

Spark YG™ 581 anti-p53 Phospho (Ser15) Recombinant Antibody

Catalog# / Size	640755 / 25 µg 640756 / 100 µg
Clone	P53S15-1C11.Rec
Regulatory Status	RUO
Other Names	P53, Tumor protein 53, LFS1, Tumor suppressor p53, Cellular tumor antigen P53, Antigen NY-CO-13, Phosphoprotein p53
Isotype	Rabbit IgG
Description	The p53 transcription factor is a tumor suppressor which regulates genome stability via the cell cycle, DNA repair, apoptosis, and senescence. It is activated in response to various cellular stresses including DNA damage. Mutations in TP53 gene are found in approximately half of all human cancers, making it one of the most mutated genes in cancer. These mutations often lead to loss of tumor-suppressing functions, contributing to uncontrolled cell proliferation and tumor development. Phosphorylation at Serine 15 is particularly important for p53 activation and function. This modification, often triggered by DNA damage, enhances p53 stability and its ability to activate target genes involved in cell cycle arrest and apoptosis. Without this phosphorylation, p53 ability to respond to stress signals and prevent tumorigenesis is significantly impaired.

Product Details

Verified Reactivity	Human
Antibody Type	Recombinant
Host Species	Rabbit
Immunogen	Synthetic peptide of human p53 phosphorylated at Ser15
Formulation	Phosphate-buffered solution, pH 7.2, containing 0.09% sodium azide
Preparation	The antibody was purified by affinity chromatography and conjugated with Spark YG™ 581 under optimal conditions.
Concentration	0.5 mg/mL
Storage & Handling	The antibody solution should be stored undiluted between 2°C and 8°C, and protected from prolonged exposure to light. Do not freeze.
Application	ICFC - Quality tested ICC - Verified
Recommended Usage	Each lot of this antibody is quality control tested by intracellular immunofluorescent staining with flow cytometric analysis . For flow cytometric staining, the suggested use of this reagent is ≤ 0.015 µg per million cells in 100 µL volume. For immunocytochemistry, a concentration range of 1.25 - 5.0 µg/mL is recommended. It is recommended that the reagent be titrated for optimal performance for each application. * Spark YG™ 581 has a maximum excitation of 562 nm and a maximum emission of 581 nm.
Excitation Laser	Green Laser (532 nm)/Yellow-Green Laser (561 nm)
Additional Product Notes	For use of this antibody in intracellular flow cytometry (ICFC), we recommend fixation and permeabilization using True-Phos™ Perm Buffer (Cat. No. 425401). For use of this antibody in immunocytochemistry (ICC), we recommend fixation and permeabilization using either PFA-Triton X-100 or PFA-ice-cold methanol. Visit our Technical Protocols Library here to find additional guidance on the relevant applications and experimental conditions.

Antigen Details

Structure	The p53 protein consists of 393 amino acids and has a molecular weight of approximately 53 kDa.
Distribution	- Under normal conditions, p53 is present at low levels and shuttles between the nucleus and the cytoplasm. - Upon activation by stress signals such as DNA damage, p53 accumulates in the nucleus to initiate DNA repair, cell cycle arrest, or apoptosis. - p53 can localize to the mitochondria to promote apoptosis by interacting with pro- and anti-apoptotic protein.
Function	• Cell Cycle Arrest: p53 can halt the cell cycle to allow for DNA repair before the cell proceeds to divide. • DNA Repair: It activates genes involved in DNA repair mechanisms, ensuring that damaged DNA is corrected. • Apoptosis: If the DNA damage is irreparable, p53 can initiate programmed cell death (apoptosis) to prevent the propagation of damaged cells. • Senescence: p53 can induce a state of permanent cell cycle arrest known as senescence, preventing damaged cells from dividing. • Metabolic Regulation: It also plays a role in regulating cellular metabolism and oxidative stress responses.
Interaction	MDM2: This protein is a major negative regulator of p53. It binds to p53, leading to its ubiquitination and degradation. p21: p53 activates the transcription of p21, a cyclin-dependent kinase inhibitor that plays a role in cell cycle arrest. BAX: p53 induces the expression of BAX, a pro-apoptotic protein that promotes apoptosis. PUMA and NOXA: These are other pro-apoptotic proteins regulated by p53, involved in the intrinsic pathway of apoptosis. ATM and ATR: These kinases phosphorylate p53 in response to DNA damage, stabilizing and activating it. BRCA1: p53 interacts with BRCA1, a protein involved in DNA repair. 53BP1: This protein binds to p53 and is involved in DNA damage response. CBP/p300: These are transcriptional co-activators that acetylate p53, enhancing its transcriptional activity.
Biology Area	Apoptosis/Tumor Suppressors/Cell Death, Cancer Biomarkers, Cell Biology, Cell Cycle/DNA Replication, Cell Death, Cell Proliferation and Viability, DNA Repair/Replication, Signal Transduction, Transcription Factors
Molecular Family	Phospho-Proteins, Tumor Suppressors
Antigen References	1. Loughery J, <i>et al.</i> 2014. <i>Nucleic Acids Research</i>. 42:7666. 2. Marei HE, <i>et al.</i> 2021. <i>Cancer Cell International</i>. 21:703. 3. Ahmadi SE, <i>et al.</i> 2024. <i>Biomarker Research</i>. 12:137. 4. Timofeev O, <i>et al.</i> 2021. <i>Cancers</i>. 13:2422.
Regulation	• Post-Translational Modifications: Phosphorylation, acetylation, and ubiquitination are key modifications that regulate p53 stability and activity. • MDM2 Interaction: The protein MDM2 is a major negative regulator of p53. It binds to p53, leading to its ubiquitination and subsequent degradation. • Stress Signals: In response to cellular stress such as DNA damage, hypoxia, or oncogene activation, p53 is stabilized and activated to carry out its tumor suppressor functions. • Mutations in the TP53 gene, is a common feature in many cancers, leading to uncontrolled cell proliferation and tumor development.
Gene ID	7157

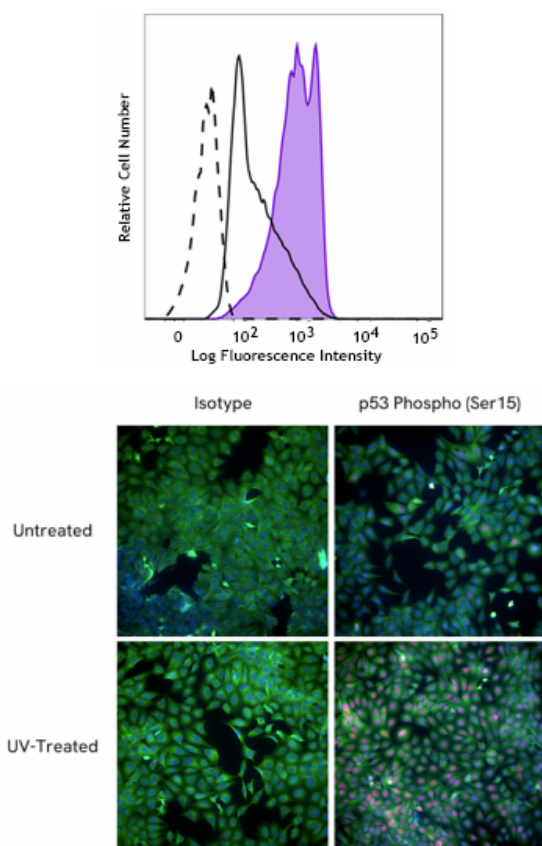
Related Protocols

- [Immunocytochemistry Staining Protocol](#)
- [Intracellular Staining With True-Phos™ Perm Buffer in Cell Suspensions Protocol](#)
- [Intracellular Flow Cytometry Staining Protocol](#)

Other Formats

Purified anti-p53 Phospho (Ser15) Recombinant Antibody, Spark YG™ 581 anti-p53 Phospho (Ser15) Recombinant Antibody, Alexa Fluor® 647 anti-p53 Phospho (Ser15) Recombinant Antibody

Product Data



A-431 cells untreated (negative control, open histogram) or treated with UV light to induce DNA damage (positive control, filled histogram) were fixed and permeabilized using True-Phos™ Perm Buffer (Cat. No. 425401) and then intracellularly stained with Spark YG™ 581 anti-p53 Phospho (Ser15) Recombinant Antibody (clone P53S15-1C11.Rec) or PE Rabbit IgG Isotype control (open histogram, dashed line).

A-431 cells untreated (top panels) or treated with ultraviolet light to induce DNA damage and p53 activation (bottom panels) were fixed and permeabilized with 0.5% Triton X-100, and then intracellularly stained with either Spark YG™ 581 anti-p53 Phospho (Ser15) Recombinant Antibody (clone P53S15-1C11.Rec)(right panels) or PE Rabbit IgG isotype control (left panels). Nuclei were counterstained with DAPI (Cat. No. 422801) (blue), and cytoplasm with Alexa Fluor® 488 anti-Tubulin-α Antibody (Cat. No. 627906) (green). Images were captured using a Revvity Operetta CLS™ High Content Analysis System with a 20X objective.

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