CELL APPLICATIONS, INC.

Cer1 Antibody
Cat. No. CP10301

Applications:	**WB, IHC**
Detected MW:	**30 kDa**
Species & Reactivity:	**Human, Mouse, Rat**
Isotype:	**Mouse IgG1**

BACKGROUND

Human Cer1 gene encodes one member of a family of cytokines structurally and functionally related to the *Xenopus* head-inducing factor, Cerberus (xCer). At the time of its identification, cerberus shared significant homology with only one other protein, the putative rat tumor suppressor protein Dan. The region of homology shared by these genes closely resembles the cysteine knot motif found in a number of signaling molecules, such as members of the TGFβ superfamily.[1] CER1 (DAND4 or Cerberus 1), GREM1 (DAND2 or CKTSF1B1), GREM2 (DAND3 or CKTSF1B2), GREM3 (DAND5 or CKTSF1B3 or CER2) and NBL1 (DAND1) are secreted-type DAN domain (DAND) proteins. CER1 and GREM3 are Nodal antagonists, while GREM1 is a BMP antagonist. Nodal and BMP signaling pathways network with WNT signaling pathway during embryogenesis and carcinogenesis. CER1 (Cerberus 1) and GREM3 (CKTSF1B3 or CER2) inhibit NODAL signaling through ACVR1B (ALK4) or ACVR1C (ALK7) to SMAD2 or SMAD3. GREM1 (CKTSF1B1) inhibits BMP signaling through BMPR1A (ALK3), BMPR1B (ALK6) or ACVR1 (ALK2) to SMAD1, SMAD5 or SMAD8. It was shown that CER1 is a common target of WNT and NODAL signaling pathways in human embryonic stem cells.[2] Triple TCF/LEF-binding sites were identified within human CER1 promoter. Binding sites for NODAL signaling effectors, SMAD3/SMAD4 and FOXH1, were also conserved among human, chimpanzee, cow and dog CER1 promoters. *CER1* mRNA was expressed in human ES cells in the undifferentiated state and in the early endodermal lineage. WNT and NODAL signaling pathways are indispensable for human ES cells. Because CER1 upregulation in human ES cells leads to Nodal signaling inhibition associated with endodermal differentiation, CER1 is a key molecule for the maintenance of human ES cells and plays a pivotal role during early embryogenesis. CER1 is also the pharmacogenomics target in the field of regenerative medicine. However when mouse *Cer*1 gene was inactivated by replacing the first coding exon with a *lacZ* reporter gene. Mice homozygous for this allele ($Cer1^{lacZ}$) showed no apparent perturbation of embryogenesis or later development. Moreover, the *lacZ* reporter revealed a number of hitherto uncharacterized sites of *Cer*1 expression in late fetal and adult tissues. Studies suggests that *Cer*1 is not essential for their morphogenesis, differentiation, or homeostasis.[3]

References:
1. Pearce, J.J. H. et al: Dev. Biol. 209:98-110, 1999
2. Katoh, M. & Katoh, M.: Int. J. Mol. Med. 17:795-9, 2006
3. Stanley, E.G. et al: Genesis 26:259–64, 2000

TECHNICAL INFORMATION

Source:
Cer1 Antibody is a mouse monoclonal antibody raised against recombinant human Cer1 fragments expressed in *E. coli*.

Specificity and Sensitivity:
This antibody detects endogenous Cer1 proteins without cross-reactivity with other family members.

Storage Buffer: PBS and 30% glycerol

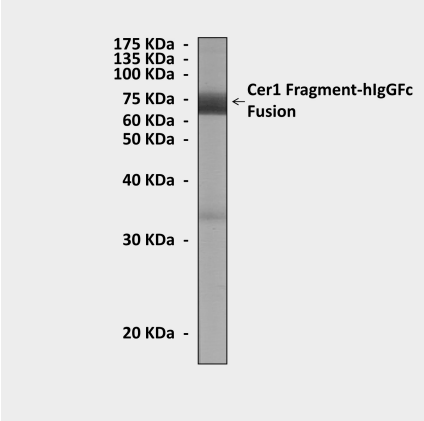
Storage:
Store at -20°C for at least one year. Store at 4°C for frequent use. Avoid repeated freeze-thaw cycles.

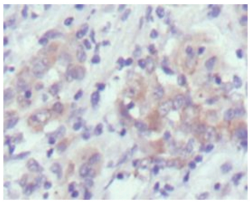
APPLICATIONS

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.*

QUALITY CONTROL DATA





Top: Western Blot detection of Cer1 proteins in 293 cell lysate containing human Cer1-hIgGFc fusion proteins using Cer1 Antibody. **Bottom:** This antibody stains paraffin-embedded human gastric cancer in immunohistochemical staining.