

PRODUCT INFORMATION



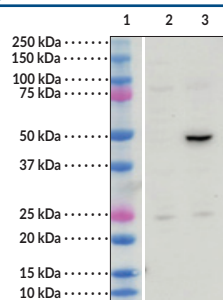
PPAD (*Porphyromonas gingivalis*) Polyclonal Antibody

Item No. 37598

Overview and Properties

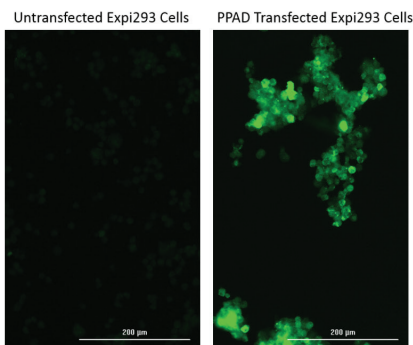
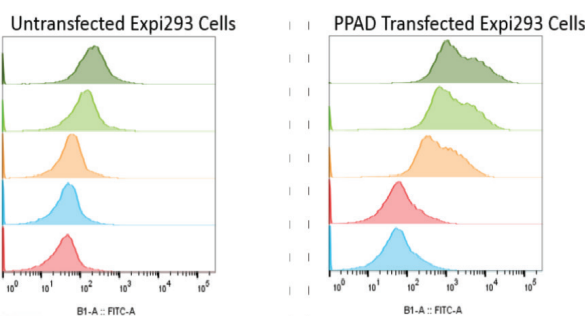
Contents: This vial contains 500 µg of protein A-purified polyclonal antibody.
Synonym: *P. gingivalis* Peptidylarginine Deiminase
Immunogen: Recombinant PPAD (*P. gingivalis*)
Cross Reactivity: (+) PPAD; (-) Human PAD2, PAD3, PAD4, PAD6
Species Reactivity: (+) *P. gingivalis*; other species not tested
Molecular Weight: ~62 kDa (expected)
Uniprot No.: Q9RQJ2
Form: Liquid
Storage: -20°C (as supplied)
Stability: ≥3 years
Storage Buffer: PBS, pH 7.2, containing 50% glycerol and 0.02% sodium azide
Host: Rabbit
Applications: ELISA, flow cytometry (FC), immunofluorescence (IF), and Western blot (WB); the recommended starting dilution is 1:200. Other applications were not tested, therefore optimal working concentration/dilution should be determined empirically.

Image

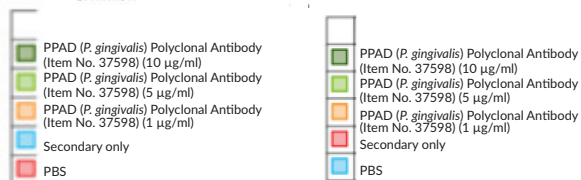


Lane 1: MW Markers
Lane 2: Expi293™ cell lysate
Lane 3: Expi293™ cells overexpressing PPAD (*P. gingivalis*) Polyclonal Antibody (Item No. 37598).

Note that the PPAD in the overexpressing cells is not a full length protein (~49 kDa detection).



Untransfected and PPAD transfected cells were fixed with 3.7% PFA, and blocked with 5% FBS. Cells were probed with PPAD (*Porphyromonas gingivalis*) Polyclonal Antibody (Item No. 37598) at 5 µg/ml followed by a Goat Anti-Rabbit IgG FITC secondary antibody (Item No. 10006588).



Untransfected and PPAD transfected cells were fixed with 3.8 PFA, and blocked with 5% FBS. Cells were probed with PPAD (*Porphyromonas gingivalis*) Polyclonal Antibody (Item No. 37598) at the indicated concentrations followed by a Goat Anti-Rabbit IgG FITC secondary antibody (Item No. 10006588).

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
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Description

Porphyromonas gingivalis (*P. gingivalis*) peptidyl arginine deiminase (PPAD) is a bacterial enzyme and virulence factor secreted by *P. gingivalis*, an oral bacterium involved in the progression of periodontal disease.^{1,2} It is composed of a pro-peptide sequence, a catalytic domain, an immunoglobulin-like (Ig-like) domain, and a C-terminal domain, but the mature protein contains only the catalytic domain and Ig-like domain.² It is expressed on the bacterial outer membrane. PPAD and proteolytic enzymes, such as arginine gingipain (RgpB), are released from *P. gingivalis* to break down proteins, which it uses as an energy source.^{1,2} RgpB cleaves proteins at arginine residues, and PPAD specifically deiminates the resulting C-terminal arginine residues of both bacterial and host proteins to citrulline, a process known as citrullination.¹⁻³ Unlike mammalian PADs, PPAD does not require calcium and can convert free L-arginine into L-citrulline in addition to deaminating these residues at the C-terminus of proteins and peptides.⁴ A *ppad* deletion mutation ($\Delta 8820$) in *P. gingivalis* strain 381 increases biofilm formation, alters biofilm architecture, and induces the secretion of protein aggregates.¹ Mice infected with a PPAD deficient strain of *P. gingivalis* have reduced periodontal inflammation and similarly infected mice in a model of collagen-induced arthritis have reduced bone erosion.⁵ Cayman's PPAD (*Porphyromonas gingivalis*) Polyclonal Antibody can be used for ELISA, flow cytometry (FC), immunofluorescence (IF), and Western blot (WB) applications. The expected WB detection size is approximately 62 kDa from *P. gingivalis* samples.

References

1. Vermilyea, D.M., Ottenberg, G.K., and Davey, M.E. Citrullination mediated by PPAD constrains biofilm formation in *P. gingivalis* strain 381. *NPJ Biofilms Microbiomes* **5(1)**, 7 (2019).
2. Montgomery, A.B., Kopec, J., Shrestha, L., et al. Crystal structure of *Porphyromonas gingivalis* peptidylarginine deiminase: Implications for autoimmunity in rheumatoid arthritis. *Ann. Rheum. Dis.* **75(6)**, 1255-1261 (2016).
3. Olsen, I., Singhrao, S.K., and Potempa, J. Citrullination as a plausible link to periodontitis, rheumatoid arthritis, atherosclerosis and Alzheimer's disease. *J. Oral Microbiol.* **10(1)**, 1487742 (2018).
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5. Gully, N., Bright, R., Marino, V., et al. *Porphyromonas gingivalis* peptidylarginine deiminase, a key contributor in the pathogenesis of experimental periodontal disease and experimental arthritis. *PLoS One* **9(6)**, e100838 (2014).

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