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Datasheet for 200-401-869

# NRF1 Antibody

## Overview

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|---|---|
| **Description:** | Anti-NRF1 (RABBIT) Antibody - 200-401-869 |
| **Item No.:** | 200-401-869 |
| **Size:** | 500 µg |
| **Applications:** | ELISA, IHC, WB, Other |
| **Reactivity:** | Human, Mouse |
| **Host Species:** | Rabbit |

## Product Details

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| **Background:** | NRF1 (also known as nuclear respiratory factor 1, alpha palindromic binding protein and alpha-pal) is the mammalian homolog to the erect wing (ewg) Drosophila protein that is required for proper development of the central nervous system and indirect flight muscles. In mammals NRF1 functions as a transcription factor that activates the expression of the EIF2S1 (EIF2-alpha) gene. This protein links the transcriptional modulation of key metabolic genes to cellular growth and development and has been implicated in the control of nuclear genes required for respiration, heme biosynthesis, and mitochondrial DNA transcription and replication. NRF1 forms a homodimer and binds DNA as a dimer. NRF1 shows a nuclear localization and is widely expressed in embryonic, fetal, and adult tissues. Phosphorylation of NRF1 enhances DNA binding. Multiple splice variants have been identified for this protein. |
| **Synonyms:** | rabbit anti-NRF1 antibody, rabbit anti-NRF 1 antibody, NRF-1, alpha pal antibody, alpha palindromic binding protein antibody, locus control region factor 1 antibody, NFE2 related factor 1 antibody, nuclear respiratory factor 1 antibody, transcription factor 11 antibody |
| **Host Species:** | Rabbit |
| **Clonality:** | Polyclonal |
| **Format:** | IgG |

## Target Details

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| **Gene Name:** | Nrf1 |
| **Reactivity:** | Human, Mouse |

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| **Immunogen Type:** | Recombinant Protein |
| **Immunogen:** | This protein A purified antibody was prepared from whole rabbit serum produced by repeated immunizations with a purified recombinant mouse NRF1 protein corresponding to aa 1- 534 of the native protein. |
| **Purity/Specificity:** | This protein A purified antibody is directed against mouse NRF1. The product was purified from monospecific antiserum by protein A affinity purification. BLAST analysis was used to suggest reactivity with this protein from mouse, human, chimpanzee, dog, rat, chicken, frog and zebrafish based on very high sequence homology with the immunogen sequence. Cross reactivity with NRF1 homologues from other sources has not been determined. |
| **Relevant Links:** | • UniProtKB - Q9WU00<br>• NCBI - 13529317<br>• GeneID - 18181 |

## Application Details

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| **Tested Applications:** | ELISA, IHC, WB |
| **Suggested Applications:** | Other (Based on references) |
| **Application Note:** | This protein A purified antibody has been tested for use in ELISA, immunohistochemistry and by western blot. Specific conditions for reactivity should be optimized by the end user. Expect a band approximately 67 kDa in size corresponding to NRF1 by western blotting in the appropriate cell lysate or extract. Splice variants exist for this protein that may result in the detection of lower molecular weight bands. |
| **Assay Dilutions:** | All assays should be optimized by the user. Recommended dilutions (if any) may be listed below. |
| **ELISA:** | 1:3,000 - 1:10,000 |
| **IHC:** | 2 mg/ml - 5 µg/ml |
| **WB:** | 1:500 - 1:2,000 |

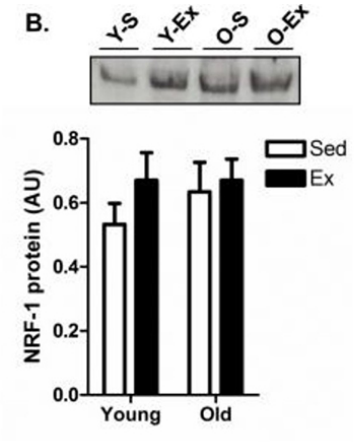
## Formulation

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| **Physical State:** | Liquid (sterile filtered) |
| **Concentration:** | 2.2 mg/mL by UV absorbance at 280 nm |
| **Buffer:** | 0.02 M Potassium Phosphate, 0.15 M Sodium Chloride, pH 7.2 |
| **Preservative:** | 0.01% (w/v) Sodium Azide |
| **Stabilizer:** | None |

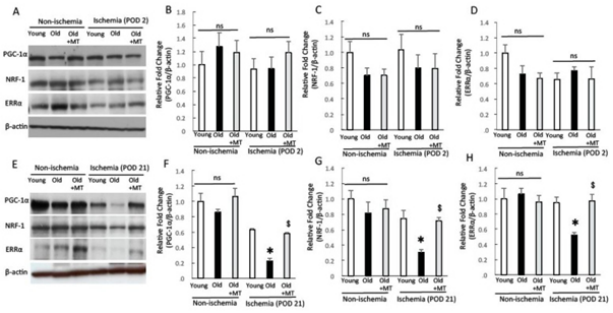
## Shipping & Handling

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| **Shipping Condition:** | Dry Ice |
| **Storage Condition:** | Store vial at -20° C prior to opening. Aliquot contents and freeze at -20° C or below for extended storage. Avoid cycles of freezing and thawing. Centrifuge product if not completely clear after standing at room temperature. This product is stable for several weeks at 4° C as an undiluted liquid. Dilute only prior to immediate use. |
| **Expiration:** | Expiration date is one (1) year from date of receipt. |

## Images

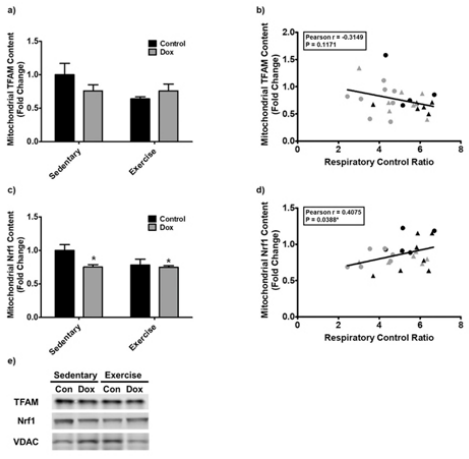



**Western Blot**
Mitochondrial biogenesis regulators are not altered with age and exercise in testis.
Protein expression levels of the important mitochondrial transcriptional co-activator NRF-1 (B) in the testes of young sedentary (Y-S) and exercise-trained (Y-Ex) animals, and old sedentary (O-S) and exercise-trained (O-Ex)
animals. Top: Western blots are shown with dashed lines indicating that lanes from the gel have been excised and the lanes from a single gel reordered to show a representative image. Bottom: A summary of data (n=7/group). Significance was set at P<0.05 and all data are represented as mean ± SE. Data are expressed as arbitrary units (AU).
*P<0.05 vs. young.
Fig 3.
PMID: 25108553



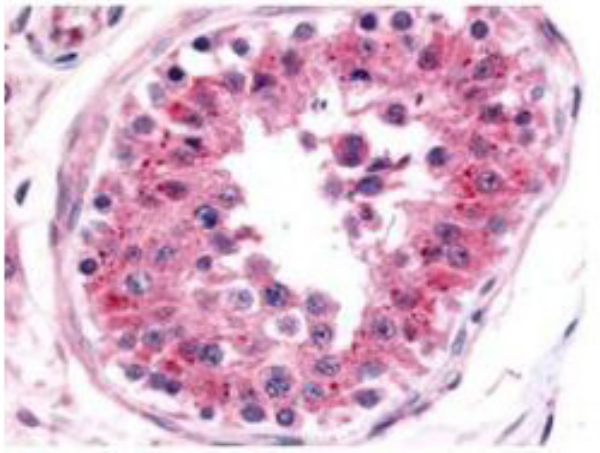
**Western Blot**

The protein expressions of peroxisome proliferator-activated receptor γ coactivator-1α (PGC-1α), nuclear respiratory factor (NRF)-1 and estrogen-related receptor α (ERRα). The expression of PGC-1α, NRF-1 and ERRα was analyzed by Western blotting in the non-ischemic and ischemic (POD 2 and 21) skeletal muscles of young, old, and MitoTEMPO-treated old mice. Representative images of PGC-1α, NRF-1 and ERRα for POD 2 (A) and POD 21 (E) and the summarized findings after quantification of PGC-1α/β-actin ((B,F) POD 2, 21, respectively), NRF-1/β-actin ((C,G) POD 2, 21, respectively) and ERRα/β-actin ((D,H) POD 2, 21, respectively). For POD 2, the expression of PGC-1α, NRF-1 and ERRα did not differ among the three groups. For POD 21, the expression of PGC-1α, NRF-1 and ERRα was lower in old mice than young mice. MitoTEMPO treatment effectively preserved PGC-1α, NRF-1 and ERRα expression to similar levels as young mice. MT indicates MitoTEMPO. The values are expressed as the means ± S.E.M. n = 10, each. * $p < 0.05$ vs. young mice, $ $p < 0.05$ vs. old mice. ns indicates no significant difference.
Fig 7.
PMID: 28869535

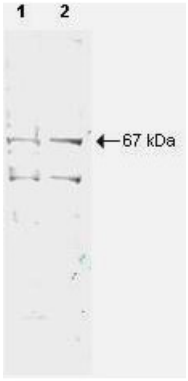


**Western Blot**

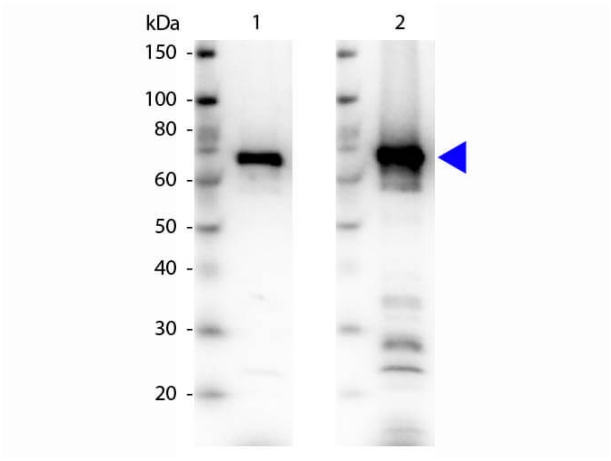
Alterations in liver mitochondrial biogenesis markers in sedentary and exercise trained animals treated with DOX. a) Mitochondrial transcription factor A (TFAM) and c) nuclear response factor 1 (Nrf1) were examined as markers of mitochondrial biogenesis. Proteins were examined in isolated liver mitochondria. Values are mean ± SEM. *, P < 0.05 vs. Sedentary Control. Correlative relationships between mitochondrial efficiency (respiratory control ratio) and mitochondrial TFAM (b) and Nrf1 (d) were examined in isolated mitochondria from Sedentary Control (black circle), Sedentary DOX (gray circles), Exercise Control (black triangles) and Exercise DOX (gray triangles) animals. e) Representative immunoblot images for TFAM, Nrf1, and loading control VDAC. Fig 2.
PMID: 30629044



**Immunohistochemistry**
Rockland's Affinity Purified anti-NRF1antibody was used at a 5 µg/ml to detect NRF1 in a variety of tissues. This image shows NRF1 staining of human testis. The antibody shows nuclear staining in lymphocytes. Tissue was formalin-fixed and paraffin embedded. Personal Communication, Tina Roush, LifeSpanBiosciences, Seattle, WA.




**Western Blot**
Western blot using Rockland's Protein A Purified anti-NRF1 antibody shows detection of a 67-kDa band corresponding to human NRF1. Lane 1: HeLa nuclear extract (p/n W09-001-367) and Lane 2: HeLa whole cell lysate (p/n W09-000-364), [molecular weight marker not shown]. Approx. 10µg of each lysate was separated by SDS-PAGE and transferred onto nitrocellulose. The blot was incubated with a 1:500 dilution of the antibody at room temperature for 1 h followed by detection using IRDye™700 labeled Goat-a-Rabbit IgG [H&L] (p/n 611-130-122) diluted 1:2,500. IRDye™700 fluorescence image was captured using the Odyssey® Infrared Imaging System developed by LI-COR. IRDye is a trademark of LI-COR, Inc. Other detection systems will yield similar results.




**Western Blot**
Western blot of Rabbit Anti-NRF1 antibody. Load: 50 ng NFR1-HIS recombinant protein per lane. Primary antibody - Lane 1: NRF1 antibody (p/n 200-401-869) at 1:1,000 overnight at 4°C. Primary antibody - Lane 2: 6xHIS Epitope tag antibody (p/n 600-401-382) at 1:1,000 overnight at 4°C. Secondary antibody: Peroxidase rabbit secondary antibody at 1:40,000 for 30 min at RT. Blocking: (p/n MB-070) for 30 min at RT. Predicted/observed size: 67 kDa, 67 kDa for NRF1 -His tagged. Other band(s): None.

## References

- Hinkey JM et al. Exercise training prevents doxorubicin-induced mitochondrial dysfunction of the liver. *Med Sci Sports Exerc.* (2019)
- Das JK et al. NRF1-mediated oncogenic reprogramming drives estrogen-induced breast carcinogenesis. *Cells.* (2018)
- Miura et al. Mitochondrial-Targeted Antioxidant Maintains Blood Flow, Mitochondrial Function, and Redox Balance in Old Mice Following Prolonged Limb Ischemia. *International Journal of Molecular Sciences* (2017)
- Nguyen LMD et al. Effect of near-infrared light exposure on mitochondrial signaling in C2C12 muscle cells. *Mitochondrion.* (2014)
- Joseph AM et al. Mitochondrial adaptations evoked with exercise are associated with a reduction in age-induced testicular atrophy in Fischer-344 rats. *Biogerontology.* (2014)


## Disclaimer

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