

revvity

# Finding the pathway to assay optimization is easy

LANCE® *Ultra* kinase assay  
selection guide



## LANCE *Ultra* Serine/Threonine kinase selection guide

LANCE® *Ultra* TR-FRET reagents comprise the widest portfolio of validated kinase assay offerings available for rapid, sensitive and robust screening of purified kinase targets in a biochemical format.

- We provide S/B ratiometric data for each LANCE *Ultra* assay to guide you to the best performing solution for your assay.
- Rapid assay optimization every time.
- Our selection guides contain over 300 kinases from a variety of suppliers:
  - 225 Serine/Threonine kinases validated on LANCE *Ultra* reagents
  - 85 Tyrosine kinases validated on LANCE *Ultra* reagents

### How to use this guide:

1. Locate your kinase
  - In many cases, up to three commercial kinase vendors have been tested.
  - Many common aliases are shown in parenthesis.
2. Best performing *ULight*™ substrates are listed for each enzyme according to performance
  - Signal to background (S/B) ratios (Signal at 665 nm / minus ATP control at 665 nm) are indicated in parenthesis.
  - All S/B ratios were obtained at fixed experimental conditions unless otherwise noted (see page 10).
3. Based on your substrate choice, find the corresponding Europium-labeled anti-phospho antibody on page 11 (**i.e. LANCE *Ultra* products used for this study**) to identify the TR-FRET donor anti-phospho antibody for your LANCE *Ultra* assay.

If you cannot find your kinase of interest, please ask your Revvity sales specialist, as our list continues to expand. Two kits are available for testing purposes:

- **KinaSelect Ser/Thr kit** (5 x 250 data points, TRF0300-C)
  - 5 *ULight*-labeled Ser/Thr kinase specific substrates + 5 matching Europium-labeled anti-phospho antibodies
- **KinaSelect TK kit** (1,000 data points, TRF0301-D)
  - 1 *ULight*-labeled kinase specific substrate + 1 matching Europium-labeled anti-phospho antibody

## LANCE® Ultra Reagents for Ser/Thr kinase assays

Up to three kinase substrates are listed based on signal to background (S/B) ratios obtained with commercially available enzymes.

S/B ratios (Signal at 665 nm / minus ATP control at 665 nm) are indicated in parenthesis.

Kinase	ULight Substrate 1	ULight Substrate 2	ULight Substrate 3	Kinase Supplier	Supplier Cat. No.
<b>ACTR2B (ACVR2B)</b>	ULight-Histone H3 (Thr3; 10.4)	ULight-Topo II $\alpha$ (7.2)		Carna Biosciences	09-132
<b>ACV-R1 (ALK2)</b>	ULight-Topo II $\alpha$ (10.9)			ProQinase	0372-0000-1
<b>ALK2 (ACV-R1)</b>	ULight-Topo II $\alpha$ (Mn <sup>2+</sup> ; 21.5)			Carna Biosciences	09-134
<b>ACVR2A</b>	ULight-Histone H3 (Thr3; 9.4)	ULight-CREBtide (5.7)		Carna Biosciences	09-131
<b>ACVRL1 (ALK1)</b>	ULight-CREBtide (14.2)	ULight-Topo II $\alpha$ (5.6)	ULight-PLK (5.4)	Invitrogen	PV4883
<b>BARK1 (ADRBK1, GRK2)</b>	ULight-Topo II $\alpha$ (22.9)			Carna Biosciences	01-111
<b>ADRBK2 (BARK2, GRK3)</b>	ULight-Topo II $\alpha$ (27.9)			Invitrogen	PV3827
<b>BARK2 (ADRBK2, GRK3)</b>	ULight-Topo II $\alpha$ (22.9)	ULight-Histone H3 (Thr3; 10.1)		Carna Biosciences	01-112
<b>AKT1</b>	ULight-CREBtide (32.0)	ULight-rpS6 (20.5)	ULight-PLK (19.1)	Carna Biosciences	01-101
<b>AKT2</b>	ULight-CREBtide (32.4)	ULight-rpS6 (21.7)	ULight-PLK (20.1)	Carna Biosciences	01-102
<b>AKT3</b>	ULight-CREBtide (32.1)	ULight-rpS6 (21.6)	ULight-PLK (20.7)	Carna Biosciences	01-103
<b>ALK4 (ACVR1B)</b>	ULight-Topo II $\alpha$ (20.6)			Carna Biosciences	09-135
<b>AMPK-alpha1 fl</b>	ULight-CREBtide (9.6)	ULight-Histone H3 (Thr3; 5.3)		ProQinase	0289-0000-1
<b>AMPK<math>\alpha</math>1/<math>\beta</math>1/<math>\gamma</math>1 (PRKAA1/B1/G1)</b>	ULight-CREBtide (31.9)	ULight-Acetyl-CoA Carboxylase (30.5)	ULight-PLK (15.1)	Carna Biosciences	02-113
<b>AMPK<math>\alpha</math>2/<math>\beta</math>1/<math>\gamma</math>1 (PRKAA2/B1/G1)</b>	ULight-CREBtide (30.3)	ULight-Acetyl-CoA Carboxylase (29.9)	ULight-PLK (11.5)	Carna Biosciences	02-114
<b>ARK5 (NuaK1)</b>	ULight-CREBtide (18.8)	ULight-Topo II $\alpha$ (7.7)		ProQinase	0300-0000-1
<b>NuaK1 (ARK5)</b>	ULight-CREBtide (22.8)	ULight-Topo II $\alpha$ (3.1)		Carna Biosciences	02-126
<b>AurA (Aurora-A)</b>	ULight-PLK (20.5)	ULight-Histone H3 (Ser10; 13.0)		Carna Biosciences	05-101
<b>AurB (AURKB)/INCENP</b>	ULight-CREBtide (29.8)	ULight-rpS6 (21.0)	ULight-PLK (17.6)	Carna Biosciences	05-102
<b>Aurora-B</b>	ULight-CREBtide (13.4)	ULight-Histone H3 (Ser10; 12.7)	ULight-PLK (7.6)	ProQinase	0190-0000-1
<b>AurC (AURKC)</b>	ULight-PLK (16.2)	ULight-Histone H3 (Ser10; 12.1)	ULight-CREBtide (11.7)	Carna Biosciences	05-103
<b>Aurora-C</b>	ULight-CREBtide (8.9)	ULight-Histone H3 (Ser10; 8.4)	ULight-PLK (3.8)	ProQinase	0315-0000-1

Newly added Kinases highlighted in Green



Kinase	ULight Substrate 1	ULight Substrate 2	ULight Substrate 3	Kinase Supplier	Supplier Cat. No.
<b>BMPR1B</b>	ULight-Topo II $\alpha$ (18.7)			Carna Biosciences	09-138
<b>BMPR2</b>	ULight-Histone H3 (Thr3; 11.0)			Carna Biosciences	09-139
<b>BRAF</b>	GST-MAP2K1/ ULight anti-GST (6.1)			Carna Biosciences	09-122
<b>BRAF [V600E]</b>	GST-MAP2K1/ ULight anti-GST (10.5)			Carna Biosciences	09-144
<b>BRSK1</b>	ULight-CDC25 (7.6)	ULight-Acetyl-CoA Carboxylase (5.2)		Carna Biosciences	02-115
<b>BRSK2</b>	ULight-CDC25 (8.4)	ULight-Acetyl-CoA Carboxylase (7.9)		Carna Biosciences	02-116
<b>CaMK1<math>\alpha</math> (CAMK1)<sup>2</sup></b>	ULight-CREBtide (28.4)			Carna Biosciences	02-104
<b>CaMK1<math>\beta</math> (PNCK)<sup>2</sup></b>	ULight-CREBtide (29.6)			Carna Biosciences	02-105
<b>CaMK1<math>\delta</math> (CAMK1D)<sup>2</sup></b>	ULight-CREBtide (30.5)			Carna Biosciences	02-106
<b>CaMK2<math>\alpha</math> (CAMK2A)<sup>2</sup></b>	ULight-CREBtide (26.1)	ULight-rpS6 (22.3)	ULight-PKC (16.1)	Carna Biosciences	02-109
<b>CaMK2<math>\beta</math> (CAMK2B)<sup>2</sup></b>	ULight-CREBtide (30.7)	ULight-rpS6 (23.6)	ULight-mTOR (12.0)	Carna Biosciences	02-110
<b>CaMK2<math>\delta</math> (CAMK2D)<sup>2</sup></b>	ULight-rpS6 (25.4)	ULight-CREBtide (23.8)	ULight-PLK (14.0)	Carna Biosciences	02-111
<b>CaMK2<math>\gamma</math> (CAMK2G)<sup>2</sup></b>	ULight-CREBtide (26.2)	ULight-rpS6 (18.2)	ULight-PKC (15.6)	Carna Biosciences	02-112
<b>CaMK4<sup>2</sup></b>	ULight-CREBtide (33.5)	ULight-mTOR (8.6)	ULight-PLK (6.0)	Carna Biosciences	02-108
<b>CAMKK1<sup>2</sup></b>	ULight-p70S6K (25.1)	ULight-CREBtide (19.6)		Carna Biosciences	05-107
<b>CAMKK2</b>	ULight-Histone H3 (Thr3; 12.2)			Carna Biosciences	05-108
<b>CAMKK2<sup>2</sup></b>	ULight-Histone H3 (Thr3; 12.0)	ULight-p70S6K (5.5)		Carna Biosciences	05-108
<b>CDC2/CycB1</b>	ULight-MBP (43.2)	ULight-4E-BP1 (37.2)		Carna Biosciences	04-102
<b>CDC2L6/CycC</b>	ULight-Histone H3 (Thr3; 10.0)			Carna Biosciences	04-112
<b>CDC42BPB (MRCKb)</b>	ULight-Histone H3 (Ser10; 6.7)			ProQinase	0382-0000-1
<b>MRCK<math>\beta</math> (CDC42BPB)</b>	ULight-Histone H3 (Ser10; 6.9)	ULight-CREBtide (6.3)	ULight-PLK (3.3)	Carna Biosciences	01-108
<b>CDC7/ASK</b>	ULight-Topo II $\alpha$ (14.6)			Carna Biosciences	05-109
<b>CDK1/CycA</b>	ULight-4E-BP1 (37.9)	ULight-MBP (21.9)		ProQinase	0134-0054-1
<b>CDK1/CycB1</b>	ULight-4E-BP1 (39.6)	ULight-MBP (27.8)		ProQinase	0134-0135-1
<b>CDK1/CycE</b>	ULight-4E-BP1 (39.2)	ULight-MBP (21.5)		ProQinase	0134-0055-1
<b>CDK2/CycA</b>	ULight-MBP (39.9)	ULight-4E-BP1 (36.7)		Carna Biosciences	04-103

Newly added Kinases highlighted in Green



Kinase	ULight Substrate 1	ULight Substrate 2	ULight Substrate 3	Kinase Supplier	Supplier Cat. No.
CDK2/CycE1	ULight-4E-BP1 (33.5)	ULight-MBP (28.5)		Carna Biosciences	04-165
CDK3/CycE1	ULight-MBP (38.9)	ULight-4E-BP1 (23.3)		Carna Biosciences	04-104
CDK4/CycD1	ULight-4E-BP1 (38.7)	ULight-MBP (21.6)		ProQinase	0142-0143-1
CDK4/CycD3	ULight-MBP (37.2)	ULight-4E-BP1 (32.3)		Carna Biosciences	04-105
CDK5/p25	ULight-MBP (37.1)	ULight-4E-BP1 (36.5)		Carna Biosciences	04-106
CDK5/p25NCK	ULight-4E-BP1 (34.2)	ULight-MBP (24.9)		ProQinase	0356-0389-1
CDK5/p35NCK	ULight-4E-BP1 (40.3)	ULight-MBP (22.9)		ProQinase	0356-0355-1
CDK6/CycD1	ULight-4E-BP1 (39.6)	ULight-MBP (17.0)		ProQinase	0051-0143-1
CDK6/CycD3	ULight-MBP (35.7)	ULight-4E-BP1 (35.4)		Carna Biosciences	04-107
CDK7/CycH/MAT1	ULight-MBP (19.0)			Carna Biosciences	04-108
<b>CDK8/CycC</b>	ULight-CREBtide (7.3)	ULight-GS (5.0)	ULight-rpS6 (4.7)	ProQinase	0376-0390-1
<b>CDK9/CyclinK</b>	ULight-GS (9.3)			Invitrogen	PV4335
CDK9/CycT1	ULight-4E-BP1 (28.1)	ULight-MBP (14.4)		Carna Biosciences	04-110
CGK2 (PKG2, PRKG2)	ULight-CREBtide (35.8)	ULight-PLK (14.1)		Carna Biosciences	01-143
CHK1 (CHEK1)	ULight-CREBtide (30.4)	ULight-PKC (15.7)	ULight-Acetyl-CoA Carboxylase (8.1)	Carna Biosciences	02-117
CHK2 (CHEK2)	ULight-CREBtide (31.8)	ULight-PLK (7.3)	ULight-rpS6 (6.4)	Carna Biosciences	02-162
CK1 $\alpha$ (CSNK1A1)	ULight-Topo II $\alpha$ (13.7)			Carna Biosciences	03-101
CK1-alpha1	ULight-Topo II $\alpha$ (15.0)			ProQinase	0406-0000-1
CK1 $\delta$ (CSNK1D)	ULight-Topo II $\alpha$ (23.5)	ULight-GS (12.5)		Carna Biosciences	03-103
CK1 $\epsilon$ (CSNK1E)	ULight-Topo II $\alpha$ (23.7)			Carna Biosciences	03-104
CK1 $\gamma$ 1 (CSNK1G1)	ULight-Histone H3 (Thr3; 14.6)			Carna Biosciences	03-105
CK1 $\gamma$ 2 (CSNK1G2)	ULight-Histone H3 (Thr3; 10.1)	ULight-Topo II $\alpha$ (7.2)		Carna Biosciences	03-106
CK1 $\gamma$ 3 (CSNK1G3)	ULight-Histone H3 (Thr3; 12.9)			Carna Biosciences	03-107
CK2-alpha1	ULight-Topo II $\alpha$ (22.0)			ProQinase	0124-0000-1
CK2 $\alpha$ 1/b (CSNK2A1/B)	ULight-IkBa (28.7)	ULight-Topo II $\alpha$ (13.8)	ULight-Histone H3 (Thr3; 10.9)	Carna Biosciences	05-184
CK2-alpha2	ULight-Topo II $\alpha$ (21.4)			ProQinase	0412-0000-1

Newly added Kinases highlighted in Green



Kinase	ULight Substrate 1	ULight Substrate 2	ULight Substrate 3	Kinase Supplier	Supplier Cat. No.
<b>CK2<math>\alpha</math>2/<math>\beta</math> (CSNK2A2/B)</b>	ULight-IkBa (29.6)	ULight-Topo II $\alpha$ (14.6)	ULight-Histone H3 (Thr3; 10.1)	Carna Biosciences	05-185
<b>CLK1</b>	ULight-MBP (41.2)	ULight-4E-BP1 (25.7)	ULight-GS (20.1)	Carna Biosciences	04-126
<b>CLK2</b>	ULight-CREBtide (19.1)	ULight-MBP (11.9)	ULight-Histone H3 (Ser10; 8.3)	Carna Biosciences	04-127
<b>CLK3</b>	ULight-CREBtide (26.2)	ULight-GS (14.1)	ULight-rpS6 (8.5)	Carna Biosciences	04-128
<b>COT (MAP3K8)</b>	ULight-p70S6K (Mn <sup>2+</sup> ; 11.0)	ULight-Acetyl-CoA Carboxylase (Mn <sup>2+</sup> ; 7.8)	GST-MAP2K1 / ULight-anti-GST (Mn <sup>2+</sup> ; 7.8)	Carna Biosciences	07-301
<b>COT</b>	GST-MAP2K1 / ULight-anti-GST (Mn <sup>2+</sup> ; 8.0)	ULight-p70S6K (Mn <sup>2+</sup> ; 5.3)	ULight-Acetyl-CoA Carboxylase (Mn <sup>2+</sup> ; 4.3)	ProQinase	0180-0000-1
<b>CRIK (CIT)</b>	ULight-Histone H3 (Ser10; 8.3)			Carna Biosciences	01-104
<b>DAPK1</b>	ULight-CREBtide (23.7)	ULight-PLK (18.1)	ULight-Histone H3 (Ser10; 9.3)	Carna Biosciences	02-134
<b>DAPK1</b>	ULight-CREBtide (10.5)	ULight-Histone H3 (Thr3; 9.8)		ProQinase	0332-0000-1
<b>DAPK2</b>	ULight-CREBtide (6.7)	ULight-PLK (6.4)		Invitrogen	PV3614
<b>DAPK3</b>	ULight-CREBtide (13.8)	ULight-Histone H3 (Thr3; 6.6)	ULight-Histone H3 (Ser10; 6.3)	Carna Biosciences	02-136
<b>DCAMKL1</b>	ULight-CREBtide (34.8)			Carna Biosciences	02-139
<b>DCAMKL2</b>	ULight-CREBtide (31.4)			Carna Biosciences	02-140
<b>DLK (MAP3K12)</b>	ULight-CREBtide (36.4)	ULight-PKC (11.6)	ULight-Histone H3 (Thr3; 10.9)	Carna Biosciences	09-111
<b>DNA PK<sup>3</sup></b>	ULight-mTOR (40 U; S/B +/- DNA: 6.6)			Promega	V7870
<b>DRAK1 (STK17A)</b>	ULight-CREBtide (9.2)	ULight-Histone H3 (Thr3; 6.2)		Carna Biosciences	02-137
<b>DYRK1A</b>	ULight-GS (20.1)	ULight-MBP (18.5)	ULight-4E-BP1 (7.4)	Carna Biosciences	04-130
<b>DYRK1B</b>	ULight-4E-BP1 (24.6)	ULight-MBP (23.2)	ULight-GS (19.2)	Carna Biosciences	04-131
<b>DYRK2</b>	ULight-MBP (33.4)	ULight-4E-BP1 (30.0)	ULight-GS (19.9)	Carna Biosciences	04-132
<b>DYRK3</b>	ULight-4E-BP1 (39.9)	ULight-MBP (22.0)	ULight-GS (18.3)	Carna Biosciences	04-133
<b>DYRK4</b>	ULight-4E-BP1 (36.3)	ULight-MBP (26.7)	ULight-GS (20.2)	Invitrogen	PV3871
<b>Erk1 (MAPK3)</b>	ULight-4E-BP1 (37.9)	GST-ATF-2 / ULight-anti-GST (37.6)	ULight-MBP (26.6)	Carna Biosciences	04-142
<b>Erk2 (MAPK1)</b>	ULight-4E-BP1 (37.1)	GST-ATF-2 / ULight-anti-GST (35.1)	ULight-MBP (28.0)	Carna Biosciences	04-143
<b>ERK2</b>	GST-ATF-2 / ULight-anti-GST (40.0)	ULight-4E-BP1 (31.9)	ULight-MBP (19.4)	ProQinase	0634-0000-7
<b>Erk5 (MAPK7)</b>	ULight-4E-BP1 (22.4)			Carna Biosciences	04-146
<b>Erk7 (MAPK15)</b>	ULight-4E-BP1 (22.3)			Carna Biosciences	04-147

Newly added Kinases highlighted in Green



Kinase	ULight Substrate 1	ULight Substrate 2	ULight Substrate 3	Kinase Supplier	Supplier Cat. No.
<b>GCN2</b>	ULight-CREBtide (13.5)	ULight-Histone H3 (Thr3; 12.3)		Carna Biosciences	05-153
<b>GPRK4 (GRK4)</b>	ULight-Topo II $\alpha$ (18.8)	ULight-CREBtide (15.7)	ULight-p70S6K (14.2)	Carna Biosciences	01-313
<b>GPRK6 (GRK6)</b>	ULight-Histone H3 (Thr3; 10.8)	ULight-Topo II $\alpha$ (4.3)		Carna Biosciences	01-315
<b>GPRK7 (GRK7)</b>	ULight-Histone H3 (Thr3; 10.2)	ULight-Topo II $\alpha$ (5.9)		Carna Biosciences	01-116
<b>GRK5</b>	ULight-IkBa (26.5)	ULight-Topo II $\alpha$ (26.3)	ULight-Histone H3 (Thr3; 11.7)	Invitrogen	PV3824
<b>GSK3<math>\alpha</math> (GSK3A)</b>	ULight-4E-BP1 (34.5)	ULight-GS (21.5)		Carna Biosciences	04-140
<b>GSK3<math>\beta</math> (GSK3B)</b>	ULight-4E-BP1 (35.9)	ULight-GS (21.9)		Carna Biosciences	04-141
<b>Haspin (GSG2)</b>	ULight-Histone H3 (Thr3; 15.5)			Carna Biosciences	05-111
<b>HGK (MAP4K4)</b>	ULight-p70S6K (23.8)			Carna Biosciences	07-137
<b>HIPK1</b>	ULight-4E-BP1 (30.8)	ULight-MBP (22.9)	ULight-GS (20.1)	Carna Biosciences	04-135
<b>HIPK2</b>	ULight-MBP (37.4)	ULight-GS (17.4)		Carna Biosciences	04-136
<b>HIPK3</b>	ULight-4E-BP1 (36.9)	ULight-MBP (22.9)	ULight-GS (21.3)	Carna Biosciences	04-137
<b>HIPK4</b>	ULight-4E-BP1 (37.7)	ULight-MBP (21.2)	ULight-GS (20.5)	Carna Biosciences	04-138
<b>HRI</b>	ULight-CREBtide (13.3)	ULight-PLK (6.2)		ProQinase	0444-0000-1
<b>ICK</b>	ULight-MBP (33.4)	ULight-4E-BP1 (24.7)	ULight-GS (12.6)	Carna Biosciences	04-156
<b>IKK<math>\alpha</math> (CHUK)</b>	ULight-IkBa (22.4)	ULight-rpS6 (17.9)	ULight-Acetyl-CoA Carboxylase (11.8)	Carna Biosciences	05-112
<b>IKK<math>\beta</math></b>	ULight-p70S6K (30.4)	ULight-IkBa (25.6)	ULight-rpS6 (22.1)	Carna Biosciences	05-084
<b>IKK-beta</b>	ULight-IkBa (25.5)			ProQinase	0258-0000-1
<b>IKKe (IKBKE)</b>	ULight-p70S6K (22.1)	ULight-rpS6 (20.2)	ULight-PLK (15.8)	Carna Biosciences	05-114
<b>IKK-epsilon</b>	ULight-rpS6 (22.0)	ULight-p70S6K (15.5)	ULight-PLK (12.5)	ProQinase	0320-0000-1
<b>IRAK1</b>	ULight-p70S6K (28.3)	ULight-Acetyl-CoA Carboxylase (17.7)	ULight-Histone H3 (Thr3; 14.4)	Carna Biosciences	09-101
<b>IRAK4</b>	ULight-p70S6K (Mn <sup>2+</sup> ; 32.4)	ULight-Acetyl-CoA Carboxylase (31.9)		Carna Biosciences	09-145
<b>IRAK4</b>	ULight-p70S6K (Mn <sup>2+</sup> ; 28.1)	ULight-Acetyl-CoA Carboxylase (23.9)		ProQinase	0586-0000-1
<b>JNK1 (MAPK8)</b>	ULight-4E-BP1 (34.5)	GST-ATF-2 / ULight-anti-GST (32.0)	ULight-MBP (21.4)	Carna Biosciences	04-163
<b>JNK2 (MAPK9)</b>	ULight-4E-BP1 (35.0)	GST-ATF-2 / ULight-anti-GST (32.8)	ULight-MBP (20.8)	Carna Biosciences	04-164
<b>JNK3 (MAPK10)</b>	GST-ATF-2 / ULight-anti-GST (33.7)	ULight-4E-BP1 (32.8)	ULight-MBP (19.8)	Carna Biosciences	04-150

Newly added Kinases highlighted in Green



Kinase	ULight Substrate 1	ULight Substrate 2	ULight Substrate 3	Kinase Supplier	Supplier Cat. No.
<b>LATS2</b>	ULight-CREBtide (14.8)	ULight-mTOR (5.0)		Carna Biosciences	01-124
<b>LRRK2</b>	ULight-CREBtide (24.2)	ULight-PLK (19.9)	ULight-Histone H3 (Thr3; 10.4)	Carna Biosciences	09-110
<b>LRRK2 [G2019S]</b>	ULight-Histone H3 (Thr3; 15.4)			Invitrogen	PV4881
<b>LRRK2 [G2019S]</b>	ULight-Histone H3 (Thr3; 15.3)	ULight-CREBtide (8.4)		Carna Biosciences	09-146
<b>LZK</b>	ULight-CREBtide (17.9)	ULight-Histone H3 (Thr3; 8.3)		Carna Biosciences	09-114
<b>MAP2K3</b>	GST-p38 $\alpha$ / ULight-anti-GST (19.8)			Carna Biosciences	07-048
<b>MAP2K4</b>	GST-p38 $\alpha$ / ULight-anti-GST (22.1)			Carna Biosciences	07-044
<b>MAP2K6 (MKK6)</b>	GST-p38 $\alpha$ / ULight-anti-GST (23.1)			Carna Biosciences	07-046
<b>MAP3K1</b>	ULight-Acetyl-CoA Carboxylase (5.3)			Carna Biosciences	07-103
<b>MAP3K2</b>	GST-MAP2K1 / ULight-anti-GST (5.9)			Carna Biosciences	07-004
<b>MAP3K6</b>	ULight-CREBtide (6.5)			Carna Biosciences	07-108
<b>MAP3K14 (NIK)</b>	ULight-CREBtide (9.3)			Carna Biosciences	07-102
<b>NIK (MAP3K14)</b>	ULight-CREBtide (8.5)			ProQinase	0344-0000-1
<b>MAP4K2</b>	ULight-rpS6 (18.3)	ULight-CREBtide (16.0)	ULight-p70S6K (9.2)	Carna Biosciences	07-111
<b>MAP4K5 (KHS1)</b>	ULight-p70S6K (35.6)	ULight-rpS6 (24.9)	ULight-Acetyl-CoA Carboxylase (23.8)	Invitrogen	PV3682
<b>MAPKAPK2</b>	ULight-4E-BP1 (32.2)	ULight-MBP (31.4)	ULight-CREBtide (29.1)	Carna Biosciences	02-142
<b>MAPKAPK3</b>	ULight-CREBtide (27.1)	ULight-rpS6 (13.2)	ULight-PKC (12.3)	Carna Biosciences	02-143
<b>MAPKAPK3</b>	ULight-CREBtide (26.1)	ULight-mTOR (11.8)	ULight-CDC25 (8.2)	ProQinase	0633-0000-1
<b>MAPKAPK5</b>	ULight-MBP (11.1)	ULight-4E-BP1 (10.1)		Carna Biosciences	02-144
<b>MAPKAPK5</b>	ULight-Topo II $\alpha$ (3.6)	ULight-PLK (3.6)		ProQinase	0380-0000-1
<b>MARK1</b>	ULight-PLK (18.1)	ULight-Acetyl-CoA Carboxylase (13.9)	ULight-CREBtide (8.9)	Carna Biosciences	02-120
<b>MARK1</b>	ULight-Acetyl-CoA Carboxylase (9.4)	ULight-PLK (9.3)	ULight-CREBtide (8.0)	ProQinase	0432-0000-1
<b>MARK2 (EMK1)</b>	ULight-PLK (18.0)	ULight-Acetyl-CoA Carboxylase (15.6)	ULight-CREBtide (8.5)	Carna Biosciences	02-121
<b>MARK3 (C-TAK1)</b>	ULight-PLK (12.3)	ULight-Acetyl-CoA Carboxylase (11.9)	ULight-CDC25 (7.6)	Carna Biosciences	02-122
<b>MARK3 (C-TAK1)</b>	ULight-Acetyl-CoA Carboxylase (15.1)	ULight-PLK (13.2)	ULight-CDC25 (7.1)	ProQinase	0433-0000-1
<b>MARK4 (MARKL1)</b>	ULight-Acetyl-CoA Carboxylase (25.7)	ULight-CREBtide (21.0)	ULight-PLK (18.8)	Carna Biosciences	02-123

Newly added Kinases highlighted in Green





Kinase	ULight Substrate 1	ULight Substrate 2	ULight Substrate 3	Kinase Supplier	Supplier Cat. No.
MELK	ULight-CREBtide (32.9)			Carna Biosciences	02-124
MGC42105 (B3KVM1)	ULight-CREBtide (25.8)	ULight-PLK (10.8)	ULight-CDC25 (7.4)	Carna Biosciences	02-125
MINK (MINK1)	ULight-p70S6K (55.1)	ULight-PKC (14.5)	ULight-rpS6 (11.8)	Carna Biosciences	07-139
MLK1 (MAP3K9)	GST-MAP2K1 / ULight-anti-GST (11.4)	ULight-rpS6 (5.4)		Carna Biosciences	09-015
MLK2 (MAP3K10)	ULight-Histone H3 (Thr3; 11.0)	GST-MAP2K1 / ULight-anti-GST (3.2)		Carna Biosciences	09-116
MLK3 (MAP3K11)	GST-MAP2K1 / ULight-anti-GST (6.4)			Carna Biosciences	09-017
MNK1 (MKNK1)	ULight-CREBtide (36.8)	ULight-Histone H3 (Ser10; 9.9)		Carna Biosciences	02-145
MNK2 (MKNK2)	ULight-CREBtide (30.5)	ULight-rpS6 (18.9)	ULight-Histone H3 (Ser10; 13.2)	Carna Biosciences	02-146
MOS	ULight-Topo II $\alpha$ (9.1)	ULight-CREBtide (6.6)	GST-MAP2K1 / ULight-anti-GST (6.3)	Carna Biosciences	05-118
MRCK $\alpha$ (CDC42BPA)	ULight-Histone H3 (Ser10; 7.5)	ULight-CREBtide (6.7)		Carna Biosciences	01-107
MSK1 (RPS6KA5)	ULight-CREBtide (28.5)	ULight-rpS6 (26.4)	ULight-PLK (20.6)	Carna Biosciences	01-147
MSK2 (RPS6KA4)	ULight-CREBtide (31.1)	ULight-rpS6 (25.0)	ULight-PLK (19.8)	Carna Biosciences	01-148
MST1 (STK4)	ULight-p70S6K (13.3)	ULight-PKC (12.8)	ULight-Histone H3 (Thr3; 8.9)	Millipore	14-624
MST1 (STK4)	ULight-PKC (11.9)	ULight-Histone H3 (Thr3; 8.4)	ULight-p70S6K (6.5)	Carna Biosciences	07-116
MST1 (STK4)	ULight-PKC (14.0)	ULight-Histone H3 (Thr3; 6.5)	ULight-rpS6 (5.5)	ProQinase	0667-0000-1
MST2 (STK3)	ULight-Histone H3 (Thr3; 8.0)	ULight-PKC (5.2)	ULight-p70S6K (4.4)	Carna Biosciences	07-117
MST2 (STK3)	ULight-p70S6K (12.5)	ULight-PKC (9.0)	ULight-Histone H3 (Thr3; 6.2)	ProQinase	0699-0000-1
MST3 (STK24)	ULight-CREBtide (14.7)	ULight-PKC (9.3)	ULight-rpS6 (8.9)	Carna Biosciences	07-118
MST4 (MASK)	ULight-PKC (14.6)	ULight-rpS6 (8.5)		Carna Biosciences	07-119
mTOR (1362-end)	ULight-4E-BP1 (Mn <sup>2+</sup> ; 36.9)	ULight-p70S6K (Mn <sup>2+</sup> ; 18.3)		Millipore	14-770
MYT1 (PKMYT1)	ULight-CREBtide (10.6)			Carna Biosciences	05-176
NDR1 (STK38)	ULight-CREBtide (10.5)	ULight-Histone H3 (Ser10; 8.7)		Carna Biosciences	01-125
NDR2	ULight-Histone H3 (Ser10; 8.0)	ULight-CREBtide (7.0)		Carna Biosciences	01-126
NEK1	ULight-p70S6K (60.0)	ULight-Acetyl-CoA Carboxylase (24.0)	ULight-rpS6 (18.6)	Carna Biosciences	05-123
NEK2	ULight-p70S6K (43.3)	ULight-CREBtide (31.2)	ULight-rpS6 (18.2)	Carna Biosciences	05-226
NEK3	ULight-p70S6K (26.9)	ULight-4E-BP1 (18.2)		Carna Biosciences	05-127

Newly added Kinases highlighted in Green



Kinase	ULight Substrate 1	ULight Substrate 2	ULight Substrate 3	Kinase Supplier	Supplier Cat. No.
NEK4	ULight-p70S6K (40.1)			Carna Biosciences	05-128
NEK6	ULight-p70S6K (32.0)			Carna Biosciences	05-130
NEK7	ULight-p70S6K (33.4)			Carna Biosciences	05-131
NEK9	ULight-p70S6K (48.9)	ULight-rpS6 (16.5)	ULight-Acetyl-CoA Carboxylase (13.0)	Carna Biosciences	05-133
NEK11	ULight-p70S6K (20.0)	ULight-Histone H3 (Thr3; 14.9)		Carna Biosciences	05-125
NLK	ULight-CREBtide (9.4)	ULight-PLK (1.3)		Carna Biosciences	04-151
NLK	ULight-CREBtide (15.4)	ULight-PLK (6.0)		ProQinase	0253-0000-1
Nuak2 (SNARK)	ULight-CREBtide (23.9)	ULight-Histone H3 (Thr3; 7.2)		Carna Biosciences	02-127
SNARK (Nuak2)	ULight-CREBtide (14.8)	ULight-Histone H3 (Thr3; 5.8)	ULight-PLK (5.5)	ProQinase	0414-0000-1
OSR1 (OXSR1)	ULight-Histone H3 (Thr3; 5.6)			Carna Biosciences	07-122
p38 $\alpha$ (MAPK14)	ULight-4E-BP1 (37.0)	GST-ATF-2 / ULight-anti-GST (32.1)	ULight-MBP (27.9)	Carna Biosciences	04-152
p38-alpha (MAPK14)	GST-ATF-2 / ULight-anti-GST (36.7)	ULight-4E-BP1 (33.1)	ULight-MBP (5.4)	ProQinase	0443-0000-3
p38 $\beta$ (MAPK11)	ULight-MBP (40.6)	GST-ATF-2 / ULight-anti-GST (36.9)	ULight-4E-BP1 (32.6)	Carna Biosciences	04-153
p38-beta (MAPK11)	GST-ATF-2 / ULight-anti-GST (36.8)	ULight-4E-BP1 (35.8)	ULight-MBP (14.2)	ProQinase	0455-0000-3
p38 $\delta$ (MAPK13)	ULight-MBP (41.2)	GST-ATF-2 / ULight-anti-GST (35.1)	ULight-4E-BP1 (30.7)	Carna Biosciences	04-154
p38 $\gamma$ (MAPK12)	ULight-4E-BP1 (37.7)	GST-ATF-2 / ULight-anti-GST (37.0)	ULight-MBP (33.6)	Carna Biosciences	04-155
p70S6K (S6K; RPS6KB1)	ULight-CREBtide (30.2)	ULight-rpS6 (18.1)	ULight-Histone H3 (Ser10; 9.4)	Carna Biosciences	01-154
p70S6K $\beta$ (RPS6KB2)	ULight-CREBtide (28.6)	ULight-rpS6 (23.0)	ULight-Crosstide (13.9)	Carna Biosciences	01-155
PAK1	ULight-PLK (12.3)	ULight-Histone H3 (Ser10; 4.5)		Carna Biosciences	07-123
PAK1	ULight-PLK (15.6)			ProQinase	0357-0000-1
PAK2	ULight-PLK (16.7)	ULight-Histone H3 (Ser10; 4.9)		Carna Biosciences	07-124
PAK3	ULight-PLK (19.9)	ULight-Histone H3 (Ser10; 12.2)	ULight-GS (9.2)	Carna Biosciences	07-125
PAK4	ULight-CREBtide (12.2)	ULight-PLK (4.3)		ProQinase	0365-0000-1
PAK5 (PAK7)	ULight-PLK (18.5)			Carna Biosciences	07-127
PAK6 <sup>1</sup>	ULight-PLK (5h; 7.0)			Carna Biosciences	07-128
PAK6	ULight-Histone H3 (Thr3; 8.5)	ULight-PLK (5.5)		ProQinase	0423-0000-1
PASK	ULight-CREBtide (31.0)	ULight-Crosstide (12.6)	ULight-mTOR (10.4)	Carna Biosciences	02-128

Newly added Kinases highlighted in Green



Kinase	ULight Substrate 1	ULight Substrate 2	ULight Substrate 3	Kinase Supplier	Supplier Cat. No.
<b>PBK</b>	ULight-CREBtide (16.3)			ProQinase	0185-0000-1
<b>PBK<sup>1</sup></b>	ULight-Acetyl-CoA Carboxylase (5 h; 7.1)			Carna Biosciences	05-168
<b>PEK (EIF2AK3)</b>	ULight-p70S6K (51.9)	ULight-Topo II $\alpha$ (18.0)	ULight-Acetyl-CoA Carboxylase (15.4)	Carna Biosciences	05-155
<b>PGK (PRKG1)</b>	ULight-CREBtide (37.0)	ULight-PLK (11.1)		Carna Biosciences	01-142
<b>PHKG1</b>	ULight-CREBtide (31.3)	ULight-Histone H3 (Thr3; 8.5)	ULight-rpS6 (7.0)	Carna Biosciences	02-152
<b>PHKG2</b>	ULight-CREBtide (31.7)	ULight-rpS6 (15.6)	ULight-mTOR (9.7)	Carna Biosciences	02-153
<b>PIM1</b>	ULight-CREBtide (34.7)	ULight-mTOR (8.5)	ULight-rpS6 (8.2)	Carna Biosciences	02-054
<b>PIM1</b>	ULight-CREBtide (31.2)	ULight-rpS6 (21.5)	ULight-mTOR (12.6)	ProQinase	0186-0000-1
<b>PIM2</b>	ULight-CREBtide (30.3)	ULight-rpS6 (20.9)	ULight-mTOR (11.3)	Carna Biosciences	02-155
<b>PIM2</b>	ULight-CREBtide (14.6)	ULight-rpS6 (10.4)	ULight-mTOR (6.6)	ProQinase	0223-0000-1
<b>PIM3</b>	ULight-CREBtide (31.0)	ULight-rpS6 (24.7)	ULight-mTOR (11.7)	Carna Biosciences	02-156
<b>PKAC<math>\alpha</math> (PRKACA)</b>	ULight-CREBtide (24.3)	ULight-rpS6 (16.8)	ULight-PLK (16.6)	Carna Biosciences	01-127
<b>PKAC<math>\beta</math> (PRKACB)</b>	ULight-rpS6 (23.7)	ULight-PLK (20.8)	ULight-CREBtide (15.7)	Carna Biosciences	01-128
<b>PKC<math>\alpha</math> (PRKCA)</b>	ULight-CREBtide (28.1)	ULight-rpS6 (19.4)	ULight-PKC (14.5)	Carna Biosciences	01-133
<b>PKC<math>\beta</math>1 (PRKCB1)</b>	ULight-CREBtide (30.5)	ULight-PKC (15.6)		Carna Biosciences	01-134
<b>PKC<math>\beta</math>2 (PRKCB2)</b>	ULight-CREBtide (26.1)	ULight-rpS6 (19.1)	ULight-PKC (14.0)	Carna Biosciences	01-165
<b>PKC-beta2 (PRKCB2)</b>	ULight-CREBtide (31.4)	ULight-PKC (16.2)	ULight-rpS6 (2.9)	ProQinase	0116-0000-1
<b>PKC<math>\delta</math> (PRKCD)</b>	ULight-CREBtide (29.4)	ULight-PKC (14.8)		Carna Biosciences	01-135
<b>PKC<math>\epsilon</math> (PRKCE)</b>	ULight-CREBtide (31.0)	ULight-PKC (14.9)		Carna Biosciences	01-136
<b>PKAC<math>\gamma</math></b>	ULight-CREBtide (33.4)	ULight-rpS6 (24.2)	ULight-PLK (21.3)	Carna Biosciences	01-129
<b>PKC<math>\gamma</math> (PRKCG)</b>	ULight-CREBtide (29.7)	ULight-PKC (15.6)	ULight-rpS6 (9.1)	Carna Biosciences	01-137
<b>PKC-gamma (PRKCG)</b>	ULight-CREBtide (26.1)	ULight-PKC (13.5)	ULight-rpS6 (10.2)	ProQinase	0204-0000-1
<b>PKC<math>\eta</math> (PRKCH)</b>	ULight-CREBtide (29.5)	ULight-PKC (14.3)	ULight-rpS6 (9.5)	Carna Biosciences	01-138)
<b>PKC-eta (PRKCH)</b>	ULight-rpS6 (22.4)	ULight-PLK (13.2)	ULight-PKC (10.6)	ProQinase	0420-0000-1
<b>PKC<math>\iota</math> (PRKCI)</b>	ULight-CREBtide (29.4)	ULight-PKC (15.4)	ULight-rpS6 (8.9)	Carna Biosciences	01-139
<b>PKC<math>\theta</math> (PRKCQ)</b>	ULight-CREBtide (30.4)	ULight-PKC (15.1)	ULight-rpS6 (12.3)	Carna Biosciences	01-140
<b>PKC<math>\zeta</math> (PRKCZ)</b>	ULight-CREBtide (22.4)	ULight-PKC (14.1)	ULight-rpS6 (12.9)	Carna Biosciences	01-141

Newly added Kinases highlighted in Green

Kinase	ULight Substrate 1	ULight Substrate 2	ULight Substrate 3	Kinase Supplier	Supplier Cat. No.
<b>PKC-zeta</b>	ULight-CREBtide (18.6)	ULight-PKC (14.1)		ProQinase	0117-0000-1
<b>PKC-mu (PKD-1, PRKD1)</b>	ULight-CREBtide (23.2)	ULight-PLK (8.4)	ULight-PKC (5.6)	ProQinase	0115-0000-1
<b>PKD1 (PRKD1, PKC-mu)</b>	ULight-CREBtide (21.6)	ULight-PLK (14.4)		Carna Biosciences	02-157
<b>PKC-nu (PRKD3, EPK2)</b>	ULight-CREBtide (23.1)	ULight-PLK (5.4)		ProQinase	0661-0000-1
<b>PKD3 (PRKD3, PKC-nu)</b>	ULight-CREBtide (31.4)	ULight-Histone H3 (Thr3; 8.8)	ULight-PLK (6.0)	Carna Biosciences	02-159
<b>PKD2 (PRKD2)</b>	ULight-PLK (10.3)	ULight-CREBtide (9.4)		Carna Biosciences	02-158
<b>PKN1 (PRK1)</b>	ULight-CREBtide (32.6)	ULight-PKC (10.5)	ULight-rpS6 (7.5)	Carna Biosciences	01-144
<b>PRK1 (PKN1)</b>	ULight-CREBtide (31.8)	ULight-rpS6 (17.9)	ULight-PKC (14.0)	ProQinase	0207-0000-1
<b>PKN2</b>	ULight-CREBtide (32.3)			Carna Biosciences	01-145
<b>PKN3</b>	ULight-CREBtide (33.5)	ULight-rpS6 (20.0)	ULight-PKC (15.4)	Carna Biosciences	01-146
<b>PKR (EIF2AK2)</b>	ULight-Histone H3 (Thr3; 10.8)	ULight-CREBtide (6.7)		Carna Biosciences	05-156
<b>PLK1</b>	ULight-p70S6K (24.8)	ULight-Topo II $\alpha$ (23.0)	ULight-Histone H3 (Thr3; 13.4)	Carna Biosciences	05-157
<b>PLK1</b>	ULight-Topo II $\alpha$ (7.0)	ULight-Histone H3 (Thr3; 5.7)		ProQinase	0183-0000-1
<b>PLK2 (SNK)</b>	ULight-Topo II $\alpha$ (22.9)	ULight-CREBtide (11.6)		Carna Biosciences	05-158
<b>PLK3</b>	ULight-I $\kappa$ B $\alpha$ (27.5)	ULight-Topo II $\alpha$ (20.4)	ULight-4E-BP1 (15.0)	Carna Biosciences	05-159
<b>PLK3</b>	ULight-Topo II $\alpha$ (18.6)	ULight-Histone H3 (Thr3; 6.1)	ULight-4E-BP1 (5.1)	ProQinase	0437-0000-1
<b>PLK4 (SAK)</b>	ULight-CREBtide (10.4)	ULight-PLK (1.9)		Carna Biosciences	05-160
<b>SAK (PLK4)</b>	ULight-CREBtide (11.4)	ULight-PLK (5.8)		ProQinase	0306-0000-1
<b>PRKX</b>	ULight-CREBtide (34.1)	ULight-PLK (19.7)	ULight-PKC (13.7)	Carna Biosciences	01-130
<b>QIK (SNF1LK2)</b>	ULight-CREBtide (29.6)	ULight-Acetyl-CoA Carboxylase (28.8)	ULight-PLK (14.1)	Carna Biosciences	02-129
<b>SNF1LK2 (QIK)</b>	ULight-CREBtide (32.2)	ULight-Acetyl-CoA Carboxylase (24.8)	ULight-PLK (14.5)	Invitrogen	PV4792
<b>RAF1</b>	GST-MAP2K1/ ULight-anti-GST (9.3)			Carna Biosciences	09-125
<b>RIPK2</b>	ULight-CREBtide (8.4)			Carna Biosciences	09-128
<b>RIPK5</b>	ULight-CREBtide (9.7)	ULight-p70S6K (5.7)		Invitrogen	PV4678
<b>ROCK1</b>	ULight-CREBtide (34.8)	ULight-rpS6 (23.4)	ULight-PLK (19.6)	Carna Biosciences	01-109
<b>ROCK2</b>	ULight-CREBtide (32.7)	ULight-rpS6 (20.0)	ULight-PLK (16.9)	Carna Biosciences	01-110

Newly added Kinases highlighted in Green



Kinase	ULight Substrate 1	ULight Substrate 2	ULight Substrate 3	Kinase Supplier	Supplier Cat. No.
<b>RSK1 (RPS6KA1)</b>	ULight-CREBtide (32.1)	ULight-rpS6 (22.0)	ULight-PLK (20.5)	Carna Biosciences	01-149
<b>RSK2 (RPS6KA3)</b>	ULight-CREBtide (30.0)	ULight-rpS6 (20.9)	ULight-Crosstide (18.8)	Carna Biosciences	01-150
<b>RSK3 (RPS6KA2)</b>	ULight-CREBtide (32.0)	ULight-rpS6 (25.9)	ULight-PLK (18.5)	Carna Biosciences	01-151
<b>RSK4 (RPS6KA6)</b>	ULight-CREBtide (32.0)	ULight-rpS6 (23.8)	ULight-PLK (18.4)	Carna Biosciences	01-152
<b>SGK</b>	ULight-CREBtide (32.7)	ULight-rpS6 (20.8)	ULight-PLK (20.6)	Carna Biosciences	01-158
<b>SGK2</b>	ULight-CREBtide (32.5)	ULight-PLK (21.3)	ULight-rpS6 (21.1)	Carna Biosciences	01-159
<b>SGK3 (SGKL)</b>	ULight-CREBtide (28.0)	ULight-rpS6 (22.7)	ULight-PLK (17.7)	Carna Biosciences	01-160
<b>SIK</b>	ULight-CREBtide (17.8)	ULight-Acetyl-CoA Carboxylase (9.2)	ULight-PLK (7.4)	Carna Biosciences	02-131
<b>SLK</b>	ULight-CREBtide (31.0)			Carna Biosciences	07-129
<b>skMLCK (MYLK)<sup>2</sup></b>	ULight-CREBtide (35.8)			Carna Biosciences	02-150
<b>SRPK1</b>	ULight-CREBtide (20.0)			ProQinase	0434-0000-1
<b>SRPK2</b>	ULight-CREBtide (14.3)			ProQinase	0381-0000-1
<b>STK33</b>	ULight-rpS6 (13.1)	ULight-mTOR (9.5)	ULight-CREBtide (8.0)	Millipore	14-671
<b>STK33</b>	ULight-CREBtide (8.3)			Carna Biosciences	02-301
<b>TAK1-TAB1 (MAP3K7)</b>	ULight-p70S6K (5.6)			Carna Biosciences	09-019
<b>TAOK2</b>	ULight-p70S6K (15.6)	ULight-CREBtide (9.0)	ULight-PKC (5.7)	Carna Biosciences	07-133
<b>TAOK3</b>	ULight-CREBtide (21.2)	ULight-Histone H3 (Thr3; 9.3)	ULight-p70S6K (7.9)	Carna Biosciences	07-135
<b>TBK1</b>	ULight-p70S6K (34.5)	ULight-rpS6 (24.8)	ULight-Acetyl-CoA Carboxylase (24.5)	Carna Biosciences	05-115
<b>TGFβR1 (TGFB1)</b>	ULight-Topo IIα (21.3)			Carna Biosciences	09-141
<b>TGFβR2 (TGFB2)</b>	ULight-CREBtide (6.7)			Carna Biosciences	09-142
<b>TLK1</b>	ULight-Topo IIα (17.4)	ULight-Histone H3 (Thr3; 15.2)	ULight-p70S6K (9.4)	Carna Biosciences	05-166
<b>TLK2</b>	ULight-Topo IIα (17.9)	ULight-Histone H3 (Thr3; 17.2)	ULight-p70S6K (13.8)	Carna Biosciences	05-167
<b>TSK2 (TSSK2)</b>	ULight-CREBtide (32.1)	ULight-PLK (20.2)	ULight-Acetyl-CoA Carboxylase (15.6)	Carna Biosciences	02-165
<b>TSSK2 (TSK2)</b>	ULight-CREBtide (31.0)	ULight-Acetyl-CoA Carboxylase (17.9)	ULight-PLK (16.2)	ProQinase	0220-0000-1
<b>TSSK1</b>	ULight-CREBtide (20.4)	ULight-PLK (17.9)	ULight-Acetyl-CoA Carboxylase (16.2)	Carna Biosciences	02-364
<b>TSSK3</b>	ULight-CREBtide (32.5)	ULight-Acetyl-CoA Carboxylase (27.3)	ULight-PLK (20.0)	Carna Biosciences	02-166
<b>TTBK1</b>	ULight-Topo IIα (24.9)	ULight-Histone H3 (Thr3; 17.8)	ULight-p70S6K (13.4)	Carna Biosciences	03-108

Newly added Kinases highlighted in Green



Kinase	ULight Substrate 1	ULight Substrate 2	ULight Substrate 3	Kinase Supplier	Supplier Cat. No.
<b>TTBK2</b>	ULight-Topo II $\alpha$ (24.2)	ULight-Histone H3 (Thr3; 17.4)	ULight-rpS6 (10.3)	Carna Biosciences	03-109
<b>ULK3</b>	ULight-Histone H3 (Thr3; 6.5)			Carna Biosciences	05-173
<b>VRK1</b>	ULight-CREBtide (17.0)	ULight-Histone H3 (Thr3; 8.7)		ProKinase	0302-0000-1
<b>VRK2</b>	ULight-Histone H3 (Thr3; 15.1)			Carna Biosciences	03-111
<b>WEE</b>	ULight-CREBtide (10.0)			Carna Biosciences	05-177
<b>WNK1</b>	ULight-CREBtide (7.4)			Carna Biosciences	05-179
<b>WNK2</b>	ULight-CREBtide (21.4)			Carna Biosciences	05-180
<b>WNK3</b>	ULight-CREBtide (4.8)			Carna Biosciences	05-181
<b>WNK4</b>	ULight-CREBtide (10.3)			Carna Biosciences	05-182
<b>YSK1 (STK25)</b>	ULight-CREBtide (21.8)	ULight-rpS6 (14.3)	ULight-p70S6K (5.7)	Carna Biosciences	07-136
<b>ZAK</b>	ULight-p70S6K (36.1)	ULight-Histone H3 (Thr3; 15.5)	ULight-mTOR (11.4)	Carna Biosciences	09-120

<sup>1</sup> Kinase reaction time is 5h

<sup>2</sup> CaCl<sub>2</sub> and Calmodulin at 1 mM and 0.5  $\mu$ M, respectively, are added to the kinase reactions

<sup>3</sup> DNA PK: assay buffer and conditions as recommended by Promega. ATP: 200  $\mu$ M final, kinase reaction incubation time 1 h

Kinases were assayed in standard conditions, using reagent concentrations and kinase buffer described below. All modifications to standard assay conditions are indicated in the table.

#### Kinase assay components:

Kinases: 20 nM (various suppliers)

ATP: 200  $\mu$ M

ULight substrates in kinase reactions: 50 nM (100 nM for ULight-CDC25)

GST-protein substrates in kinase reactions: 30 nM (when indicated)

ULight-anti-GST antibody in assay: 30 nM (when indicated)

Europium anti-phospho-substrate antibodies in assay: 2 nM

#### Kinase buffer (pH 7.5):

50 mM HEPES

10 mM MgCl<sub>2</sub>

3 mM MnCl<sub>2</sub> (when indicated)

1 mM EGTA

2 mM DTT and 0.01% Tween 20

After incubation at 23°C for 1 h (or 5 h when indicated), kinase reactions were stopped with EDTA. Antibodies were added and incubated for 1 h prior to detection with the EnVision.

**NOTE: All kinases were sourced from commercial vendors from commercially available lots. In many cases, the same kinase was tested from multiple vendors. If the results obtained with kinases from different vendors were very different in our testing, we have shown all suppliers' data. If the results were similar, we have shown only one representative set of test results. We encourage you to qualify your kinase activity to ensure that the assay signal is specific to the enzyme tested.**

LANCE® *Ultra* products used for this study:

Labeled Antibody	Description	Catalog No.	Phospho-Motif
ULight-CREBtide	ULight-CREBtide (Ser133)	TRF0107	RRP <u>S</u> YRK
Europium-anti-phospho-CREB	Europium-anti-phospho-CREB (Ser133)	TRF0200	
ULight-MBP	ULight-Myelin Basic Protein Peptide	TRF0109	VTPR <u>T</u> PPP
Europium-anti-phospho-MBP	Europium-anti-phospho-Myelin Basic Protein	TRF0201	
ULight-Crosstide	ULight-Crosstide (GSK-3 $\alpha$ Ser21)	TRF0106	PRT <u>S</u> SFAE
Europium-anti-phospho-Crosstide	Europium-anti-phospho-Crosstide (GSK-3 $\alpha$ Ser21)	TRF0202	
ULight-PLK	ULight-PLK (Ser137) Peptide	TRF0110	RRR <u>S</u> LLE
Europium-anti-phospho-PLK	Europium-anti-phospho-PLK (Ser137)	TRF0203	
ULight-PKC	ULight-PKC Substrate (Ala25Ser)	TRF0108	RKG <u>S</u> LRQ
Europium anti-phospho-PKC	Europium anti-phospho-PKC Peptide (Ala25Ser)	TRF0207	
ULight-I $\kappa$ B $\alpha$	ULight-IkappaB-alpha (Ser32/36) Peptide	TRF0113	RHD <u>S</u> GLD <u>S</u> M
Europium-anti-phospho-I $\kappa$ B $\alpha$	Europium-anti-phospho-IkappaB-alpha (Ser32/36)	TRF0206	
ULight-Histone H3 (Thr3/Ser10)	ULight-Histone H3 (Thr3/Ser10) Peptide	TRF0125	ART <u>K</u> QTARK <u>S</u> TG
Europium-anti-phospho-Histone H3 (Ser10)	Europium-anti-phospho-Histone H3 (Ser10)	TRF0210	
Europium-anti-phospho-Histone H3 (Thr3)	Europium-anti-phospho-Histone H3 (Thr3)	TRF0211	
ULight-mTOR	ULight-mTOR (Ser2448) Peptide	TRF0119	TRTD <u>S</u> YSAG
Europium-anti phospho-mTOR	Europium-anti phospho-mTOR (Ser2448)	TRF0209	
ULight-p70S6K	ULight-p70S6K (Thr389) Peptide	TRF0126	FLGF <u>T</u> YVAP
Europium-anti-phospho-p70S6K	Europium-anti-phospho-p70S6K (Thr389)	TRF0214	
ULight-Acetyl-CoA Carboxylase	ULight-Acetyl-CoA Carboxylase (Ser79) SAMS Peptide	TRF0133	RSAM <u>S</u> SGLHL
Europium-anti-phospho-Acetyl-CoA Carboxylase	Europium-anti-phospho-Acetyl-CoA Carboxylase (Ser79)	TRF0208	
ULight-Cdc25C	ULight-Cdc25C (Ser216) Peptide	TRF0123	YRSP <u>S</u> MPEN
Europium-anti-phospho-(Ser) 14-3-3 binding motif	Europium-anti-phospho-(Ser) 14-3-3 binding motif, mAb 4E2	AD0192	(R/K)XX <u>S</u> XP
ULight-4E-BP1	ULight-eIF4E-binding protein 1 (Thr37/46) Peptide	TRF0128	DYST <u>T</u> PGGTLFST <u>T</u> PGTRI
Europium-anti-phospho-4E-BP1	Europium-anti-phospho-eIF4E-binding protein 1 (Thr37/46)	TRF0216	

Labeled Antibody	Description	Catalog No.	Phospho-Motif
ULight-rpS6	ULight-40S Ribosomal Protein S6 (pSer235/Ser236) Peptide	TRF0129	KRRRLpS <u>S</u> SLRAS
Europium-anti-phospho-rpS6	Europium-anti-phospho-40S Ribosomal Protein S6 (Ser235/236)	TRF0217	
ULight-Topo II $\alpha$	ULight-DNA Topoisomerase 2-alpha (Thr1342) Peptide	TRF0130	FDEK <u>T</u> DDDEF
Europium-anti-phospho-Topo II $\alpha$	Europium-anti-phospho-DNA Topoisomerase 2-alpha (Thr1342)	TRF0218	
ULight-anti-GST	ULight-anti-GST	TRF0104	
Europium-anti-phospho-ATF-2	Europium-anti-phospho-ATF-2 (Thr53)	TRF0212	
	ATF-2 Fusion Protein	Cell Signaling Technology cat. 9224	
Europium-anti-phospho-p38a	Europium-anti-phospho-MAP Kinase p38-alpha (Thr180/Tyr182)	TRF0219	
	GST-p38 $\alpha$ (MAPK14), inactive	Carna BioSciences cat. 04-152-10	
Europium-anti-phospho-MEK1/2	Europium-anti-phospho-MEK1/2 (Ser217/221)	TRF0213	
	GST-MAP2K1, inactive	Carna BioSciences cat. 07-141-10	
ULight-Glycogen Synthase	ULight-Glycogen Synthase (Ser641/pSer657) Peptide	TRF0131	PAS <u>V</u> PPSPSLRHSSPHQ(pS)ED
Europium anti-phospho-Glycogen Synthase	Europium anti-phospho-Glycogen Synthase (Ser641)	TRF0220	



## LANCE *Ultra* tyrosine kinase selection guide

### How to use this guide:

1. Locate your kinase
  - In many cases, up to three commercial kinase vendors have been tested.
  - Many common aliases are shown in parenthesis.
2. Best performing *ULight*<sup>™</sup> substrates are listed for each enzyme according to performance criteria where signal to background (S/B) ratios are greater than 3.0
  - S/B ratios (Signal at 665 nm / minus ATP control at 665 nm) are indicated in parenthesis.
  - All S/B ratios were obtained at fixed experimental conditions unless otherwise noted (see page 16).
3. Based on your substrate choice, find the corresponding Europium-labeled anti-phospho antibody on page 16 (**LANCE *Ultra* products used for this study**) to identify the TR-FRET donor anti-phospho antibody for your LANCE *Ultra* assay.

If you cannot find your kinase of interest, please ask your Revvity sales specialist, as our list continues to expand. Two kits are available for testing purposes:

- **KinaSelect Ser/Thr kit** (5 x 250 data points, TRF0300-C)
  - 5 *ULight*-labeled Ser/Thr kinase specific substrates + 5 matching Europium-labeled anti-phospho antibodies
- **KinaSelect TK kit** (1,000 data points, TRF0301-D)
  - 1 *ULight*-labeled kinase specific substrate + 1 matching Europium-labeled anti-phospho antibody

## LANCE® Ultra reagents for tyr kinase assays

Up to three kinase substrates are listed based on signal to background (S/B) ratios obtained with commercially available enzymes.

S/B ratios (Signal at 665 nm / minus ATP control at 665 nm) are indicated in parentheses.

Kinase [Concentration, nM]	ULight Substrate 1	ULight Substrate 2	ULight Substrate 3	Kinase Supplier	Supplier Cat. No.
<b>ABL [0.25]</b>	ULight-poly GT (13.1)	ULight-poly GAT (11.1)	ULight-TK (4.1)	Carna Biosciences	08-001
<b>ABL (T315I, ABL1) [0.5]</b>	ULight-poly GT (6.6)	ULight-poly GAT (6.4)	ULight-TK (4.8)	Carna Biosciences	08-093
<b>ACK [20]</b>	ULight-poly GT (27.3)	ULight-poly GAT (27.2)	ULight-TK (17.3)	Carna Biosciences	08-103
<b>ALK [4]</b>	ULight-IRS-1 (16.8)	ULight-poly GT (9.8)	ULight-TK (8.8)	Carna Biosciences	08-105
<b>ARG [0.5]</b>	ULight-poly GT (13.2)	ULight-poly GAT (12.7)	ULight-TK (10.6)	Carna Biosciences	08-102
<b>AXL [4]</b>	ULight-poly GT (9.8)	ULight-poly GAT (5.6)		Carna Biosciences	08-107
<b>BLK [0.5]</b>	ULight-TK (31.0)	ULight-poly GT (16.5)	ULight-CDK1 (9.6)	Carna Biosciences	08-164
<b>BMX [0.5]</b>	ULight-poly GT (13.2)	ULight-poly GAT (9.0)	ULight-TK (7.1)	Carna Biosciences	08-179
<b>BRK [3]</b>	ULight-poly GT (17.4)	ULight-poly GAT (3.0)		Carna Biosciences	08-165
<b>BTK [0.25]</b>	ULight-poly GAT (19.6)	ULight-poly GT (11.8)	ULight-TK (6.8)	Carna Biosciences	08-080
<b>CSK [20]</b>	ULight-TK (27.2)	ULight-poly GAT (20.3)	ULight-poly GT (10.4)	Carna Biosciences	08-111
<b>CTK [20]</b>	ULight-poly GAT (18.8)	ULight-poly GT (12.6)		Carna Biosciences	08-012
<b>DDR1 [0.5]</b>	ULight-poly GAT (3.0)			Carna Biosciences	08-113
<b>DDR2 [0.5]</b>	ULight-poly GAT (5.1)	ULight-IRS-1 (4.9)	ULight-poly GT (4.1)	Carna Biosciences	08-114
<b>EGFR [0.5]</b>	ULight-JAK-1 (19.0)	ULight-TK (10.0)	ULight-poly GAT (5.0)	Carna Biosciences	08-115
<b>EGFR (T790M) [0.5]</b>	ULight-poly GT (18.1)	ULight-poly GAT (10.8)	ULight-JAK-1 (3.9)	Carna Biosciences	08-194
<b>EphA1 [0.5]</b>	ULight-poly GT (24.1)	ULight-poly GAT (11.4)	ULight-TK (10.8)	Carna Biosciences	08-120
<b>EphA2 [0.25]</b>	ULight-TK (26.9)	ULight-poly GT (12.3)	ULight-poly GAT (7.1)	Carna Biosciences	08-121
<b>EphA3 [0.5]</b>	ULight-TK (22.4)	ULight-poly GT (17.4)	ULight-poly GAT (8.0)	Carna Biosciences	08-122
<b>EphA4 [0.5]</b>	ULight-TK (31.5)	ULight-poly GT (12.6)	ULight-poly GAT (11.3)	Carna Biosciences	08-123
<b>EphA5 [1]</b>	ULight-TK (35.5)	ULight-poly GAT (21.9)	ULight-JAK-1 (21.2)	Carna Biosciences	08-124
<b>EphA6 [0.5]</b>	ULight-poly GAT (15.5)	ULight-poly GT (14.2)	ULight-TK (5.4)	Carna Biosciences	08-125

Kinase [Concentration, nM]	ULight Substrate 1	ULight Substrate 2	ULight Substrate 3	Kinase Supplier	Supplier Cat. No.
EphA7 [0.5]	ULight-poly GT (22.7)	ULight-TK (17.2)	ULight-poly GAT (11.1)	Carna Biosciences	08-126
EphA8 [0.25]	ULight-TK (32.3)	ULight-poly GT (16.4)	ULight-poly GAT (7.8)	Carna Biosciences	08-127
EphB1 [0.5]	ULight-TK (29.9)	ULight-poly GT (25.1)	ULight-CDK1 (14.1)	Carna Biosciences	08-128
EphB2 [0.25]	ULight-TK (28.8)	ULight-poly GT (27.9)	ULight-poly GAT (13.2)	Carna Biosciences	08-129
EphB3 [0.1]	ULight-poly GT (29.0)	ULight-TK (24.7)	ULight-poly GAT (11.2)	Carna Biosciences	08-130
EphB4 [0.5]	ULight-TK (29.8)	ULight-poly GT (13.7)	ULight-CDK1 (12.6)	Carna Biosciences	08-131
FAK [3]	ULight-poly GT (20.0)	ULight-poly GAT (13.0)		Carna Biosciences	08-037
FER [0.25]	ULight-TK (31)	ULight-poly GAT (17.1)	ULight-CDK1 (16.1)	Carna Biosciences	08-139
FES [1]	ULight-TK (29.4)	ULight-poly GAT (19.0)	ULight-poly GT (17.1)	Carna Biosciences	08-140
FGFR1 [0.5]	ULight-JAK-1 (30.8)	ULight-TK (26.4)	ULight-IRS-1 (13.5)	Carna Biosciences	08-133
FGFR2 [0.25]	ULight-JAK-1 (33.2)	ULight-TK (27.1)	ULight-IRS-1 (15.5)	Carna Biosciences	08-134
FGFR3 [0.25]	ULight-JAK-1 (27.6)	ULight-TK (24.4)	ULight-poly GT (16.0)	Carna Biosciences	08-135
FGFR4 [3]	ULight-JAK-1 (20.8)	ULight-TK (17.7)	ULight-poly GT (9.2)	Carna Biosciences	08-136
FGR [0.1]	ULight-TK (29.3)	ULight-poly GT (25.1)	ULight-poly GAT (17.7)	Carna Biosciences	08-166
FLT1 [0.25]	ULight-poly GT (22.2)	ULight-poly GAT (15.4)	ULight-JAK-1 (10.0)	Carna Biosciences	08-189
FLT3 [0.1]	ULight-TK (25.9)	ULight-JAK-1 (25.0)	ULight-poly GT (20.8)	Carna Biosciences	08-154
FLT4 [0.25]	ULight-JAK-1 (36.9)	ULight-TK (20.0)	ULight-IRS-1 (11.4)	Carna Biosciences	08-190
FMS (CSFR) [0.25]	ULight-poly GT (14.6)	ULight-JAK-1 (6.3)	ULight-poly GAT (6.2)	Carna Biosciences	08-155
FRK [0.5]	ULight-poly GAT (22.9)	ULight-poly GT (20.8)	ULight-TK (9.7)	Carna Biosciences	08-167
FYN [0.25]	ULight-TK (25.9)	ULight-CDK1 (19.7)	ULight-poly GT (12.8)	Carna Biosciences	08-068
HCK [0.25]	ULight-TK (29.7)	ULight-poly GT (21.3)	ULight-poly GAT (13.2)	Carna Biosciences	08-169
HER2 [10]	ULight-poly GT (9.3)	ULight-poly GAT (8.4)		Carna Biosciences	08-166
HER4 (ERBB4) [0.1]	ULight-poly GT (25.2)	ULight-poly GAT (14.4)	ULight-TK (3.1)	Carna Biosciences	08-118
IGF1R [0.25]	ULight-TK (25.1)	ULight-poly GT (21.8)	ULight-IRS-1 (15.2)	Carna Biosciences	08-141
INSR [20]	ULight-poly GAT (25.4)	ULight-poly GT (18.3)	ULight-TK (4.0)	Carna Biosciences	08-242
IRR [0.5]	ULight-poly GT (21.6)	ULight-TK (19.2)	ULight-IRS-1 (15.6)	Carna Biosciences	08-143
ITK [0.5]	ULight-poly GT (9.8)	ULight-poly GAT (8.5)	ULight-TK (8.4)	Carna Biosciences	08-181
JAK1 [7]	ULight-JAK-1 (19.5)	ULight-poly GT (17.6)	ULight-poly GAT (16.4)	Carna Biosciences	08-144

Kinase [Concentration, nM]	ULight Substrate 1	ULight Substrate 2	ULight Substrate 3	Kinase Supplier	Supplier Cat. No.
<b>JAK2 [1]</b>	ULight-JAK-1 (41.8)	ULight-TK (35.5)	ULight-IRS-1 (21.4)	Carna Biosciences	08-045
<b>JAK3 [0.5]</b>	ULight-JAK-1 (37.3)	ULight-TK (16.1)	ULight-poly GAT (6.9)	Carna Biosciences	08-046
<b>KDR [0.25]</b>	ULight-JAK-1 (30.8)	ULight-TK (16.9)	ULight-poly GT (8.6)	Carna Biosciences	08-191
<b>KIT [2]</b>	ULight-poly GAT (21.7)	ULight-poly GT (13.0)	ULight-JAK-1 (3.3)	Carna Biosciences	08-056
<b>LCK [0.5]</b>	ULight-poly GAT (16.5)	ULight-TK (12.3)	ULight-poly GT (10.4)	Carna Biosciences	08-170
<b>LTK [1]</b>	ULight-poly GAT (25.1)	ULight-poly GT (21.3)	ULight-TK (13.7)	Carna Biosciences	08-106
<b>LYNa [0.5]</b>	ULight-TK (32.5)	ULight-poly GT (15.6)	ULight-CDK1 (14.3)	Carna Biosciences	08-171
<b>LYNb [1]</b>	ULight-TK (33.1)	ULight-CDK1 (24.0)	ULight-poly GT (18.6)	Carna Biosciences	08-172
<b>MATK (Hyl) [1]</b>	ULight-poly GT (20.7)	ULight-poly GAT (8.8)		Invitrogen	PV3370
<b>MER [0.25]</b>	ULight-poly GT (29.2)	ULight-poly GAT (15.9)	ULight-TK (12.9)	Carna Biosciences	08-108
<b>MET [0.5]</b>	ULight-TK (24.2)	ULight-JAK-1 (19.7)	ULight-poly GT (17.0)	Carna Biosciences	08-151
<b>MUSK [1]</b>	ULight-poly GAT (10.6)	ULight-JAK-1 (3.9)	ULight-TK (3.1)	Carna Biosciences	08-153
<b>PDGFRa [0.5]</b>	ULight-poly GT (17.8)	ULight-poly GAT (10.6)	ULight-JAK-1 (9.0)	Carna Biosciences	08-157
<b>PDGFRb [0.25]</b>	ULight-poly GAT (12.5)	ULight-poly GT (11.2)	ULight-TK (4.7)	Carna Biosciences	08-158
<b>PTK2B (FAK2) [0.25]</b>	ULight-polyGT (19.2)	ULight-poly GAT (12.3)		Invitrogen	PV4567
<b>PYK2 [0.25]</b>	ULight-poly GT (15.5)	ULight-poly GAT (7.7)		Carna Biosciences	08-138
<b>RET [0.5]</b>	ULight-JAK-1 (23.6)	ULight-TK (20.3)	ULight-IRS-1 (6.9)	Carna Biosciences	08-159
<b>RON [0.25]</b>	ULight-poly GT (27.7)	ULight-poly GAT (25.7)	ULight-JAK-1 (4.9)	Carna Biosciences	08-152
<b>ROR1 [20]</b>	ULight-poly GT (3.4)			Carna Biosciences	08-160
<b>ROR2 [20]</b>	ULight-poly GT (4.2)			Carna Biosciences	08-161
<b>ROS [0.25]</b>	ULight-TK (24.5)	ULight-poly GT (23.8)	ULight-IRS-1 (20.5)	Carna Biosciences	08-163
<b>SRC [0.5]</b>	ULight-TK (31.7)	ULight-poly GAT (18.4)	ULight-CDK1 (16.6)	Carna Biosciences	08-173
<b>SRM [0.5]</b>	ULight-TK (32.5)	ULight-poly GAT (20.1)	ULight-poly GT (18.3)	Carna Biosciences	08-174
<b>SYK [0.5]</b>	ULight-TK (24.6)	ULight-JAK-1 (20.0)	ULight-poly GAT (4.1)	Carna Biosciences	08-176
<b>TEC [0.5]</b>	ULight-poly GT (25.4)	ULight-TK (18.6)	ULight-poly GAT (15.4)	Carna Biosciences	08-182
<b>TIE2 [0.5]</b>	ULight-poly GT (19.3)	ULight-TK (17.7)	ULight-poly GAT (9.4)	Carna Biosciences	08-185
<b>TNK1 [1]</b>	ULight-poly GAT (15.2)	ULight-poly GT (9.3)	ULight-TK (6.8)	Carna Biosciences	08-104
<b>TRKA (NTRK1) [0.5]</b>	ULight-TK (23.2)	ULight-poly GAT (17.5)	ULight-poly GT (16.3)	Carna Biosciences	08-186

Kinase [Concentration, nM]	ULight Substrate 1	ULight Substrate 2	ULight Substrate 3	Kinase Supplier	Supplier Cat. No.
<b>TRKB (NTRK2) [0.5]</b>	ULight-TK (28.0)	ULight-poly GAT (26.3)	ULight-poly GT (22.9)	Carna Biosciences	08-187
<b>TRKC (NTRK3) [0.5]</b>	ULight-poly GT (34.1)	ULight-poly GAT (22.3)	ULight-TK (6.4)	Carna Biosciences	08-188
<b>TXK [3]</b>	ULight-poly GAT (18.9)	ULight-poly GT (11.0)	ULight-TK (5.9)	Carna Biosciences	08-183
<b>TYK2 [4]</b>	ULight-JAK-1 (15.2)	ULight-IRS-1 (7.3)	ULight-TK (7.3)	Carna Biosciences	08-147
<b>TYRO3 [0.25]</b>	ULight-poly GT (21.5)	ULight-poly GAT (9.1)	ULight-TK (6.1)	Carna Biosciences	08-109
<b>YES [0.25]</b>	ULight-TK (28.0)	ULight-poly GT (15.3)	ULight-poly GAT (14.0)	Carna Biosciences	08-175
<b>ZAP70 [4]</b>	ULight-poly GAT (15.3)	ULight-poly GT (11.1)	ULight-TK (7.6)	Carna Biosciences	08-077

**Kinase assay components:**

Kinases: see table for concentration

ATP: 200  $\mu$ M in kinase reaction

ULight-poly GT, ULight-poly GAT and ULight-IRS-1:100 nM in kinase reaction

ULight-JAK-1, ULight-TK and ULight-CDK1: 50 nM in kinase reaction

Europium anti-phospho-substrate antibodies: 2 nM in final volume

**Kinase buffer:**

50 mM HEPES pH 7.5

10 mM MgCl<sub>2</sub>

1 mM EGTA

2 mM DTT and 0.01% Tween 20

Kinase reactions were performed in 10  $\mu$ L in white OptiPlates™-384 (cat# 6007290). After 2 h incubation at 23 °C, kinase reactions were stopped with EDTA (10 mM final concentration in 20  $\mu$ L). Eu-anti-phospho antibodies were added and incubated for one hour prior to detection with the EnVision®. All kinases were sourced from commercial vendors, and from commercially available lots.

**LANCE Ultra products used for this study:**

	Catalog number	Phospho-Motif
ULight-poly GT	TRF0100	[EY(4:1)]n
ULight-poly GAT	TRF0101	[EAY(1:1:1)]n
ULight-IRS-1 (Tyr983) Peptide	TRF0120	SRGD <u>Y</u> MTMQ
ULight-JAK-1 (Tyr1023) Peptide	TRF0121	DKEY <u>Y</u> TVKD
ULight-CDK1 (Tyr15) Peptide	TRF0122	GEGT <u>Y</u> VVY
ULight-TK Peptide	TRF0127	<u>Y</u>
Europium-anti-phosphotyrosine (PT66)	AD0068, AD0069	<u>Y</u>
KinaSelect TK kit*	TRF0301-D	<u>Y</u>

\*contains ULight-TK Peptide, 0.5 nmole, Europium-anti-phosphotyrosine (PT66), 10  $\mu$ g and Lance Detection Buffer 10X, 1.8 mL

