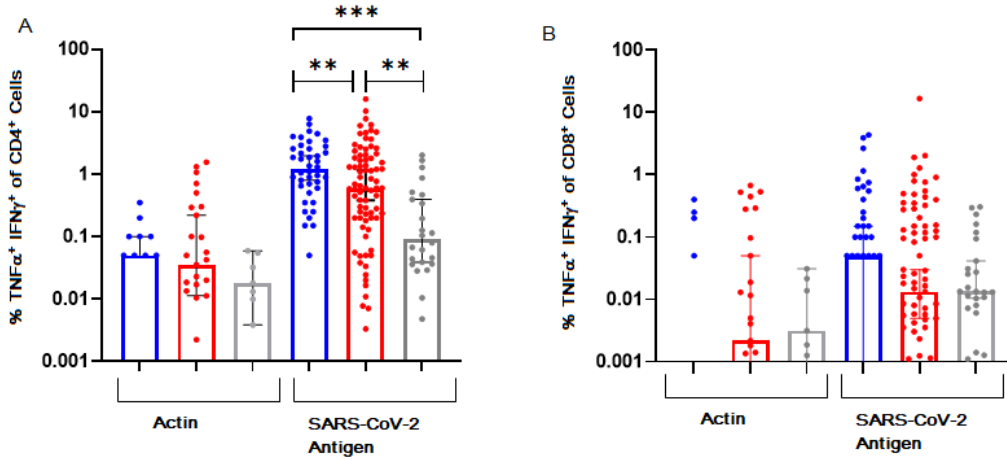
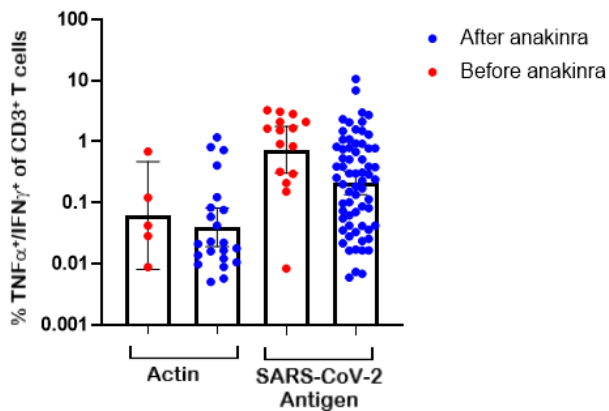


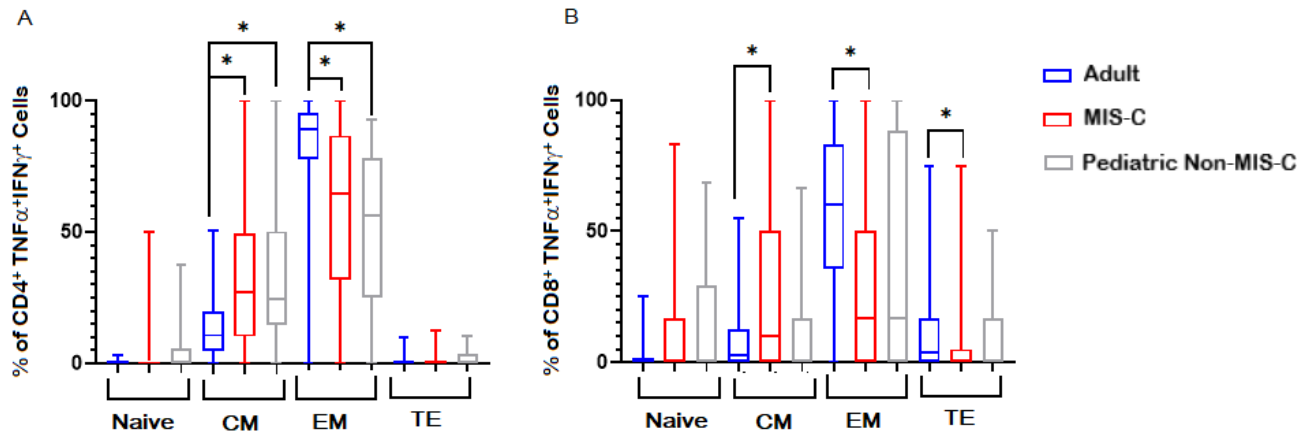
Supplementary Materials



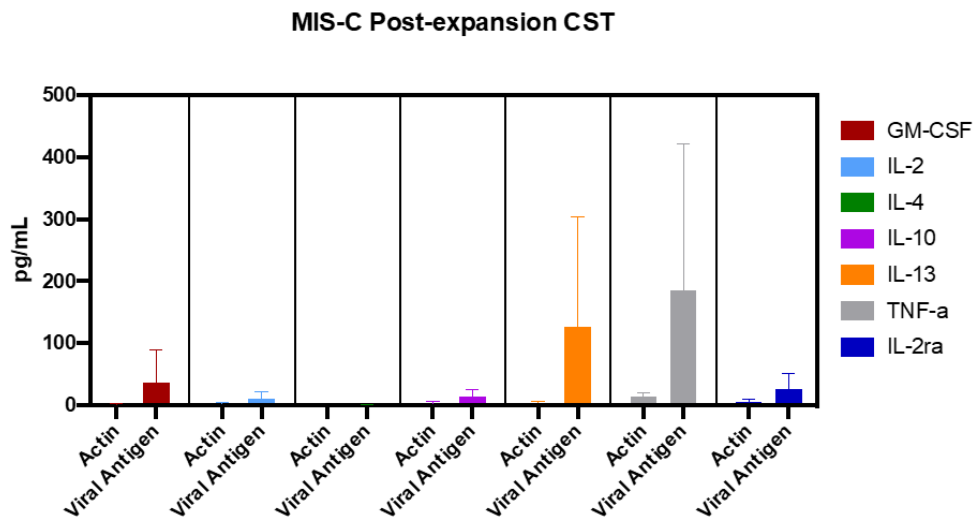
Supplemental Figure 1. CST response among CD4⁺ and CD8⁺ T cell subsets. Percent of (A) CD4⁺ and (B) CD8⁺ T lymphocytes from convalescent adult (blue), non-MIS-C pediatric (gray), and MIS-C (red) subjects secreting TNF- α and IFN- γ when stimulated with actin (negative control) or viral antigen post expansion in the presence of viral peptides. Actin = negative control. ***: $p < 0.0001$, **: $p < 0.05$. Column = median, error bars = 95% CI.



Supplemental Figure 2. Effect of anakinra on CST expansion. Magnitude of CST expansion from samples drawn before (red) and after (blue) anakinra treatment (1.39% versus 0.78%, $p = 0.16$). Boxes: geometric mean, whiskers: 95% CI around geometric mean.

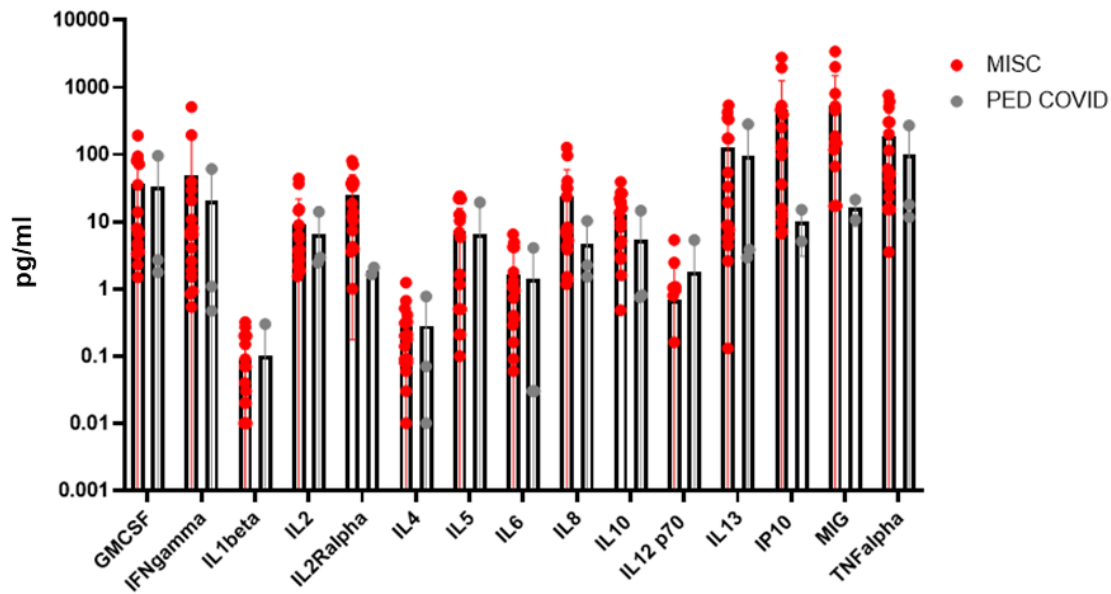


Supplemental Figure 3. Memory phenotype of CST Subsets. Percent of (A) CD4+ and (B) CD8+ CSTs expressing markers of T cell memory consistent with naïve ($CCR7^+CD45RO^-$), central memory (CM) ($CCR7^+CD45RO^+$), effector memory (EM) ($CCR7^-CD45RO^+$), and terminal effector (TE) ($CCR7^-CD45RO^-$) phenotype. Boxes: interquartile range, lines: median, whiskers: minimum to maximum, *: $p < 0.05$.



Supplemental Figure 4. MIS-C sample post-expansion cytokine secretion. SARS-CoV-2-specific cytokine production in CSTs from MIS-C patients following 10-day expansion.

Differences between combined SARS-CoV-2 antigen and actin restimulation were significant for all displayed cytokines ($p < 0.05$). Boxes: mean values; whiskers: standard deviation.



Supplemental Figure 5. MIS-C versus non-MIS-C pediatric post-expansion cytokine

secretion. Comparison of SARS-CoV-2-specific cytokine production in pediatric patients with MIS-C (red) vs uncomplicated COVID-19 (gray) following 10-day expansion. Differences were not statistically significant. Boxes: mean values; whiskers: standard deviation.

	HLA-A	HLA-A	HLA-B	HLA-B	HLA-C	HLA-C	DRB1	DRB1	DRB3	DRB3	DRB4	DRB4	DRB5	DQB1	DQB1	DQA1	DQA1	DPB1	DPB1	DDP1	DDP1
M	02:07:0101	11:02:0101	46:01:0101	46:01:0101	01:02:0101	01:02:0101	09:01:0201	14:04:0101	02:02:0106		01:03:01:05			03:03:0202	06:01:0101	01:04:0101	03:02:0102	02:01:0201	05:01:01:01	01:03:0101	02:02:0201
M	23:17:0101	31:01:0213	53:01:0101	58:02:0101	04:01:0101	06:02:0101	07:01:0101	13:01:0101			01:03:01:01			02:02:0101	03:03:0201	02:01:0101	03:03:0109	04:01:0101	18:01:01:01	01:03:0102	01:03:0102
M	03:01:0107	30:02:0103	49:01:0101	57:03:0101	07:01:0101	07:18:0101	15:03:0101	15:78					01:01:0102	06:02:0101	06:02:0101	01:02:0101	01:02:0101	18:01:01:01	18:01:01:01	01:03:0102	01:03:0102
M	02:01:0101	30:02:0102	45:01:0101	45:01:0101	16:01:0101	16:01:0102	01:02:0101	08:06						03:01:0105	05:01:0101	01:01:0201	05:05:0103	01:01:0101	18:01:01:01	01:03:0102	02:02:0204
M	02:01:0101	23:01:0101	07:02:0101	58:11	07:02:0101	07:02:0101	03:02:0101	11:02:0101						03:01:01:16	04:02:0108	04:01:0104	05:05:01:13	01:01:0101	01:01:01:01	02:02:0204	02:02:0204
M	68:01:0102	68:01:0102	15:03:0102	52:01:0201	02:10:0101	16:01:0101	03:02:0101	10:01:0101						04:02:0108	05:01:0102	01:05:0101	04:01:0104	01:01:0101	131:01:0101	02:01:01:14	02:01:0803
M	24:02:0101	34:02:0101	07:02:0101	44:02:0101	05:01:0102	15:05:0201	01:01:0101	15:03:0101					01:01:0102	05:01:0103	06:02:0101	01:01:0101	01:02:0101	13:01:0101	105:01:0101	02:01:0106	03:01:0105
M	01:01:0101	29:02:0101	40:02:0101	44:03:0101	03:05	04:01:0101	04:07:0101	07:01:0101			01:03:01:02 N	01:03:02		03:02:0101	03:03:0201	02:01:0101	03:01:0101	04:01:0101	04:02:01:02	01:03:0102	01:03:0105
M	01:01:0101	03:01:0101	14:02:0101	40:01:0101	08:02:0101	17:01:0105	11:02:0101	15:01:0101	02:02:0101					03:19:0101	06:02:0101	01:02:01:10	05:05:01:13	04:01:0101	04:01:01:01	01:03:0104	01:05
M	24:02:0101	68:03:0101	35:01:0102	35:17:01	04:01:0101	07:02:0101	01:01:0101	14:06:01						03:01:0101	05:01:0103	01:01:0101	05:03:0101	04:02:0102	13:01:0102	01:03:0105	02:02:0201
M	02:01:0101	32:01:0101	35:08:0101	50:01:0101	04:01:0106	06:02:0102	03:01:0101	07:01:0101			01:03:01:02 N			02:01:0101	03:03:0201			01:01:0101	04:01:01:01	01:03:0104	02:01:0202
M	24:02:0101	26:01:0101	40:02:0101	45:01:0101	03:05	06:02:0103	01:01:0101	04:07:0101			01:03:01:01			03:02:0101	05:01:0103	01:01:0101	03:01:0101	02:01:02:10	04:02:01:02	01:03:0102	01:03:0105
M	02:01:0101	68:01:0102	35:03:0101	55:01:0101	03:03:0101	04:01:0101	8:01:01	16:01:01						04:02:0104	05:02:0101	01:02:0201	04:01:0101	03:01:0101	04:01:01:01	01:03:0102	01:03:0104
M	29:02:0101	33:01:0101	14:02:0101	58:01:0101	07:18:0101	08:02:0101	01:02:0101	08:04:01						04:02:0108	05:01:0101	01:01:0201	04:01:01:27	104:01:0101	01:03:0102	01:03:0102	01:03:0104
M	02:05:0101	24:38	35:01:0102	35:02:0101	03:04:0102	04:01:0106	04:07:0101	11:04:0101	02:02:0102		01:03:01:01			03:01:0102	03:02:0101	03:01:0101	05:05:0101	04:02:0102	14:01:01:01	01:03:0105	02:01:0102
M	02:01:0101	24:02:0101	07:02:0101	35:17:01	04:01:0101	07:02:0103	04:07:0101	15:01:0101			01:03:01:01			03:02:0101	06:02:0101	01:02:0101	03:01:0101	04:02:0102	05:01:01:01	01:03:0105	02:02:0201
M	01:01:0101	02:01:0101	35:02:0101	35:12:0101	04:01:0101	04:01:0106	08:02:0101	11:04:0101	02:02:0102	02:02:11				04:02:0104	06:03:0101	01:03:0102	04:01:0101	02:01:0201	04:02:01:02	01:03:0105	02:01:0102
M	02:01:0101	68:03:0101	35:01:0102	35:17:01	04:01:0101	07:02:0101	04:07:0101	04:11:01			01:03:01:01			03:02:0101	04:02:0109	03:01:0101	03:03:0106	04:02:0102	04:02:01:02	01:03:0105	01:03:0105
M	01:01:0101	02:01:0101	08:01:0101	41:02:0101	07:01:0101	17:03:0102												04:01:0101	04:01:01:03	01:03:0102	01:03:0104
M	24:02:0101	25:01:0101	18:01:0102	35:05:0102	04:01:0101	12:03:0101	04:310	13:02:03			01:03:01:01		01:01:0101	03:02:0101	06:02:0101	01:02:01:10	03:01:0101	02:01:0201	04:01:01:01	01:03:0102	02:01:0102
M	01:01:0101	68:03:0101	39:05:0101	57:01:0101	06:02:0101	07:02:0101	04:07:0101	07:01:0101			01:03:01:01	01:03:01:02 N		03:02:0101	03:03:0201	02:01:0101	03:01:0101	04:01:0101	04:02:01:02	01:03:0102	01:03:0105
P	02:02:0101	23:01:0101	15:16:0102	42:01:0101	14:02:0102	17:01:0102	11:01:0201	15:03:0101	02:02:0105				01:01:0102	06:02:0101	06:02:0104	01:02:0101	01:02:0101	01:01:0101	18:01:01:01	01:03:0102	02:01:0202
P	02:01:0101	33:03:0101	40:64:0102	44:03:0101	03:04:0102	04:01:0101	08:04:03	15:03:0101					01:01:0102	04:02:0104	06:02:0101	01:02:0101	04:01:0101	18:01:0101	105:01:0105	01:03:0102	01:03:0105
P	30:01:0101	74:01:0101	42:01:0101	45:01:0101	16:01:0101	17:01:0102	08:04:01	13:03:0101						03:01:0101	03:19:0101	04:01:0201	05:05:0101	01:01:0101	69:01:01:01	02:01:0101	02:01:0803
P	29:02:0102	32:01:0101	27:05:0201	45:01:0101	05:01:0102	06:02:0103	03:01:0101	04:01:0101			01:03:01:01			02:01:0101	03:01:0101	03:03:0101	05:01:0102	01:01:0101	04:01:01:01	01:03:0102	02:01:0202
P	01:01:0101	25:01:0101	18:01:0102	57:01:0101	06:02:0101	12:03:0101	07:01:0101	15:01:0101			01:03:01:01	01:03:01:02 N	01:01:0101	03:03:0201	06:02:0101	01:02:0101	02:01:0101	02:01:0201	23:01:01:01	01:03:0101	01:03:0104
P	24:02:0101	68:02:0101	51:01:0101	57:03:0102	07:01:0201	15:02:0101	03:02:0101	11:01:0101	02:02:0102	03:01:0101				03:01:0103	04:02:0108	04:01:0104	05:05:0101	01:01:0101	04:01:01:01	01:03:0104	02:02:0204
P	03:01:0101	26:01:0101	07:02:0101	40:02:0101	02:02:0201	07:02:0103	11:04:0101	13:01:0101	01:76	02:02:0102				03:01:0103	06:03:0101	01:03:0102	05:05:0101	02:02:0101	104:01:0101	01:03:0101	01:03:0102

Supplemental Table 1. HLA Sequences. Traditional HLA allele sequences for MIS-C (N = 21) and non-MIS-C (N = 7) pediatric subjects. M = MIS-C, P = pediatric non-MIS-C.