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#4670

## Loading Control Antibody Sampler Kit (HRP Conjugate)

1 Kit (5 x 20 microliters)

**For Research Use Only. Not for Use in Diagnostic Procedures.**

| Product Includes   | Product # | Quantity | Mol. Wt | Isotype/Source |
|--|-----------|----------|---------|----------------|
| COX IV (3E11) Rabbit mAb (HRP Conjugate)                     | 5247      | 20 µl    | 17 kDa  | Rabbit IgG     |
| β-Tubulin (9F3) Rabbit mAb (HRP Conjugate)                   | 5346      | 20 µl    | 55 kDa  | Rabbit IgG     |
| GAPDH (D16H11) XP <sup>®</sup> Rabbit mAb (HRP Conjugate)    | 8884      | 20 µl    | 37 kDa  | Rabbit IgG     |
| β-Actin (D6A8) Rabbit mAb (HRP Conjugate)                    | 12620     | 20 µl    | 45 kDa  | Rabbit IgG     |
| Histone H3 (D1H2) XP <sup>®</sup> Rabbit mAb (HRP Conjugate) | 12648     | 20 µl    | 17 kDa  | Rabbit IgG     |

Please visit [cellsignal.com](http://cellsignal.com) for individual component applications, species cross-reactivity, dilutions, protocols, and additional product information.

### Description

The Loading Control Antibody Sampler Kit (HRP Conjugate) contains antibodies directed against a variety of housekeeping proteins. These Cell Signaling Technology antibodies are conjugated to the carbohydrate groups of horseradish peroxidase (HRP) via its amine groups. The kit contains enough primary antibodies to perform two western blots.

### Storage

Supplied in 10 mM sodium HEPES (pH 7.5), 150 mM NaCl, 100 µg/ml BSA, 50% glycerol and less than 0.02% sodium azide. Store at -20°C. Do not aliquot the antibody.

### Background

Housekeeping proteins perform numerous basic functions within the cell and are constitutively expressed at high levels in a variety of tissues and cell types. Western blot analysis commonly uses housekeeping proteins such as β-actin, COX IV, GAPDH, histone H3 and the α- and β-tubulins as loading controls. Actin is a ubiquitous protein and a major component of the eukaryotic cytoskeleton. Actin exists mainly as the F-actin fibrous polymer (1). Glyceraldehyde-3-phosphate dehydrogenase (GAPDH) catalyzes the phosphorylation of glyceraldehyde-3-phosphate during glycolysis. Recent work has demonstrated that GAPDH plays roles in apoptosis (2), gene expression (3), and nuclear transport (4). Globular tubulin subunits made up of α- and β-tubulin heterodimers are the building blocks of microtubules, one of three types of cytosolic fibers that comprise the cytoskeleton (5). Histone proteins, including histone H3, make up the primary building block of chromatin known as nucleosomes. Modulation of the chromatin structure plays an important role in the regulation of transcription in eukaryotes (6). Cytochrome c oxidase (COX) is a hetero-oligomeric enzyme consisting of 13 subunits localized to the inner mitochondrial membrane (7-9). It is the terminal enzyme complex in the respiratory chain, catalyzing the reduction of protons across the mitochondrial inner membrane to drive ATP synthesis (10).

### Background References

1. Condeelis, J. (2001) *Trends Cell Biol* 11, 288-93.
2. Hara, M.R. and Snyder, S.H. *Cell Mol Neurobiol* 26, 527-38.
3. Zheng, L. et al. (2003) *Cell* 114, 255-66.
4. Bae, B.I. et al. (2006) *Proc Natl Acad Sci U S A* 103, 3405-9.
5. Westermann, S. and Weber, K. (2003) *Nat Rev Mol Cell Biol* 4, 938-47.
6. Workman, J.L. and Kingston, R.E. (1998) *Annu Rev Biochem* 67, 545-79.
7. Ostermeier, C. et al. (1996) *Curr Opin Struct Biol* 6, 460-6.
8. Capaldi, R.A. et al. (1983) *Biochim Biophys Acta* 726, 135-48.
9. Kadenbach, B. et al. (2000) *Free Radic Biol Med* 29, 211-21.
10. Barrientos, A. et al. (2002) *Gene* 286, 53-63.

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