

**PhosphoPlus® TFEB (Ser211) Antibody Duet**

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

**UniProt ID:**  
#P19484

**Entrez-Gene Id:**  
7942

Product Includes	Product #	Quantity	Mol. Wt	Isotype/Source
Phospho-TFEB (Ser211) (E9S8N) Rabbit mAb	37681	100 µl	70 kDa	Rabbit IgG
TFEB (D2O7D) Rabbit mAb	37785	100 µl	65-70 kDa	Rabbit IgG

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

## Description

PhosphoPlus® Duets from Cell Signaling Technology (CST) provide a means to assess protein activation status. Each Duet contains an activation-state and total protein antibody to your target of interest. These antibodies have been selected from CST's product offering based upon superior performance in specified applications.

## 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

Transcription factor EB (TFEB) is a member of the Myc-related, bHLH leucine-zipper family of transcription factors that drives the expression of a network of genes known as the Coordinated Lysosomal Expression and Regulation (CLEAR) network (1,2). TFEB specifically recognizes and binds regulatory sequences within the CLEAR box (GTCACGTGAC) of lysosomal and autophagy genes, resulting in the upregulated expression of genes involved in lysosome biogenesis and function, and regulation of autophagy (1,2). TFEB is activated in response to nutrient deprivation, stimulating translocation to the nucleus where it forms homo- or heterooligomers with other members of the microphthalmia transcription factor (MITF) subfamily and resulting in upregulation of autophagosomes and lysosomes (3-5). Recently, it has been shown that TFEB is a component of mammalian target of rapamycin (mTOR) complex 1 (mTORC1), which regulates the phosphorylation and nuclear translocation of TFEB in response to cellular starvation and stress (6-9). During normal growth conditions, TFEB is phosphorylated at Ser211 in an mTORC1-dependent manner. Phosphorylation promotes association of TFEB with 14-3-3 family proteins and retention in the cytosol. Inhibition of mTORC1 results in a loss of TFEB phosphorylation, dissociation of the TFEB/14-3-3 complex, and rapid transport of TFEB to the nucleus where it increases transcription of CLEAR and autophagy genes (10). TFEB has also been shown to be activated in a nutrient-dependent manner by p42 MAP kinase (Erk2). TFEB is phosphorylated at Ser142 by Erk2 in response to nutrient deprivation, resulting in nuclear localization and activation, and indicating that pathways other than mTOR contribute to nutrient sensing via TFEB (3).

## Background References

1. Sardiello, M. et al. (2009) *Science* 325, 473-7.
2. Sardiello, M. and Ballabio, A. (2009) *Cell Cycle* 8, 4021-2.
3. Settembre, C. et al. (2011) *Science* 332, 1429-33.
4. David, R. (2011) *Nat Rev Mol Cell Biol* 12, 404.
5. Cuervo, A.M. (2011) *Science* 332, 1392-3.
6. Peña-Llopis, S. et al. (2011) *EMBO J* 30, 3242-58.
7. Settembre, C. and Ballabio, A. (2011) *Autophagy* 7, 1379-81.
8. Peña-Llopis, S. and Brugarolas, J. (2011) *Cell Cycle* 10, 3987-8.
9. Settembre, C. et al. (2012) *EMBO J* 31, 1095-108.
10. Martina, J.A. et al. (2012) *Autophagy* 8, 903-14.

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