Supporting Information:

Table S1. Previously published HLA-class I associations with EBV^+cHL.

Number of Patients	Susceptibility	Reference
HLA-A*01		
934 (278 EBV+)	Increased incidence of EBV^+cHL	[1]
516 (192 EBV+)	Increased incidence of EBV^+cHL	[2]
338 (78 EBV+ of 311 tested)	Increased incidence of EBV^+cHL	[3]
HLA-A*02		
934 (278 EBV+)	Decreased incidence of EBV^+cHL	[1]
516 (192 EBV+)	Decreased incidence of EBV^+cHL	[2]
338 (78 EBV+ of 311 tested)	Decreased incidence of EBV^+cHL	[3]
HLA-B*37		
338 (78 EBV+ of 311 tested)	Increased incidence of EBV^+cHL	[3]

Table S2. LMP2A overlapping peptide pools.

Italics denotes a predicted epitope, bold a defined epitope.

Pool #1	Pool #2	Pool #3
MGSLEMVPMGAGPPSPG	GTQDQSLYLGLQHDGND	*LLLAAVASSY*AAAQRKL
PMGAGPPSPGGDPDGYD	YLGLQHDGNDGLPPPPY	SSYAAAQRKLLTPVTVL
SPGGDPD*GYDGGNNSQY*	GNDGLPPPPYSPRDDSS	RKLLTPVTVLTAVVTFF
*GYDGGNNSQY*PSASGSS	PPYS*PRDDSSQHIY*EEA	TVLTAVVTFFAICLTWR
SQYPSASGSSGNTPTPP	DSSQHIYEEAGRGSMNP	TFFAICLTWRIEDPPFN
GSSGNTPTPPNDEERES	EEAGRGSMNPVCLPVIV	TWR**IEDPPFNSL**LFALL
TPPNDEERESNEEPPPP	MNPVCLPVIVAPYLFWL	PFNSLLFALLAAAGGLQ
RESNEEPPPPYEDPYWG	VIVA**PYLFWLAAI**AASC	ALLAAAGGLQGIYVLVM
PPPYEDPYWGNGDRHSD	FWLAAIAASCFTASVST	GLQGIYVLVMLVLLILA
YWGNGDRHSDYQPLGTQ	ASCFTASVSTVVTATGL	LVMLVLLILAYRRRWRR
HSDYQPLGTQDQSLYLG	VSTVVTATGLALSLLLL	ILAYRRRWRRLTVCGGI

Pool #4	Pool #5	Pool #6
WRRLTVCGGIMFLACVL	LGTLNLTTMFLLMLLWT	VAGILFILAILTEWGSG
GGIMFLACVLVLIVDAV	TMFLLM**LLWTLVVL**L**I**C	LAI*LTEWGSGNRTY*GPV
DAVL*QLSPLLGAVT*VVS	LWTLVVLLICSSCSSCP	GSGNR**TYGPVFMCL**GGL
PLLGAVTVVSMTLLLLA	LIC**SSCSSCPLSKILL**A	GPVFM**CLGGLLTMV**AGA
VVSMTLLLLAFVLWLSS	S**CPLSKILL**ARLFLYAL	GGLLTMVAGAVWLTVMS
LLAFVLWLSSPGGLGTL	LLARL**FLYALALLL**LAS	AGAVWLTVMSNTLLSAW
LSSPG**GLGTLGAAL**LTL	LAS*ALIAGGSIL*QTNFK	VMSNT**LLSAWILTA**GFL
GTLGAALLTLAAALALL	GGSILQTNFKSLSSTEF	SAWI**LTAGFLIFL**IGFA
LTLAAALALLASLILGT	NFKSLSSTEFIPNLFCM	GFLIFLIGFALFGVIRC
ALLASLILGTLNLTTMF	TEFIPNLFCMLLLIVAG	CYYCLTL*ESEERPPTPY*
	FCMLLLIVAGILFILAI	*ESEERPPTPY*RNTV

Table S3. Predicted and defined peptide epitopes from EBV-latent proteins.

Epitope	Protein	Score	Source	Binding/ Reference
HLA-A*01				
VLEKARGSTY	EBNA3A	25	Predicted	Confirmed
TNEEIDLAY	EBNA3B	26	Predicted	Confirmed
CDEGTRHATTY	EBNA3B	23	Predicted	Confirmed
PKDAKQTDY	EBNA3C	25	Predicted	Confirmed
ASERLVPEESY	EBNA3C	27	Predicted	Confirmed
ELESSDDELPY	EBNA3C	27	Predicted	Confirmed
YQEPPAPQAPY	EBNA3C	25	Predicted	Confirmed
YQEPPPPQAPY	EBNA3C	25	Predicted	Confirmed
LLALLFWLY	LMP1	21	Predicted	Confirmed
WTGGALLVLY	LMP1	24	Predicted	Confirmed
ESEERPPTPY	LMP2A	27	Predicted	Confirmed
GYDGGNNSQY	LMP2A	25	Predicted	Confirmed
PRDDSSQHIY	LMP2A	25	Predicted	Confirmed
LTEWGSGNRTY	LMP2A	29	Predicted	Confirmed
HLA-A*03				
ALFLGIVLF	LMP1	24	Predicted	Confirmed
MLWRLGATI	LMP1	23	Predicted	Confirmed
QLTEEVENK	LMP1	23	Predicted	Confirmed
ALIAGGSIL	LMP2A	26	Predicted	Confirmed
LLLAAVASSY	LMP2A	28	Predicted	Confirmed
QLSPLLGAVT	LMP2A	25	Predicted	Confirmed
RLLLMRAGK	EBNA3A	31	Predicted	Confirmed
RVVVSAVVH	EBNA3A	29	Predicted	Confirmed
IVSRGGPKVK	EBNA3A	30	Predicted	Confirmed
HLEPAQKGTK	EBNA3A	28	Predicted	Confirmed
RLRAEAQVK	EBNA3A	36	Defined	[13]
HLA-A*02				
LLWTLVVLL	LMP2A	30	Defined	[4]
FLYALALLL	LMP2A	24	Defined	[15]
CLGGLLTMV	LMP2A	27	Defined	[17]
LTAGFLIFL	LMP2A	25	Defined	[5]
YLLEMLWRL	LMP1	30	Defined	[19]
YLQQNWWTL	LMP1	24	Defined	[19]
TLLVDLLWL	LMP1	27	Defined	[19]
LLLIALWNL	LMP1	28	Defined	[19]
ALLVLYSFA	LMP1	19	Defined	[20]
SVRDRLARL	EBNA3A	23	Defined	[10]
LLDFVRFMGV	EBNA3C	22	Defined	[21]

Epitope	Protein	Score	Source	Binding/ Reference
HLA-A*11				
SSCSSCPLSK	LMP2A	29	Defined	[4]
HLA-A*24				
TYGPVFMCL	LMP2A	24	Defined	[5]
PYLFWLAAI	LMP2A	22	Defined	[6]
HLA-B*07				
RPPIFIRRL	EBNA3A	21	Defined	[7]
QPRAPIRPI	EBNA3C	23	Defined	[7]
VPAPAGPIV	EBNA3A	20	Defined	[8]
HLA-B*08				
CPLSKILL	LMP2A	26	Defined	[9]
QAKWRLQTL	EBNA3A	32	Defined	[10]
FLRGRAYGL	EBNA3A	31	Defined	[10]
HLA-B*35				
MGSLEMVPM	LMP2A	8	Defined	[11]
YPLHEQHGM	EBNA3A	17	Defined	[10]
AVLLHEESM	EBNA3B	7	Defined	[8]
HLA-B*37				
VDLLWLLLF	LMP1	28	Predicted	Unconfirmed
DEHHHDDSL	LMP1	25	Predicted	Unconfirmed
TEFIPNLF	LMP2A	24	Predicted	Unconfirmed
TDLSYIKSF	EBNA3A	27	Predicted	Unconfirmed
SDLRPLGSL	EBNA3B	28	Predicted	Unconfirmed
LDTQHILCF	EBNA3C	28	Predicted	Unconfirmed
PDAPLDLSL	EBNA3C	27	Predicted	Unconfirmed
LDFVRFMGV	EBNA3C	17	Defined	[12]
HLA-B*44				
VEITPYKPTW	EBNA3B	25	Defined	[8]
EGGVGWRHW	EBNA3C	13	Defined	[14]
EENLLDFVRF	EBNA3C	25	Defined	[16]
KEHVIQNAF	EBNA3C	25	Defined	[18]
HLA-B*60 (HLA-B*40.01)				
IEDPPFNSL	LMP2A	22	Defined	[5]

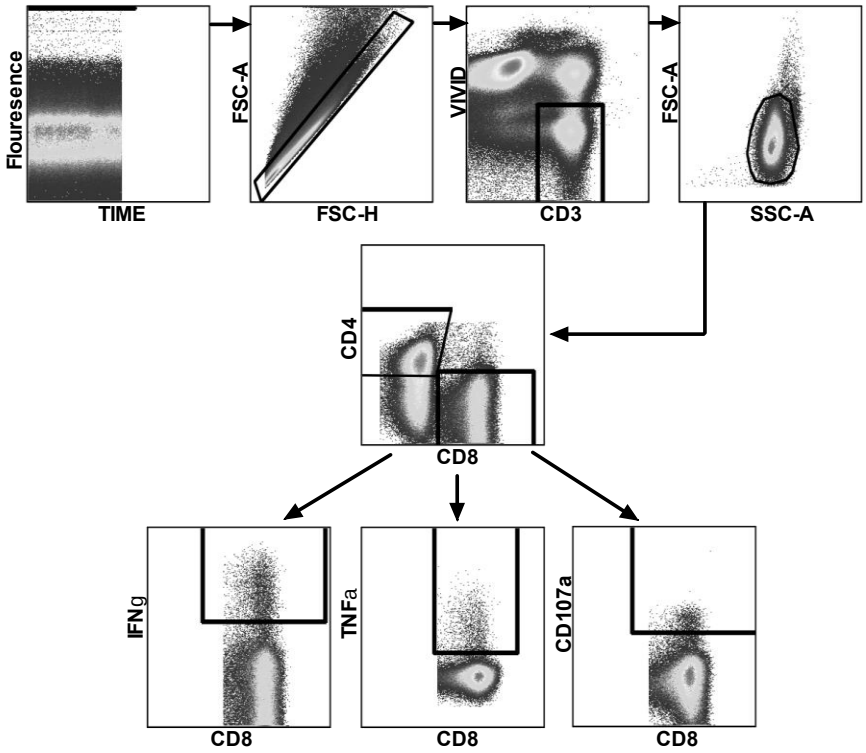

Figure S1. Flow Cytometry analysis gating strategy. Gating on patient sample with positive control stimulation. Arrows indicate order from parent gate. Gating strategy follows previously published standard practice [22].

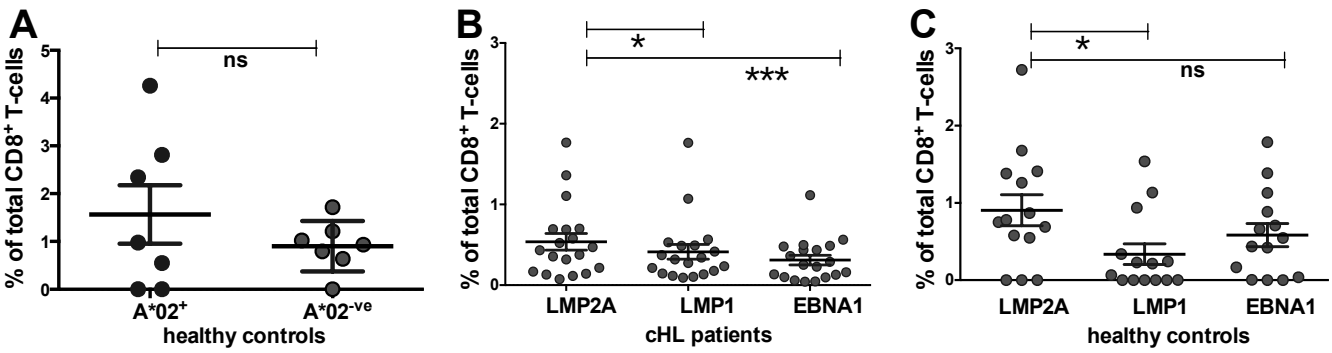

Figure S2. *Ex vivo* EBV-specific $CD8^+$ T-cell responses in healthy controls and comparison between responses against EBV-latency-II proteins. Error bars represent SEM. **(A)** Summed percentages of *ex vivo* LMP1/2A-specific $CD8^+$ T-cell responses defined by IFNγ, TNFα and CD107a in healthy EBV-seropositive controls. **(B-C)** Comparison of EBV-latency-II antigen-specific $CD8^+$ T-cells. Summed percentages of IFNγ, TNFα and CD107a responses in **(B)** cHL patients and **(C)** healthy EBV-seropositive controls.

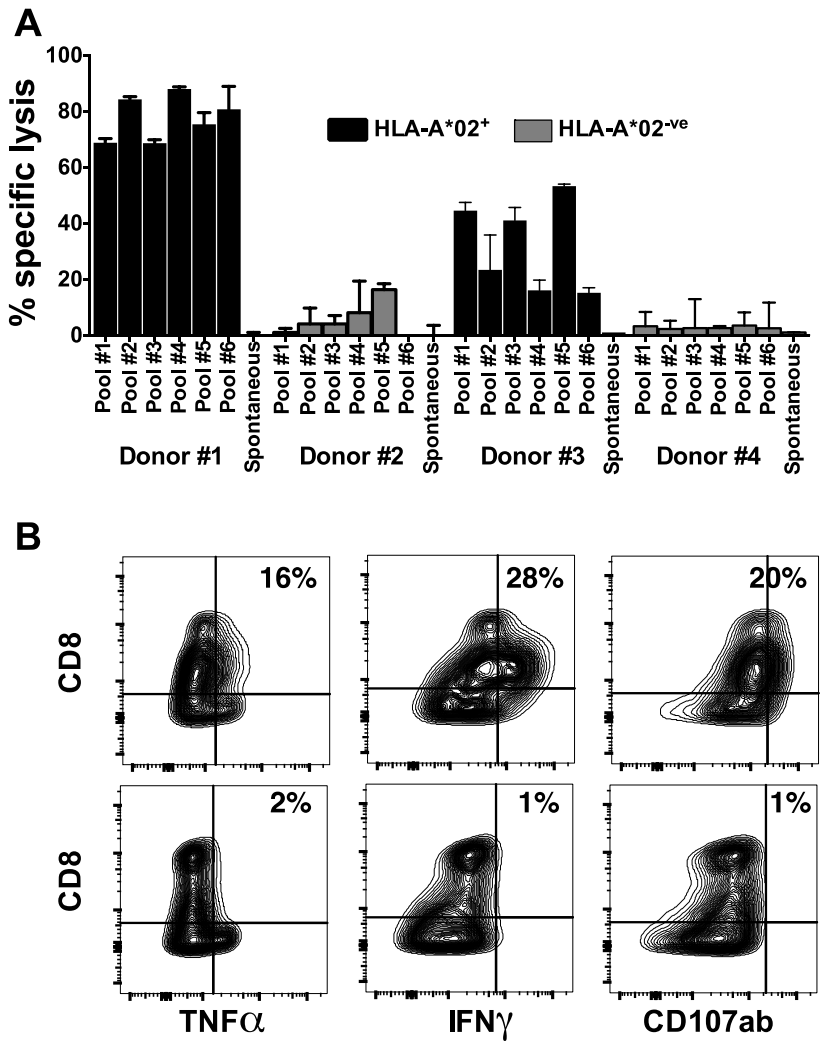

Fig. S3. *In vitro* LMP2A-specific $CD8^+$ T-cell cytotoxicity compared between HLA-$A*02^+$ and HLA-$A*02^{-ve}$ healthy control donors. EBV-specific T-cells were expanded in four EBV-seropositive healthy control donors (Donors 1-4, HLA-A*02/A*02/B*07/B*44; HLA-A*03/A*23/B*35/B*44; HLA-A*02/A*02/B*35/B*57; HLA-A*03/A*32/B*8/B*47 respectively). **(A)** LMP2A-specific cytotoxicity was quantified using autologous CFSE labeled PHA blasts (target cells) incubated with each of six LMP2A overlapping peptide pools (Table S2). LMP2A-specific lysis was calculated for each well relative to the unpulsed control sample. **(B)** Representative intracellular cytokine and CD107ab mobilization by $CD8^+$ T-cells (gated on $CD3^+$) in response to 6 hours stimulation by LMP2A peptide pool #1 pulsed PHA blasts in donor 3 (top panel) compared with unpulsed PHA blasts (bottom panel).

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