

BACKGROUND

Foxa (previously termed HNF3) transcription factors comprise a subfamily of forkhead transcription factors, which includes Foxa1, Foxa2, and Foxa3 (previously termed HNF3 α , HNF3 β , and HNF3 γ respectively). They have been found to play important roles in multiple stages of mammalian life, beginning with early development, continuing during organogenesis, and finally in metabolism and homeostasis in the adult.¹

Foxa2 is required for the formation of the node and notochord, and in its absence severe defects in gastrulation, neural tube patterning, and gut morphogenesis result in embryonic lethality. Foxa1 and Foxa2 cooperate to establish competence in foregut endoderm and are required for normal development of endoderm-derived organs such as the liver, pancreas, lungs, and prostate. In post-natal life, members of the Foxa family control glucose metabolism through the regulation of multiple target genes in the liver, pancreas, and adipose tissue.² Foxa2 is part of the transcriptional network downstream of the insulin receptor, and improves insulin resistance in peripheral tissues. Foxa2 is known to control the expression of many key genes involved in β -cell glucose sensing, such as the *Pdx-1* gene. Moreover, Foxa2 plays a central role in insulin release via the regulation of genes coding for both *Kir6.2* (inward rectifier potassium channel member 6.2) and *Sur1* (sulfonylurea receptor 1) genes, the two subunits of the ATP-dependent K⁺ (K_{ATP}) channel. In brief, it appears that Foxa2 plays a pivotal role in key β -cell functions and physiology and glucose homeostasis.³

Foxa2 acts as a 'pioneer' factor opening the compacted chromatin enable chromatin access for other tissue-specific transcription factors. It acts through interactions with nucleosomal core histones and thereby replacing linker histones at target enhancer and/or promoter sites. It binds DNA with the consensus sequence 5'[AC]A[AT]T[AG]TT[GT][AG][CT]T[CT]3' (By similarity).⁴

References:

1. Friedman, J.R. & Kaestner, K.H.: Cell Mol Life Sci. 63:2317-28, 2006
2. Ang, S.L.: Adv. Exp. Med. Biol. 651:58-65, 2009
3. Lantz, K. et al: J. Clin. Invest. 114:512-20, 2004
4. Wederell, E.D. et al: Nuclei. Acid Res. 35:4549-64, 2008

TECHNICAL INFORMATION

Source:

Foxa2 Antibody is a mouse monoclonal antibody raised against purified recombinant human Foxa2 fragments expressed in *E. coli*.

Specificity and Sensitivity:

This antibody detects endogenous Foxa2 proteins without cross-reactivity with other family members.

Storage Buffer: PBS and 30% glycerol

Storage:

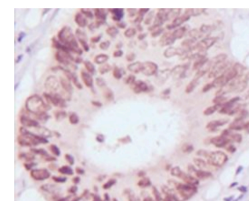
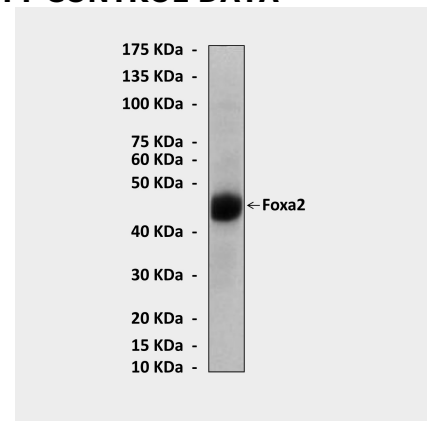
Store at -20°C for at least one year. Store at 4°C for frequent use. Avoid repeated freeze-thaw cycles.

APPLICATIONS

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

*Optimal dilutions must be determined by end user.

QUALITY CONTROL DATA



Top: Western Blot detection of Foxa2 proteins in A549 cell lysate using Foxa2 antibody. **Bottom:** This antibody stains paraffin-embedded human colon cancer tissue in immunohistochemical analysis.

