

# PRODUCT INFORMATION



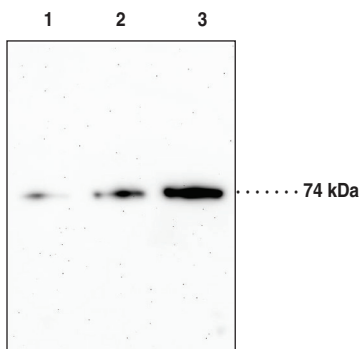
## PAD4 Monoclonal Antibody (Clone 6D8)

Item No. 19669

### Overview and Properties

|                            |   |
|----------------------------|---|
| <b>Contents:</b>           | This vial contains 100 µg of protein G-purified IgG.  |
| <b>Synonyms:</b>           | HL-60 PAD, PADI4, Peptidylarginine Deiminase IV, Protein-arginine Deiminase Type-4  |
| <b>Immunogen:</b>          | Full length recombinant PAD4 protein  |
| <b>Species Reactivity:</b> | (+) Human; other species not tested   |
| <b>Uniprot No.:</b>        | Q9UM07  |
| <b>Form:</b>               | Liquid  |
| <b>Storage:</b>            | -20°C (as supplied)   |
| <b>Stability:</b>          | ≥1 year   |
| <b>Storage Buffer:</b>     | PBS, pH 7.2, with 50% glycerol and 0.02% sodium azide   |
| <b>Clone:</b>              | 6D8   |
| <b>Host:</b>               | Mouse   |
| <b>Isotype:</b>            | IgG <sub>1</sub>  |
| <b>Applications:</b>       | ELISA and Western blot (WB); the recommended starting dilution is 1:500. Other applications were not tested, therefore optimal working concentration/dilution should be determined empirically. |

### Image



**Lane 1:** PAD4 Recombinant Protein (25 ng)  
**Lane 2:** PAD4 Recombinant Protein (50 ng)  
**Lane 3:** PAD4 Recombinant Protein (100 ng)

WARNING  
THIS PRODUCT IS FOR RESEARCH ONLY - NOT FOR HUMAN OR VETERINARY DIAGNOSTIC OR THERAPEUTIC USE.

SAFETY DATA  
This material should be considered hazardous until further information becomes available. Do not ingest, inhale, get in eyes, on skin, or on clothing. Wash thoroughly after handling. Before use, the user must review the complete Safety Data Sheet, which has been sent via email to your institution.

WARRANTY AND LIMITATION OF REMEDY  
Buyer agrees to purchase the material subject to Cayman's Terms and Conditions. Complete Terms and Conditions including Warranty and Limitation of Liability information can be found on our website.

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## Description

Protein arginine deiminase 4 (PAD4) catalyzes the conversion of arginine residues to citrulline within cellular protein substrates, resulting in the loss of a positive charge, which can alter protein structure and/or function.<sup>1</sup> It is expressed in neutrophils, as well as a variety of tissues, including the brain, liver, lung, and kidney.<sup>1-3</sup> PAD4 has a key role in NETosis, a lytic form of cell death characterized by the release of neutrophil extracellular traps (NETs).<sup>1</sup> Upon neutrophil activation, PAD4 translocates to the nucleus where it citrullinates histones, initiating chromatin decondensation and the release of NETs.<sup>2,4,5</sup> Neutrophils isolated from *Pad4*<sup>-/-</sup> mice exhibit decreased citrullination of histone H3 under both basal and LPS-stimulated conditions and are defective for NET formation in response to stimulation with LPS, phorbol 12-myristate 13-acetate (PMA; Item No. 10008014), or hydrogen peroxide.<sup>4</sup> *Pad4*<sup>-/-</sup> mice exhibit larger lesions than wild-type mice in a model of necrotizing fasciitis induced by M1 group A *S. pyogenes* lacking the extracellular DNase Sda1. *Pad4*-deficient mice also exhibit reduced infarct size in a model of myocardial ischemia-reperfusion injury and reduced tumor growth in a Lewis lung carcinoma model.<sup>2,6</sup> Serum PAD4 autoantibodies have been found in patients with rheumatoid arthritis and are associated with disease severity.<sup>7</sup> Cayman's PAD4 Monoclonal Antibody (Clone 6D8) can be used for ELISA and Western blot (WB) applications. The antibody recognizes PAD4 at 74 kDa from human samples.

## References

1. van Beers, J.J.B.C., Zendman, A.J.W., Raijmakers, R., *et al.* Peptidylarginine deiminase expression and activity in PAD2 knock-out and PAD4-low mice. *Biochimie* **95**(2), 299-308 (2013).
2. Demers, M., Wong, S.L., Martinod, K., *et al.* Priming of neutrophils toward NETosis promotes tumor growth. *Oncoimmunology* **5**(5), e1134073 (2016).
3. Jones, J.E., Causey, C.P., Knuckley, B., *et al.* Protein arginine deiminase 4 (PAD4): Current understanding and future therapeutic potential. *Curr. Opin. Drug Discov. Devel.* **12**(5), 616-627 (2009).
4. Li, P., Li, M., Lindberg, M.R., *et al.* PAD4 is essential for antibacterial innate immunity mediated by neutrophil extracellular traps. *J. Exp. Med.* **207**(9), 1853-1862 (2010).
5. Thiam, H.R., Wong, S.L., Qiu, R., *et al.* NETosis proceeds by cytoskeleton and endomembrane disassembly and PAD4-mediated chromatin decondensation and nuclear envelope rupture. *Proc. Natl. Acad. Sci. USA* **117**(13), 7326-7337 (2020).
6. Savchenko, A.S., Borissoff, J.I., Martinod, K., *et al.* VWF-mediated leukocyte recruitment with chromatin decondensation by PAD4 increases myocardial ischemia/reperfusion injury in mice. *Blood* **123**(1), 141-148 (2014).
7. Halvorsen, E.H., Pollmann, S., Gilboe, I.M., *et al.* Serum IgG antibodies to peptidylarginine deiminase 4 in rheumatoid arthritis and associations with disease severity. *Ann. Rheum. Dis.* **67**, 414-417 (2008).

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