Revision 1

#9918 Store at -20°C

Translational Control Antibody Sampler Kit

1 Kit (6 x 20 microliters)

Cell Signaling TECHNOLOGY®

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Product Includes	Product #	Quantity	Mol. Wt	Isotype/Source
Phospho-Akt (Ser473) (D9E) XP® Rabbit mAb	4060	20 µl	60 kDa	Rabbit IgG
Phospho-p70 S6 Kinase (Thr389) (108D2) Rabbit mAb	9234	20 µl	70, 85 kDa	Rabbit IgG
Phospho-S6 Ribosomal Protein (Ser235/236) (D57.2.2E) XP® Rabbit mAb	4858	20 µl	32 kDa	Rabbit IgG
Phospho-eIF2α (Ser51) (D9G8) XP® Rabbit mAb	3398	20 µl	38 kDa	Rabbit IgG
Phospho-4E-BP1 (Thr37/46) (236B4) Rabbit mAb	2855	20 µl	15 to 20 kDa	Rabbit IgG
Phospho-eIF4E (Ser209) Antibody	9741	20 µl	25 kDa	Rabbit
Anti-rabbit IgG, HRP-linked Antibody	7074	100 µl		Goat

Please visit cellsignal.com for individual component applications, species cross-reactivity, dilutions, protocols, and additional product information.

Description

The Translational Control Antibody Sampler Kit provides a fast and economical means of evaluating multiple proteins involved in translational control. The kit contains enough primary and secondary antibody to perform two Western blot experiments.

Storage

Supplied in 10 mM sodium HEPES (pH 7.5), 150 mM NaCl, 100 µg/ml BSA, 50% glycerol and less than 0.02% sodium azide. Store at –20°C. Do not aliquot the antibody.

Background

Key steps in translational control occur at the level of eukaryotic initiation factor 4F (eIF4F) and p70 S6 kinase regulation. eIF4F is a complex whose functions include the recognition of the mRNA 5' cap structure. Several stimuli, such as insulin and various growth and survival factors, regulate the eIF4F complex and p70 S6 kinase primarily by triggering a signaling cascade dependent on sequential activation of PI3K, Akt/PKB and mTOR/FRAP kinases. Akt is activated by phosphorylation within the C-terminus at Ser473 and within the activation loop at Thr308 by phospholipid-dependent kinases. Inactivation in vivo of PI3K by the highly selective inhibitor LY294002 inhibits Akt and downstream elements of this cascade. Direct phosphorylation of mTOR/FRAP at Ser2448 by Akt is a key regulatory event controlling its kinase activity. mTOR/FRAP activity can be effectively blocked by Rapamycin, leading to inactivation of eukaryotic initiation factor 4E binding protein 1 (4E-BP1), an inhibitor of translation initiation, and activation of p70 S6 kinases. Inactivation of 4E-BP1 by sequential phosphorylation causes the release of eIF4E, which, together with eIF4G and other factors, forms a functional eIF4F cap binding complex. p70 S6 kinases phosphorylates the 40S ribosomal subunit protein S6 and stimulates the translation of 5' oligopyrimidine tract containing mRNAs. The Erk pathway is also involved in regulation at this level by regulating the eIF4E kinase, Mnk1, and activating p70 S6 kinase. Tuberin, a product of the tumor supressor gene TSG2, is directly phosphorylated atThr1462 by Akt/PKB. Tuberin inhibits the mammalian target of rapamycin, mTOR, which results in inhibition of p70 S6 kinase and activation of 4E-BP1 and, therefore, inhibition of translation.

Background References

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6. Dever, T.E. (2002) *Cell* 108, 545-56.
7. Goncharova, E.A. et al. (2002) *J Biol Chem* 277, 30958-67.

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