

# PDGF Receptor Activation Antibody Sampler Kit



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1 Kit (8 x 20 microliters)

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**For Research Use Only. Not for Use in Diagnostic Procedures.**

| Product Includes  | Product # | Quantity    | Mol. Wt    | Isotype/Source |
|---|-----------|-------------|------------|----------------|
| Phospho-PDGF Receptor $\beta$ (Tyr751) (C63G6) Rabbit mAb                           | 4549      | 20 $\mu$ l  | 190 kDa    | Rabbit IgG     |
| PDGF Receptor $\beta$ (28E1) Rabbit mAb   | 3169      | 20 $\mu$ l  | 190 kDa    | Rabbit IgG     |
| Phospho-SHP-2 (Tyr542) Antibody   | 3751      | 20 $\mu$ l  | 72 kDa     | Rabbit         |
| SHP-2 (D50F2) Rabbit mAb  | 3397      | 20 $\mu$ l  | 72 kDa     | Rabbit IgG     |
| Phospho-Akt (Ser473) (D9E) XP <sup>®</sup> Rabbit mAb                               | 4060      | 20 $\mu$ l  | 60 kDa     | Rabbit IgG     |
| Akt (pan) (C67E7) Rabbit mAb  | 4691      | 20 $\mu$ l  | 60 kDa     | Rabbit IgG     |
| Phospho-p44/42 MAPK (Erk1/2) (Thr202/Tyr204) (D13.14.4E) XP <sup>®</sup> Rabbit mAb | 4370      | 20 $\mu$ l  | 44, 42 kDa | Rabbit IgG     |
| p44/42 MAPK (Erk1/2) (137F5) Rabbit mAb   | 4695      | 20 $\mu$ l  | 42, 44 kDa | Rabbit IgG     |
| Anti-rabbit IgG, HRP-linked Antibody  | 7074      | 100 $\mu$ l |            | Goat           |

Please visit [cellsignal.com](http://cellsignal.com) for individual component applications, species cross-reactivity, dilutions, protocols, and additional product information.

## Description

The PDGF Receptor Activation Antibody Sampler Kit provides an economical means to evaluate the activation status of multiple members of the PDGF receptor pathway, including SHP-2, Akt, and p44/42 MAPK (Erk1/2). The kit includes enough antibody to perform two western blot experiments per primary antibody.

## Storage

Supplied in 10 mM sodium HEPES (pH 7.5), 150 mM NaCl, 100  $\mu$ g/ml BSA, 50% glycerol and less than 0.02% sodium azide. Store at  $-20^{\circ}\text{C}$ . Do not aliquot the antibody.

## Background

Platelet derived growth factor (PDGF) family proteins form dimers (PDGF AA, PDGF AB, PDGF BB, PDGF CC, and PDGF DD) that bind receptor tyrosine kinases PDGF receptor  $\alpha$  (PDGFR $\alpha$ ) and PDGF receptor  $\beta$  (PDGFR $\beta$ ) in a specific pattern. PDGFR $\beta$  homodimers bind PDGF BB and DD homodimers and the PDGF AB heterodimer. Heteromeric receptor PDGF  $\alpha/\beta$  binds PDGF B, C, and D homodimers and the PDGF AB heterodimer (1). Ligand binding induces PDGF receptor dimerization and autophosphorylation, followed by binding and activation of cytoplasmic SH2 domain-containing signal transduction molecules, such as GRB2, Src, GAP, PI3 kinase, PLC $\gamma$ , and NCK. Activated PDGF receptors initiate signaling pathways that control cell growth, actin reorganization, migration, and differentiation (2). PDGFR $\beta$  kinase-insert region residue Tyr751 forms the PI3 kinase docking site, and phosphorylation of PDGFR $\beta$  at this site inhibits the association between the SH2 domain of the PI3 kinase p85 subunit and PDGFR $\beta$  (3,4).

SHP-2 (PTPN11) is a nonreceptor protein tyrosine phosphatase that participates in signaling pathways that control cell growth, differentiation, migration, and death (5). Activation of SHP-2 and its association with Gab1 is critical for sustained Erk activation downstream of growth factor receptors and cytokines (6). Phosphorylation of SHP-2 at Tyr542 and Tyr580 in response to growth factor receptor activation is thought to relieve basal inhibition and stimulate SHP-2 tyrosine phosphatase activity (7,8). Insulin and various growth/survival factors activate Akt, a kinase that acts in a wortmannin-sensitive pathway involving PI3 kinase to help control survival and apoptosis (9-11). Akt is activated by phospholipid binding and activation loop phosphorylation at Thr308 by PDK1 (12) and by phosphorylation within the carboxy terminus at Ser473.

The p44/42 MAPK (Erk1/2) signaling pathway is activated in response to extracellular stimuli including mitogens, growth factors, and cytokines (13-15). Research suggests that this pathway is an important target in cancer diagnosis and treatment (16). External stimuli lead to activation of a kinase cascade that results in the activation of p44 and p42 by a MAP kinase. MEK1 and MEK2 activate p44 and p42 through phosphorylation of activation loop residues Thr202/Tyr204 and Thr185/Tyr187, respectively. Clinical studies describe PDGF expression in a number of different solid tumors, from glioblastomas to prostate carcinomas. The biological role of PDGF signaling in these tumors varies from autocrine stimulation of cancer cell growth to more subtle paracrine interactions involving adjacent stroma and even angiogenesis. Targeting PDGF signaling may be an effective way for tumor treatment (17).

## Background References

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