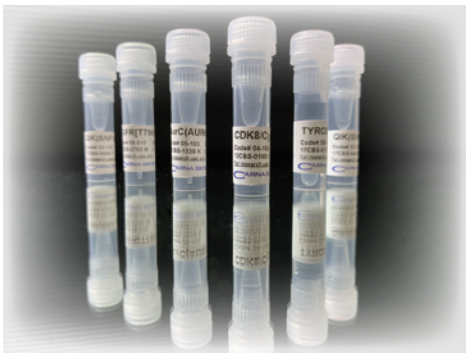
Carna's lipid kinase panel includes numerous members of the PIK family. The enzymes enable complete and easy investigation of lipid kinase drug targets.

Protein Substrates

Our protein substrates are available for use in phosphorylation activity assays to assess kinase activity.

Custom protein production

We offer custom production services using our extensive expertise, for any kinase of interest.
For more information, please contact us at info@carnabio.com



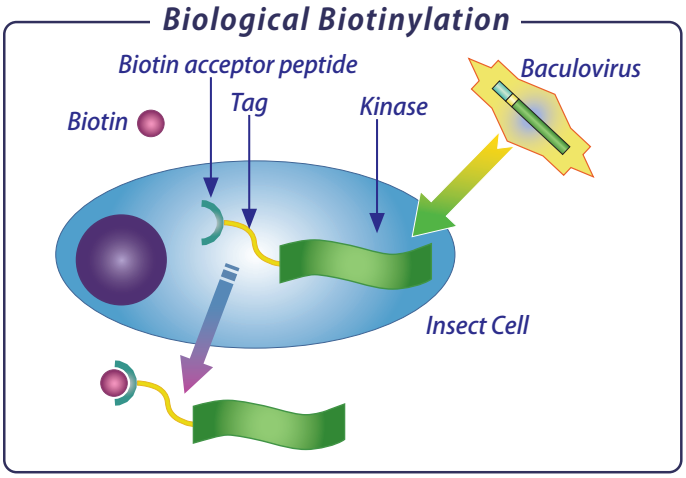
Biotinylated Kinases

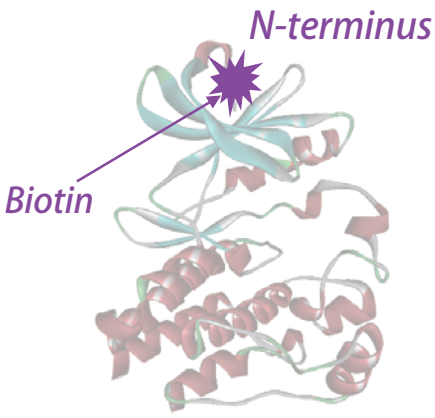
Biotinylated Kinases are best suited for the study of compound binding affinity and other kinase-molecule interactions using devices measuring Surface Plasmon Resonance (SPR), BioLayer Interferometry (BLI) and other similar biomolecular interactions. They can also be utilized in homogenous proximity-based binding assays such as TR-FRET, AlphaScreen™ and HTRF® to interrogate inhibitor binding affinity, determine on-off rates, and measure binding kinetics. The immobilization of target proteins onto sensor surfaces without impairing their structure and activity can be challenging in small molecule drug discovery. Carna' s in-house, single-site specifically biotinylated kinases are easily immobilized, leading to rapid acquisition of accurate and real-time data for evaluation of your drug candidates!

*Target lists: Please refer to the attachment.

Advantages of Carna's Biological Biotinylation Process

- Kinases are labeled with a single biotin at the N-terminus
- Easy-to-use ; no additional labeling required
- Native, catalytically active kinase domains are preserved
- High quality human kinases produced via Baculovirus expression system
- Stable activity determined post expression
- Select kinases available pre-activated (via ATP treatment) and non-activated (without ATP treatment)





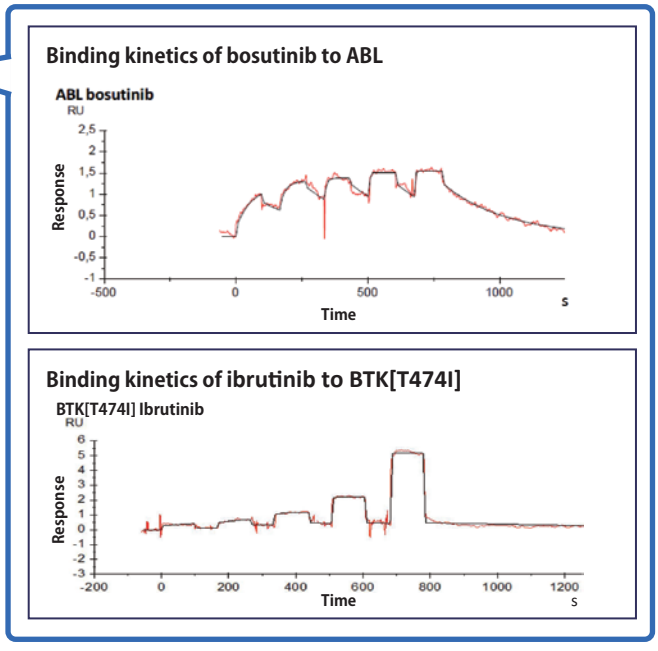
SPR data samples* using Carna's biotinylated kinases are shown on our website

(*Measured using Biacore T200 in collaboration with Oncolines B.V)

Biotinylated Kinases

Catalog No.	Product Name	Product Size			Biacore Sensorgram (Reference Data)
08-401-20N	BTN-ABL(ABL1)	10ug	100ug	Bulk	
01-401-20N	BTN-AKT1	10ug	100ug	Bulk	
01-402-20N	BTN-AKT2	10ug	100ug	Bulk	
08-405-20N	BTN-ALK	10ug	100ug	Bulk	
08-429-20N	BTN-ALK[L1196M]	10ug	100ug	Bulk	
05-401-20N	BTN-AurA (AURKA)	10ug	100ug	Bulk	
05-402-21N	BTN-AurB (AURKB)/INCENP*	10ug	100ug	Bulk	
08-407-20N	BTN-AXL	10ug	100ug	Bulk	
08-479-20N	BTN-BMX	10ug	100ug	Bulk	
09-422-20N	BTN-BRAF	10ug	100ug	Bulk	
08-480-20N	BTN-BTK *	10ug	100ug	Bulk	
08-417-20N	BTN-BTK[C481S] *	10ug	100ug	Bulk	
08-417-23N	BTN-BTK[C481S][non-activated]	10ug	100ug	Bulk	
08-480-23N	BTN-BTK[non-activated]	10ug	100ug	Bulk	TBA
08-418-20N	BTN-BTK[T316A] *	10ug	100ug	Bulk	
08-418-23N	BTN-BTK[T316A][non-activated]	10ug	100ug	Bulk	
08-419-20N	BTN-BTK[T474I] *	10ug	100ug	Bulk	
08-419-23N	BTN-BTK[T474I][non-activated]	10ug	100ug	Bulk	
08-420-20N	BTN-BTK[T474S] *	10ug	100ug	Bulk	

Click!



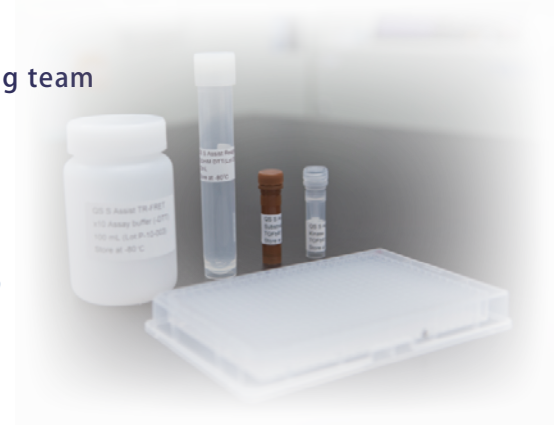
QuickScout Screening Assist™ Kits

QuickScout Screening Assist™ Kits are designed to accelerate your in house compound screening, particularly secondary and counter- screening applications. Our Kits provide essential reagents and detailed assay protocols in one package, and are available for more than 300 human kinase targets. After your initial kit purchase, components contained in the kit can be purchased separately and in bulk.

*Target lists: Please refer to the attachment.

Advantages of Carna's Assay Kits

- **Prepared utilizing the extensive expertise of our kinase profiling team**
- **Ready-To-Run products & protocols save time and money**
- **Scalable for HTS applications**



Designed for primary, in-house screening procedures applicable to Lead Generation through Lead Optimization!

Assay Platform	Minimum Kit Size	Kit Components
Mobility Shift Assay QSS Assist™ MSA This MSA kit works best using LabChip® technology from PerkinElmer, Inc.	400dp Equivalent to 1 x 384-well plate	● Protein Kinase ● Substrate Mixture (ATP, Cation included) ● Assay Buffer ● Termination Buffer ● Assay Protocol (Separation conditions included)
FP(IMAP™) QSS Assist™ FP	400dp Equivalent to 1 x 384-well plate	● Protein Kinase ● Substrate Mixture (ATP, Cation included) ● Assay Buffer ● Assay Protocol
TR-FRET QSS Assist™ TR-FRET	400dp Equivalent to 1 x 384-well plate	● Protein Kinase ● Substrate Mixture (ATP, Cation included) ● Assay Buffer ● Assay Protocol
ELISA QSS Assist™ ELISA	100dp Equivalent to 1 x 96-well plate	● Protein Kinase ● Substrate Mixture (ATP, Cation included) ● Assay Buffer ● Antibody for ELISA (except for TTK & WEE1) ● Assay Protocol
ADP-Glo™ QSS Assist™ ADP-Glo™	400dp Equivalent to 1 x 384-well plate	● Protein Kinase ● Substrate Solution ● Kinase dilution Buffer (Cation included) ● Assay Buffer ● MgCl2 solution for detection reagent ● Assay Protocol

Sample protocols for all kit platforms are available online.
Each kinase kit is made-to-order, with turnaround time of 2-3 weeks.

Biochemical Kinase Screening and Profiling Services

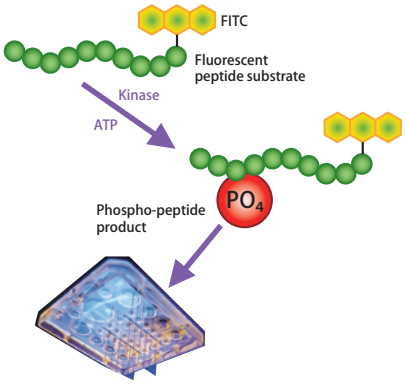
Carna offers >320 biochemical screening and profiling assays for assessing potency and selectivity of your compounds. Our three assay platforms allow us to interrogate a wide range of kinase targets using stringent SOPs. We offer testing at higher ATP concentration (1mM) to provide insight into compound inhibition and potency under more physiologically relevant conditions, in addition to our ~ATP km assay services.

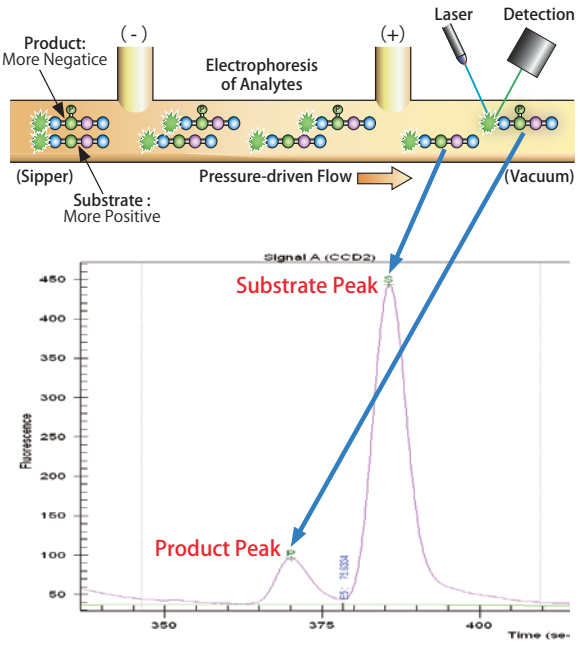
*Target lists: Please refer to the attachment.

Three Assay Platforms

1. Mobility Shift Assay

Direct monitoring of phosphorylation by measuring non-phosphorylated and phosphorylated substrate.





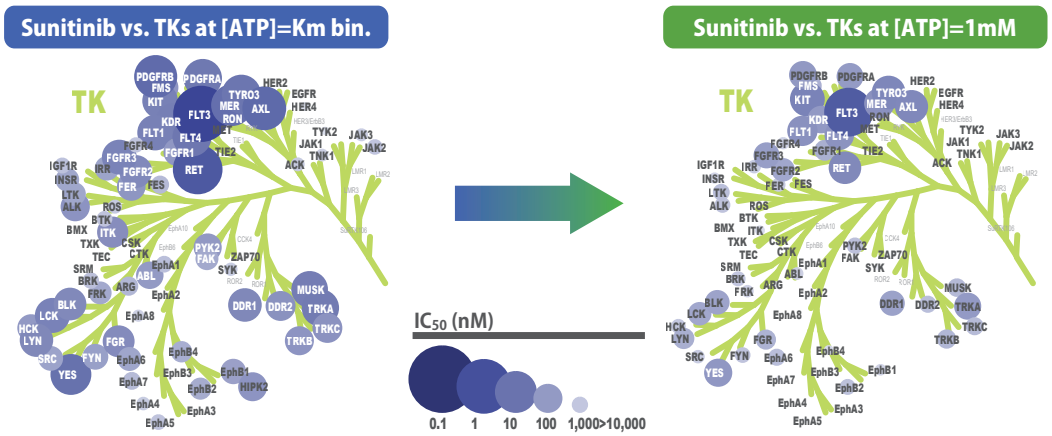
2. IMAP™ (Immobilized Metal Ion-Affinity Partitioning) Assay

3. ADP-Glo™ Assay

~ATP Km / 1mM ATP Assays

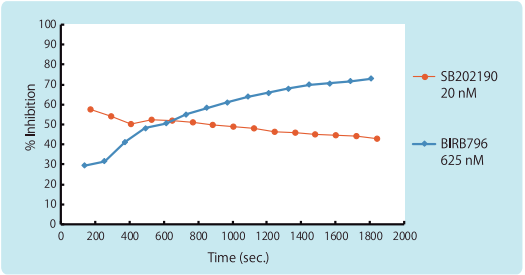
ATP concentration approximating Km are our routine kinase assays
Many assays are also available at 1mM ATP

Assays approaching physiological ATP levels, provide insight to in vivo pharmacology.



Preincubation Kinase Profiling Service

Carna's preincubation service can be utilized to study slow binding compounds. This service incorporates a thirty (30) minute room temperature preincubation of target kinase with your test compound(s) prior to measuring activity in our standard Mobility Shift Assay.



Time course of p38α inhibitors (ATP=1mM)

Structurally unrelated SB202190 and BIRB796 are potent inhibitors of p38α. BIRB796 interacts with p38α in a manner different from SB202190, and its binding induces a slow conformational change that locks the protein into an inactive conformation. The potency of BIRB796 increases with prolonged incubation, which is easily detected utilizing the pre-incubation service.

Biochemical Kinase Screening and Profiling Services

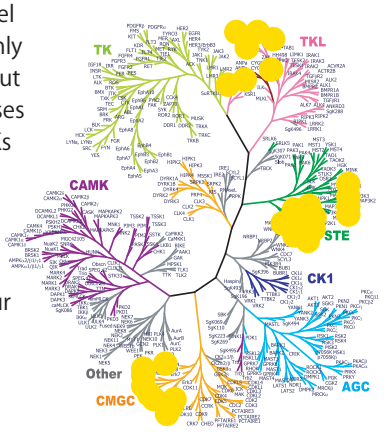
QuickScout™ Pre-selected Panel Profiling Options

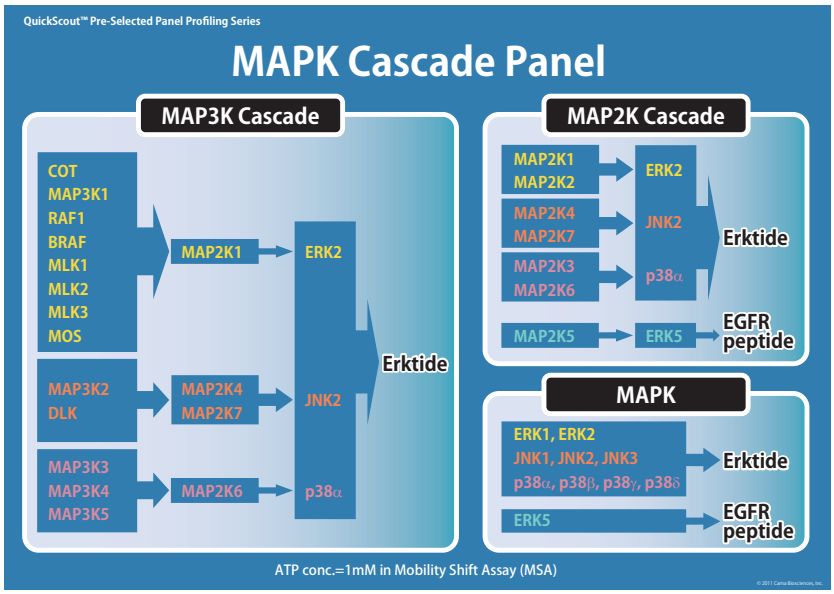
Our selected panel series are well-suited for an initial profiling of your compounds.

*Target lists: Please refer to the attachment.

MAPK Cascade Panel ver. 2.0

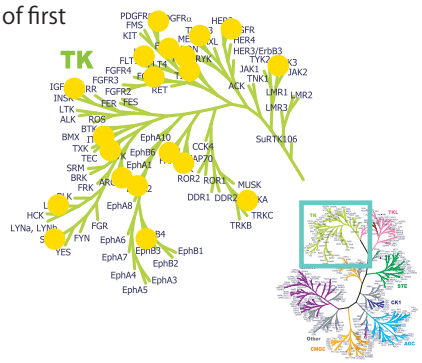
The MAPK cascade plays an important role in the intracellular signal transduction of eukaryotic cells. Our MAPK panel includes not only MAP kinases, but upstream kinases such as MAPKKs and MAPKKKs. This panel is useful for analyzing the function of your compounds in the cascade.





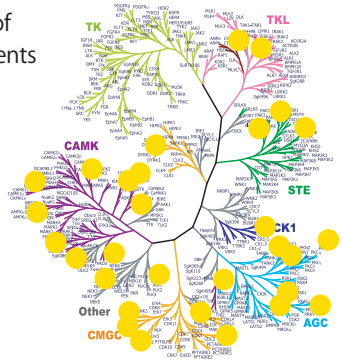
Tyrosine Kinase (TK) Panel ver. 2.0

QuickScout™ TK Panel consists of 20 Pre-Selected receptor and non-receptor Tyrosine Kinases, and helps you to rapidly screen your compounds against druggable and clinically relevant kinases. Identification and optimization of small molecule inhibitors against many of the targets in our 20 TK Panel have led to the development of first and second generation therapeutics for the treatment of diseases such as leukemia and cancers of the lung, breast, and kidney.



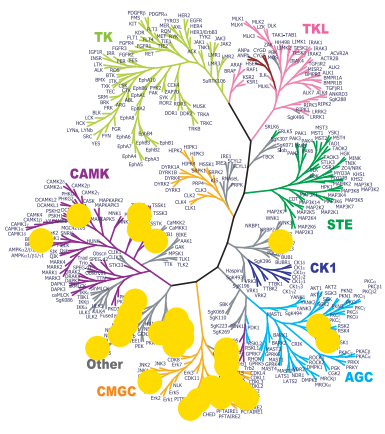
Serine/Threonine Kinase (STK)Panel ver. 3.0

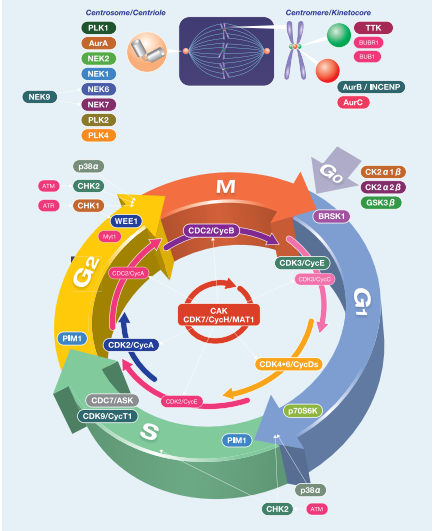
QuickScout™ STK Panel consists of 30 Pre-selected Serine / Threonine kinases that are key members of the AGC, CAMK, CMGC, STE, TKL, and Other Group of STK kinases. This Panel allows you to screen your lead compounds using the industry's most diverse Kinome Sampler and helps to discover and characterize the selectivity of compounds as potential treatments for cancer, inflammatory, metabolic and/or neurological diseases.



Cell Cycle Panel ver. 2.0

QuickScout™ Cell Cycle Panel is comprised of relevant kinases for cell-cycle regulation and is well-suited for determining whether your compound acts on cell division. This panel mainly includes kinases that are directly involved in the cell-cycle where their inhibition may interfere with cell proliferation.





NanoBRET™ TE Intracellular Kinase Cell-Based Assay

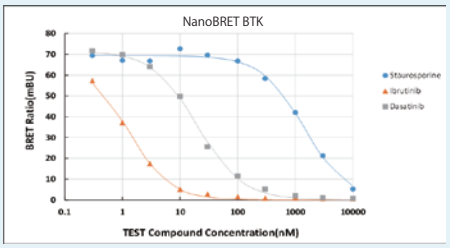
Quantifying kinase inhibitor occupancy, selectivity, and affinity within the cellular environment is crucial to more accurately predict engagement potencies against human kinases. In addition to equilibrium evaluation, kinetic parameters such as Residence Time should be determined for better compound optimization. Quantitative and wide-spectrum kinase profiling services using the NanoBRET™ Target Engagement Intracellular Kinase Assay System (Promega) enable you to assess your compound's engagement for a selected intracellular target under physiological conditions, including compound Residence Time at the target, while keeping the cells intact. Simply submit your compound(s) of interest, and Carna will rapidly deliver cellular IC_{50} values and Residence Time!

*Target lists: Please refer to the attachment. For targets not listed, please inquire.

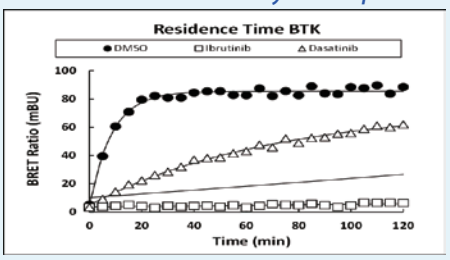
Promega

Investigate Inhibitor Binding and Residence Time in Intact Cells Expressing Full-length Kinases

IC_{50} Data Sample



Residence Time Analysis Sample



IC_{50} Determinations & Residence Time Analysis

IC_{50} determinations
(7 serial half-log dilutions, 8 conc.points)

Turnaround:
2 weeks upon receipt of compounds

Residence Time Analysis*
(performed in duplicate based on your IC_{50} evaluation result)

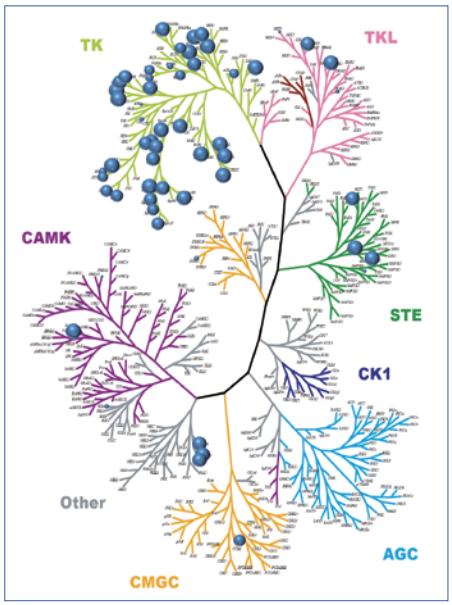
Turnaround: 3 weeks after dose setting
*Preliminary IC_{50} determinations required for study dose setting.

Panel Services

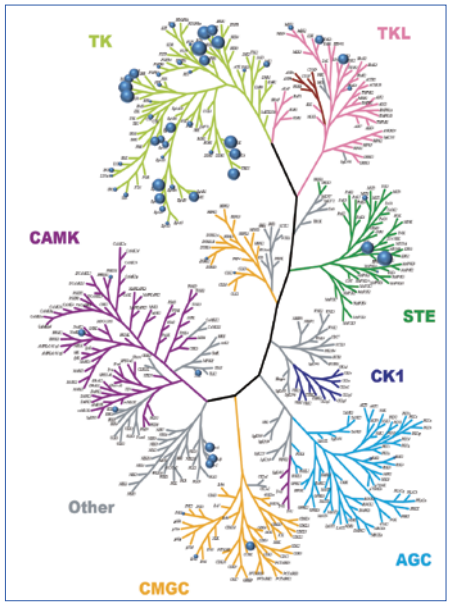
- CDK Panel Assay Service
- Kinome-Wide Profiling Service (192 Kinase Panel)

Compare and Assess Selectivity and Potency at Cellular ATP Concentration

[Target occupancy using 1μM Crizotinib]



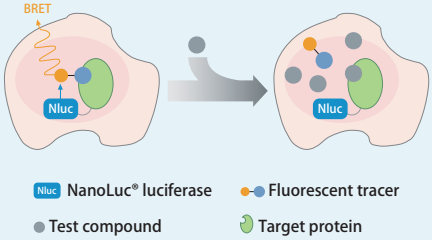
Carna Kinase Profiling service
ATP Km, Mobility Shift Assay



NanoBRET™ (HEK 293 cells)
Cell Chem Biol. 2018 Feb 15;25(2):206-214.e11

NanoBRET™ System

A cell-permeable fluorescent NanoBRET™ tracer, a BRET acceptor, is added to HEK293 cells expressing a full length kinase/NanoLuc® fusion protein. Engagement of the tracer to the target protein generates a BRET signal.



Binding of the test compound to the target protein results in a loss of NanoBRET™ signal between the target protein and the tracer inside intact cells.

NanoBRET™ TE Intracellular Kinase Cell-Based Assay

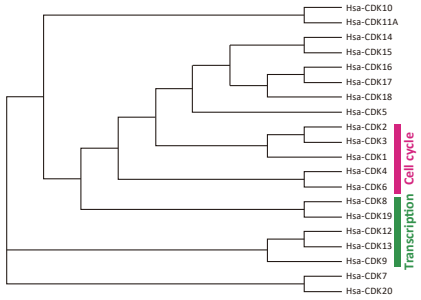
Two Panel Assay Sercvices using NanoBRET™ Target Engagement (TE) Intracellular Kinsase Assay technology are available to accelerate your investigations.

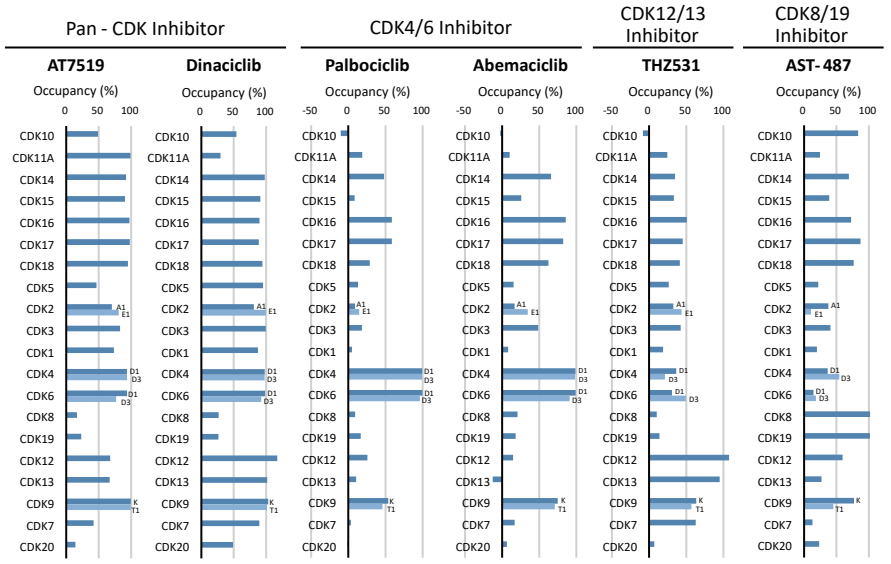
*Target lists: Please refer to the attachment. For targets not listed, please inquire.

CDK Panel Assay Service

Carna's NanoBRET™ TE Intracellular CDK Panel Assay consists of 24 CDK targets. It is an ideal tool to examine the specificity of your CDK inhibitor across an extensive set of CDK family kinases: in the presence of the cyclin subunit; in a cellular environment; and in a unified assay format. The compound's engagement with each CDK is quantitatively measured inside living HEK293 cells, which provides a snapshot of your compound's selectivity across all the CDK targets in the panel.

CDK Phylogenic Tree



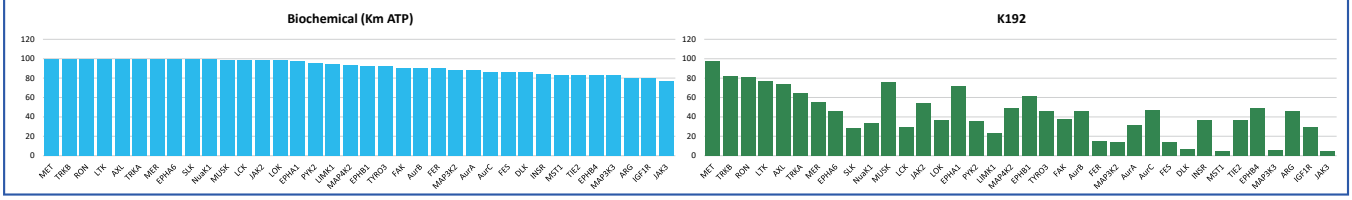


(Right)
NanoBRET™ TE Intracellular CDK Panel Assay reveals each selectivity at 10 μM conc. of pan-CDK inhibitors (AT7519, dinaciclib), CDK4/6 inhibitors (palbociclib, abemaciclib), CDK12/13 inhibitor (THZ531), and CDK8/19 inhibitor (AST-487).

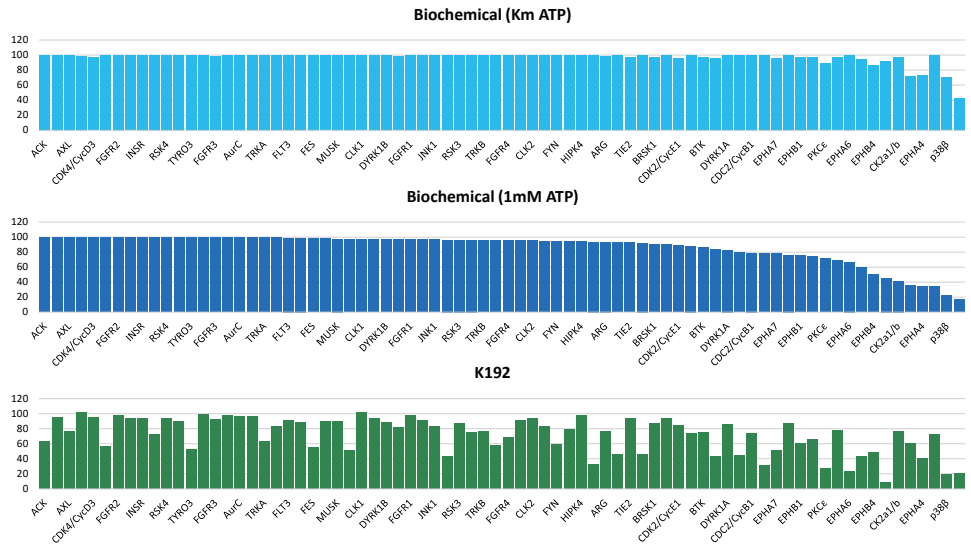
Kinome-Wide Profiling Service (K192)

NanoBRET™ TE Intracellular Kinase Assay System (Promega) is used in this broad panel of 192 kinase targets (see list), each expressed intracellularly by transient transfection. Compound evaluation against all targets is performed simultaneously at 1 compound concentration in duplicate, under the same assay conditions. Follow up IC_{50} determinations also available.

Comparison data using 1μM Crizotinib in a biochemical assay (Mobility Shift Assay) and NanoBRET™ K192 cell assay panel (36 selected targets shown)



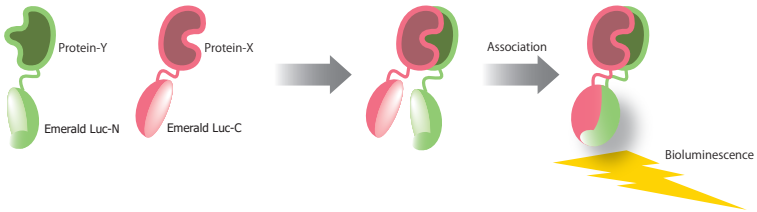
Comparison data using 0.3μM CC1 inhibitor in a biochemical assay (Mobility Shift Assay) and NanoBRET™ K192 cell assay panel



Detection of Protein-Protein Interactions ~ProbeX™~

Carna's split luciferase complementation assay, utilizing a unique luciferase derived from Pyrearinus termitilluminans (Emerald Luciferase, E-Luc), is a valuable tool for your study of Protein-Protein Interactions (PPIs). Detection of various types of PPIs, including GPCRs, is performed with ease and high-sensitivity. In addition to off-the-shelf cell lines, we develop stable transfected cell lines suitable for detecting specific PPIs of interest.

Split Luciferase Technology

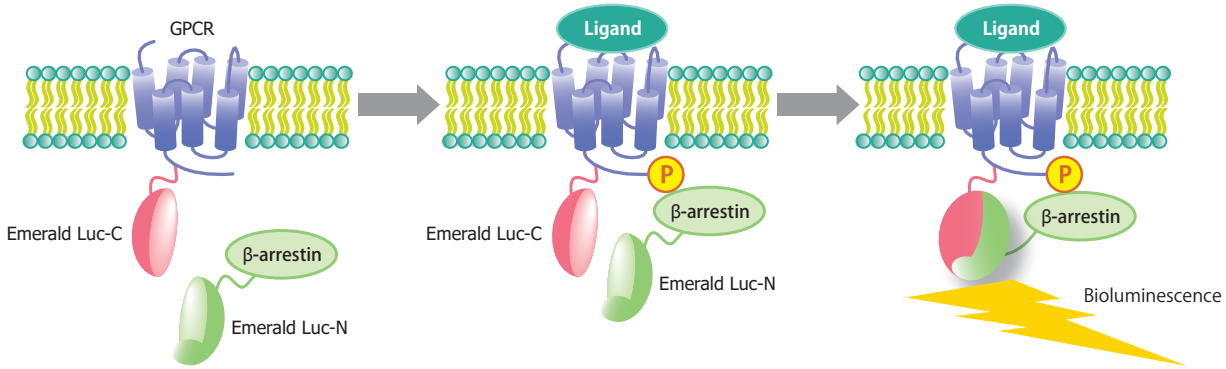


E-Luc is known to emit a brighter and more stable signal than conventional firefly luciferases. The N- and C-terminal domains of luciferase can be separated into two fragments, which can then re-associate in cells. When the two fragments of the reporter proteins are brought within proximity, they spontaneously refold and generate a detectable signal (patent filed).

Application for GPCR

The N-terminal and C-terminal fragments of emerald split luciferase are fused to β-arrestin and GPCR, respectively. Binding of a ligand to the GPCR triggers phosphorylation of the GPCR, thereby inducing its interaction with β-arrestin. This interaction brings the N-terminal luciferase flagment into proximity with the C-terminal fragment, and bioluminescence activity is recovered.
Please view the list* showing our validated stable transfectants. We also develop custom cell lines suitable for your needs on a fee for service basis.

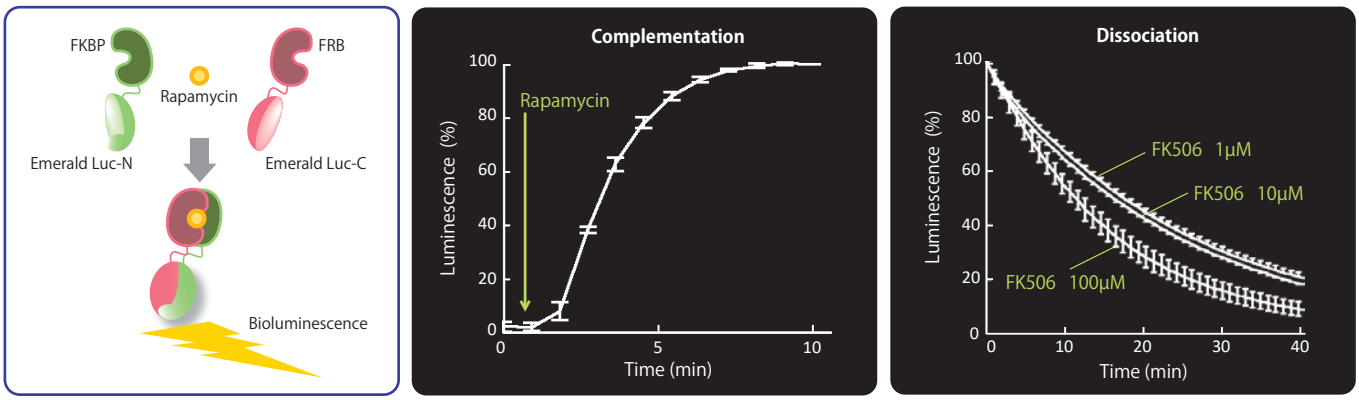
*Target lists: Please refer to the attachment.



GPCR Ligand Assay utilizing Split Luciferase Technology

Example Application - FKBP-FRB Interaction

The immunosuppressant macrolide, rapamycin, mediates the interaction of two proteins: FKBP and FRB (left). Addition of rapamycin facilitates E-Luc complementation and a concomitant rapid increase in bioluminescence (middle). A competitive inhibitor of FK506 decoupled the rapamycin-induced signal (right), indicating the E-Luc complementation is reversible. This is in contrast to the split GFP system which is irreversible and not applicable to detect dissociation of two proteins.



Products & Services by Kinase

Products & Services / Kinases name	Products							Services							
								Cell-Free Assays						Cell-Based Assays	
								Mobility Shift Assay/IMAP™							
								MSA/IMAP™		ATP conc.					
	Kinase Proteins	Biotiny-lated Kinases	Kinase Protein Assay Kit									ADP-Glo™ (ATP=Km)	NanoBRET™ TE Intracellular Kinase Cell-Based Assay Services		
			MSA	FP (IMAP™)	ELISA	TR-FRET	ADP-Glo™	■: IMAP™ (FP)	Preincubation Study	Km	1mM		Assay Service	CDK Panel	K192 Panel
AAK1													○		○
ABL(ABL1)	○	○	○					○	○	○	○		○		
ABL(ABL1) [E255K]	○		○					○	○	○	○		○		
ABL(ABL1) [F317I]													○		
ABL(ABL1) [F317L]													○		
ABL(ABL1) [H396P]													○		
ABL(ABL1) [M351T]													○		
ABL(ABL1) [Q252H]													○		
ABL(ABL1) [T315I]	○	○	○					○	○	○	○		○		
ABL(ABL1) [Y253F]													○		
ACK(TNK2)	○		○					○		○	○		○		○
ACTR2B(ACVR2B)	○	○				○									
ACVR1C(ALK7)	○														
ACVR2A	○	○				○									
ACVRL1(ALK1)	○					○							○		
ADK													○		
AKT1	○	○	○	○				○	○	○	○		○		
AKT1 [E17K]													○		
AKT2	○	○	○	○				○	○	○			○		○
AKT2 [E17K]													○		
AKT3	○		○	○				○	○	○					
AKT3 [E17K]													○		
AKT3 [G171R]													○		
ALK	○	○	○			○		○	○	○	○		○		
ALK [C1156Y]	○	○	○					○	○	○	○				
ALK [D1203N]	○														
ALK [F1174L]	○	○	○					○	○	○	○				
ALK [F1174L/G1202R]	○	○													
ALK [G1202R]	○	○	○					○	○	○	○				
ALK [G1269A]	○	○	○					○	○	○	○				
ALK [I1171N]	○	○													
ALK [I1171N/L1198F]	○	○													
ALK [I1171S]	○	○													
ALK [I1171T]	○	○													
ALK [L1196M]	○	○	○					○	○	○	○				
ALK [L1196M/G1202R]	○	○													
ALK [L1198F]	○	○													
ALK [L1198F/G1202R]	○														
ALK [R1275Q]	○	○	○					○	○	○	○				
ALK [T1151_L1152insT]	○		○					○		○	○				
ALK [V1180L]	○	○													
ALK2(ACVR1)	○					○							○		
ALK2(ACVR1) [G328V]													○		
ALK2(ACVR1) [G356D]													○		
ALK2(ACVR1) [Q207D]	○												○		
ALK2(ACVR1) [R206H]	○												○		
ALK4(ACVR1B)	○					○							○		
AMPKα1(PRKAA1)													○		○
AMPKα1/β1/γ1(PRKAA1/B1/G1)	○	○	○					○	○	○	○				
AMPKα1/β2/γ1(PRKAA1/B2/G1)	○	○													
AMPKα2(PRKAA2)													○		○
AMPKα2/β1/γ1(PRKAA2/B1/G1)	○		○					○	○	○					
AMPKα2/β2/γ1(PRKAA2/B2/G1)	○														
ARG(ABL2)	○		○					○	○	○	○		○		○
AurA(AURKA)	○	○	○	○				○		○	○		○		○
AurA(AURKA)/TPX2			○					○	○	○					
AurB(AURKB)													○		○
AurB(AURKB)/INCENP	○	○	○	○				○	○	○	○				
AurC(AURKC)	○		○	○				○		○	○		○		○
AXL	○	○	○			○		○		○	○		○		○
BARK1(ADRBK1)	○	○													
BARK2(ADRBK2)	○														
BLK	○		○					○		○	○		○		
BMP2K													○		○
BMPR1A	○					○							○		
BMPR1B(ALK6)	○					○									
BMPR2	○														
BMX	○	○	○					○	○	○	○		○		○
BRAF	○	○			○			○			○		○		
BRAF [T599_V600insT]	○														
BRAF [V600E]	○				○			○			○		○		○
BRK(PTK6)	○	○	○					○		○	○		○		○
BRK(PTK6) [non-activated]		○													
BRSK1	○		○					○	○	○	○		○		○
BRSK2	○		○	○				○	○	○			○		○
BTK	○	○	○			○		○		○	○		○		○
BTK [non-activated]		○													

Products & Services by Kinase

Products & Services / Kinases name	Products							Services							
								Cell-Free Assays					Cell-Based Assays		
								Mobility Shift Assay/IMAP™							
								MSA/IMAP™		ATP conc.					
	Kinase Proteins	Biotiny-lated Kinases	Kinase Protein Assay Kit									ADP-Glo™ (ATP=Km)	NanoBRET™ TE Intracellular Kinase Cell-Based Assay Services		
			MSA	FP (IMAP™)	ELISA	TR-FRET	ADP-Glo™	■: IMAP™ (FP)	Preincubation Study	Km	1mM		Assay Service	CDK Panel	K192 Panel
BTK [C481S]	○	○	○					○		○	○		○		
BTK [C481S] [non-activated]		○													
BTK [E41K]													○		
BTK [M437R]	○	○													
BTK [M437R] [non-activated]		○													
BTK [P190K]													○		
BTK [T316A]		○													
BTK [T316A] [non-activated]		○													
BTK [T474I]		○											○		
BTK [T474I] [non-activated]		○													
BTK [T474S]		○													
BTK [T474S] [non-activated]		○													
BUB1/BUB3	○	○	○					○	○	○					
BUBR1(BUB1B)	○														
CaMK1α(CAMK1)	○		○					○		○	○		○		○
CaMK1β(PNCK)	○												○		
CaMK1γ(CAMK1G)													○		
CaMK1δ(CAMK1D)	○		○					○		○			○		
CaMK2α(CAMK2A)	○		○	○				○	○	○	○		○		○
CaMK2β(CAMK2B)	○	○	○					○	○	○	○				
CaMK2γ(CAMK2G)	○		○					○	○	○	○		○		
CaMK2δ(CAMK2D)	○	○	○					○	○	○	○		○		○
CaMK4	○		○	○				○	○	○	○				
CAMKK1	○														
CAMKK1(124-411)													○		
CAMKK2	○														
CAMKK2(165-445)													○		
CDC7/ASK	○		○					○		○	○				
CDK1(CDC2)/CycA2	○	○											○		
CDK1(CDC2)/CycB1	○	○	○	○				○	○	○	○		○	○	○
CDK1(CDC2)/CycE1													○		
CDK2/CycA1													○	○	
CDK2/CycA2	○	○	○	○				○	○	○	○		○		
CDK2/CycE1	○	○	○					○	○	○	○		○	○	○
CDK3/CycE1	○	○	○	○				○	○	○	○		○	○	○
CDK4/CycD1													○	○	
CDK4/CycD3	○	○	○	○				○		○	○		○	○	○
CDK5													○		
CDK5/p25	○	○	○	○				○	○	○	○				
CDK5/CDK5R1													○	○	○
CDK5/CDK5R2													○		
CDK6/CycD1	○												○	○	○
CDK6/CycD3	○		○					○		○	○		○	○	
CDK7													○		○
CDK7/CycH													○	○	
CDK7/CycH/MAT1	○	○	○					○		○	○				
CDK8/CycC	○	○			○								○	○	
CDK9/CycK	○	○											○	○	○
CDK9/CycT1	○	○	○					○		○	○		○	○	
CDK9/CycT2	○	○													
CDK10/CycL2													○	○	○
CDK11A/CycK													○		
CDK11A/CycL2													○	○	
CDK12(CRKRS)/CycK													○	○	
CDK12(CRKRS)(720-1490aa)/CycK		○													
CDK13(CHED)/CycK	○	○											○	○	
CDK13(CHED)(694-1512aa)/CycK		○													
CDK14/CycY													○	○	○
CDK15/CycY													○	○	○
CDK17/CycY													○	○	○
CDK18/CycY													○	○	○
CDK19(CDC2L6)/CycC	○	○			○								○	○	
CDK20/CycH													○	○	○
CDKL1													○		○
CDKL2													○		○
CDKL3													○		○
CDKL5													○		○
CGK2(PRKG2)	○		○	○				○	○	○			○		
CHAK1(TRPM7)	○														
CHK1(CHEK1)	○	○	○	○				○	○	○	○		○		
CHK2(CHEK2)	○		○	○				○	○	○	○		○		○
CK1α(CSNK1A1)	○		○					○		○	○				
CK1α1L(CSNK1A1L)													○		○
CK1γ1(CSNK1G1)	○		○					○	○	○					
CK1γ2(CSNK1G2)	○		○					○	○	○			○		○
CK1γ3(CSNK1G3)	○		○					○	○	○					
CK1δ(CSNK1D)	○		○	○				○	○	○	○		○		○

Products & Services by Kinase

Products & Services / Kinases name	Products							Services							
								Cell-Free Assays						Cell-Based Assays	
								Mobility Shift Assay/IMAP™							
								MSA/IMAP™		ATP conc.					
	Kinase Proteins	Biotiny-lated Kinases	Kinase Protein Assay Kit									ADP-Glo™ (ATP=Km)	NanoBRET™ TE Intracellular Kinase Cell-Based Assay Services		
			MSA	FP (IMAP™)	ELISA	TR-FRET	ADP-Glo™	■: IMAP™ (FP)	Preincubation Study	Km	1mM		Assay Service	CDK Panel	K192 Panel
CK1ε(CSNK1E)	○		○					○		○	○		○		
CK2α1(CSNK2A1)													○		○
CK2α1/β(CSNK2A1/B)	○		○					○	○	○	○				
CK2α2(CSNK2A2)													○		○
CK2α2/β(CSNK2A2/B)	○		○					○	○	○					
CLK1	○		○	○				○	○	○	○		○		○
CLK2	○		○					○	○	○	○		○		○
CLK3	○		○					○	○	○					
CLK4	○												○		○
Cofilin2	○														
COQ8B													○		
COT(MAP3K8)	○				○			○			○				
CRIK(CIT)	○		○	○				○		○					
CSK	○		○			○		○		○	○		○		
DAPK1	○		○	○				○		○	○				
DAPK2													○		○
DAPK3	○	○													
DCAMKL1(DCLK1)	○												○		
DCAMKL2	○		○					○		○					
DCLK3													○		○
DDR1	○	○	○					○		○	○		○		
DDR1(SRC treated)	○	○													
DDR2	○	○	○					○		○	○		○		
DDR2 [N456S]													○		
DGKα(DGKA)	○	○					○					○			
DGKα(DGKA)(196-735aa)		○													
DGKβ(DGKB)	○	○					○					○			
DGKβ(DGKB)(235-803aa)		○													
mouse DGKβ(DGKB)		○													
DGKγ(DGKG)	○	○					○					○			
DGKγ(DGKG)(261-791aa)		○													
mouse DGKγ(DGKG)		○													
DGKδ(DGKD)	○	○					○					○			
DGKε(DGKE)	○	○					○					○			
DGKη(DGKH)	○	○					○					○			
DGKι(DGKI)	○	○					○					○			
DGKκ(DGKK)	○	○										○			
DGKθ(DGKQ)	○	○					○					○			
DGKζ(DGKZ)	○	○					○					○			
DLK(MAP3K12)	○	○			○			○			○		○		○
DMPK1(DMPK)	○														
DMPK2(CDC42BPG)	○														
DRAK1(STK17A)	○														
DRAK2(STK17B)													○		○
DYRK1A	○		○					○	○	○	○		○		○
DYRK1B	○		○					○	○	○	○		○		○
DYRK2	○		○					○	○	○	○		○		
DYRK3	○		○					○	○	○	○				
DYRK4	○		○												
EEF2K	○		○					○		○					
EGFR(ERBB1)	○	○	○					○	○	○	○		○		
EGFR [C797S]	○	○													
EGFR [C797S/L858R]	○	○						○		○	○				
EGFR [d746-750]	○	○	○					○	○	○	○		○		
EGFR [d746-750/C797S]	○	○						○	○	○	○				
EGFR [d746-750/T790M]	○		○					○		○	○				
EGFR [d746-750/T790M/C797S]	○							○			○				
EGFR [d746-750/T790M/C797S/L858R]	○	○													
EGFR [D770_N771insNPG]	○		○					○		○	○				
EGFR [D770_N771insNPG/T790M]	○														
EGFR [L747P]	○														
EGFR [L792H]	○														
EGFR [L858R]	○	○	○					○	○	○	○		○		
EGFR [L861Q]	○		○					○	○	○	○				
EGFR [S768I]	○														
EGFR [T790M]	○	○	○					○	○	○	○				
EGFR [T790M/L858R]	○	○	○					○	○	○	○		○		
EGFR [T790M/C797S/L858R]	○							○		○	○				
EIF2S1	○														
EIF4EBP1	○														
EML4-ALK	○		○					○		○	○				
EPHA1	○		○					○	○	○	○		○		○
EPHA2	○	○	○			○		○	○	○	○		○		
EPHA2 [non-activated]		○													
EPHA3	○		○					○	○	○	○		○		
EPHA4	○		○					○	○	○	○		○		○
EPHA5	○		○					○	○	○	○		○		

Products & Services by Kinase

Products & Services / Kinases name	Products							Services							
								Cell-Free Assays					Cell-Based Assays		
								Mobility Shift Assay/IMAP™							
								MSA/IMAP™		ATP conc.					
	Kinase Proteins	Biotiny-lated Kinases	Kinase Protein Assay Kit									ADP-Glo™ (ATP=Km)	NanoBRET™ TE Intracellular Kinase Cell-Based Assay Services		
			MSA	FP (IMAP™)	ELISA	TR-FRET	ADP-Glo™	■: IMAP™ (FP)	Preincubation Study	Km	1mM		Assay Service	CDK Panel	K192 Panel
EPHA6	○		○					○	○	○	○		○		○
EPHA7	○		○					○	○	○	○		○		○
EPHA8	○		○					○	○	○	○		○		
EPHB1	○		○					○	○	○	○		○		○
EPHB2	○		○					○	○	○	○		○		
EPHB3	○		○					○	○	○	○		○		
EPHB4	○		○					○	○	○	○		○		○
ERN1													○		○
ERN2													○		○
Erk1(MAPK3)	○		○	○				○	○	○	○		○		
Erk2(MAPK1)	○		○	○				○	○	○	○		○		
Erk2(MAPK1) [inactive mutant]	○														
Erk2(MAPK1) [inactive]	○														
Erk3(MAPK6)													○		○
Erk4(MAPK4)													○		○
Erk5(MAPK7)	○				○			○		○	○				
Erk5(MAPK7) [inactive mutant]	○														
Erk5(MAPK7) [inactive]	○														
Erk7(MAPK15)	○														
FAK(PTK2)	○	○	○			○		○		○	○		○		○
FER	○		○					○	○	○	○		○		○
FES	○		○			○		○	○	○	○		○		○
FGFR1	○	○	○					○	○	○	○		○		○
FGFR1 [non-activated]		○													
FGFR1 [V561M]	○		○					○		○	○				
FGFR2	○	○	○					○	○	○	○		○		○
FGFR2 [non-activated]		○													
FGFR2 [C491A]	○	○													
FGFR2 [C491A][non-activated]		○													
FGFR2 [C491A/V564I]	○	○													
FGFR2 [C491A/V564I][non-activated]		○													
FGFR2 [C491A/V564L]	○														
FGFR2 [E565A]	○														
FGFR2 [K659M]													○		
FGFR2 [L617F]													○		
FGFR2 [L617V]													○		
FGFR2 [M537I]													○		
FGFR2 [N549D]	○														
FGFR2 [N549H]	○		○										○		
FGFR2 [N549K]	○												○		
FGFR2 [V564F]	○												○		
FGFR2 [V564I]	○		○					○	○	○	○		○		
FGFR2 [V564L]	○														
FGFR3	○	○	○			○		○		○	○		○		○
FGFR3 [G697C]	○		○										○		
FGFR3 [K650E]	○		○					○		○	○				
FGFR3 [K650M]	○		○					○		○	○				
FGFR3 [V555L]	○		○					○		○	○				
FGFR3 [V555M]	○		○					○		○	○		○		
FGFR4	○	○	○					○	○	○	○		○		○
FGFR4 [N535K]	○		○					○		○	○				
FGFR4 [V550E]	○		○					○		○	○				
FGFR4 [V550L]	○		○					○	○	○	○				
FGR	○		○					○		○	○		○		
FLT1(VEGFR1)	○		○					○	○	○	○		○		
FLT3	○	○	○			○		○		○	○		○		○
FLT3 [non-activated]		○													
FLT3 [D835H]													○		
FLT3 [D835V]													○		
FLT3 [D835Y]													○		
FLT3 [K663Q]													○		
FLT3 [N841I]													○		
FLT3 [R834Q]													○		
FLT4(VEGFR3)	○		○					○	○	○	○				
FMS(CSF1R)	○	○	○					○		○	○		○		
FMS(CSF1R) [non-activated]		○													
FRK	○		○					○	○	○	○		○		
FYN [isoform a]	○	○	○					○		○	○		○		○
FYN [isoform a][Y531F]													○		
FYN [isoform b]	○		○					○		○	○				
GAK													○		○
GCN2(EIF2AK4)	○	○													
GCN2(EIF2AK4) domain 2													○		
GLK(MAP4K3)													○		○
GPRK4(GRK4)	○														
GPRK6(GRK6)	○														
GPRK7(GRK7)	○														

Products & Services by Kinase

Products & Services / Kinases name	Products							Services							
								Cell-Free Assays						Cell-Based Assays	
								Mobility Shift Assay/IMAP™				ADP-Glo™ (ATP=Km)	NanoBRET™ TE Intracellular Kinase Cell-Based Assay Services		
								MSA/IMAP™		ATP conc.					
	Kinase Proteins	Biotiny-lated Kinases	Kinase Protein Assay Kit												
			MSA	FP (IMAP™)	ELISA	TR-FRET	ADP-Glo™	■: IMAP™ (FP)	Preincubation Study	Km	1mM		Assay Service	CDK Panel	K192 Panel
GSK3α(GSK3A)	○		○					○	○	○	○		○		
GSK3β(GSK3B)	○	○	○		○			○	○	○	○		○		
Haspin(GSG2)	○		○					○	○	○					
HCK	○		○			○		○		○	○		○		
HER2(ERBB2)	○		○					○		○	○				
HER4(ERBB4)	○		○					○	○	○	○				
HGK(MAP4K4)	○		○	○				○		○	○				
HH498(TNNI3K)	○												○		○
HIPK1	○		○					○	○	○					
HIPK2	○		○					○	○	○			○		○
HIPK3	○		○					○	○	○	○		○		○
HIPK4	○		○					○		○	○		○		○
HPK1(MAP4K1)	○		○					○		○			○		○
HRI(EIF2AK1)	○														
ICK	○												○		○
IGF1R	○	○	○			○		○	○	○	○		○		○
IGF1R [non-activated]		○													
IKKα(CHUK)	○	○		○				■		○					
IKKα(CHUK) [inactive mutant]		○													
IKKβ(IKBKB)	○	○	○					○	○	○	○				
IKKε(IKBKE)	○		○	○				○		○			○		○
INSR	○	○	○					○	○	○	○		○		○
INSR [non-activated]		○													
IRAK1	○			○				■		○			○		
IRAK3													○		○
IRAK4	○	○	○	○				○		○	○		○		○
IRR(INSRR)	○		○					○		○	○				
ITK	○	○	○					○		○	○		○		○
JAK1													○		
JAK1(JH1)	○	○	○			○		○		○	○		○		
JAK2													○		
JAK2 [V617F]													○		○
JAK2(JH1)	○	○	○			○		○	○	○	○		○		
JAK2(JH1JH2)	○		○												
JAK2(JH1JH2) [V617F]	○		○												
JAK3													○		○
JAK3(JH1)	○		○			○		○		○	○				
JNK1(MAPK8)	○							○	○	○	○		○		○
JNK1(MAPK8) [inactive mutant]	○														
JNK1(MAPK8) [inactive]	○														
JNK2(MAPK9)	○							○	○	○	○		○		○
JNK2(MAPK9) [inactive]	○														
JNK3(MAPK10)	○							○	○	○	○		○		○
KDR(VEGFR2)	○	○	○					○	○	○	○				
KHS1(MAP4K5)													○		○
KIT	○	○	○					○		○	○		○		
KIT [A829P]													○		
KIT [D816E]	○		○					○		○	○				
KIT [D816H]													○		
KIT [D816V]	○		○					○		○	○		○		
KIT [D816Y]	○		○					○		○	○				
KIT [L576P]													○		
KIT [T670I/D816V]	○														
KIT [T670I]	○		○					○		○	○				
KIT [V559D,T670I]													○		
KIT [V559D,V654A]													○		
KIT [V559D]													○		
KIT [V560G/D816V]	○		○												
KIT [V560G]	○		○					○		○	○				
KIT [V654A/D816V]	○														
KIT [V654A]			○					○		○	○				
KIT [non-activated]		○													
LATS1													○		○
LATS2			○					○		○	○		○		○
LATS1/MOBKL1A	○														
LATS2/MOBKL1A	○	○													
LCK	○	○	○			○		○	○	○	○		○		○
LIMK1	○												○		○
LIMK2	○	○											○		○
LKB1(STK11)													○		○
LKB1(STK11)/MO25α/STRADα	○														
LOK(STK10)	○		○					○		○			○		○
LRRK2	○												○		○
LRRK2 [G2019S]	○												○		
LRRK2 [I2020T]													○		
LRRK2 [R1441C]													○		
LTK	○		○					○		○	○		○		○

Products & Services by Kinase

Products & Services / Kinases name	Products							Services							
								Cell-Free Assays					Cell-Based Assays		
								Mobility Shift Assay/IMAP™							
								MSA/IMAP™		ATP conc.					
	Kinase Proteins	Biotiny-lated Kinases	Kinase Protein Assay Kit									ADP-Glo™ (ATP=Km)	NanoBRET™ TE Intracellular Kinase Cell-Based Assay Services		
			MSA	FP (IMAP™)	ELISA	TR-FRET	ADP-Glo™	■: IMAP™ (FP)	Preincubation Study	Km	1mM		Assay Service	CDK Panel	K192 Panel
LTK [I565N]	○														
LTK [L590M]	○														
LTK [L592F]	○														
LTK [L650F]	○														
LYNa	○	○	○			○		○	○	○	○				
LYNb	○		○					○	○	○	○		○		
LZK(MAP3K13)	○				○								○		
MAP2K1	○				○			○			○				
MAP2K1 [F129L]	○														
MAP2K1 [inactive mutant]	○														
MAP2K1 [inactive]	○	○													
MAP2K1 [P124L]	○														
MAP2K2	○				○			○			○				
MAP2K3	○				○			○			○				
MAP2K4	○				○			○			○				
MAP2K5	○				○			○			○		○		
MAP2K6	○				○			○			○		○		
MAP2K6 [inactive mutant]	○														
MAP2K6 [inactive]	○														
MAP2K7	○				○			○			○				
MAP2K7 [inactive mutant]	○														
MAP2K7 [inactive]	○														
MAP3K1	○				○			○			○				
MAP3K2	○				○			○			○		○		○
MAP3K3	○				○			○			○		○		○
MAP3K4	○				○			○			○		○		○
MAP3K5	○	○						○			○				
MAP3K6	○														
MAP3K14	○														
MAP4K2	○		○					○		○			○		○
MAPKAPK2	○		○	○				○	○	○	○				
MAPKAPK3	○		○	○				○	○	○					
MAPKAPK5	○		○	○				○	○	○					
MARK1	○		○					○	○	○					
MARK2	○		○					○	○	○			○		○
MARK3	○		○					○	○	○			○		
MARK4	○		○					○	○	○	○		○		○
MAST3													○		○
MAST4													○		○
MELK	○		○	○				○		○			○		○
MELK [T460M]													○		
MER(MERTK)	○	○	○			○		○	○	○	○		○		○
MER(MERTK) [A708S]													○		
MET	○	○	○			○		○	○	○	○		○		○
MET [D1228H]	○	○	○					○	○	○	○		○		
MET [D1228N]	○	○											○		
MET [F1200I]													○		
MET [M1250T]	○	○	○					○	○	○	○		○		
MET [P991S]													○		
MET [T1173I]													○		
MET [T992I]													○		
MET [V1092I]													○		
MET [Y1230A]													○		
MET [Y1230C]		○											○		
MET [Y1230D]													○		
MET [Y1230H]	○	○											○		
MET [Y1235D]	○	○	○					○	○	○	○		○		
MINK(MINK1)	○		○					○		○	○				
MLK1(MAP3K9)	○	○			○			○			○		○		○
MLK2(MAP3K10)	○	○			○			○			○		○		○
MLK3(MAP3K11)	○	○			○			○			○		○		○
MLK4	○												○		○
MNK1(MKNK1)	○	○	○	○				○	○	○					
MNK2(MKNK2)	○		○	○				○	○	○	○		○		○
MOK													○		
MOS	○				○			○			○				
MRCKα(CDC42BPA)	○		○	○				○		○					
MRCKβ(CDC42BPB)	○		○					○		○					
MSK1(RPS6KA5)	○		○	○				○	○	○	○				
MSK2(RPS6KA4)	○		○	○				○		○	○		○		○
MSSK1(STK23)	○		○					○		○					
MST1(STK4)	○		○					○		○	○		○		○
MST2(STK3)	○	○	○					○		○	○		○		○
MST3(STK24)	○		○					○		○			○		
MST4	○		○	○				○		○			○		
MTOR(FRAP)/MLST8	○														
MUSK	○	○	○					○		○	○		○		○

Products & Services by Kinase

Products & Services / Kinases name	Products							Services							
								Cell-Free Assays					Cell-Based Assays		
								Mobility Shift Assay/IMAP™							
								MSA/IMAP™		ATP conc.					
	Kinase Proteins	Biotiny-lated Kinases	Kinase Protein Assay Kit									ADP-Glo™ (ATP=Km)	NanoBRET™ TE Intracellular Kinase Cell-Based Assay Services		
			MSA	FP (IMAP™)	ELISA	TR-FRET	ADP-Glo™	■: IMAP™ (FP)	Preincubation Study	Km	1mM		Assay Service	CDK Panel	K192 Panel
MUSK [non-activated]		○													
MYLK3													○		○
MYLK4	○	○											○		○
MYT1(PKMYT1)	○												○		○
NDR1(STK38)	○		○					○		○			○		○
NDR2(STK38L)	○		○					○		○			○		○
NEK1	○		○					○		○	○		○		○
NEK2	○		○					○	○	○	○		○		○
NEK3	○												○		○
NEK4	○		○					○	○	○			○		○
NEK5													○		○
NEK6	○		○					○		○	○		○		
NEK7	○		○					○		○	○				
NEK9	○	○	○					○		○	○		○		○
NEK11	○												○		○
NIM1K(MGC42105)	○		○	○				○	○	○			○		○
NLK	○												○		○
NPM1-ALK	○		○					○	○	○	○				
NRK(NESK)													○		
NuaK1(ARK5)	○		○	○				○	○	○	○		○		○
NuaK2	○	○	○					○	○	○	○		○		
OSR1(OXSR1)	○														
p38α(MAPK14)	○	○	○	○				○	○	○	○		○		○
p38α(MAPK14) [inactive mutant]	○														
p38α(MAPK14) [inactive]	○	○													
p38α(MAPK14) [T106M]													○		
p38β(MAPK11)	○		○	○				○	○	○	○		○		○
p38γ(MAPK12)	○		○	○				○	○	○	○				
p38δ(MAPK13)	○		○	○				○	○	○	○				
p70S6K(RPS6KB1)	○		○	○				○	○	○	○				
p70S6Kβ(RPS6KB2)	○		○	○				○	○	○					
PAK1	○		○					○	○	○	○				
PAK2	○		○					○	○	○	○				
PAK3	○		○												
PAK4	○	○	○					○		○			○		○
PAK5(PAK7)	○		○					○	○	○	○		○		
PAK6	○	○	○					○		○			○		○
PASK	○		○	○				○		○	○				
PBK	○		○	○				○		○	○				
PCTAIRE1(CDK16)/CycY	○												○	○	○
PDGFRα(PDGFRA)	○		○					○	○	○	○				
PDGFRα(PDGFRA) [non-activated]		○													
PDGFRα(PDGFRA) [D842V]	○		○					○	○	○	○				
PDGFRα(PDGFRA) [T674I]	○		○					○		○	○				
PDGFRα(PDGFRA) [V561D]	○		○					○	○	○	○		○		
PDGFRβ(PDGFRB)	○	○	○			○		○	○	○	○				
PDGFRβ(PDGFRB) [non-activated]		○													
PDHK1(PDK1)	○														
PDHK2(PDK2)	○		○					○		○					
PDHK3(PDK3)	○														
PDHK4(PDK4)	○		○					○		○					
PDK1(PDPK1)	○							○		○	○				
PEK(EIF2AK3)	○			○				■		○					
PGK(PRKG1)	○		○	○				○		○					
PHKG1	○		○	○				○		○			○		○
PHKG2	○		○					○		○			○		○
PI4KA													○		
PI4KB	○												○		
PIK3C3	○												○		
PIK3CA/PIK3R1	○	○					○					○	○		
PIK3CA [C420R]/PIK3R1													○		
PIK3CA [E542K]/PIK3R1		○					○					○	○		
PIK3CA [E545A]/PIK3R1													○		
PIK3CA [E545K]/PIK3R1		○					○					○	○		
PIK3CA [H1047L]/PIK3R1													○		
PIK3CA [H1047R]/PIK3R1		○					○					○	○		
PIK3CA [H1047Y]/PIK3R1													○		
PIK3CA [I800L]/PIK3R1													○		
PIK3CA [M1043I]/PIK3R1													○		
PIK3CA [P539R]/PIK3R1		○					○					○			
PIK3CA [Q546K]/PIK3R1													○		
PIK3CA [R88Q]/PIK3R1		○					○					○			
PIK3CB/PIK3R1	○	○					○					○	○		
PIK3CD/PIK3R1	○	○					○					○	○		
PIK3CG		○													
PIKFYVE(PIP5K3)	○	○					○					○	○		
PIM1	○		○	○				○	○	○	○				

Products & Services by Kinase

Products & Services / Kinases name	Products							Services							
								Cell-Free Assays						Cell-Based Assays	
								Mobility Shift Assay/IMAP™				ADP-Glo™ (ATP=Km)	NanoBRET™ TE Intracellular Kinase Cell-Based Assay Services		
								MSA/IMAP™		ATP conc.					
	Kinase Proteins	Biotiny-lated Kinases	Kinase Protein Assay Kit												
			MSA	FP (IMAP™)	ELISA	TR-FRET	ADP-Glo™	■: IMAP™ (FP)	Preincubation Study	Km	1mM		Assay Service	CDK Panel	K192 Panel
PIM2	○		○	○				○		○	○				
PIM3	○		○					○		○	○		○		
PIP4K2A	○						○					○			
PIP4K2B	○						○					○			
PIP4K2C	○												○		
PIP5K1A	○						○					○			
PIP5K1B	○						○					○	○		
PIP5K1C	○						○					○			
PIP5KL1	○						○					○			
PKACα(PRKACA)	○	○	○	○				○		○	○		○		○
PKACβ(PRKACB)	○		○					○		○	○		○		○
PKACγ(PRKACG)	○		○					○		○					
PKCα(PRKCA)	○	○	○	○				○		○	○		○		
PKCβ1(PRKCB1)	○		○	○				○		○			○		
PKCβ2(PRKCB2)	○		○					○		○					
PKCγ(PRKCG)	○	○	○					○		○	○		○		
PKCδ(PRKCD)	○		○	○				○		○			○		
PKCε(PRKCE)	○		○	○				○	○	○	○		○		○
PKCζ(PRKCZ)	○		○	○				○		○					
PKCη(PRKCH)	○	○	○	○				○		○			○		
PKCθ(PRKCQ)	○		○	○				○		○			○		
PKCι(PRKCI)	○		○	○				○		○					
PKD1(PRKD1)	○		○	○				○	○	○					
PKD2(PRKD2)	○		○	○				○	○	○	○				
PKD3(PRKD3)	○		○	○				○		○					
PKN1	○	○						■		○					
PKN2	○														
PKN3	○														
PKR(EIF2AK2)	○			○				■		○					
PLK1	○	○	○	○				○		○	○		○		
PLK2	○			○				■		○			○		○
PLK3	○		○	○				○		○	○		○		○
PLK4													○		○
PRKX	○		○	○				○		○			○		○
PYK2(PTK2B)	○	○	○					○	○	○	○		○		○
QIK(SNF1LK2)	○		○					○	○	○	○		○		○
RAF1(CRAF)	○	○			○			○			○		○		
RET	○	○	○					○	○	○	○		○		○
RET [G691S]	○	○	○					○	○	○	○				
RET [G691S] [non-activated]		○													
RET [G810C]	○														
RET [G810C/M918T]	○														
RET [G810R]	○														
RET [G810S]	○														
RET [M918T]	○	○	○					○	○	○	○		○		
RET [M918T] [non-activated]		○													
RET [S891A]	○	○	○					○	○	○	○				
RET [S891A] [non-activated]		○													
RET [V804L]													○		
RET [V804M]	○	○											○		
RET [V804M] [non-activated]		○													
RET [Y791F]	○	○	○					○	○	○	○				
RET [Y791F] [non-activated]		○													
RIOK2													○		○
RIPK1													○		○
RIPK2	○												○		○
RIPK3													○		
ROCK1	○	○	○	○				○		○	○		○		
ROCK2	○		○	○				○		○	○		○		
RON(MST1R)	○		○					○	○	○	○		○		○
ROS(ROS1)	○		○					○	○	○	○				
ROS(ROS1) [G2032R]	○														
ROS(ROS1) [G2032R/L2086F]	○														
ROS(ROS1) [L2086F]	○														
RSK1(RPS6KA1)	○		○	○				○		○	○		○		○
RSK2(RPS6KA3)	○		○	○				○		○	○		○		○
RSK2(RPS6KA3) [I416V]													○		
RSK2(RPS6KA3) [L608F]													○		
RSK3(RPS6KA2)	○		○	○				○	○	○	○		○		○
RSK4(RPS6KA6)	○		○					○	○	○	○		○		○
SBK3													○		○
SGK	○		○	○				○	○	○	○		○		○
SGK2	○		○					○		○			○		
SGK3(SGKL)	○		○	○				○	○	○					
SIK(SNF1LK)	○		○					○		○	○		○		○
SIK3(QSK)	○												○		○
SIK3(QSK)(59-365aa)	○														

Products & Services by Kinase

Products & Services / Kinases name	Products							Services							
								Cell-Free Assays					Cell-Based Assays		
								Mobility Shift Assay/IMAP™							
								MSA/IMAP™		ATP conc.					
	Kinase Proteins	Biotiny-lated Kinases	Kinase Protein Assay Kit									ADP-Glo™ (ATP=Km)	NanoBRET™ TE Intracellular Kinase Cell-Based Assay Services		
			MSA	FP (IMAP™)	ELISA	TR-FRET	ADP-Glo™	■: IMAP™ (FP)	Preincubation Study	Km	1mM		Assay Service	CDK Panel	K192 Panel
skMLCK(MYLK2)	○		○					○	○	○	○		○		○
SLK	○		○					○		○			○		○
Smad1	○														
Smad3	○														
smMLCK(MYLK)	○														
SNRK													○		○
SPHK1	○	○	○					○	○	○					
SPHK2	○	○	○					○		○					
SRC	○	○	○					○	○	○	○		○		
SRM(SRMS)	○		○					○	○	○	○		○		○
SRPK1	○	○		○				■		○					
SRPK2	○		○	○				○		○					
SSTK(TSSK6)	○														
STK16													○		○
STK32A													○		
STK32B													○		○
STK33	○												○		○
STK35 (CLIK1)													○		○
STK36													○		○
STLK3(STK39)	○														
SYK	○	○	○			○		○		○	○				
SYK [non-activated]		○													
TAK1-TAB1(MAP3K7)	○	○	○		○			○		○	○				
TAOK2	○		○					○		○	○				
TAOK3	○														
TBK1	○	○	○					○	○	○	○		○		○
TEC	○		○					○	○	○	○		○		○
TESK1	○												○		
TGFβR1(TGFBR1)(ALK5)	○	○				○							○		
TGFβR2(TGFBR2)	○												○		
TIE1													○		○
TIE2(TEK)	○	○	○			○		○	○	○	○		○		○
TIE2(TEK) [A1124V]													○		
TIE2(TEK) [P883A]													○		
TIE2(TEK) [R849W]													○		
TIE2(TEK) [Y1108F]													○		
TIE2(TEK) [Y897C]													○		
TIE2(TEK) [Y897S]													○		
TLK1	○												○		○
TLK2	○												○		○
TNIK	○	○	○	○				○		○	○				
TNK1	○		○					○		○	○		○		○
TRKA(NTRK1)	○	○	○			○		○		○	○		○		○
TRKA(NTRK1) [non-activated]		○													
TRKA(NTRK1) [G667C]													○		
TRKB(NTRK2)	○	○	○					○	○	○	○		○		○
TRKB(NTRK2) [non-activated]		○													
TRKC(NTRK3)	○	○	○					○	○	○	○				
TSSK1	○		○					○	○	○	○		○		
TSSK2	○		○					○		○					
TSSK3	○		○					○		○					
TTBK1	○														
TTBK2	○														
TTK	○				○								○		
TXK	○		○					○		○	○		○		○
TYK2	○	○	○			○		○		○	○		○		
TYK2 (JH1)													○		
TYK2 (JH2)													○		
TYK2 (JH1 JH2)	○	○													
TYRO3	○	○	○					○	○	○	○		○		○
TYRO3 [non-activated]		○													
ULK1													○		○
ULK2													○		○
ULK3	○												○		○
VRK1	○														
VRK2	○														
WEE1	○	○			○								○		○
WEE2													○		○
WNK1	○	○	○	○				○		○					
WNK2	○		○					○		○					
WNK3	○		○					○		○					
WNK4	○	○													
YES(YES1)	○	○	○					○	○	○	○		○		
YES(YES1) [T348I]	○		○					○	○	○	○				
YSK1(STK25)	○														
YSK4(MAP3K19)													○		○
ZAK	○												○		○

Products & Services by Kinase

Products & Services / Kinases name	Products							Services							
								Cell-Free Assays					Cell-Based Assays		
	Kinase Proteins	Biotiny-lated Kinases	Kinase Protein Assay Kit					Mobility Shift Assay/IMAP™				ADP-Glo™ (ATP=Km)	NanoBRET™ TE Intracellular Kinase Cell-Based Assay Services		
								MSA/IMAP™		ATP conc.					
			MSA	FP (IMAP™)	ELISA	TR-FRET	ADP-Glo™	■: IMAP™ (FP)	Preincubation Study	Km	1mM		Assay Service	CDK Panel	K192 Panel
ZAP70	○		○					○		○	○				

Carna Biosciences, Inc.

BMA 3F, 1-5-5 Minatojima-Minamimachi,
Chuo-ku, Kobe 650-0047 JAPAN

TEL: +81 78 302 7091 / FAX: +81 78 302 7086
E-mail: info@carnabio.com

Carna's wholly-owned subsidiary

CarnaBio USA, Inc.

209 West Central Street, Suite 127, Natick, MA 01760 USA

TEL: +1-508-650-1244
Toll-Free: +1-888-645-1233
E-mail: orders@carnabio.com / FAX: +1-508-650-1722