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## Galectin-9 (D9R4A) XP<sup>®</sup> Rabbit mAb (Alexa Fluor<sup>®</sup> 647 Conjugate)

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

<b>Applications:</b> FC-FP	<b>Reactivity:</b> H	<b>Sensitivity:</b> Endogenous	<b>Source/Isotype:</b> Rabbit IgG	<b>UniProt ID:</b> #O00182	<b>Entrez-Gene Id:</b> 3965
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### Product Usage Information

#### Application

Flow Cytometry (Fixed/Permeabilized)

#### Dilution

1:50

### Storage

Supplied in PBS (pH 7.2), less than 0.1% sodium azide and 2 mg/ml BSA. Store at 4°C. Do not aliquot the antibody. Protect from light. Do not freeze.

### Specificity/Sensitivity

Galectin-9 (D9R4A) XP<sup>®</sup> Rabbit mAb (Alexa Fluor<sup>®</sup> 647 Conjugate) recognizes endogenous levels of total galectin-9 protein.

### Source / Purification

Monoclonal antibody is produced by immunizing animals with recombinant human galectin-9 protein.

### Description

This Cell Signaling Technology antibody is conjugated to Alexa Fluor<sup>®</sup> 647 fluorescent dye and tested in-house for direct flow cytometric analysis in human cells. This antibody is expected to exhibit the same species cross-reactivity as the unconjugated Galectin-9 (D9R4A) XP<sup>®</sup> Rabbit mAb #54330.

### Background

Galectins are a family of  $\beta$ -galactose binding proteins that are characterized by an affinity for poly-N-acetyllactosamine-enriched glycoconjugates and a carbohydrate-binding site (1,2). Members of the galectin family have been implicated in a variety of biological functions, including cell adhesion (3), growth regulation (4), cytokine production (5), T-cell apoptosis (6), and immune responses (7).

Galectin-9 is induced by proinflammatory stimuli, including IFN- $\gamma$ , TNF- $\alpha$ , and TLR ligands, and regulates various immune responses through interaction with its ligand TIM-3 (8, 9). Binding of galectin-9 to TIM-3 expressed by Th1 CD4 T cells resulted in T cell death (9). On the other hand, galectin-9 treatment of tumor-bearing mice increased the number of IFN- $\gamma$ -producing TIM-3+ CD8 T cells and TIM-3+ dendritic cells (10). Transgenic overexpression of either TIM-3 or galectin-9 in mice led to an increase in cells with a myeloid-derived suppressor cell phenotype and inhibition of immune responses (11). CD44 is also proposed to be a receptor for galectin-9, and interaction of galectin-9 with CD44 expressed by induced regulatory T (iTreg) cells enhanced the stability of function of iTreg cells. In addition, galectin-9 was recently demonstrated to bind Dectin-1 expressed by pancreatic ductal adenocarcinoma-infiltrating macrophages, resulting in tolerogenic macrophage reprogramming and suppression of anti-tumor immunity. Increased galectin-9 expression has been observed in several cancer types, including lung, liver, breast, and kidney (12). Alternative splicing of the galectin-9 transcript leads to several isoforms (13).

### Background References

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3. Offner, H. et al. (1990) *J Neuroimmunol* 28, 177-84.
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5. Filer, A. et al. (2009) *Arthritis Rheum* 60, 1604-14.
6. Perillo, N.L. et al. (1995) *Nature* 378, 736-9.
7. Cooper, D.N. et al. (1991) *J Cell Biol* 115, 1437-48.
8. Gieseke, F. et al. (2013) *Eur J Immunol* 43, 2741-9.
9. Zhu, C. et al. (2005) *Nat Immunol* 6, 1245-52.
10. Nagahara, K. et al. (2008) *J Immunol* 181, 7660-9.
11. Dardalhon, V. et al. (2010) *J Immunol* 185, 1383-92.
12. Heusschen, R. et al. (2014) *Biochim Biophys Acta* 1842, 284-92.
13. Heusschen, R. et al. (2013) *Biol Reprod* 88, 22.

### Species Reactivity

Species reactivity is determined by testing in at least one approved application (e.g., western blot).

### Applications Key

**FC-FP:** Flow Cytometry (Fixed/Permeabilized)

### Cross-Reactivity Key

**H:** Human

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