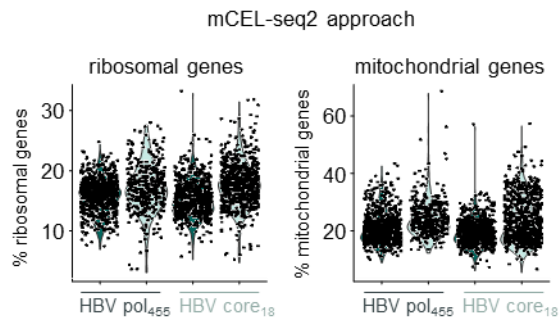


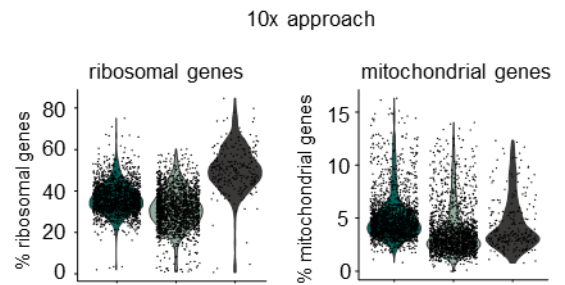


Attenuated effector T cells are linked to control of chronic HBV infection

In the format provided by the authors and unedited

A**Clinical phases**

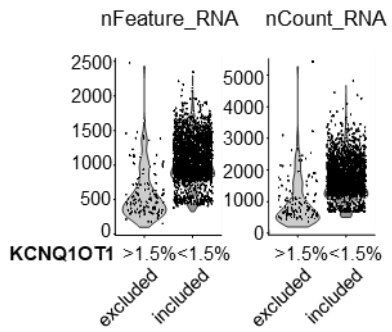
- endogenous control/chronic HBV
- NUC control/chronic HBV

B**HBV pol₄₅₅**

- endogenous control/chronic HBV
- acute HBV
- acute resolved HBV

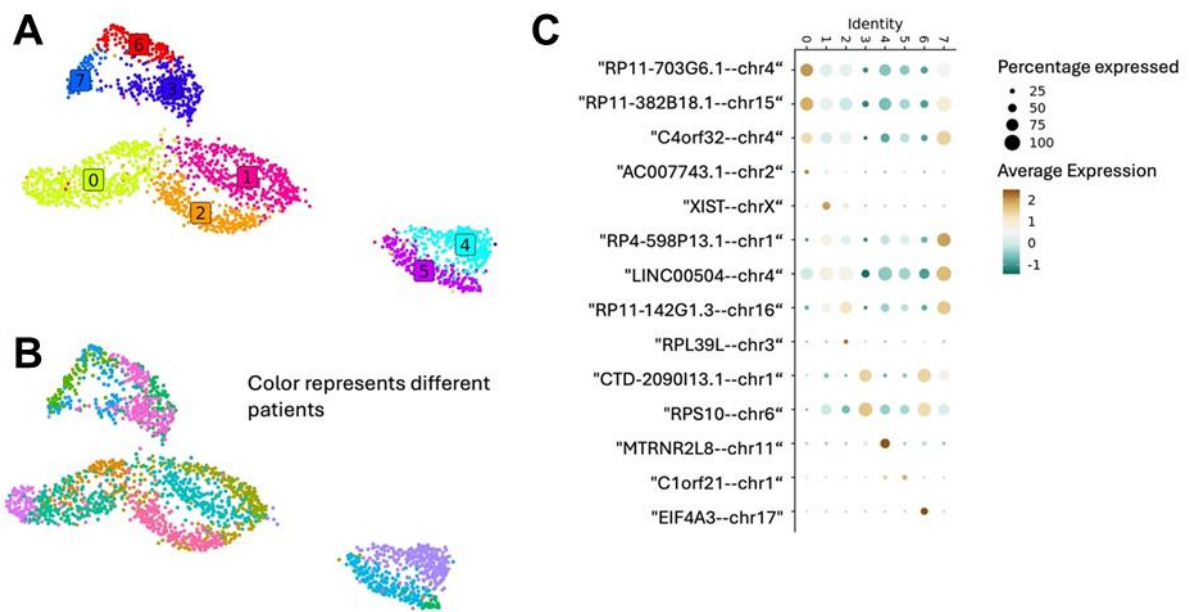
Supplementary figure 1:

Percentage of ribosomal and mitochondrial genes in **(A)** HBV core₁₈-specific and HBV pol₄₅₅-specific CD8⁺ T cells of endogenous control/chronic HBV and NUC control/chronic HBV and in **(B)** HBV pol₄₅₅-specific CD8⁺ T cells of endogenous control/chronic HBV, acute and acute resolved HBV infection are depicted.



Supplementary figure 2:

Violin Plots showing the number of genes and transcripts per cell of cells with > 1.5% KCNQ10T1 transcripts and cells with < 1.5% KCNQ10T1 transcripts which were included in the analysis. Note that the numbers of genes and transcripts per cell are significantly lower in cells with > 1.5% KCNQ10T1 transcripts indicating that these are low quality cells.



Supplementary figure 3:

UMAP representation showing **(A)** clusters and **(B)** patients of HBV-specific T cells without batch correction in different colors. Note that without batch correction, clustering is primarily governed by patients. **(C)** Differential gene expression analysis of this clustering further reveals many non-long coding RNAs and ribosomal proteins differentially expressed among patients and dominated the differential gene expression analysis. Few examples are shown in the Dot plot.

Supplementary Table 1: Study cohort of HLA-A*02:01 positive individuals with endogenous control (HBeAg- cHBV infection)

Patient ID	Sex	Age	Diagnose	Clinical Phase	Therapy	Viral Load [IU/ml]	ALT [U/ml]	AST [U/ml]	Used epitope
cHBV#1	F	29	cHBV	HBeAg- cHBV infection	naive	31	19	23	HBV core ₁₈
cHBV#2	F	53	cHBV	HBeAg- cHBV infection	naive	1795	46	31	HBV core ₁₈
cHBV#3	F	44	cHBV	HBeAg- cHBV infection	naive	915	28	nd	HBV core ₁₈
cHBV#4	F	33	cHBV	HBeAg- cHBV infection	naive	2456	36	25	HBV pol ₄₅₅
cHBV#5	F	57	cHBV	HBeAg- cHBV infection	naive	2392	16	28	HBV pol ₄₅₅
cHBV#6	M	52	cHBV	HBeAg- cHBV infection	naive	neg	29	32	HBV core ₁₈
cHBV#7	F	36	cHBV	HBeAg- cHBV infection	naive	1033	17	19	HBV core ₁₈
cHBV#8	F	43	cHBV	HBeAg- cHBV infection	naive	202	18	16	HBV core ₁₈
cHBV#9	M	31	cHBV	HBeAg- cHBV infection	naive	3148	22	23	HBV pol ₄₅₅
cHBV#10	M	53	cHBV	HBeAg- cHBV infection	naive	1356	37	40	HBV core ₁₈
cHBV#11	M	64	cHBV	HBeAg- cHBV infection	naive	1480	nd	30	HBV pol ₄₅₅
cHBV#12	F	49	cHBV	HBeAg- cHBV infection	naive	114	26	19	HBV pol ₄₅₅
cHBV#13	F	39	cHBV	HBeAg- cHBV infection	naive	543	22	17	HBV pol ₄₅₅
cHBV#14	M	38	cHBV	HBeAg- cHBV infection	naive	5128	26	29	HBV pol ₄₅₅
cHBV#15	F	33	cHBV	HBeAg- cHBV infection	naive	59	25	24	HBV core ₁₈
cHBV#16	F	38	cHBV	HBeAg- cHBV infection	naive	82	24	23	HBV core ₁₈
cHBV#17	M	60	cHBV	HBeAg- cHBV infection	naive	189	21	20	HBV core ₁₈
cHBV#18	F	21	cHBV	HBeAg- cHBV infection	naive	1901	23	30	HBV pol ₄₅₅
cHBV#19	M	43	cHBV	HBeAg- cHBV infection	naive	644	29	44	HBV pol ₄₅₅
cHBV#20	F	34	cHBV	HBeAg- cHBV infection	naive	1495	nd	10	HBV core ₁₈
cHBV#21	M	33	cHBV	HBeAg- cHBV infection	naive	1181	24	24	HBV core ₁₈
cHBV#22	M	61	cHBV	HBeAg- cHBV infection	naive	377	30	18	HBV pol ₄₅₅
cHBV#23	F	28	cHBV	HBeAg- cHBV infection	naive	93	20	22	HBV core ₁₈ HBV pol ₄₅₅
cHBV#24	F	54	cHBV	HBeAg- cHBV infection	naive	683	24	27	HBV core ₁₈
cHBV#25	F	36	cHBV	HBeAg- cHBV infection	naive	585	22	25	HBV core ₁₈
cHBV#26	F	34	cHBV	HBeAg- cHBV infection	naive	28	18	13	HBV core ₁₈
cHBV#27	F	36	cHBV	HBeAg- cHBV infection	naive	439	21	19	HBV core ₁₈
cHBV#28	F	34	cHBV	HBeAg- cHBV infection	naive	2625	24	14	HBV pol ₄₅₅
cHBV#29	M	44	cHBV	HBeAg- cHBV infection	naive	5978	24	29	HBV pol ₄₅₅
cHBV#30	F	32	cHBV	HBeAg- cHBV infection	naive	1710	26	25	HBV pol ₄₅₅
cHBV#31	M	34	cHBV	HBeAg- cHBV infection	naive	1531	28	45	HBV core ₁₈
cHBV#32	F	54	cHBV	HBeAg- cHBV infection	naive	neg	28	29	HBV core ₁₈
cHBV#33	M	40	cHBV	HBeAg- cHBV infection	naive	neg	nd	17	HBV pol ₄₅₅
cHBV#34	M	22	cHBV	HBeAg- cHBV infection	naive	1,469	30	21	HBV pol ₄₅₅

cHBV#35	M	43	cHBV	HBeAg- cHBV infection	naive	882	26	21		HBV pol ₄₅₅
cHBV#36	F	35	cHBV	HBeAg- cHBV infection	naive	902	25	20	HBV core ₁₈	
cHBV#37	F	34	cHBV	HBeAg- cHBV infection	naive	322	23	20	HBV core ₁₈	HBV pol ₄₅₅
cHBV#38	F	55	cHBV	HBeAg- cHBV infection	naive	27	23	22	HBV core ₁₈	HBV pol ₄₅₅
cHBV#39	F	36	cHBV	HBeAg- cHBV infection	naive	777	18	22		HBV pol ₄₅₅
cHBV#40	M	28	cHBV	HBeAg- cHBV infection	naive	1854	58	93		HBV pol ₄₅₅
cHBV#41	F	35	cHBV	HBeAg- cHBV infection	naive	250	25	20		HBV pol ₄₅₅
cHBV#42	F	49	cHBV	HBeAg- cHBV infection	naive	1352	30	30		HBV pol ₄₅₅
cHBV#43	F	41	cHBV	HBeAg- cHBV infection	naive	544	17	13		HBV pol ₄₅₅

Abbreviations: ALT: alanine aminotransaminase, AST: aspartate aminotransferase, F: female, M: male, neg: negative, nd: not done

Supplementary Table 2: Study cohort of HLA-A*02:01 positive individuals with high viral load (HBeAg- CHB)

Patient ID	Sex	Age	Diagnose	Clinical Phase	Therapy	Viral Load [IU/ml]	ALT [U/ml]	AST [U/ml]	Used epitope	
cHBV#44	M	42	cHBV	HBeAg- CHB (high VL)	naive	11000000	233	98		HBV pol ₄₅₅
cHBV#45	F	25	cHBV	HBeAg- CHB (high VL)	naive	11700	23	22		HBV pol ₄₅₅
cHBV#46	F	37	cHBV	HBeAg- CHB (high VL)	naive	11000	21	25		HBV pol ₄₅₅
cHBV#47	M	68	cHBV	HBeAg- CHB (high VL)	naive	100000	78	48		HBV pol ₄₅₅
cHBV#48	F	48	cHBV	HBeAg- CHB (high VL)	naive	152882	22	23		HBV pol ₄₅₅
cHBV#49	M	35	cHBV	HBeAg- CHB (high VL)	naive	3185613	35	47		HBV pol ₄₅₅
cHBV#50	M	41	cHBV	HBeAg- CHB (high VL)	naive	11144	40	107		HBV pol ₄₅₅
cHBV#51	F	61	cHBV	HBeAg- CHB (high VL)	naive	92090	48	72		HBV pol ₄₅₅
cHBV#52	M	67	cHBV	HBeAg- CHB (high VL)	naive	9000	25	26	HBV core ₁₈	
cHBV#53	F	41	cHBV	HBeAg- CHB (high VL)	naive	10000	12	24	HBV core ₁₈	

Abbreviations: ALT: alanine aminotransaminase, AST: aspartate aminotransferase, F: female, M: male

Supplementary Table 3: Study cohort of HLA-A*02:01 positive individuals with NUC control (NUC-treated HBeAg- CHB)

Patient ID	Sex	Age	Diagnose	Clinical Phase	Therapy	Viral Load [IU/ml]	ALT [U/ml]	AST [U/ml]	Used epitope	
cHBV#54	M	23	cHBV	NUC-treated HBeAg- CHB (low VL)	Entecavir	2602	24	21	HBV core ₁₈	
cHBV#55	M	54	cHBV	NUC-treated HBeAg- CHB (low VL)	Tenofovir	neg	27	43	HBV core ₁₈	HBV pol ₄₅₅
cHBV#56	M	50	cHBV	NUC-treated HBeAg- CHB (low VL)	Entecavir	neg	32	34	HBV core ₁₈	HBV pol ₄₅₅
cHBV#57	F	35	cHBV	NUC-treated HBeAg- CHB (low VL)	Tenofovir	neg	30	35		HBV pol ₄₅₅
cHBV#58	F	62	cHBV	NUC-treated HBeAg- CHB (low VL)	Entecavir	neg	30	24		HBV pol ₄₅₅
cHBV#59	F	65	cHBV	NUC-treated HBeAg- CHB (low VL)	Tenofovir	neg	22	20	HBV core ₁₈	
cHBV#60	M	44	cHBV	NUC-treated HBeAg- CHB (low VL)	Tenofovir	neg	28	26		HBV pol ₄₅₅
cHBV#61	M	34	cHBV	NUC-treated HBeAg- CHB (low VL)	Entecavir	neg	22	36		HBV pol ₄₅₅
cHBV#62	M	38	cHBV	NUC-treated HBeAg- CHB (low VL)	Tenofovir	neg	20	25	HBV core ₁₈	HBV pol ₄₅₅
cHBV#63	M	57	cHBV	NUC-treated HBeAg- CHB (low VL)	Telbivudine	neg	27	30		HBV pol ₄₅₅
cHBV#64	M	55	cHBV	NUC-treated HBeAg- CHB (low VL)	Tenofovir	607	37	45		HBV pol ₄₅₅
cHBV#65	M	55	cHBV	NUC-treated HBeAg- CHB (low VL)	Tenofovir	neg	32	33		HBV pol ₄₅₅
cHBV#66	M	41	cHBV	NUC-treated HBeAg- CHB (low VL)	Tenofovir	neg	25	33		HBV pol ₄₅₅
cHBV#67	F	57	cHBV	NUC-treated HBeAg- CHB (low VL)	Tenofovir	neg	26	24		HBV pol ₄₅₅
cHBV#68	M	75	cHBV	NUC-treated HBeAg- CHB (low VL)	Tenofovir	neg	27	23	HBV core ₁₈	HBV pol ₄₅₅
cHBV#69	M	38	cHBV	NUC-treated HBeAg- CHB (low VL)	Entecavir	neg	26	44	HBV core ₁₈	
cHBV#70	M	56	cHBV	NUC-treated HBeAg- CHB (low VL)	Entecavir	neg	26	30	HBV core ₁₈	
cHBV#71	F	67	cHBV	NUC-treated HBeAg- CHB (low VL)	Entecavir	25	44	67	HBV core ₁₈	
cHBV#72	M	29	cHBV	NUC-treated HBeAg- CHB (low VL)	Entecavir	neg	36	22	HBV core ₁₈	
cHBV#73	M	78	cHBV	NUC-treated HBeAg- CHB (low VL)	Entecavir	neg	25	24	HBV core ₁₈	
cHBV#74	M	36	cHBV	NUC-treated HBeAg- CHB (low VL)	Tenofovir	19	26	45		HBV pol ₄₅₅
cHBV#75	F	55	cHBV	NUC-treated HBeAg- CHB (low VL)	Entecavir	neg	22	14		HBV pol ₄₅₅
cHBV#76	M	74	cHBV	NUC-treated HBeAg- CHB (low VL)	Tenofovir	neg	17	14	HBV core ₁₈	HBV pol ₄₅₅
cHBV#77	F	55	cHBV	NUC-treated HBeAg- CHB (low VL)	Tenofovir	neg	28	29	HBV core ₁₈	
cHBV#78	M	56	cHBV	NUC-treated HBeAg- CHB (low VL)	Tenofovir	neg	nd	52	HBV core ₁₈	
cHBV#79	F	47	cHBV	NUC-treated HBeAg- CHB (low VL)	Entecavir	neg	31	31		HBV pol ₄₅₅
cHBV#80	F	60	cHBV	NUC-treated HBeAg- CHB (low VL)	Tenofovir	neg	30	36		HBV pol ₄₅₅

Abbreviations: ALT: alanine aminotransaminase, AST: aspartate aminotransferase, F: female, M: male, neg: negative, nd: not done, NUC: nucleos(t)ide analogues

Supplementary Table 4: Study cohort of HLA-B*35:01 positive individuals with chronic HBV infection

Patient ID	Sex	Age	Diagnose	Clinical Phase	Therapy	Viral Load [IU/ml]	ALT [U/ml]	AST [U/ml]	Used epitope
cHBV#81	F	34	cHBV	HBeAg- cHBV infection	naive	929	20	13	HBV pol ₁₇₃
cHBV#82	M	30	cHBV	HBeAg- cHBV infection	naive	2908	26	34	HBV pol ₁₇₃
cHBV#83	F	61	cHBV	HBeAg- cHBV infection	naive	273	18	16	HBV pol ₁₇₃
cHBV#84	F	52	cHBV	HBeAg- cHBV infection	naive	309	20	22	HBV pol ₁₇₃
cHBV#85	F	31	cHBV	HBeAg- cHBV infection	naive	neg	15	13	HBV pol ₁₇₃
cHBV#86	M	56	cHBV	HBeAg- cHBV infection	naive	neg	38	58	HBV pol ₁₇₃
cHBV#87	F	49	cHBV	HBeAg- cHBV infection	naive	233	27	26	HBV pol ₁₇₃
cHBV#88	M	34	cHBV	NUC-treated HBeAg- CHB	Tenofovir	neg	30	35	HBV pol ₁₇₃
cHBV#89	M	37	cHBV	NUC-treated HBeAg- CHB	Entecavir	neg	33	43	HBV pol ₁₇₃
cHBV#90	M	24	cHBV	NUC-treated HBeAg- CHB	Tenofovir	neg	25	35	HBV pol ₁₇₃
cHBV#91	F	62	cHBV	NUC-treated HBeAg- CHB	Baraclude	neg	25	16	HBV pol ₁₇₃
cHBV#92	M	66	cHBV	NUC-treated HBeAg- CHB	Tenofovir	neg	25	26	HBV pol ₁₇₃
cHBV#93	F	55	cHBV	NUC-treated HBeAg- CHB	Tenofovir	neg	24	17	HBV pol ₁₇₃
cHBV#94	F	52	cHBV	NUC-treated HBeAg- CHB	Baraclude	neg	nd	12	HBV pol ₁₇₃

Abbreviations: ALT: alanine aminotransaminase, AST: aspartate aminotransferase, F: female, M: male, neg: negative, NUC: nucleos(t)ide analogues

Supplementary Table 5: Study cohort of HLA-A*02:01 positive individuals with self-limiting acute HBV infection

Patient ID	Sex	Age	Diagnose	Viral Load [IU/ml]	ALT [U/ml]	AST [U/ml]	HBsAg	HBcAg	Used epitope	
aHBV#1	M	40	aHBV	6289	1697	4220	pos	pos	HBV core ₁₈	HBV pol ₄₅₅
aHBV#2	M	39	aHBV	1411742	nd	3862	pos	pos	HBV core ₁₈	HBV pol ₄₅₅
aHBV#3	F	40	aHBV	6111	nd	6525	pos	pos	HBV core ₁₈	HBV pol ₄₅₅
aHBV#4	M	57	aHBV	2666803	2942	6098	pos	pos	HBV core ₁₈	HBV pol ₄₅₅
aHBV#5	M	48	aHBV	61330507	762	1913	pos	pos		HBV pol ₄₅₅
aHBV#6	M	38	aHBV	291496	2233	2970	pos	pos	HBV core ₁₈	HBV pol ₄₅₅
aHBV#7	M	51	aHBV	12917	474	1291	pos	pos		HBV pol ₄₅₅
aHBV#8	M	42	aHBV	6111	nd	3366	pos	pos		HBV pol ₄₅₅

Abbreviations: ALT: alanine aminotransaminase, AST: aspartate aminotransferase, F: female, M: male, nd: not done, pos: positive

Supplementary Table 6: Study cohort of HLA-A*02:01 positive individuals with acute-resolved HBV infection

Patient ID	Sex	Age	Diagnose	Viral Load [IU/ml]	ALT [U/ml]	AST [U/ml]	HBsAg	HBcAg	Used epitope	
rHBV#1	M	38	rHBV	neg	18	17	neg	pos	HBV core ₁₈	HBV pol ₄₅₅
rHBV#2	M	49	rHBV	neg	24	23	neg	pos		HBV pol ₄₅₅
rHBV#3	M	55	rHBV	nd	25	21	neg	pos	HBV core ₁₈	HBV pol ₄₅₅
rHBV#4	M	59	rHBV	neg	35	37	neg	pos	HBV core ₁₈	HBV pol ₄₅₅
rHBV#5	M	43	rHBV	neg	16	19	neg	pos	HBV core ₁₈	HBV pol ₄₅₅
rHBV#6	F	41	rHBV	neg	25	20	neg	pos		HBV pol ₄₅₅
rHBV#7	M	34	rHBV	neg	20	28	neg	pos		HBV pol ₄₅₅
rHBV#8	F	58	rHBV	neg	34	28	neg	pos	HBV core ₁₈	HBV pol ₄₅₅
rHBV#9	F	55	rHBV	neg	42	29	neg	pos		HBV pol ₄₅₅
rHBV#10	M	52	rHBV	neg	26	22	neg	pos		HBV pol ₄₅₅
rHBV#11	M	64	rHBV	neg	19	15	neg	pos		HBV pol ₄₅₅

Abbreviations: ALT: alanine aminotransaminase, AST: aspartate aminotransferase, F: female, M: male, neg: negative, nd: not done, pos: positive