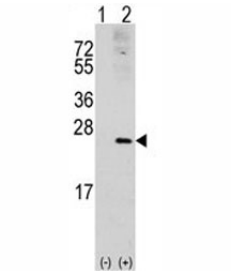
# Ras-related C3 Botulinum Toxin Substrate 1 Antibody / RAC1 (F50528)

| Catalog No. | Formulation | Size |
|---|---|---|
| F50528-0.4ML | In 1X PBS, pH 7.4, with 0.09% sodium azide | 0.4 ml |
| F50528-0.08ML | In 1X PBS, pH 7.4, with 0.09% sodium azide | 0.08 ml |

**Bulk quote request**

| | |
|---|---|
| **Availability** | 1-3 business days |
| **Species Reactivity** | Human |
| **Predicted Reactivity** | Mouse, Rat, Bovine, Pig, Primate, Chicken, Drosophila |
| **Format** | Antigen affinity purified |
| **Host** | Rabbit |
| **Clonality** | Polyclonal (rabbit origin) |
| **Isotype** | Rabbit Ig |
| **Purity** | Antigen affinity |
| **UniProt** | P63000 |
| **Applications** | Western blot: 1:1000 |
| **Limitations** | This Ras-related C3 Botulinum Toxin Substrate 1 Antibody is available for research use only. |




Ras-related C3 Botulinum Toxin Substrate 1 Antibody WB Analysis of RAC1-Transfected 293 Cells. Western blot analysis of nontransfected human 293 cells (lane 1) and RAC1-transfected 293 cells (lane 2) using RAC1 Rabbit Polyclonal Antibody. A prominent immunoreactive band migrating at approximately 25 kDa is detected in the RAC1-transfected sample, with substantially lower signal in the nontransfected control. Each lane contains 2 ug of cell lysate.

## Description

Ras-related C3 Botulinum Toxin Substrate 1 Antibody targets RAC1, a member of the Rho family of small GTPases that regulate cytoskeletal organization, cell adhesion, migration, and intracellular signaling. RAC1, also known as p21-Rac1, functions as a molecular switch by cycling between inactive GDP-bound and active GTP-bound states. Guanine nucleotide exchange factors (GEFs) promote RAC1 activation, while GTPase-activating proteins (GAPs) stimulate GTP hydrolysis. Guanine nucleotide dissociation inhibitors (GDIs) regulate its intracellular distribution and availability for

activation. These mechanisms allow RAC1 to coordinate cellular responses to extracellular signals and changes in the surrounding environment.

One of the principal functions of RAC1 is regulation of actin cytoskeleton remodeling. Activated RAC1 stimulates the WAVE regulatory complex, which promotes Arp2/3-dependent actin nucleation and the formation of branched actin networks. These processes support lamellipodia formation, cell spreading, and directional migration. RAC1 also influences membrane trafficking, cell polarity, and the assembly and turnover of adhesion complexes. Spatially restricted RAC1 activation at the leading edge of migrating cells helps coordinate membrane protrusion with interactions between the cytoskeleton and extracellular matrix, enabling controlled cellular movement.

Beyond cytoskeletal regulation, RAC1 participates in signaling pathways associated with cell proliferation, survival, differentiation, and inflammatory responses. RAC1 interacts with p21-activated kinases (PAKs), which influence downstream MAP kinase signaling and cytoskeletal regulatory proteins. It also contributes to reactive oxygen species production through NADPH oxidase complexes. In immune cells, RAC1-dependent signaling supports chemotaxis, phagocytosis, and other processes requiring dynamic actin rearrangement. RAC1 additionally contributes to neuronal development, dendritic spine formation, and synaptic organization through its effects on actin-dependent cellular structures.

Abnormal RAC1 activity has been implicated in cancer progression, particularly through its effects on cell motility, invasion, and survival signaling. Activating mutations and altered regulation of RAC1-associated pathways can contribute to persistent signaling in certain malignancies. The historical name Ras-related C3 botulinum toxin substrate 1 reflects RAC1's identification as a substrate of bacterial C3 exoenzyme. RAC1 remains an important target for investigating cytoskeletal dynamics, intracellular signaling, and mechanisms underlying abnormal cellular behavior. RAC1 Rabbit Polyclonal Antibody supports research into the expression and regulation of this small GTPase and its contributions to cellular organization and disease.

RAC1 is a central regulator of actin cytoskeleton remodeling, cell migration, and intracellular signaling. Researchers investigating these functions can also explore our RAC1 Antibody R32162, which is validated for WB, IHC, IF, and FACS.

## Application Notes

Titration of the Ras-related C3 Botulinum Toxin Substrate 1 Antibody may be required due to differences in protocols and secondary/substrate sensitivity.

## Immunogen

A portion of amino acids 49-78 from the human protein was used as the immunogen for this RAC1 antibody.

## Storage

Aliquot the RAC1 antibody and store frozen at -20oC or colder. Avoid repeated freeze-thaw cycles.

## Alternate Names

RAC1 antibody, Rac1 antibody, Rac family small GTPase 1 antibody, p21-Rac1 antibody, Ras-related C3 botulinum toxin substrate 1 antibody, TC-25 antibody, Cell migration-inducing gene 5 protein antibody

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