

# PRODUCT INFORMATION



## DJ-1/PARK7 (human, recombinant)

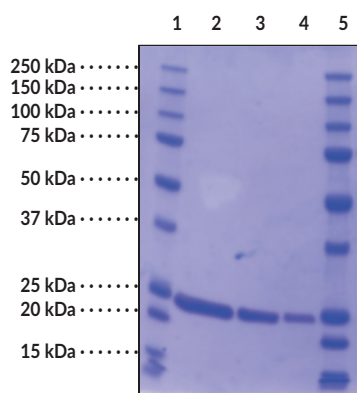
Item No. 23589

### Overview and Properties

**Synonyms:** Parkinson Deglycase DJ-1, Parkinson Disease Protein 7  
**Source:** Recombinant N-terminal His-tagged PARK7 enzyme expressed in *E. coli*  
**Amino acids:** 2-189  
**Uniprot No.:** Q99497  
**Molecular Weight:** 22 kDa  
**Storage:** -80°C (as supplied); avoid freeze/thaw cycles by aliquoting protein  
**Stability:** ≥1 year  
**Purity:** ≥90% estimated by SDS-PAGE  
**Supplied in:** 50 mM HEPES, pH 8.0, 150 mM sodium chloride, and 10% glycerol  
**Protein Concentration:** *batch specific*

Information represents the product specifications. Batch specific analytical results are provided on each certificate of analysis.

### Image



Lane 1: MW Markers  
Lane 2: 4 µg  
Lane 3: 2 µg  
Lane 4: 1 µg

*Representative gel image shown; actual purity may vary between batches.*

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

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DJ-1/Parkinson disease protein 7 (PARK7) is a dimeric protein deglycase that repairs methylglyoxal- and glyoxal-glycated cysteine, arginine, and lysine residues in oxidatively damaged proteins.<sup>1</sup> It acts on early glycation intermediates (hemithioacetals and aminocarbinals) to prevent the formation of irreversibly damaged advanced glycation end products (AGEs). PARK7 also repairs methylglyoxal- and glyoxal-glycated dGTP, GTP, GDP, GMP, RNA, and DNA.<sup>2</sup> Knockdown of PARK7 *in vitro* increases glycated DNA, DNA strand breaks, and phosphorylated p53 levels but decreases mRNA expression of the antioxidant-related enzyme NAD(P)H:quinone acceptor oxidoreductase 1 (NQO1) and destabilizes the nuclear factor erythroid 2-related factor (Nrf2), a master regulator of antioxidant transcriptional responses.<sup>3</sup> PARK7 is also a glyoxalase that converts glyoxal and methylglyoxal to glycolic and lactic acid, respectively, in the absence of glutathione.<sup>4</sup> It acts as a redox-sensitive molecular chaperone and inhibits aggregation of  $\alpha$ -synuclein in cell-free assays and in murine neuroblastoma cells.<sup>5</sup> PARK7 forms a complex with the E3 ubiquitin ligase Parkin and PTEN-induced putative kinase 1 (PINK1) that promotes ubiquitination and degradation of Parkin substrates, including Parkin itself and Synphilin-1 in neuroblastoma SH-SY5Y cells and human brain lysates.<sup>6</sup> Mutations to PARK7 have been linked to autosomal recessive, early-onset Parkinson's disease.<sup>7</sup>

## References

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1. Richarme, G., Mihoub, M., Dairou, J., *et al.* Parkinsonism-associated protein DJ-1/Park7 is a major protein deglycase that repairs methylglyoxal- and glyoxal-glycated cysteine, arginine, and lysine residues. *J. Biol. Chem.* **290**(3), 1885-1897 (2015).
2. Richarme, G., Liu, C., Mihoub, M., *et al.* Guanine glycation repair by DJ-1/Park7 and its bacterial homologs. *Science* **357**(6347), 208-211 (2017).
3. Clements, C.M., McNally, R.S., Conti, B.J., *et al.* DJ-1, a cancer- and Parkinson's disease-associated protein, stabilizes the antioxidant transcriptional master regulator Nrf2. *Proc. Natl. Acad. Sci. USA* **103**(41), 15091-15096 (2006).
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