

Supplementary Table 1. Antigen preparations applied in this study

ID#	Antigen preparations (Epitopes)	Description	Source	References
1	HCA (AE3)1:5	Human Carcinoma-associated Antigens (HCA) 1:5 dil.	Egenix (Millbrook, NY)	
2	HCA (AE3)	HCA	Egenix (Millbrook, NY)	Thingstad et al., Eur J Pharm Sci. 6, 121 (1998).
3	Cyst9 (A)	Human ovarian cyst (HOC) substance Cyst 9 Phenol sol., blood group substance A.	From the late Prof. Elvin A. Kabat (Columbia University) (EAK)	Baer et al., J. Immunol. 82, 183 (1959); Moreno et al., J. Exp. Med. 134, 439 (1971).
4	JS (H)	HOC substance JS Phenol insol., blood group substance H.	EAK	Schiffman et al., Biochemistry. 3,113 (1964).
5	HGM-BGS (A + H)	Hog gastric mucin (HGM), blood group substance A and H.	EAK	Feizi et al., J. Exp. Med. 133, 39 (1971).
6	Hog76 (A)	HGM 76, blood group substance A.	EAK	
7	Hog 10% (A)	HGM 10%, blood group substance A.	EAK	
8	MSS (A)	HOC MSS, blood group substance A.	EAK	Moreno et al., J. Exp. Med. 134, 439 (1971); Carsten et al., J. Amer. Chem. Soc. 75:3083 (1956).
9	Hog39 B2 (A)	HGM 39 B2, blood group substance A.	EAK	Hammarstrom and Kabat, Biochemistry. 8:2696 (1969).
10	Cyst14 (A2)	HOC Cyst 14, phenol insol dialyzed, blood group substance A2.	EAK	
11	WG (A2)	Saliva W. G. phenol insoluble, blood group substance A2.	EAK	Moreno et al., J. Exp. Med. 134, 439 (1971).
12	Cyst11	HOC cyst 11 substance.	EAK	Kabat, et al, J. Exp. Med. 89, 1 (1949).
13	Cow21	Cow gastric mucin (CGM) substance 21	EAK	Beiser & Kabat, J. Immunol. 68, 19 (1952).
14	Beach (B)	HOC Beach, blood group substance B.	EAK	Feizi and Kabat, J. Exp. Med. 135, 1247 (1972).
15	Cow28 (B)	CGM substance 28, blood group substance B.	EAK	
16	Cow43	CGM substance 43.	EAK	Feizi et al., J. Exp. Med. 133, 39 (1971).
17	Cow26	CGM substance 26.	EAK	
18	Hog5	HGM substance 5.	EAK	
19	Wilson Hog mucin 10%	Wilson HGM substance 10%.	EAK	
20	Hog6 (H)	HGM 6, blood group substance H.	EAK	
21	Hog67 4% (A)	HGM 67 4%, blood group substance A.	EAK	
22	Hog (H)	HGM blood group substance H.	EAK	Kabat, et al, J. Exp. Med. 89, 1 (1949); Beiser & Kabat, J. Immunol. 68, 19 (1952); Allen & Kabat, J. Immunol. 82, 340-357, (1959).
23	Hog30	HGM substance 30	EAK	
24	Cow21 10% ppt (I-Ma)	CGM substance 21, phenol insoluble,10% precipitations (ppt), blood group substance B+I	EAK	
25	Cow25	CGM substance 25, H2O sol.,10% ppt.	EAK	
26	Cow26 10% ppt (I)	CGM substance 26, phenol insoluble, 10% ppt, blood group substance I.	EAK	Beiser & Kabat, J. Immunol. 68, 19 (1952).
27	N-1 10% 2X (Le ^a)	HOC substance N-1 10% 2X, blood group substance Le ^a	EAK	
28	N-1 IO4- (Le ^a)	HOC substance N-1 IO4-,NaOH, blood group substance Le ^a	EAK	Lloyd et al., Biochemistry 7, 2976 (1968).
29	Beach P1 (Ii, O-Cores)	HOC substance Beach P1 Phenol insol., blood group substance I, i, and O-Cores.	EAK	Allen & Kabat, J. Immunol. 82, 358 (1959); Schiffman et al., J. Am. Chem. Soc. 82, 1122 (1959).
30	McDon P1 (O-Cores)	HOC substance McDon P1, Phenol insol., blood group substance precursors.	EAK	Sikder et al., Carbohydr Res. 151, 247 (1986).
31	Tij II (Le ^a , Ii, and O-Cores)	HOC substance Tij II 20%fr. 2nd 10%, B, Le ^a , blood group precursor Ii, T and Tn	EAK	Maisonrouge-McAuliffe & Kabat, Arch. Biochem. Biophys. 175, 71 (1976).
32	OG 10% 2X (Ii, O-Cores)	HOC substance OG 10% 2X, blood group precursor I, i, and O-Cores.	EAK	Vicari & Kabat, J. Immunol. 102, 821 (1969); Feizi et al., J. Exp. Med. 133, 39 (1971).
33	LNT-BSA (Type I)	Lacto-N-tetraose-BSA	EAK	Kabat et al., J. Immunol. 128, 540 (1982).
34	Pn XIV (Type II)	Pneumococcus type XIV capsular polysaccharide	E.R. Squibb and Son, No. 227, Lot 80320	Howe et al., J. Am. Chem. Soc. 80, 6656 (1958).
35	ASOR (Tri/m-II)	Asialo-orosomucoid expressing Tri/m-II glyco-epitopes	EAK	Wang & Lu, Physiol Genomics 18(2), 245 (2004).
36	AGOR (Tri/m-Gn)	Agalacto-orosomucoid expressing Tri/m-Gn glyco-epitopes	EAK	Wang & Lu, Physiol Genomics 18(2), 245 (2004).
37	iAFGP	Inactive anti-freeze glycoprotein	EAK	Feeney et al., J. Biol. Chem. 250, 3344 (1975).
38	Chondroitin sulfate A	Chondroitin sulfate A		
39	Chondroitin sulfate B	Chondroitin sulfate B		
40	Chondroitin sulfate C	Chondroitin sulfate C		Kabat et al., Carbohydr. Res. 130, 289 (1984).
41	Hyaluronic Acid	Hyaluronic acid sodium salt, Sigma-53747	Sigma Chemical Co., St. Louis, MO	http://www.sigmaaldrich.com/catalog

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42	Helix pomatia	D-Galactans of the snail Helix pomatia	EAK	O'Colla, Proc. R. Ir. Acad. Sect. B. Biol. Geol. Chem. Sci. 55B, 165 (1953).
43	Arabino Galactan	Arabino Galactan (Larch CORASH)	EAK	Kabat et al., J. Exp. Med. 152, 979 (1980).
44	H.Nemorialis Galactan	D-Galactans of the snail Helix nemoralis	EAK	Correa et al., Carbohydr. Res. 3, 445 (1967).
45	Dudman's Rhizobium tritoli TA1	Dudman's Rhizobium tritoli TA1 polysaccharide	EAK	Chaudhari et al., Carbohydr. Res. 28, 221 (1973).
46	Pn C	Pneumococcal C polysaccharide (species-specific)	EAK	Kabat et al., J. Exp. Med. 152, 979 (1980).
47	Pn SIV	Pneumococcus type IV soluble polysaccharide	EAK	Kabat et al., J. Exp. Med. 164, 642 (1986).
48	Pn VIII	Pneumococcus type VIII CP	EAK	Brown, R., J. Immunol. 37, 445 (1939).
49	Pn IX	Pneumococcus type IX CP	EAK	Kabat et al., J. Exp. Med. 164, 642 (1986).
50	Pn 27	Pneumococcus type 27 CP	EAK	Bennett & Bishop, Can. J. Chem. 55, 8 (1977).
51	Bacto-agar 20°C extract	Bacto-agar 20°C extract	EAK	Duckworth & Yaphe, Carbohydr. Res. 16, 189 (1971).
52	E. coli. K1	E. coli K1 CP	EAK	
53	E. coli. K92	E. coli K92 CP	EAK	
54	E. coli. K100	E. coli K100 CP	EAK	
55	Phosphomannan	Yeast phosphomannan polysaccharide, NRRL B-2448	Northern Regional research laboratory (NRRL), Peoria, IL	
56	Meningococcus group B	Meningococcus group B CP	EAK	
57	Meningococcus group Y	Meningococcus group Y CP	EAK	
58	H.influenza A	Haemophilus influenzae type A CP	EAK	Kabat et al., J. Exp. Med. 164, 642 (1986).
59	Pn14 ATCC 23-X	Pneumococcal type 14 (US Type 14) CP (ATCC® 23-X™)	Merck, Sharp & Dohme	
60	Pn23 ATCC 25-X	Pneumococcal type 23F (US Type 23) CP (ATCC® 25-X™)	Merck, Sharp & Dohme	
61	Pn23 ATCC 25-X 1:5	Pneumococcal type 23F (US Type 23) CP (ATCC® 25-X™) 1:5 dil.	Merck, Sharp & Dohme	http://www.atcc.org/products
62	Pn23-EAK	Pneumococcal type 23 CP (EAK)	EAK	Heidelberger et al., J Immunol.99,794 (1967); Wang et al., Proteomics, 7,180 (2007).
63	Pn23-EAK 1:5	Pneumococcal type 23 CP (EAK) 1:5 dil.	EAK	Heidelberger et al., J Immunol.99,794 (1967); Wang et al., Proteomics, 7,180 (2007).
64	S. Weslaco LPS	Shigella Weslaco LPS	EAK	Luderitz et al., Bact. Rev. 30, 192 (1966).
65	S. typhi LT2 LPS	Salmonella typhimurium LT2 LPS	EAK	Goldman and leive, Eur. J. Biochem. 107, 145 (1980).
66	E.coli K100 CP	E. coli K100 CP	EAK	
67	H.influenza A	Haemophilus influenzae type A CP	EAK	Kabat et al., J. Exp. Med. 164, 642 (1986).
68	Pn XIV (Gil)	Pneumococcus type XIV CP (Gil)	EAK	Allen & Kabat, J. Immunol. 82, 358 (1959).
69	S. dysenteriae I	Shigella dysenteriae Type 1 O-specific polysaccharide	EAK	Pozsgay, et al., Proc Natl Acad Sci USA 104:14478 (2007).
70	S. sonnei-1	Shigella sonnei polysaccharide preparation-1	EAK	
71	S. sonnei-2	Shigella sonnei polysaccharide preparation-2	EAK	Luderitz et al., Bact. Rev. 30, 192 (1966).
72	Pn SII	Pneumococcus type II soluble polysaccharide	E.R. Squibb and Son, No. 227, Lot 80320	Howe et al., J. Am. Chem. Soc. 80, 6656 (1958)
73	Tetanus Toxoid	Tetanus Toxoid from Clostridium tetani	List Biological Labs, Inc., Lot#1919A	http://www.listlabs.com/
74	Isolichenin	α-(1→3)-Glucan	EAK	Heidelberger M., J Immunol. 91, 735 (1963).
75	Group C Strep.	Streptococcal group C polysaccharide	EAK	Coligan et al., Prog Clin Biol Res. 23, 601 (1978).
76	S. sonnei LPS-3	Shigella sonnei polysaccharide preparation-3	EAK	Luderitz et al., Bact. Rev. 30, 192 (1966).
77	S. typhi LPS	Salmonella enterica serotype typhimurium LPS	Sigma-Aldrich	http://www.sigmaaldrich.com/catalog
78	Diphtheria Toxoid	Diphtheria Toxoid, from Corynebacterium diphtheriae	List Biological Labs, Inc., Lot# 1919A	http://www.listlabs.com/
79	Av-Cy3/5	Streptavidin-Cy3 and -Cy5, background fluorescent signal in FITC channel	Amashan Pharmacia, Piscataway, NJ	http://www.lifetechnologies.com
80	Dex70K-FITC	Positive marker in FITC channel	Sigma Chemical Co., St. Louis, MO	http://www.sigmaaldrich.com/catalog
81	Asialo-PSM (T)	Prepared from porcine salivary glycoproteins (PSM)	From Prof. Albert Wu, Chang-Gung Medical College, Taiwan	Tettamanti and Pigman., Arch. Biochem. Biophys., 124:41 (1968).
82	Asialo-OSM (Tn)	Prepared from ovine salivary glycoproteins (OSM)	From Prof. Albert Wu, Chang-Gung Medical College, Taiwan	Tettamanti and Pigman., Arch. Biochem. Biophys., 124:41 (1968).
83	Tn-antigen-HSA.	Tn-antigen-HSA(7 atom spacer)	V-LABS, INC., NGP2103 (Dec., 2001)	http://www.v-labs.com
84	T-antigen-HSA.	T-antigen-HSA(3 atom spacer)	V-LABS, INC., NGP2208 (Dec., 2001)	http://www.v-labs.com
85	Asialo-epiglycanin (EPGN)	Prepared from EPGN, the major sialomucin glycoprotein (~ 500 kDa) of murine mammary adenocarcinoma TA3 cells	Egenix (Millbrook, NY)	Codington et al., Biochemistry, 11, 2559 (1972)