PRODUCT INFORMATION

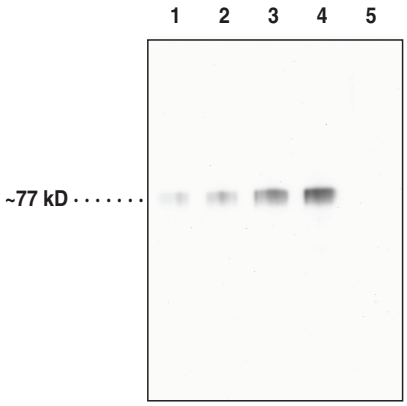
PAD6 Monoclonal Antibody (Clone 4B7)

Item No. 25965

Overview and Properties

Contents:	This vial contains 100 µg of protein G-purified monoclonal antibody
Synonyms:	PADI6, hPADVI, Peptidylarginine Deiminase 6, Protein Arginine Deiminase 6
Immunogen:	Full-length human recombinant PAD6 protein
Cross Reactivity:	(-) PAD1, PAD2, PAD3, PAD4
Species Reactivity:	(+) Human PAD6
Uniprot No.:	Q6TGC4
Form:	Liquid
Storage:	-20°C (as supplied)
Stability:	≥3 years
Storage Buffer:	PBS, pH 7.2, with 50% glycerol and 0.02% sodium azide
Clone:	4B7
Host:	Mouse
Isotype:	IgG1
Applications:	ELISA and Western blot (WB); the recommended starting dilution for ELISA and WB is 1:1,000. Other applications were not tested, therefore optimal working concentration/ dilution should be determined empirically.

Image



Lane 1: PAD6 Recombinant Protein (5 ng)
Lane 2: PAD6 Recombinant Protein (10 ng)
Lane 3: PAD6 Recombinant Protein (25 ng)
Lane 4: PAD6 Recombinant Protein (50 ng)
Lane 5: PAD3 Recombinant Protein (100 ng)

CAYMAN CHEMICAL
1180 EAST ELLSWORTH RD
ANN ARBOR, MI 48108 · USA
PHONE: [800] 364-9897
[734] 971-3335
FAX: [734] 971-3640
CUSTSERV@CAYMANCHEM.COM
WWW.CAYMANCHEM.COM

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Description

Protein arginine deiminase 6 (PAD6) is a homodimeric guanidine-modifying enzyme belonging to the amidinotransferase superfamily.[1] It is a calcium-dependent enzyme that catalyzes the post-translational modification of target proteins by converting arginine to citrulline. PAD6 is expressed in mammalian oocytes, sperm cells, and early embryos.[2] In mammalian oocytes and early embryo cytoplasm, its expression is localized to cytoskeletal sheets, dynamic structures containing various keratins, which are major targets for citrullination. *PAD6*$^{-/-}$ oocytes exhibit reduced microtubule acetylation and defective organelle positioning and redistribution, suggesting a role for PAD6 in regulating microtubule-mediated organelle movement and positioning.[3] *PAD6*$^{-/-}$ female, but not male, mice are infertile due to a reduction of *de novo* protein synthesis, cytoskeletal sheet formation, and ribosomal RNA which induces arrest of zygote development at the two-cell stage.[2,4] PAD6 is regulated by newborn ovary homeobox (Nobox), as its promoter contains a Nobox DNA-binding element (NBE) and expression and activity of PAD6 are decreased in *Nobox*$^{-/-}$ mouse ovaries.[5] In human females, homozygous nonsense mutations and compound-heterozygous mutations in PAD6 induce early embryonic arrest following *in vitro* fertilization (IVF) or intracytoplasmic sperm injection (ICSI).[6] Cayman's PAD6 monoclonal antibody (Clone 4B7) can be used for Western blot and ELISA applications. The antibody recognizes PAD6 at ~77 kDa from human samples.

References

1. Bicker, K.L. and Thompson, P.R. The protein arginine deiminases: Structure, function, inhibition, and disease. *Bioplymers* **99(2)**, 155-163 (2013).
2. Esposito, G., Vitale, A.M., Leijten, F.P., *et al.* Peptidylarginine deiminase (PAD) 6 is essential for oocyte cytoskeletal sheet formation and female fertility. *Mol. Cell Endocrinol.* **273(1-2)**, 25-31 (2007).
3. Kan, R., Yurttas, P., Kim, B., *et al.* Regulation of mouse oocyte microtubule and organelle dynamics by PADI6 and the cytoplasmic lattices. *Dev. Biol.* **350(2)**, 311-322 (2011).
4. Liu, X., Morency, E., Li, T., *et al.* Role for PADI6 in securing the mRNA-MSY2 complex to the oocyte cytoplasmic lattices. *Cell Cycle* **16(4)**, 360-366 (2017).
5. Choi, M., Lee, O.H., Jeon, S., *et al.* The oocyte-specific transcription factor, Nobox, regulates the expression of Pad6, a peptidylarginine deiminase in the oocyte. *FEBS Lett.* **584(16)**, 3629-3634 (2010).
6. Xu, Y., Shi, Y., Fu, J., *et al.* Mutations in PADI6 cause female infertility characterized by early embryonic arrest. *Am. J. Hum. Genet.* **99(3)**, 744-752 (2016).

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