BACKGROUND

The pathway from Ras through Raf and MEK (MAPK and ERK kinase) to ERK/MAPK (extracellular signal-regulated kinase/mitogen-activated protein kinase) regulates many fundamental cellular processes. Recently, a number of scaffolding proteins and endogenous inhibitors have been identified, and their important roles in regulating signaling through this pathway are now emerging. Some scaffolds augment the signal flux, but also mediate crosstalk with other pathways; certain adaptors target MEK–ERK/MAPK complexes to subcellular localizations; others provide regulated inhibition. Computational modeling indicates that, together, these modulators can determine the dynamic biological behavior of the pathway.[1]

The mitogen-activated protein kinase organizer 1 (Morg1) is a MP1-interaction partner that consists of WD40 domains, also associates with Raf-1, B-Raf, MEK and ERK/MAPK, and stabilizes their assembly into an oligomeric complex. Morg11 facilitates ERK activation when cells are stimulated with lysophosphatidic acid, phorbol 12-myristate 13-acetate, or serum, but not in response to epidermal growth factor. Suppression of Morg1 by short interfering RNA leads to a marked reduction in ERK activity when cells are stimulated with serum. Thus Morg1 is a component of a modular scaffold system that participates in the regulation of agonist-specific ERK signaling.[2] Unlike Scaffold protein KSR links signaling from RTKs and GPCRs to ERK-signaling modules. Morg1 specifically involved in linking GPCRs to ERK1/2 module.[3] In addition, Morg1 also serves as a scaffold protein for the interaction between the hypoxia-inducible factor-1alpha (HIF-1alpha) and the divergent N-terminal sequence of PHD3. This interaction attenuates expression of HIF-1alpha by activating or stabilizing of prolyl-hydroxylase 3 (PHD3), but without decreasing HIF-1alpha abundance, suggesting possible involvement of a hydroxylase-independent mechanism. However, it is also likely that formation of a complex between Morg1, PHD3 and HIF-1a might instead prevent hydroxylated HIF-1a from entering the degradation pathway.[4] Furthermore it was also demonstrated that Morg1 is expressed in the human brain in neurons, glial cells, and blood vessel walls. Morg1 expression is reduced in human brain tissue with ischemic damage. Moreover, reactive astrocytes in the surrounding brain tissue showed strong Morg1 expression. Since hypoxic adaptation with enhancing HIF-1alpha expression can engage a genetic program leading to profound sparing of brain tissue and enhanced recovery of function, down-regulation of Morg1 expression in the ischemic brain may be viewed as an intrinsic mechanism to stimulate this response. On the other hand, upregulation of Morg1 in astrocytes surrounding the penumbra may counteract this hypoxic adaptation.[5] Other report suggested that Morg1 may be a novel therapeutic target to limit renal injury after ischemia/reperfusion.[6]

References:
1. Kolch, W.: Nature Rev. Mol. Cell. Biol. 6:827-37, 2005
2. Vomastek, T. et al: Proc. Natl. Acad. Sci. USA 101:6981-6, 2004
3. Dhanasekaran, D.N. et al: Oncogene 26:3185-202, 2007
4. Hopfer, U. et al: J. Biol. Chem. 281:8645-55, 2006
5. Haase, D. et al: Neurosci. Lett. 455:46-50, 2009
6. Hammerschmidt, E. et al: Am. J. Physiol. Ren. Physiol. 66:F1273-87, 2009

TECHNICAL INFORMATION

Source:
Morg1 Antibody is a rabbit antibody raised against a short peptide from human Morg1 sequence.

Specificity and Sensitivity:
This antibody detects endogenous levels of Morg1 proteins without cross-reactivity with other related proteins.

Storage Buffer: PBS and 30% glycerol

Storage:
Store at -20°C for at least one year. Store at 4°C for frequent use. Avoid repeated freeze-thaw cycles.

APPLICATIONS

Application:	*Dilution:
WB	1:1000
IP	n/d
IHC	1:50-200
ICC	n/d
FACS	n/d

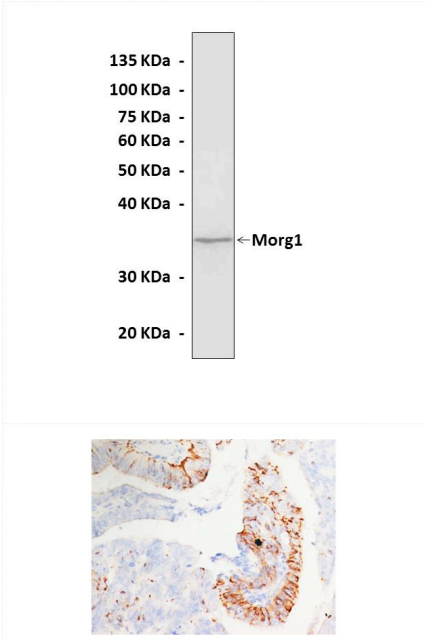
**Optimal dilutions must be determined by end user.*

Morg1 Antibody

Cat. No. CA1053

Applications:	**WB, IHC**
Detected MW:	**35 kDa**
Species & Reactivity:	**Human, Rat**
Isotype:	**Rabbit IgG**

QUALITY CONTROL DATA



Top: Western Blot detection of Morg1 proteins in rat brain tissue lysate using Morg1 Antibody. **Bottom:** This antibody stains paraffin-embedded human breast cancer tissue in immunohistochemical analysis.