



Overview

prion protein specific mAbs

Edition: 2013-04-25

mouse monoclonal antibodies for detection of prion protein (PrP)

mAb	epitope	iso type	recommended concentration		remark
			for IHC	for WB	
100B3	KRPKP (bovinePrP26-30)	2a	5 µg/ml	5 µg/ml	for full-length PrP
12B2	WGQGG (bovinePrP101-105)	1	0.2 µg/ml	0.2 µg/ml	for differentiating N-terminal PrP ^{res} cleavage; excellent in IHC
3A2	WGQGG (bovinePrP101-105)	2b	1 µg/ml	0.5 µg/ml	isotype alternative for 12B2
9A2	WNK (bovinePrP110-112)	1	0.2 µg/ml	0.5 µg/ml	recognizes human type 1 & 2 PrP ^{res}
6C2	HVAGAAAA (bovinePrP122-129)	2b	1 µg/ml	0.5 µg/ml	excellent in IHC
94B4	HTVTTTTK (bovinePrP198-205)	1	0.2 µg/ml	0.5 µg/ml	best for bovine PrP

Expected species (cross) reactivity: broad (see the Product Information of each mAb)

Application: as capturing or detecting antibody in prion research on biological samples, body fluids, cells, tissue sections and homogenates. For use in Western blot, IHC, ELISA, RIA, FACS, immunoprecipitation, dot-blot, PET-blot.

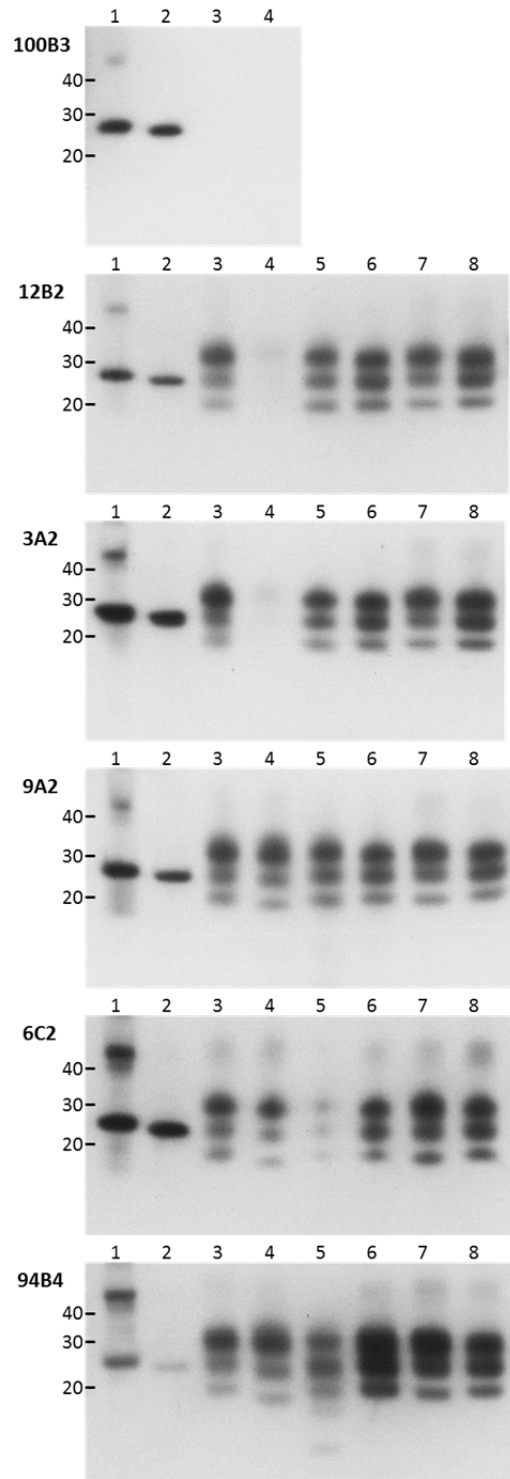
Western blot signal:

mAb name	bovine recPrP	ovine recPrP	ovine scrapie PrP ^{res}	bovine C-type BSE PrP ^{res}	bovine H-type BSE PrP ^{res}	cervid CWD PrP ^{res}	murine TSE PrP ^{res}
100B3	++	++	-	-	-	-	-
12B2	++	++	++	-/(+)	++	++	++
3A2	++	++	++	-/(+)	++	++	++
9A2	++	++	++	++	++	++	++
6C2	++	++	+	+	+	+	+
94B4	++	+	+	++	++*	+	+

*in H-type BSE, 94B4 is yielding a different PrP^{res} glycoprofile compared to 12B2, 3A2, 9A2 and 6C2

Contact :

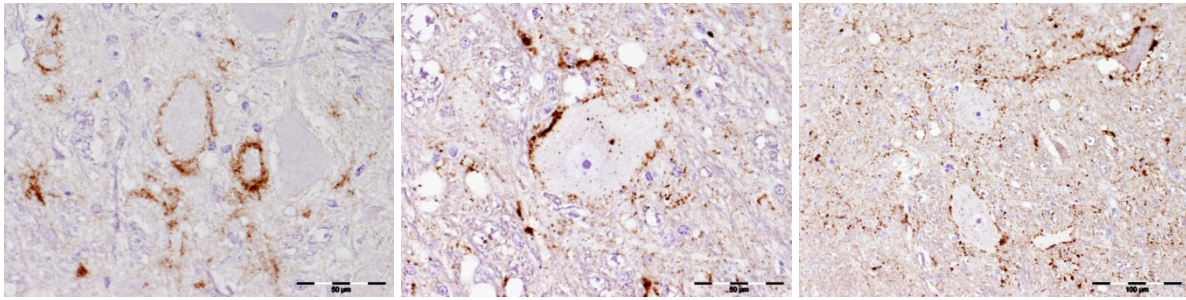
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lane	sample	digestion	Amount*
1	recombinant E.Coli bovine wt PrP25-242 (6-octarepeats)	No	5 ng
2	recombinant E.Coli ovine wt PrP25-234 (ARQ)	No	5 ng ^a
3	classical scrapie ovine brain stem	+PK	0.02 mg TE ^{b,c}
4	C-type BSE in bovine brain stem	+PK	0.1 mg TE ^b
5	H-type** BSE in bovine brain stem	+PK	0.25 mg TE ^b
6	CWD in North-American elk brain	+PK	0.5 mg TE ^{b,c}
7	301V in VM murine brain	+PK	0.02 mg TE ^{b,c}
8	ME7 in RIII murine brain	+PK	0.02 mg TE ^{b,c}

*TE= tissue equivalents, **different glycoprofile for 94B4, ^a15ng for 94B4, ^bfive times higher for 6C2, ^cfive times higher for 94B4

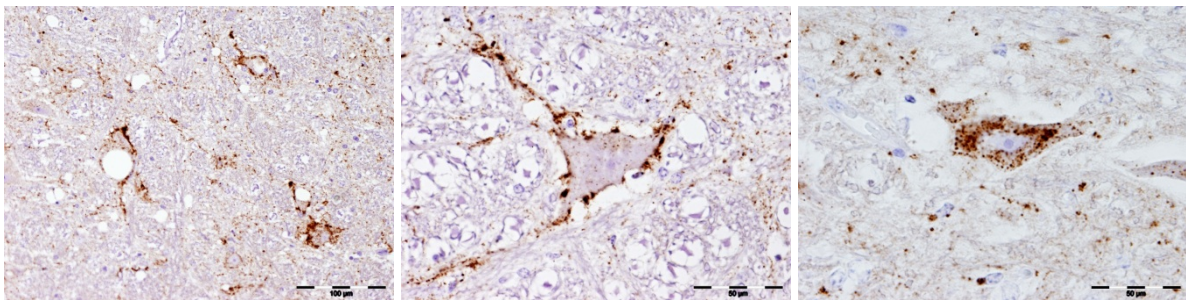
Immunohistochemistry on scrapie or BSE infected brain stem (bar in µm):



100B3, ovine scrapie (50 µm)

12B2, ovine scrapie (50 µm)

3A2, ovine scrapie (100 µm)



9A2, ovine scrapie (100 µm)

6C2 ovine scrapie (50 µm)

94B4 bovine BSE (50 µm)

References:

100B3:

First report:

Thuring CMA, van Keulen LJM, Langeveld JPM, Vromans MEW, van Zijderveld FG, and Sweeney T. Immunohistochemical differentiation of (pre)-clinical BSE and scrapie infection in sheep. *J Comp Pathol.* 2005, 132:59-69.

Other literature:

- Rigter A, Langeveld JPM, Timmer-Parohi D, Bossers A. Mapping of possible prion protein self interaction domains using peptide arrays. *BMC Biochemistry* 2007, 8:6.

12B2:

First report:

Langeveld JPM, Jacobs JG, Erkens JHF, Bossers A, van Zijderveld FG, van Keulen LJM. 2006. Rapid and discriminatory diagnosis of scrapie and BSE in retro-pharyngeal lymph nodes of sheep. *BMC Veterinary Research* 2006, 2:19.

Other literature:

- Jacobs, JG, Langeveld JPM, Biacabe A-G, Acutis P-L, Polak M P, Gavier-Widen D, Buschmann A, Caramelli M, Casalone C, Mazza M, Groschup M, Erkens JHF, Davidse A, van Zijderveld FG, Baron T. Molecular discrimination of atypical bovine spongiform encephalopathy strains from a geographical region spanning a wide area in Europe. *J Clin Microbiol.* 2007, 45:1821-1829.
- Polak Miroslaw P., Zmudzinski Jan F, Jacobs Jorg G, Langeveld Jan P.M. Atypical status of bovine spongiform encephalopathy in Poland: a molecular typing study. *Archiv Virol.* 2007, 153:69-79.
- Langeveld JPM, Erkens JHF, Rammel I, Jacobs JG, Davidse A, van Zijderveld F, Bossers A, Schildorfer H. Four independent molecular prion protein parameters for discriminating new cases of C, L, and H BSE in cattle. *J Clin Microbiol.* 2011, 49:3026–3028.
- Notari S, Capellari S, Langeveld J, Giese A, Strammiello R, Gambetti P, Kretzschmar HA, and Parchi P. A refined method for molecular typing reveals that co-occurrence of PrPSc types in Creutzfeldt-Jakob disease is not the rule. *Lab Invest.* 2007, 87:1103-1112.
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- Yull HM, Ritchie DL, Langeveld JPM, van Zijderveld FG, Bruce ME, Ironside JW, Head MW. Detection of type 1 prion protein in variant Creutzfeldt-Jakob disease. *Am J Pathol.* 2006, 168:151-157.
- Yull HM, James Ironside W, Head MW. Further characterisation of the prion protein molecular types detectable in the NIBSC Creutzfeldt-Jakob disease brain reference materials. *Biologicals* 37 (2009) 210-215

3A2:

Not published. Prepared from same mouse spleen as 12B2 and found to be identical in epitope specificity and behaviour with 12B2.

9A2:

First report:

Langeveld JPM, Jacobs JG, Erkens JHF, Bossers A, van Zijderveld FG, van Keulen LJM. 2006. Rapid and discriminatory diagnosis of scrapie and BSE in retro-pharyngeal lymph nodes of sheep. *BMC Veterinary Research* 2006, 2: 19.

Other literature:

- Jacobs, JG, Langeveld JPM, Biacabe A-G, Acutis P-L, Polak M P, Gavier-Widen D, Buschmann A, Caramelli M, Casalone C, Mazza M, Groschup M, Erkens JHF, Davidse A, van Zijderveld FG, Baron T. Molecular discrimination of atypical bovine spongiform encephalopathy strains from a geographical region spanning a wide area in Europe. *J Clin Microbiol.* 2007, 45:1821-1829
- Polak Miroslaw P., Zmudzinski Jan F, Jacobs Jorg G., Langeveld Jan P.M. Atypical status of bovine spongiform encephalopathy in Poland: a molecular typing study. *Archiv Virol.* 2007, 153:69-79.
- Biacabe A-G, Jacobs JG, Bencsik A, Langeveld JPM, Baron TGM. H-type bovine spongiform encephalopathy – complex molecular features and similarities with some human prion diseases. *Prion* 2007, 1:pp61-68.
- Tang Y, Gielbert A, Jacobs JG, Baron T, Andreoletti O, Yokoyama T, Langeveld JP, Sauer MJ. All major prion types recognised by a multiplex immunofluorometric assay for disease screening and confirmation in sheep. *J Immunol Methods* 2012, 380:30–39.
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6C2:

First report:

Rigter A, Langeveld JPM, Timmer-Parohi D, Bossers A. Mapping of possible prion protein self interaction domains using peptide arrays. *BMC Biochemistry* 2007, 8:6.

Other literature:

- Hoffmann C, Eiden M, Kaatz M, Keller M, Ziegler U, Rogers R, Hills B, Balkema-Buschmann A, van Keulen L, Jacobs JG, Groschup MH. 2011. BSE infectivity in jejunum, ileum and ileocaecal junction of incubating cattle. *Vet Res.* 2011 Feb 7;42(1):21.
- J Jacobs JG, Bossers A, Rezaei H, van Keulen LJM, McCutcheon S, Sklaviadis T, Lantier I, Berthon P, Lantier F, van Zijderveld FG, Langeveld JPM. Proteinase K resistant material in ARR/VRQ sheep brain affected with classical scrapie is composed mainly of VRQ prion protein. *J Virol.* 2011, 85:12537-12546.

94B4:

First report:

Langeveld J.P.M., Wang J.J., Shih G.C., Garssen G. J., VandeWiel D.F.M., Bossers A., Shih J.C.H. Enzymatic degradation of prion protein in brain stem from infected cattle and sheep. *J. Infect. Dis.* 2003, 188:1782-1789.

Other literature:

- Thuring CMA, Erkens JHF, Jacobs JG, Bossers A, Van Keulen LJM, Garssen GJ, Van Zijderveld FG, Ryder SJ, Groschup MH, Sweeney T, Langeveld JPM. Discrimination between scrapie and bovine spongiform encephalopathy in sheep by molecular size, immunoreactivity and glycoprofile of prion protein. *J. Clin. Microbiol.* 2004, 42:972-980.
- Jacobs, JG, Langeveld JPM, Biacabe A-G, Acutis P-L, Polak M P, Gavier-Widen D, Buschmann A, Caramelli M, Casalone C, Mazza M, Groschup M, Erkens JHF, Davidse A, van Zijderveld FG, Baron T. Molecular discrimination of atypical bovine spongiform encephalopathy strains from a geographical region spanning a wide area in Europe. *J Clin Microbiol.* 2007, 45:1821-1829.
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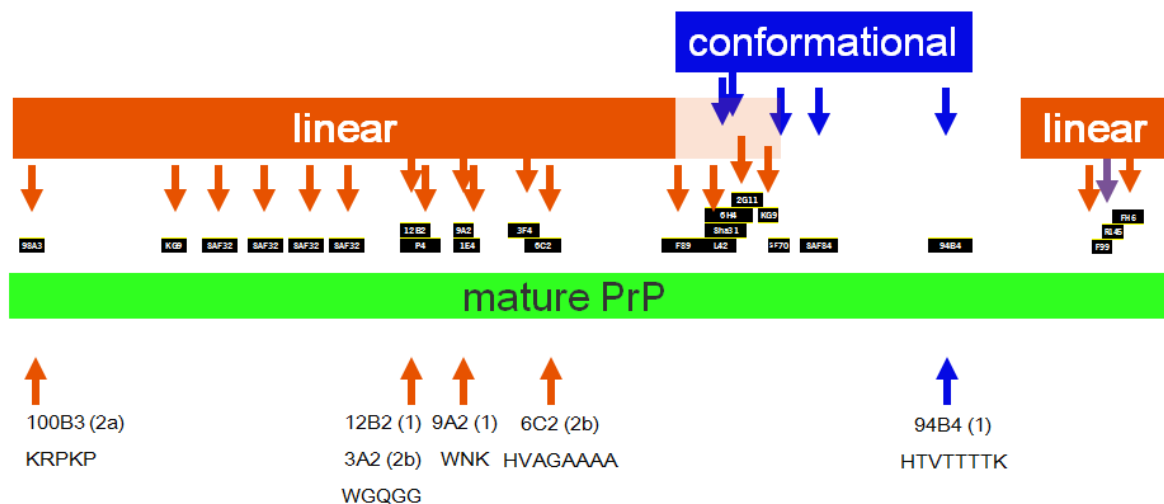
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Animal for immunization:
PrP^{0/0} mice, knock-out for PrP

Büeler H, Fischer M, Lang Y, Bluethmann H, Lipp HP, DeArmond SJ, Prusiner SB, Aguet M, Weissmann C. Normal development and behaviour of mice lacking the neuronal cell-surface PrP protein. Nature. 1992 Apr 16;356(6370):577-82.

some PrP-specific antibodies: linear and conformational epitopes



CVI mouse monoclonal antibodies (IgG class), sequence specificity

100B3, 12B2, 3A2, 9A2 & 6C2: nearly all species

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