

# PDGF Receptor Activation Antibody Sampler Kit



Orders: 877-616-CELL (2355)  
orders@cellsignal.com

Support: 877-678-TECH (8324)

Web: info@cellsignal.com  
cellsignal.com

1 Kit (8 x 20 microliters)

3 Trask Lane | Danvers | Massachusetts | 01923 | USA

**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

1. Deuel, T.F. et al. (1988) *Biofactors* 1, 213-7.
2. Ostman, A. and Heldin, C.H. (2001) *Adv Cancer Res* 80, 1-38.

3. Betsholtz, C. et al. (2001) *Bioessays* 23, 494-507.
  4. Ramalingam, K. et al. (1995) *Bioorg Med Chem* 3, 1263-72.
  5. Qu, C.K. (2000) *Cell Res* 10, 279-88.
  6. Maroun, C.R. et al. (2000) *Mol Cell Biol* 20, 8513-25.
  7. Bennett, A.M. et al. (1994) *Proc Natl Acad Sci U S A* 91, 7335-9.
  8. Lu, W. et al. (2001) *Mol Cell* 8, 759-69.
  9. Franke, T.F. et al. (1997) *Cell* 88, 435-7.
  10. Burgering, B.M. and Coffey, P.J. (1995) *Nature* 376, 599-602.
  11. Franke, T.F. et al. (1995) *Cell* 81, 727-36.
  12. Alessi, D.R. et al. (1996) *EMBO J* 15, 6541-51.
  13. Roux, P.P. and Blenis, J. (2004) *Microbiol Mol Biol Rev* 68, 320-44.
  14. Baccarini, M. (2005) *FEBS Lett* 579, 3271-7.
  15. Meloche, S. and Pouyssegur, J. (2007) *Oncogene* 26, 3227-39.
  16. Roberts, P.J. and Der, C.J. (2007) *Oncogene* 26, 3291-310.
  17. George, D. (2001) *Semin Oncol* 28, 27-33.
- 

## Trademarks and Patents

Cell Signaling Technology is a trademark of Cell Signaling Technology, Inc.

XP is a registered trademark of Cell Signaling Technology, Inc.

U.S. Patent No. 7,429,487, foreign equivalents, and child patents deriving therefrom.

All other trademarks are the property of their respective owners. Visit [cellsignal.com/trademarks](http://cellsignal.com/trademarks) for more information.

## Limited Uses

Except as otherwise expressly agreed in a writing signed by a legally authorized representative of CST, the following terms apply to Products provided by CST, its affiliates or its distributors. Any Customer's terms and conditions that are in addition to, or different from, those contained herein, unless separately accepted in writing by a legally authorized representative of CST, are rejected and are of no force or effect.

Products are labeled with For Research Use Only or a similar labeling statement and have not been approved, cleared, or licensed by the FDA or other regulatory foreign or domestic entity, for any purpose. Customer shall not use any Product for any diagnostic or therapeutic purpose, or otherwise in any manner that conflicts with its labeling statement. Products sold or licensed by CST are provided for Customer as the end-user and solely for research and development uses. Any use of Product for diagnostic, prophylactic or therapeutic purposes, or any purchase of Product for resale (alone or as a component) or other commercial purpose, requires a separate license from CST. Customer shall (a) not sell, license, loan, donate or otherwise transfer or make available any Product to any third party, whether alone or in combination with other materials, or use the Products to manufacture any commercial products, (b) not copy, modify, reverse engineer, decompile, disassemble or otherwise attempt to discover the underlying structure or technology of the Products, or use the Products for the purpose of developing any products or services that would compete with CST products or services, (c) not alter or remove from the Products any trademarks, trade names, logos, patent or copyright notices or markings, (d) use the Products solely in accordance with CST Product Terms of Sale and any applicable documentation, and (e) comply with any license, terms of service or similar agreement with respect to any third party products or services used by Customer in connection with the Products.