

Alexa Fluor® 647 anti-AMPK α Phospho (Thr172)

Catalog# / Size	600655 / 25 μ g 600656 / 100 μ g
Clone	A20017A
Regulatory Status	RUO
Other Names	PRKAA1, PRKAA2, AMPK α 1, AMPK α 2, AMPK, ACACA Kinase, Tau-Protein Kinase PRKAA1, Tau-Protein Kinase PRKAA2, Protein kinase AMP-Activated, Alpha 1 Catalytic Subunit, HMGCR Kinase
Isotype	Mouse IgG1, κ
Description	AMP-activated protein kinase alpha (AMPK α) is one subunit of the $\alpha\beta\gamma$ heterotrimeric protein complex AMPK. It is a key regulator of metabolism and energy homeostasis in eukaryotes through induction of catabolic pathways and deactivation of anabolic. As an inhibitor of mammalian target of rapamycin complex 1 (mTORC1) pathway, AMPK α is involved in the regulation of cellular growth, cell cycle progression, autophagy, and may play dual roles as both tumor suppressor and promotor. AMPK α is activated via phosphorylation of Threonine residue 172 (Thr172) within the activation loop of the α subunit and is promoted by the allosteric binding of AMP and/or ADP to AMPK's γ subunit. This phosphorylation is mediated by the serine/threonine kinase liver kinase B1 (LKB1) in conjunction with accessory subunits STRAD and MO25 and also by calcium/calmodulin-dependent protein kinase kinase 2 (CAMKK2 aka CAMKK β). Activation is induced by increases in cellular AMP:ATP and ADP:ATP ratios following a decline in ATP levels as well as by cellular stress, DNA damage, glucose starvation, and fluxes in calcium and nutrient levels. Localization of AMPK α Thr172 at the spindle poles suggests a novel role for AMPK in mitotic spindle orientation. AMPK α is a key therapeutic target in the treatment of metabolic disorders and an emerging potential treatment target for cancer.

Product Details

Isotype Control	Alexa Fluor® 647 Mouse IgG1, κ Isotype Ctrl (ICFC)
Verified Reactivity	Human, Mouse
Antibody Type	Monoclonal
Host Species	Mouse
Immunogen	Synthetic peptide of human AMPK alpha phosphorylated at Thr172
Formulation	Phosphate-buffered solution, pH 7.2, containing 0.09% sodium azide
Preparation	The antibody was purified by affinity chromatography and conjugated with Alexa Fluor® 647 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	IHC-P - Quality tested ICFC - Verified
Recommended Usage	Each lot of this antibody is quality control tested by formalin-fixed paraffin-embedded immunohistochemical staining. For immunohistochemistry, a concentration range of 1.0 - 10.0 μ g/mL is suggested. For flow cytometric staining, the suggested use of this reagent is \leq 0.25 μ g per million cells in 100 μ L volume. It is recommended that the reagent be titrated for optimal performance for each application. * Alexa Fluor® 647 has a maximum emission of 668 nm when it is excited at 633 nm / 635 nm. Alexa Fluor® and Pacific Blue™ are trademarks of Life Technologies Corporation. View full statement regarding label licenses
Excitation Laser	Red Laser (633 nm)

Application Notes

This clone was tested for ICC using serum-starved untreated HEK293 cells (negative control) and HEK293 cells treated with 5.0 μ M oligomycin for 30 minutes (positive control). Staining was expected to localize to the nucleus and cytoplasm. Three fix/perm methods were used: methanol fixation or 4% PFA fixation followed by permeabilization with either methanol or Triton X-100. Both PFA fixation followed by methanol permeabilization and PFA fixation followed by Triton X-100 permeabilization produced a strong signal with the expected localization. Methanol-only fixation only produced a faint signal.

RRID

AB_3662306 (BioLegend Cat. No. 600655)
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Antigen Details

Structure

AMPK α is a 552 amino acid protein with a predicted molecular weight of 63 kD.

Distribution

Heart, Skeletal muscle, Kidney / Nucleus and cytoplasm

Function

Serine/threonine-protein kinase, transcription regulation, Wnt signaling, metabolism

Ligand/Receptor

ATP-binding, magnesium, Metal-binding, Nucleotide-binding

Biology Area

Cell Biology, Signal Transduction

Molecular Family

Phospho-Proteins, Protein Kinases/Phosphatase

Antigen References

1. Mihaylova MM, *et al.* 2011. *Nat Cell Biol* 13:1016-23.
2. Stein SC, *et al.* 2000. *Biochem J.* 345:437-43.
3. Thaiparambil JT, *et al.* 2012. *Mol Cell Biol.* 16:3203-17.
4. Vara-Ciruelos D, *et al.* 2019. *Open Biol.* 9:190099.
5. Willows R, *et al.* 2017. *Biochem J.* 474:3059-3073.

Gene ID

[5563](#)

[5562](#)

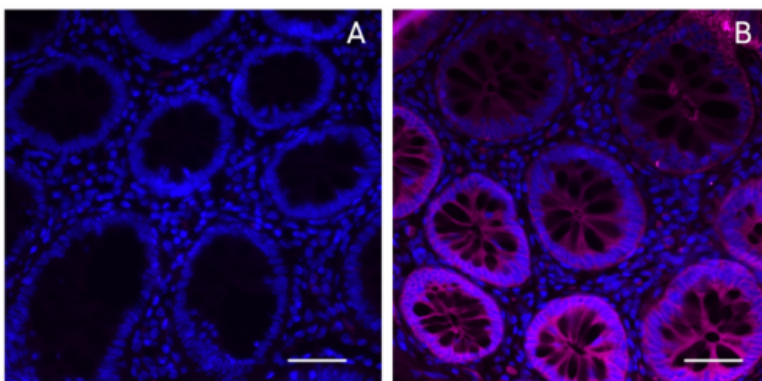
Related Protocols

- [Intracellular Flow Cytometry Staining Protocol](#)
- [Immunohistochemistry Protocol for Paraffin-Embedded Sections](#)

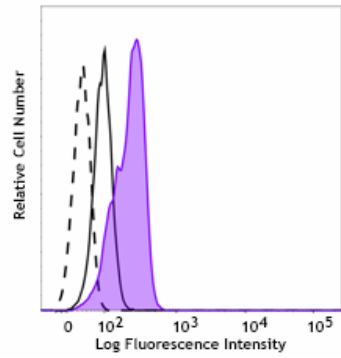
Other Formats

Purified anti-AMPK α Phospho (Thr172), Alexa Fluor $^{\circledR}$ 488 anti-AMPK α Phospho (Thr172), Alexa Fluor $^{\circledR}$ 647 anti-AMPK α Phospho (Thr172), PE anti-AMPK α Phospho (Thr172) Antibody

Product Data



IHC staining with Alexa Fluor $^{\circledR}$ 647 anti-AMPK α Phospho (Thr172) on formalin-fixed, paraffin-embedded human colon was performed following antigen retrieval using Tris-EDTA pH 9.0 Antigen Retrieval Buffer (Cat. No. 422703). Tissue sections were incubated with either Alexa Fluor $^{\circledR}$ 647 Goat anti-mouse only (Cat. No. 405322) (panel A) or with Alexa Fluor $^{\circledR}$ 647 anti-AMPK α Phospho (Thr172) (clone A20017A) (panel B). Nuclei were counterstained with DAPI (Cat. No. 422801). Scale bar: 50 μ m



Serum starved HEK293 cells were either untreated (low expression control, open histogram) or treated with Oligomycin (positive control, filled histogram). The cells were fixed and permeabilized using True-Phos™ Perm Buffer (Cat. No. 425401) and intracellularly stained with Alexa Fluor® 647 anti-AMPK α Phospho (Thr172) (clone A20017A) or Alexa Fluor® 647 mouse IgG1, κ Isotype Control (open histogram, dashed line) (Cat No. 400155).

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