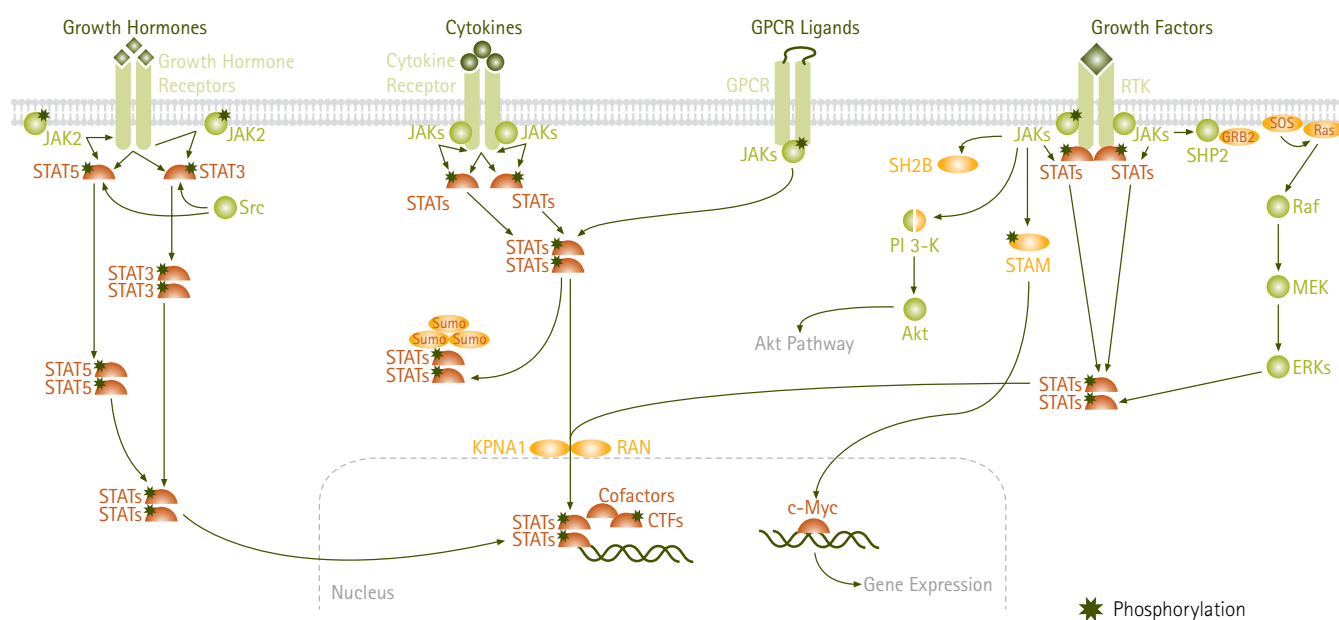


# Pathways and Biomarkers of JAK/STAT Signaling

The Janus kinase (JAK)/signal transducers and activators of transcription (STAT) signaling pathway plays an important role in cell proliferation, cell differentiation, cell migration, and cell death. It is the principal signaling mechanism for a variety of cytokines and growth factors. Constitutive activation or dysregulation of JAK/STAT signaling can result in inflammatory disease, erythrocytosis, gigantism, and leukemia.

In the JAK/STAT signaling scheme, ligand binding to cytokine receptors induces dimerization of their receptor subunits. Following ligand binding, the cytoplasmic domains of two receptor subunits associate with JAK tyrosine kinases. The activated JAKs can then phosphorylate STATs. In the nucleus, dimerized STATs bind to specific regulatory sequences to activate or repress transcription of target genes.



## Selected Antibodies for JAK/STAT Signaling Research

| Description                                     | Species Reactivity*   | Applications**     | Qty/Pk | Catalogue No. |
|-------------------------------------------------|-----------------------|--------------------|--------|---------------|
| Anti-JAK1                                       | H, Ht, M, R, Rb       | IP, WB             | 150 µL | 06-272        |
| Anti-JAK1, clone 73                             | H, M, R, Ca, Xn, Ch   | IF, IP, WB         | 100 µg | 05-1154       |
| Anti-JAK2                                       | H, M, R               | IP, WB             | 100 µg | 06-1310       |
| Anti-phospho JAK2 (Tyr570)                      | H, R, Eq, Chp, Pm, Po | WB                 | 100 µg | 09-241        |
| Anti-phospho JAK2 (Tyr813)                      | H, M, R, Eq, Chp, Po  | WB                 | 100 µg | 09-242        |
| Anti-phospho-JAK2 (Tyr1007/Tyr1008), clone E132 | H, M, R               | ICC, IH(P), IP, WB | 100 µL | 04-1098       |
| Anti-JAK3                                       | H, M                  | IH(P), IP, WB      | 100 µL | 07-1488       |
| Anti-JAK3, clone HL423                          | H, M                  | Mplex, WB          | 200 µL | 04-011        |
| Anti-STAT1                                      | H                     | WB                 | 100 µL | 04-069        |
| Anti-Phospho-STAT1 (Tyr701), clone 5C9.2        | H, M, R               | WB                 | 100 µg | 05-1064       |
| Anti-STAT2, CT                                  | H, M                  | ICC, EMSA, IP, WB  | 200 µg | 06-502        |
| Anti-phospho-STAT2 (Tyr689)                     | H, M                  | IP, WB             | 100 µL | ABE541        |
| Anti-STAT3                                      | H, M, R, B, Po, Pm    | IP, WB             | 100 µg | 07-2173       |
| Anti-STAT3, phospho (Ser727), clone 6E4         | H, M                  | ICC, IH(P), IP, WB | 100 µL | MAB3705       |
| Anti-STAT5A                                     | H, M, R               | IP, WB             | 100 µL | 06-968        |
| Anti-phospho-STAT5A/B (Tyr694/699)              | B, H, M, R            | DB, WB             | 100 µL | 07-586        |
| Anti-STAT6                                      | H                     | WB                 | 100 µg | 07-914        |
| Anti-phospho-STAT6 (Tyr641), clone 16E12        | H, M, R               | WB                 | 100 µg | 05-590        |

## Selected Inhibitors of JAK/STAT Signaling

| Description                                                                 | Comments                                                                                                                                                                                              | Size           | Catalogue No. |
|-----------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|---------------|
| JAK Inhibitor I (Pyridone 6)                                                | A cell-permeable, reversible, ATP-competitive inhibitor of JAK1 ( $IC_{50}$ = 15 nM for murine JAK1), JAK2 ( $IC_{50}$ = 1 nM), JAK3 ( $K_i$ = 5 nM), and Tyk2 ( $IC_{50}$ = 1 nM).                   | 500 µg<br>1 mg | 420099        |
| JAK2 Inhibitor IV<br>3-Amino-5-(N-tert-butyl-sulfonamido-4-phenyl)-indazole | A potent inhibitor of both the wild-type JAK2 and the constitutively active V617F mutant ( $IC_{50}$ = 78 and 206 nM, respectively).                                                                  | 5 mg           | 420139        |
| JAK3 Inhibitor VI                                                           | A cell-permeable, potent, and reversible inhibitor of JAK3 ( $IC_{50}$ = 27 nM).                                                                                                                      | 5 mg           | 420126        |
| STAT3 Inhibitor III, WP1066                                                 | A cell-permeable analog of AG 490 (Cat. No. 658401) that acts as a STAT3 pathway inhibitor. Inhibits malignant glioma growth ( $IC_{50}$ = 5.6 and 3.7 µM in U87-MG and U373-MG cells, respectively). | 10 mg          | 573097        |
| STAT3 Inhibitor V, Stattic<br>6-Nitrobenzo[b]thiophene-1, 1-dioxide         | A cell-permeable inhibitor of STAT3 cellular function that targets the STAT3-SH2 domain and prevents its association with upstream kinases.                                                           | 25 mg          | 573099        |
| STAT5 Inhibitor II, IQDMA                                                   | A cell-permeable inhibitor of STAT5 signaling that inhibits the growth of various tumor cells ( $IC_{50}$ = 8, 5, and 8 µM for A549, HL-60, and K562 cells, respectively).                            | 10 mg          | 420294        |

\*Species: B: bovine, Ca: canine; Ch: chicken; Chp: chimpanzee; Eq: equine; H: human; M: mouse, Op: opossum; Pm: primate; R: rat; Sh: sheep; Xn: xenopus

\*\*Applications: ELISA: enzyme-linked immunosorbent assay; EMSA: electrophoretic mobility shift assay; FC: flow cytometry; ICC: immunocytochemistry, IF: immunofluorescence; IH: immunohistochemistry; IP: immunoprecipitation; Mplex: multiplexing; WB: Western blotting



[www.merckmillipore.com](http://www.merckmillipore.com)

Merck Millipore, the M logo, Calbiochem, Chemicon, and Upstate are registered trademarks and InhibitorSelect is a trademark of Merck KGaA, Darmstadt, Germany.

All other trademarks are the property of their respective owners.

Lit No. PR3513NEU BS-GEN-14-10239 03/2016

© 2016 EMD Millipore Corporation, Billerica, MA USA. All rights reserved.

## To Place an Order or Receive Technical Assistance

In Europe, please call Customer Service:

France: 0825 045 645  
Germany: 01805 045 645  
Italy: 848 845 645  
Spain: 901 516 645 Option 1  
Switzerland: 0848 645 645  
United Kingdom: 0870 900 46 45

For other countries across Europe, please call:  
+44 (0) 115 943 0840

Or visit: [www.merckmillipore.com/offices](http://www.merckmillipore.com/offices)

For Technical Service visit: [www.merckmillipore.com/techservice](http://www.merckmillipore.com/techservice)