SUPPLEMENTAL MATERIAL

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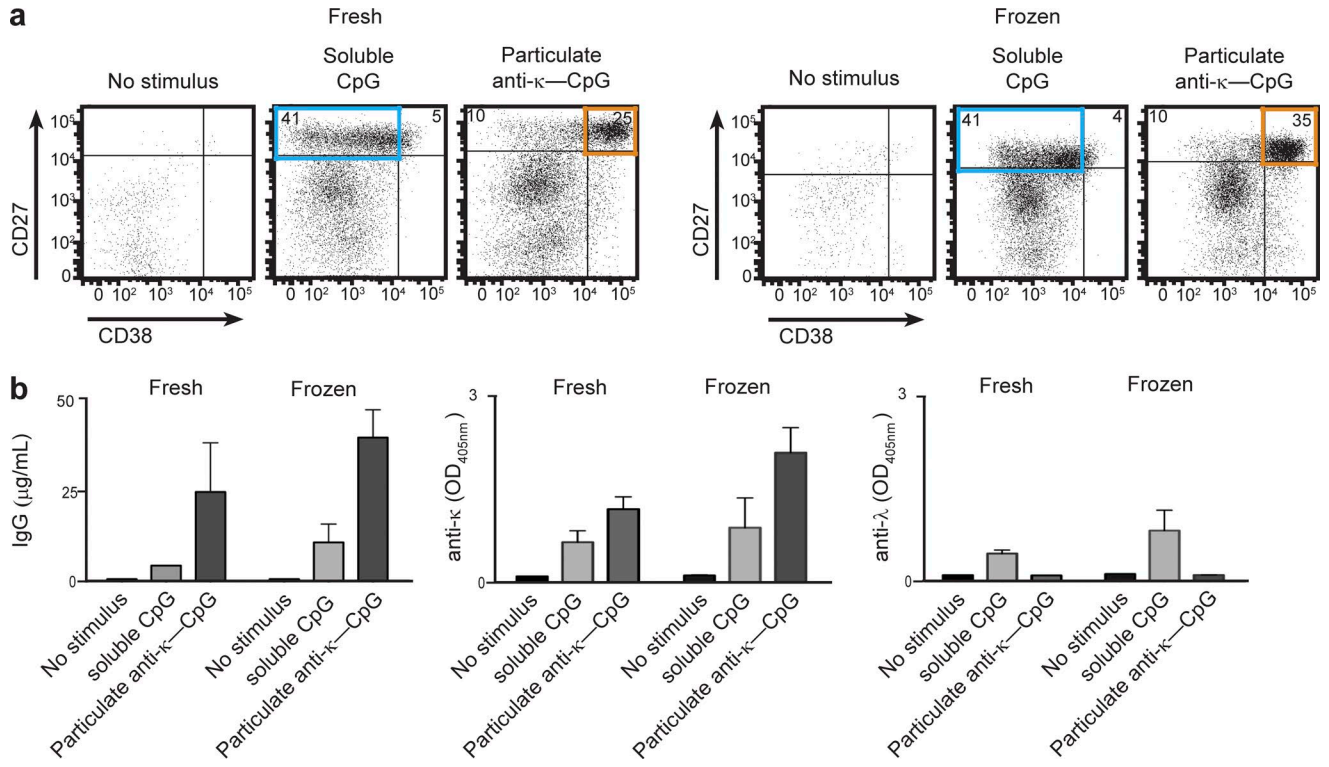

Figure S1. **Comparative in vitro stimulation of memory B cells isolated from fresh and cryopreserved PBMCs.** (a) CellTrace Violet–labeled memory B cells were cultured for 6 d with particulate anti–BCR-CpG, particulate anti-BCR, or soluble CpG. Numbers in the plots indicate the percentage of plasmablasts and plasma cells based on the expression of CD27/CD38 on proliferating cells. (b) Concentrations of IgG antibodies secreted in the culture supernatant and the presence of κ- or λ-bearing antibodies were determined by ELISA. Left, mean ± SD IgG concentrations. Middle and right, ELISA measurements of κ- and λ-chain Igs, respectively. Results represent mean OD_{405} values ± SD of duplicate samples.

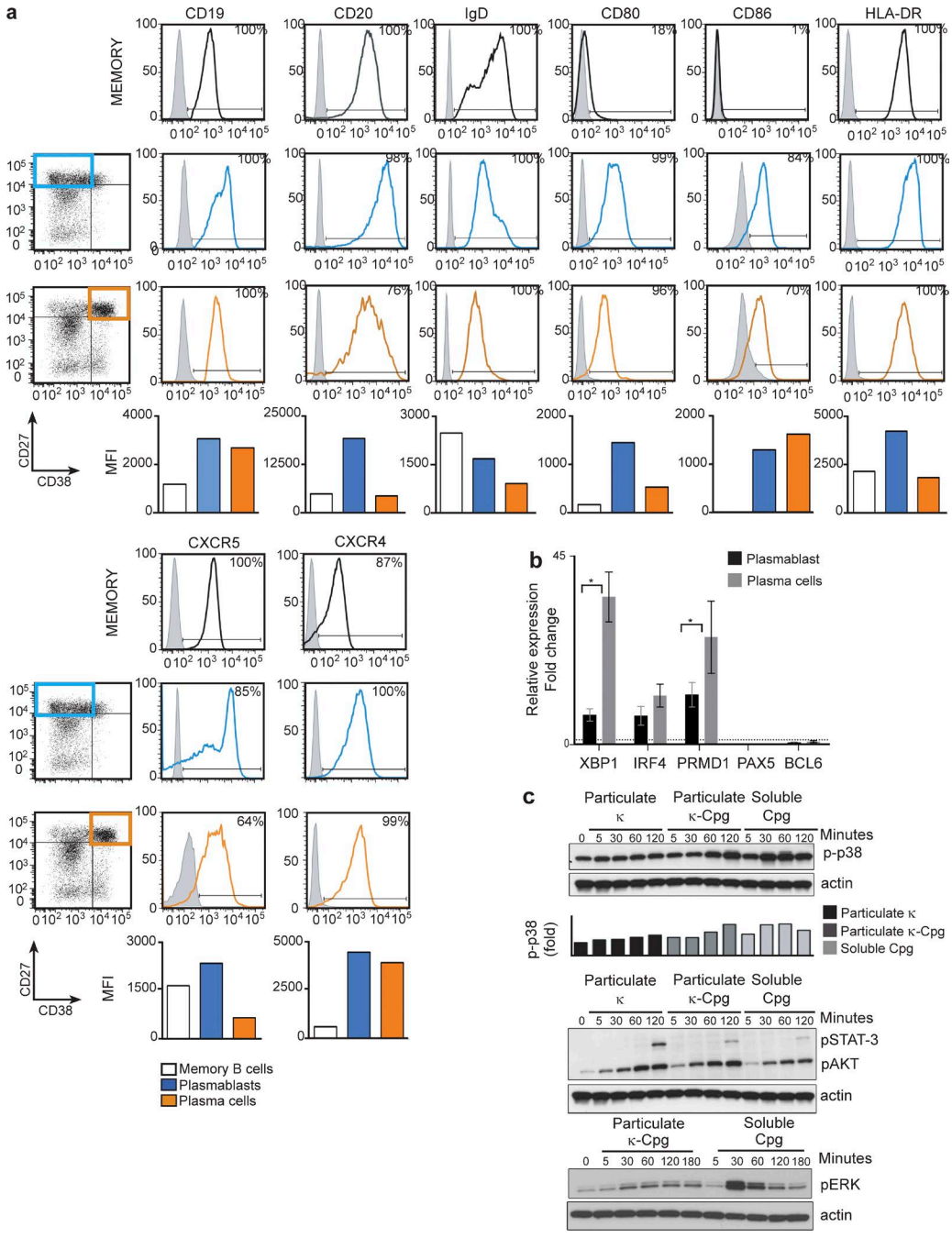

Figure S2. **Phenotype of the CD27^{high}/CD38^{int} and CD27^{high}/CD38^{high} cell populations and gene expression of transcription factors involved in plasma cell differentiation.** (a) The cell surface phenotype was analyzed by gating on plasmablasts (blue gate) generated after soluble CpG stimulation or plasma cells (orange gate) generated after particulate anti–κ-CpG stimulation. Phenotype of the memory B cells before stimulation is included. Data from one representative experiment of four are shown. Gray histograms represent the corresponding isotype control. Numbers in panels indicate the percentage of positive cells. The bar charts represent the mean fluorescence intensity (MFI) for the indicated surface markers. (b) Purified memory B cells and sorted CD27^{hi}/CD38^{int} and CD27^{hi}/CD38^{high} cells were evaluated for expression of XBP1, IRF4, PRMD1, PAX5, and BCL6 by real-time PCR. mRNA expression was normalized against the GAPDH gene and is presented as fold difference of the memory B cells (dashed line). Significant differences in gene expression between CD27^{hi}/CD38^{int} and CD27^{hi}/CD38^{high} cells are indicated (*t* test, statistical significance determined using the Holm–Sidak method to correct for multiple comparisons, with α = 5.000%; $P < 0.05$). Data are mean ± SD of gene expression determined in six experiments. (c) Purified B cells were stimulated with either particulate κ or particulate κ-CpG (5,000 nanoparticles/cell) of soluble CpG (1 µg/ml). Samples were harvested at the indicated times, and equal amounts of whole-cell lysates were subjected to SDS-PAGE and examined for phosphorylation of p38, STAT-3, AKT, and ERK. Chart shows the densitometry analysis of the bands relative to actin. Data from one representative experiment of six are shown.

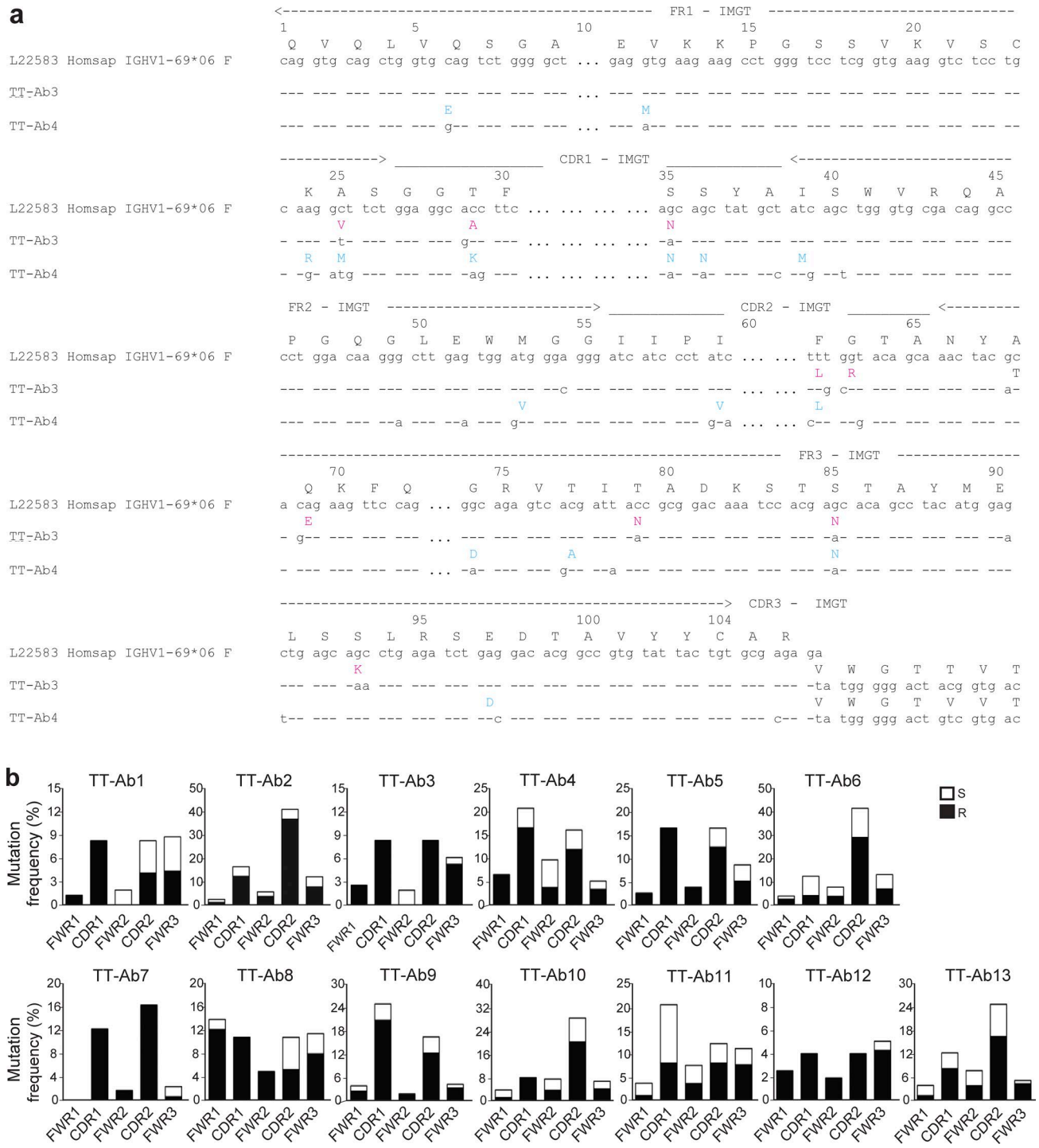

Figure S3. **Sequence analysis of TT-specific antibodies.** (a) Sequence alignment of clonally related TT-specific antibodies. VH sequences from two TT-specific antibodies with the same VH and VL gene usage were aligned against the germline gene counterpart (IGHV1-69*06). Dashes represent identity with the germline sequence. Replacement amino acid changes observed are highlighted in pink and blue. (b) Frequency of replacement (R, black) and silent (S, white) mutations in the CDRs and FWRs of the TT-specific antibody VH genes.

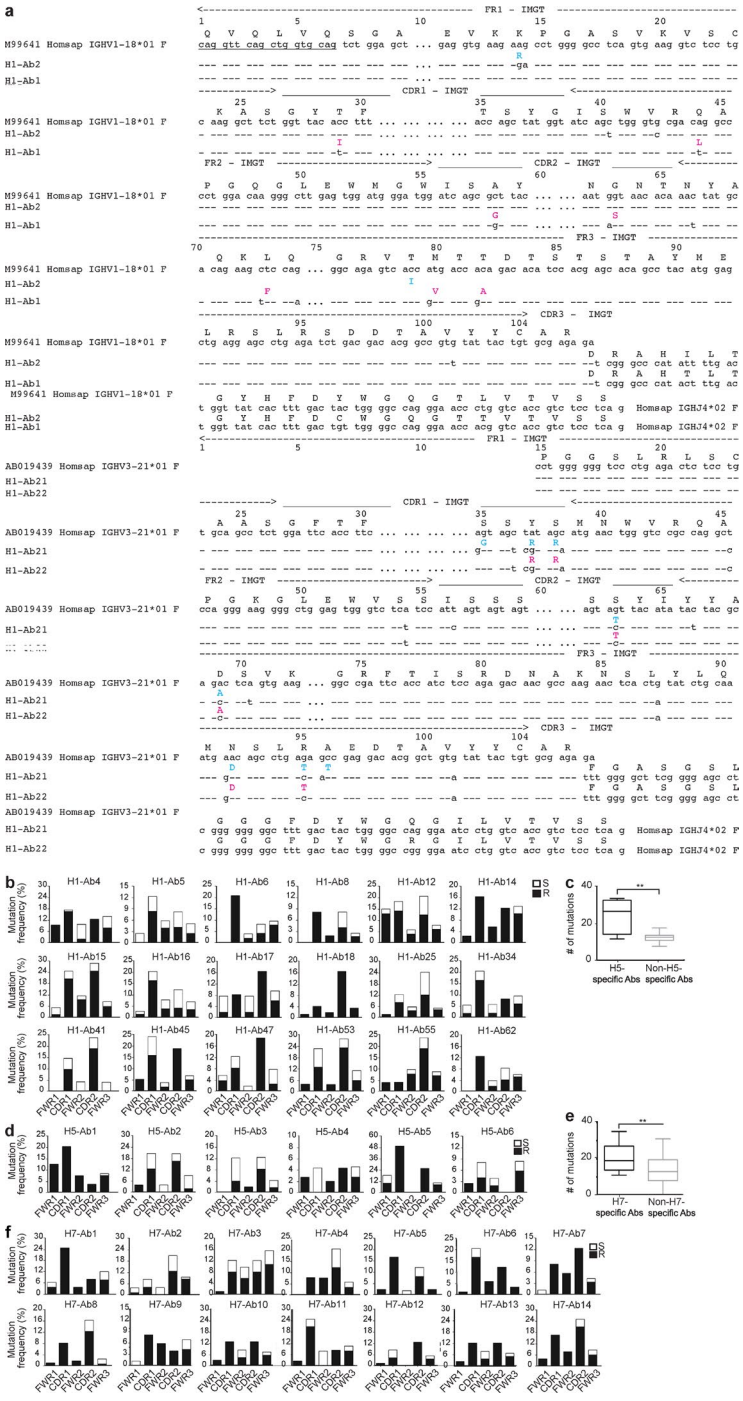

Figure S4. **Sequence analysis of HA-specific antibodies.** (a) Sequence alignment of clonally related H1-specific antibodies. VH sequences from two different clones of H1-specific antibodies with the same VH and VL gene usage were aligned against the germ line gene counterpart. Replacement amino acid changes observed are highlighted in pink and blue. (b) Frequency of replacement (R, black) and silent (S, white) mutations in the CDRs and FWRs of the VH genes. Representative examples of H1-specific antibodies are shown. (c) Comparison of the absolute numbers of somatic mutations in the VH genes encoding five H5-reactive and eight nonreacting antibodies. Boxes represent the percentile range (25–75%), the horizontal bar indicates the median, and whiskers extend to the highest and lowest data points. Two-tailed P values were calculated with an unpaired *t* test (**, P < 0.05). (d) Frequency of replacement (R, black) and silent (S, white) mutations in the CDRs and FWRs of VH genes of H5-reactive antibodies VH genes. (e) Comparison of the absolute numbers of somatic mutations in the VH genes encoding 14 H7-reactive and 57 nonreactive antibodies. Boxes represent the percentile range (25–75%), the horizontal bar indicates the median, and whiskers extend to the highest and lowest data points. Two-tailed P values were calculated with unpaired *t* test (**, P < 0.05). (f) Frequency of replacement (R, black) and silent (S, white) mutations in the CDRs and FWRs of the VH genes of the H7-reactive antibodies.

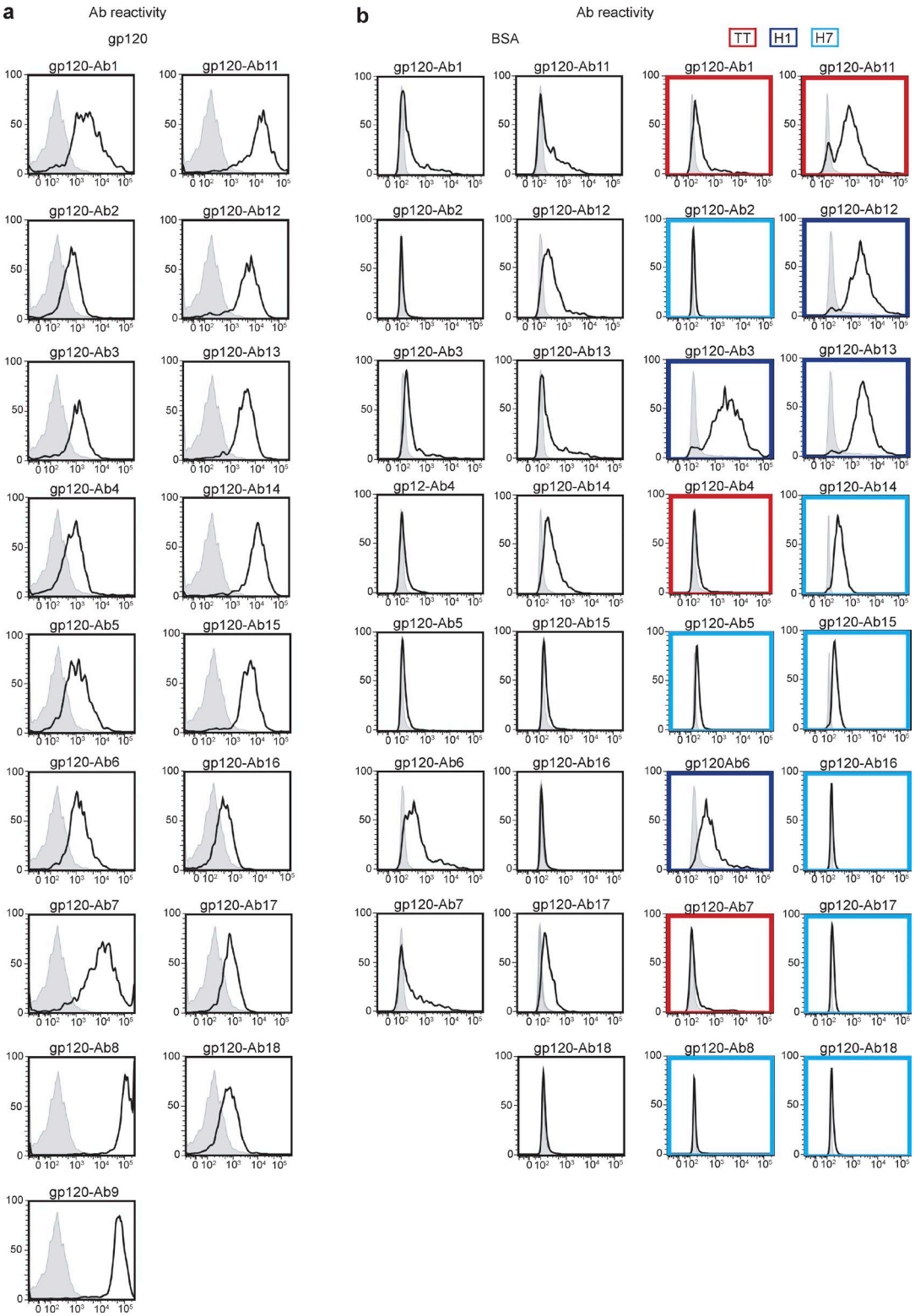

Figure S5. **Reactivity of the gp120-binding antibodies by flow cytometry.** (a) Confirmation of gp120 specificity of the recombinant antibodies screened by ELISA. Streptavidin nanoparticles coated with biotinylated gp120 were incubated with the generated antibodies, and reactivity was detected with an Fc-specific, PE-labeled anti–human IgG. Gray histograms, staining controls. (b) Reactivity of the gp-120-binding antibodies was tested against a panel of foreign antigens (BSA, TT, H1, H7) following the protocol described in the text.

Table S1. **Characteristics of the unique antigen-specific antibody sequences isolated from single plasma cells obtained after stimulation of memory cells of healthy individuals with particulate TT-CpG**

Ab	VH name	JH name	DH name	CDR3 length	CDR3 sequence	VL name	JL name	CDR3 length	CDR3 sequence
				aa				*aa*	
TT-Ab1	IGHV1-18*01	IGHJ4*02	IGHD3-22*01	15	CARGLRHYHDGSPLEYW	IGKV3-20*01	IGKJ5*01	9	CQLYGNSLITF
TT-Ab2	IGHV1-46*01	IGHJ4*02	IGHD5-24*01	11	CAGGGQRFTFDYW	IGLV2-23*02	IGLJ2*01	10	CCSYAGNSNVIF
TT-Ab3	IGHV1-69*06	IGHJ6*02	IGHD4-17*01	24	CARVWGTTVTKGPSQIKYYYYGMDVW	IGKV1-39*01	IGKJ4*01	9	CQQSYSTPLTF
TT-Ab4	IGHV1-69*06	IGHJ6*01	IGHD4-17*01	24	CARVWGTVVTQGPSQVQYNHYMDVW	IGKV1-39*01	IGKJ4*01	9	CQQSYTTPLTF
TT-Ab5	IGHV1-69*06	IGHJ4*01	IGHD5-12*01	13	CATRESGYDGQFDYW	IGLV1-47*01	IGLJ2*01	10	CATWDDSLGVVF
TT-Ab6	IGHV3-11*03	IGHJ4*03	IGHD6-19*01	15	CARVGPWPVMKGAFDSW	IGKV3-20*01	IGKJ3*01	10	CQQYGSSPLFAF
TT-Ab7	IGHV3-23*04	IGHJ4*02	IGHD6-13*01	13	CARSVQQYLGLLGYW	IGLV4-69*01	IGLJ3*02	9	CQTWGAGMGMF
TT-Ab8	IGHV3-48*03	IGHJ4*02	IGHD3-10*01	14	CARDPSPGRLGFFDYW	IGKV3-15*01	IGKJ1*01	9	CQQYNNWPRTF
TT-Ab9	IGHV3-7*03	IGHJ4*02	IGHD3-10*01	16	CARGMTAWSLGGYQYDYW	IGKV1-6*01	IGKJ1*01	9	CLQNYNYPRTF
TT-Ab10	IGHV3-7*03	IGHJ4*02	IGHD3-10*01	15	CAREYGSYWRTYYFDDW	IGKV3-11*01	IGKJ4*01	8	CQQGSNWLTF
TT-Ab11	IGHV4-31*03	IGHJ4*02	IGHD3-3*01	15	CARVRGTGYYPGTLDLW	IGKV3-20*01	IGKJ4*01	9	CQQFGSSPLTF
TT-Ab12	IGHV4-59*01	IGHJ5*02	IGHD3-22*01	19	CARARYYYDSTGYFYGWLDPW	IGKV1-5*03	IGKJ2*04	9	CQQYKSYSCSF
TT-Ab13	IGHV5-51*01	IGHJ4*02	IGHD3-22*01	16	CARQGDPSSYLTSGFEFW	IGKV1-5*03	IGKJ1*01	9	CHQYNSYSQTF

Table S2. **K_{on}, K_{off}, and K_d of selected TT-specific antibodies binding to immobilized antigen were determined by BLI**

Antibody	K_d	K_{on}	K_{off}
	M	*1/M*	*1/s*
TT-Ab3	1.61×10^{-9}	8.05×10^{4}	1.30×10^{-4}
TT-Ab4	1.37×10^{-11}	1.66×10^{5}	2.27×10^{-6}
TT-Ab7	1.85×10^{-11}	1.87×10^{5}	3.46×10^{-6}
TT-Ab9	6.64×10^{-9}	1.39×10^{5}	9.19×10^{-4}
TT-Ab10	1.59×10^{-9}	1.53×10^{5}	2.43×10^{-4}
TT-Ab12	1.95×10^{-9}	1.57×10^{5}	3.07×10^{-4}

Table S3. **Characteristics of the unique antigen-specific antibody sequences isolated from single plasma cells obtained after stimulation with particulate H1-CpG**

Ab	VH name	JH name	DH name	CDR3 length	CDR3 sequence	VL name	JL name	CDR3 length	CDR3 sequence
				aa				*aa*	
H1-Ab1	IGHV1-18*01	IGHJ4*02	IGHD3-9*01	15	CARDRAHTLTGYHFDCW	IGKV2-30*01	IGKJ2*01	10	CMQGTHWPPYTF
H1-Ab2	IGHV1-18*01	IGHJ4*02	IGHD3-9*01	15	CARDRAHILTGYHFDYW	IGKV2-30*01	IGKJ2*01	10	CMQGTHWPPYTF
H1-Ab3	IGHV1-18*01	IGHJ4*02	IGHD3-9*01	15	CARDRAHILTGYHFDYW	IGKV3-20*01	IGKJ5*01	10	CQQYGSSHVITF
H1-Ab4	IGHV1-18*01	IGHJ5*01	IGHD4-11*01	10	CARDVHYRFDSW	IGLV2-8*01	IGLJ3*02	9	CSSYAGGSRVF
H1-Ab5	IGHV1-18*01	IGHJ4*02	IGHD3-10*01	17	CARDVPHPLDNSGSSHDSW	IGKV2-30*01	IGKJ2*02	9	CMQATYWPRTF
H1-Ab6	IGHV1-18*04	IGHJ3*02	IGHD2-2*01	15	CARDRPHILAPSAFDIW	IGKV2-30*01	IGKJ2*01	9	CMQGTHWPYTF
H1-Ab7	IGHV1-18*04	IGHJ4*02	IGHD5-18*01	14	CARGTWIQHLYYFDYW	IGLV3-21*01	IGLJ2*01	11	CQVWDNTHDHVVF
H1-Ab8	IGHV1-2*02	IGHJ4*02	IGHD3-9*01	16	CARANRGGYFAWAFFDFW	IGKV3-20*01	IGKJ4*01	9	CQQYGSSPLTF
H1-Ab9	IGHV1-2*02	IGHJ3*01	IGHD5-18*01	12	CARIQLRSDGFDLW	IGLV2-23*02	IGLJ3*02	10	CCSYAGSSFWVF
H1-Ab10	IGHV1-69*01	IGHJ6*02	IGHD3-9*01	27	CARAGTPSPRLVLQYFDWLFPYYYGMDVW	IGKV2D-29*01	IGKJ4*01	9	CMQSLQLPITF
H1-Ab11	IGHV1-69*06	IGHJ6*02	IGHD1-1*01	18	CAKGGPTTGTPYYVFGLDVW	IGKV2-24*01	IGKJ2*01	8	CMQATQFQTF
H1-Ab12	IGHV1-69*09	IGHJ4*02	IGHD3-22*01	15	CATYQGGGSGYFPLDSW	IGKV3-20*01	IGKJ2*01	9	CHQYGGFMYTF
H1-Ab13	IGHV1-69*09	IGHJ4*02	IGHD1-26*01	16	CTRTPHVSTGSPGDIDNW	IGKV3-11*01	IGKJ1*01	9	CQQRGNWLWTF
H1-Ab14	IGHV1-69*09	IGHJ5*02	IGHD3-22*01	15	CARGNFDDRGYYQFDPW	IGKV2-28*01	IGKJ1*01	9	CMQGLQTPWTF
H1-Ab15	IGHV1-69*09	IGHJ4*02	IGHD3-22*01	17	CATGPSYYYDANGSPTDYW	IGKV3-15*01	IGKJ1*01	9	CQQYNNWPWTF
H1-Ab16	IGHV1-69*09	IGHJ4*02	IGHD3-10*01	13	CAGGTSRWFGDVEYW	IGKV2-30*01	IGKJ1*01	10	CMQGSHWPPSF
H1-Ab17	IGHV1-69*09	IGHJ4*02	IGHD1-26*01	11	CAKGDTVGPTPNW	IGKV3-20*01	IGKJ2*03	9	CQQYGTFLYSF
H1-Ab18	IGHV3-15*01	IGHJ4*02	IGHD2-8*01	14	CATDHSSHYYDRPDYW	IGLV4-69*01	IGLJ3*02	9	CQTWDTGIHVF
H1-Ab19	IGHV3-21*01	IGHJ4*02	IGHD4-23*01	17	CATGVTSSYGGYSGYFDSW	IGKV1-33*01	IGKJ4*01	9	CQQYDNPFLTF
H1-Ab20	IGHV3-21*01	IGHJ4*02	IGHD2-15*01	17	CATLAGYCIGGTCDDFDYW	IGLV3-25*03	IGLJ2*01	8	CQSADSSVVF
H1-Ab21	IGHV3-21*01	IGHJ4*02	IGHD3-10*01	15	CARFGASGSLGGGFDYW	IGKV3-15*01	IGKJ2*02	9	CQQYHDWPRTF
H1-Ab22	IGHV3-21*01	IGHJ4*02	IGHD3-10*01	15	CARFGASGSLGGGFDYW	IGKV3-15*01	IGKJ2*02	9	CQQYHDWPRTF
H1-Ab23	IGHV3-21*04	IGHJ4*02	IGHD4-23*01	17	CATGVTSSYGGHPGYFDSW	IGKV1-33*01	IGKJ4*01	9	CQQYDDPFLTF
H1-Ab24	IGHV3-23*01	IGHJ6*01	IGHD3-3*01	21	CAKDTGHKIFGVVRPYYHGMDVW	IGKV3-20*01	IGKJ2*01	10	CQQYGSSPMYTF
H1-Ab25	IGHV3-23*01	IGHJ4*02	IGHD3-10*01	16	CAKLPPLGSGNYGAIDYW	IGLV7-43*01	IGLJ3*02	10	CLLYFGGVNWVF
H1-Ab26	IGHV3-23*01	IGHJ6*02	IGHD3-3*01	21	CAKDTGHTIFGVVRPYYNGMDVW	IGKV2-30*01	IGKJ2*01	8	CMQGTHPYTF
H1-Ab27	IGHV3-23*01	IGHJ6*02	IGHD3-3*01	21	CAKDTGHTIFGVVRPYYNGMDVW	IGKV3-20*01	IGKJ2*01	10	CQQYGGSPMYTF
H1-Ab28	IGHV3-23*01	IGHJ4*02	IGHD3-3*01	16	CAKDLGVIIPSGGKFDSW	IGKV3-15*01	IGKJ1*01	10	CQQYNNWPPITF
H1-Ab29	IGHV3-23*04	IGHJ6*02	IGHD3-3*01	21	CAKDTGHKIFGVVRPYYHGMDVW	IGKV3-20*01	IGKJ2*01	10	CQQYGISPMYTF
H1-Ab30	IGHV3-23*04	IGHJ4*02	IGHD6-19*01	16	CAKALATHIVMAGTLDFW	IGKV3-15*01	IGKJ4*01	10	CQQYNNWPPLTF
H1-Ab31	IGHV3-23*04	IGHJ4*02	IGHD3-3*01	20	CAKDRGRSIFGLVTQDYHFDYW	IGKV1-39*01	IGKJ4*01	9	CQQSFRSPLTF
H1-Ab32	IGHV3-23*04	IGHJ4*02	IGHD3-3*01	20	CARVVGRETFGLVIPIYYFDYW	IGKV3-11*01	IGKJ4*01	10	CQQCSNWPPLTF
H1-Ab33	IGHV3-23*04	IGHJ4*02	IGHD3-3*01	20	CAKDQGNAIFGLVIPSYYFDYW	IGKV3-20*01	IGKJ4*01	10	CQQYGSSPQLTF
H1-Ab34	IGHV3-23*04	IGHJ4*02	IGHD3-3*01	18	CAKEVSWITIFGVITPFDSW	IGKV3-15*01	IGKJ4*01	9	CQQCNNWPLTF
H1-Ab35	IGHV3-23*04	IGHJ1*01	IGHD3-3*01	14	CAQDAITFFGVIITSW	IGKV3-15*01	IGKJ1*01	9	CQQYNEWPPTF
H1-Ab36	IGHV3-23*04	IGHJ6*02	IGHD3-3*01	20	CAKGDEFWSGYSPSYSYAMDVW	IGLV2-14*01	IGLJ2*01	10	CSSYTGSSTLVVF
H1-Ab37	IGHV3-23*04	IGHJ4*02	IGHD3-3*01	20	CAKDQGNAIFGLVIPSYYFDYW	IGKV3-20*01	IGKJ4*01	10	CQQYGSSPQLTF
H1-Ab38	IGHV3-30-3*01	IGHJ5*01	IGHD5-18*01	9	CARRYDGFDYW	IGLV2-23*02	IGLJ2*01	10	CCSYAGSYTYVF
H1-Ab39	IGHV3-30*01	IGHJ2*01	IGHD3-22*01	16	CARGNCRPRGYYIPQDLW	IGKV1-5*03	IGKJ1*01	9	CHQYDGFPWTF
H1-Ab40	IGHV3-30*01	IGHJ6*02	IGHD2-2*01	24	CARDVVNCSGTTCRNMDYYYYGMDVW	IGLV3-1*01	IGLJ2*01	11	CQAWDSSTDHVEF
H1-Ab41	IGHV3-33*01	IGHJ4*02	IGHD3-22*01	20	CARGFLLPYYGSSGYEYFFDFW	IGKV4-1*01	IGKJ4*01	8	CQQYYSTPSF
H1-Ab42	IGHV3-48*02	IGHJ6*02	IGHD4-17*01	18	CARAGGGYGDYFYFYGMDVW	IGLV3-21*01	IGLJ2*01	11	CQVWDSSSDHVIF
H1-Ab43	IGHV3-48*03	IGHJ4*02	IGHD6-19*01	13	CVSPIPVAGTMEIYW	IGKV3-15*01	IGKJ4*01	10	CQQYNNWPPLTF
H1-Ab44	IGHV3-64*04	IGHJ5*02	IGHD1-26*01	16	CSRGGIVRYSGSYGPDVW	IGKV2-28*01	IGKJ1*01	9	CMQALQMPWTF
H1-Ab45	IGHV3-66*01	IGHJ3*02	IGHD5-24*01	17	CARGGDAYNSGPTGAFDIW	IGLV3-21*01	IGLJ3*02	11	CQVWHSISDHWLF
H1-Ab46	IGHV3-7*03	IGHJ4*02	IGHD2-21*02	13	CARYCGGDCFGFDYW	IGKV3-15*01	IGKJ1*01	10	CQQYNDWPSWTF
H1-Ab47	IGHV3-9*01	IGHJ6*02	IGHD1-26*01	12	CVKDVGGYYAMDVW	IGLV1-51*01	IGLJ1*01	11	CGTWDSNLKAYIF
H1-Ab48	IGHV3-9*01	IGHJ4*02	IGHD6-19*01	13	CAKADSGWYGYFDSW	ND			
H1-Ab49	IGHV3-9*01	IGHJ4*02	IGHD6-19*01	14	CVKDRGLGGWYFFESW	IGLV1-51*01	IGLJ1*01	11	CGTWDSNLKAYIF
H1-Ab50	IGHV4-31*03	IGHJ3*02	IGHD5-24*01	14	CATDSKVGYVEAPDIW	IGLV1-44*01	IGLJ2*01	11	CAAWDDNLNGVLF
H1-Ab51	IGHV4-39*01	IGHJ3*02	IGHD2-21*02	16	CARSYCGGGCNFDAFDIW	IGLV2-14*01	IGLJ3*02	10	CSSYTSNITLVF
H1-Ab52	IGHV4-39*03	IGHJ3*02	IGHD4-23*01	11	CGTSVNLDAVHIW	IGLV2-14*01	IGLJ2*01	11	CSSYTDINTHVIF
H1-Ab53	IGHV4-39*03	IGHJ5*02	IGHD3-3*01	20	CARMSYMDYDFSTGYWNWFDPW	IGLV2-23*01	IGLJ3*02	10	CCSYAGSSTWVF
H1-Ab54	IGHV4-39*03	IGHJ5*02	IGHD3-3*01	20	CARLSYMDYDFSTGYWNWFDPW	IGLV2-23*01	IGLJ3*02	10	CCSYAGSSTWVF
H1-Ab55	IGHV4-59*01	IGHJ3*01	IGHD1-1*01	15	CARDQTGIRKSNAFDLW	IGKV1-39*01	IGKJ1*01	9	CQQSYDTPQTF
H1-Ab56	IGHV4-59*01	IGHJ3*02	IGHD6-6*01	15	CARDQAGIRRSNAFDIW	IGKV1-39*01	IGKJ1*01	9	CQQSYDIPQTF
H1-Ab57	IGHV4-61*02	IGHJ4*02	IGHD3-22*01	13	CARLSISSGYYYDYW	IGLV6-57*01	IGLJ2*01	9	CQSYDTFNHVF
H1-Ab58	IGHV4-61*02	IGHJ4*02	IGHD6-19*01	14	CAREDSSGWEYYFDYW	IGKV3-20*01	IGKJ2*03	9	CQQYGTFLYSF
H1-Ab59	IGHV4-61*02	IGHJ4*02	IGHD3-16*02	19	CAREDDFVWGSYRRFAYFDYW	IGKV1-33*01	IGKJ2*01	10	CQQYDNLPMYTF
H1-Ab60	IGHV4-61*07	IGHJ5*02	IGHD4-17*01	15	CARDRGELRGYNWLDPW	ND			

Table S3. **Characteristics of the unique antigen-specific antibody sequences isolated from single plasma cells obtained after stimulation with particulate H1-CpG** *(Continued)*

Ab	VH name	JH name	DH name	CDR3 length	CDR3 sequence	VL name	JL name	CDR3 length	CDR3 sequence
H1-Ab61	IGHV5-51*01	IGHJ6*02	IGHD3-16*02	16	CARHPGDKSFYYYGLDVW	IGKV1-5*03	IGKJ5*01	9	CQQYNSDSITF
H1-Ab62	IGHV5-51*01	IGHJ4*02	IGHD6-19*01	13	CARQYTSGWYILDYW	IGLV1-44*01	IGLJ2*01	11	CAAWDDSLSGVLF

Table S4. **K_{on}, K_{off}, and K_d of selected H1-specific antibodies binding to immobilized antigen were determined by SPR measurements**

Antibody	K_d	K_{on}	K_{off}
	M	*1/M*	*1/s*
H1-Ab10	5.6×10^{-4}	9	
H1-Ab19	1×10^{-12}	4.77×10^{4}	
H1-Ab20	6.88×10^{-4}	2.00×10^{5}	
H1-Ab24	8.36×10^{-4}	2.37×10^{5}	
H1-Ab29	7.36×10^{-4}	2.98×10^{5}	
H1-Ab30	6.6×10^{-11}	1.42×10^{5}	
H1-Ab32	5.6×10^{-10}	2.17×10^{3}	
H1-Ab41	8.19×10^{-11}	2.72×10^{5}	
H1-Ab43	1.55×10^{-10}	4.82×10^{4}	
H1-Ab44	2.11×10^{-4}	2.24×10^{4}	
H1-Ab54	2.97×10^{-7}	1.11×10^{3}	3.30×10^{-4}
H1-Ab55	4.67×10^{-10}		
H1-Ab56	3.72×10^{-10}	2.78×10^{4}	
H1-Ab59	1.4×10^{-8}		

Table S5. **Characteristics of the unique antigen-specific antibody sequences isolated from single plasma cells obtained after stimulation with particulate H5-CpG**

Ab	VH name	JH name	DH name	CDR3 length	CDR3 sequence	VL name	JL name	CDR3 length	CDR3 sequence
				aa				*aa*	
H5-Ab1	IGHV1-18*01	IGHJ5*01	IGHD6-25*01	18	CAVDSGGYFSSPRYRWIDPW	IGLV1-51*01	IGLJ1*01	11	CGTWDSNLKAYIF
H5-Ab2	IGHV1-69*01	IGHJ4*02	IGHD3-10*01	17	CASAHGYHNYGSRGYFVSW	IGKV3-20*01	IGKJ2*01	9	CQQYGSSPHTF
H5-Ab3	IGHV3-21*01	IGHJ5*02	IGHD2-15*01	14	CARDRGESSYYWFDPW	IGLV2-23*02	IGLJ3*02	10	CSSYAGTTIWVF
H5-Ab4	IGHV3-30*03	IGHJ4*02	IGHD3-9*01	21	CAKDFQLRLLRYFDWLSSPFDHW	IGKV3-20*01	IGKJ1*01	9	CQQYASSPQTF
H5-Ab5	IGHV3-33*01	IGHJ4*02	IGHD3-9*01	23	CARSGFRGIALRYFDWQRTDYFDGW	IGLV2-23*01	IGLJ3*02	10	CCSYAGSSTWVF
H5-Ab6	IGHV5-10-1*01	IGHJ1*01	IGHD3-9*01	21	CARQAGTLLRYFESRTKYPFQDW	IGKV3-20*01	IGKJ2*01	10	CQQYGDSPAYTF

Table S6. **Characteristics of the unique antigen-specific antibody sequences isolated from single plasma cells obtained after stimulation with particulate H7-CpG**

Ab	VH name	JH name	DH name	CDR3 length	CDR3 sequence	VL name	JL name	CDR3 length	CDR3 sequence
				aa				*aa*	
H7-Ab1	IGHV1-3*01	IGHJ5*02	IGHD3-10*01	13	CAHGSGSYLNWFDPW	IGLV2-14*01	IGLJ2*01	11	CTSYTSSSTLVAF
H7-Ab2	IGHV1-3*01	IGHJ1*01	IGHD5-18*01	19	CARDRRWWGEGDTAVEYFQYW	IGKV3-15*01	IGKJ1*0	9	CQQYNNWPPTL
H7-Ab3	IGHV1-69*01	IGHJ4*03	IGHD3-3*01	15	CSRVADDYDFWSPNKFW	IGKV1-5*03	IGKJ1*01	8	CQQYNSNSHF
H7-Ab4	IGHV1-69*01	IGHJ4*02	IGHD3-16*01	12	CARIHRAGLEANYW	IGKV1-5*01	IGKJ1*01	9	CQQYNTYSWTF
H7-Ab5	IGHV1-69*01	IGHJ6*02	IGHD6-25*01	19	CARAPVVGSRNVYYYHGLDVW	IGLV3-25*03	IGLJ3*02	10	CQSADSSDPCLF
H7-Ab6	IGHV3-21*01	IGHJ2*02	IGHD1-7*01	16	CARGAKVELALGWYFDLW	IGLV1-51*01	IGLJ3*01	11	CGTWDNRLSAAVF
H7-Ab7	IGHV3-23*01	IGHJ5*02	IGHD1-26*01	14	CAKDASWDVRGWFDPW	IGKV4-1*01	IGKJ2*01	9	CQQYYSTPYTF
H7-Ab8	IGHV3-33*01	IGHJ4*02	IGHD3-3*01	13	CAREVIYSGYFFDHW	IGKV3-15*01	IGKJ1*01	10	CQQYTYWPPWTF
H7-Ab9	IGHV3-33*01	IGHJ6*02	IGHD3-10*01	12	CARDPVGRYGMDVW	IGKV1-6*01	IGKJ1*01	9	CLQNYNFPWTF
H7-Ab10	IGHV3-7*01	IGHJ2*01	IGHD2-21*01	10	CATSSGWRFEVW	IGLV2-8*01	IGLJ2*01	10	CSSYAGTKHWIF
H7-Ab11	IGHV4-31*03	IGHJ4*02	IGHD1-26*01	23	CARTQRSTVAHIVGPVQGRFHFDYW	IGKV3-20*01	IGKJ3*01	11	CQQYGRSSGFVF
H7-Ab12	IGHV4-31*01	IGHJ4*02	IGHD2-21*01	8	CARVRGVYFW	IGKV3-20*01	IGKJ1*01	11	CQQYGSSLPPWTF
H7-Ab13	IGHV4-31*02	IGHJ5*02	IGHD3-3*01	21	CARNSAYCTDTRCYNGGGWFHPW	IGKV3-20*01	IGKJ5*01	9	CQQYGSSPITF
H7-Ab14	IGHV4-39*01	IGHJ3*02	IGHD5-24*01	14	CAVIQLSTPPVPFEIW	IGKV3-20*01	IGKJ2*01	9	CHQYDSSWYTF

Table S7. **Characteristics of the unique antigen-specific antibody sequences isolated from single plasma cells obtained after stimulation with particulate gp120-CpG**

Ab	VH name	JH name	DH name	CDR3 length	CDR3 sequence	VH mutations	VL name	JL name
				aa		*n*		
gp120-Ab1	IGHV3-11*06	IGHJ3*02	IGHD5-18*01	22	CARDRTPRGPRRVETAMVDAFDIW	11	IGKV1-12*01	IGKJ4*01
gp120-Ab2	IGHV3-23*04	IGHJ4*02	IGHD2-15*01	18	CAKRPGYCSGGSCFVYFDYW	12	IGLV1-51*01	IGLJ2*01
gp120-Ab3	IGHV3-23*04	IGHJ4*02	IGHD2-21*01	17	CAKDLADFRGWRLRIYDYW	34	IGLV2-11*01	IGLJ3*02
gp120-Ab4	IGHV3-23*04	IGHJ4*02	IGHD3-16*02	24	CARVRSSGHVKITFGGIIVYRYFDNW	19	IGKV1-33*01	IGKJ1*01
gp120-Ab5	IGHV3-23*04	IGHJ5*02	IGHD6-19*01	21	CAKDSGSYGRQWLARRQGWFDPW	27	IGKV1-5*03	IGKJ3*01
gp120-Ab6	IGHV3-30*03	IGHJ1*01	IGHD3-10*01	11	CAKDNGAILPHDW	5	IGLV2-23*02	IGLJ2*01
gp120-Ab7	IGHV3-30*03	IGHJ4*02	IGHD3-3*01	16	YCAKDSPHASGNYPPDSW	14	IGKV1-13*02	IGKJ1*01
gp120-Ab8	IGHV3-30*03	IGHJ5*02	IGHD1-26*01	15	CAKSLVGATLLGPFGPW	14	IGLV3-21*02	IGLJ1*01
gp120-Ab9	IGHV3-30*03	IGHJ4*02	IGHD1-26*01	15	CARSLVGASSRGPYGYW	7	IGLV3-21*02	IGLJ1*01
gp120-Ab10	IGHV3-33*01	IGHJ6*02	IGHD3-10*01	14	CVRGTVPHYYYGMTLW	24	IGLV5-45*01	IGLJ3*02
gp120-Ab11	IGHV3-64D*06	IGHJ4*02	IGHD3-9*01	15	CVKDIKKTGDSKRFDYW	0	IGLV1-51*01	IGLJ3*02
gp120-Ab12	IGHV3-64D*06	IGHJ5*02	IGHD3-9*01	15	CVKDIKKTGDYKRFDHW	3	IGLV1-51*01	IGLJ3*02
gp120-Ab13	IGHV3-64D*06	IGHJ4*02	IGHD3-9*01	15	CVKDIKKTGDSKRFDYW	0	IGLV1-51*01	IGLJ3*02
gp120-Ab14	IGHV3-7*01	IGHJ4*02	IGHD6-19*01	11	CVRGVSAVAGPYW	3	IGLV1-51*01	IGLJ6*01
gp120-Ab15	IGHV4-34*01	IGHJ4*02	IGHD3-3*01	18	CARNKAGRFRQQLTTPLDYW	2	IGKV3-20*01	IGKJ1*01
gp120-Ab16	IGHV5-51*01	IGHJ4*02	IGHD1-26*01	12	CARCTGEGNYFQLW	29	IGKV1-33*01	IGKJ2*01
gp120-Ab17	IGHV5-51*01	IGHJ4*02	IGHD6-13*01	13	CASTAYSSTWYIYYW	6	IGKV3-20*01	IGKJ4*01
gp120-Ab18	IGHV5-51*01	IGHJ5*02	IGHD2-2*01	17	CARHMGRYCSSNTCPFDPW	13	IGKV1-6*01	IGKJ2*01

Table S8, included as an Excel file, shows sequences of all antibodies isolated in this study.