

Supplemental Table 1

Test	Patient Value	Reference Range
HHV6 IgG	<i>Positive</i>	Negative
CMV IgG	Negative	Negative
CMV PCR	Negative	Negative
EBV-EA IgG	Negative	Negative
EBV VCA IgG	Negative	Negative
EBV VCA IgM/EBNA IgG	Negative	Negative
EBV PCR	Negative	Negative
Parvovirus B19 IgM	Negative	Negative
Parvovirus B19 IgG	Negative	Negative

Supplemental Table 2

Test	Patient Value	Reference Range
Hemoglobin	12	11.5-15.5 (g/dL)
Hematocrit	37.2	35-45 %
Platelets	321	143-398 ($\times 10^3$ μL)
WBC	18.5	5-14.5 ($\times 10^3$ μL)
ANC	4,600	1.5-8 ($\times 10^3$ μL)
Total Lymphocytes	8,740 (<i>H</i>)	1.5-7($\times 10^3$ μL)
CD3+ (T cells)	5,947 (<i>H</i>)	603-2990/cmm
CD16+CD56+ (NK)	207	95-640/cmm
CD19+ (B cells)	2,186 (<i>H</i>)	107-698/cmm

Supplemental Table 3

Test	Patient Value Total, (%)	Reference Range Total, (%)
Total B cells CD19+	2,014 (27%)	107-698/cmm (7-27%)
Memory B (CD19+CD27+)	137 (6.8%)	18-145/cmm (6-53%)
IgM Memory B cells (CD19+CD27+IgM+)	6 (0.3%)	0-12/cmm (0-5%)
Unswitched Memory B (CD19+CD27+IgM+IgD+)	62 (3.1%)	4-85/cmm (2-29%)
Switched Memory B (CD19+CD27+IgM-IgD-)	56 (2.8%)	7-61/cmm (2-27%)
Immature B cells (CD19+CD21Low)	107 (5.3%)	0.3-22/cmm (0.2-9%)

Supplemental Table 4

Test	Patient Value	Reference Range
T-Lymph (CD3+)	5,271 (70%)	603-2,990 (49-84%)
T-Helper (CD4+)	2,748 (36%)	441-2,156 (28-63%)
T Cytotoxic (CD8+)	2,065 (27%)	125-1,312 (10-40%)
Ratio (CD4:CD8)	1.33	0.96-3.93
CD4 Naïve (CD4+CD45RA+)	1,374 (50%)	84-563 (22-53%)
CD Memory (CD4+ CD45RO+)	1,209 (44%)	204-696 (34-74%)
CD4 CD62L Naïve (CD4+CD45RA+CD62L+)	1,347 (49%)	72-717 (26-64%)
CD4 Effector Memory (CD4+CD45RA-CD62L-)	550 (20%)	34-244 (9-24%)
CD4 Central Memory (CD4+CD45RA-CD62L+)	769 (28%)	138-484 (22-53%)
CD4 TEMRA (CD4+CD45RA+CD62L-)	82 (3%)	0-39 (0-4%)
CD8 Naïve (CD8+CD45RA+)	1,693 (82%)	74-530 (42-73%)
CD8 Memory (CD8+CD45RO+)	330 (16%)	53-258 (14-47%)
CD8 CD62L Naïve (CD8+CD45RA+CD62L+)	1,466 (71%)	23-474 (22-71%)
CD8 Effector Memory (CD8+CD45RA-CD62L-)	289 (14%)	26-172 (8-32%)
CD8 Central Memory (CD8+CD45RA-CD62L+)	83 (4%)	6-11 (2-21%)
CD8 TEMRA (CD8+CD45RA+CD62L-)	248 (12%)	0-233 (0-43%)
TCR $\alpha\beta$ +	5597 (64%)	1253-2216 (59-81%)
TCR $\alpha\beta$ + CD4-CD8- (Double Negative T cells)	411 (4.7%)	11-37 (0.3-1.7%)
HLADR+ activated	833 (14%)	51-246 (3-25%)
CD3+CD25+/HLA DR	1.6	1.1-10.6

Supplemental Table 5

Test	Patient Value (mg/dL)	Reference Range (mg/dL) Based on Caliper, Age specific
IgG	1,068	504-1464
IgA	204	50-240
IgM	27	40-140
Isohemagglutinins (Blood type A+)		
A1	<1:2	
A2	<1:2	
B	<1:2	
Vaccine titers		
Tetanus	0.5	>0.1 protective
S. pneumoniae	0/23	17/23 protective
H. Influenzae B	4.0	>1.0 protective

Test	Patient Value	Reference Range
CH50	111	60-144 CAE Units
AH50	94% of normal	>46

Lymphocyte Proliferation					
Patient Value [Reference Range]					
	Lymphs	CD3	CD4	CD8	CD19
PHA	85 [>33]	89 [>41]	82 [>28]	96 [>58]	
Concanavalin A	65 [>29]	71 [>35]	78 [>34]	62 [>34]	
Pokeweed	28 [>10]	35 [>2]	21 [>1]	47 [>5]	2 [>11]
Tetanus	0 [>2]	0 [>1]	0 [>2]		
Candida	64 [>4]	60 [>2]			

Test	Patient Value	Reference Range
Cytotoxic T Lymphocyte assay	Normal	Normal

Supplemental Table 6

Test	Patient Value	Reference Range
Vitamin B12	1415 pg/ml	254-1060 pg/ml

Test	Patient Value
Peripheral smear findings	+Howell Jolly bodies
ANA	Negative

Test	Patient Value (pg/ml)	Reference Range (pg/ml)
IL1 β	5	≤ 25
IL2	3	≤ 3
IL4	5	≤ 8
IL6	3	≤ 6
IL10	9	≤ 6
IL18	591	89-540
IFNg	1	≤ 5
TNF α	1	≤ 7

Supplemental Table 7

	II.1 M/WT	II.2 WT/del	III.1 WT/del	III.3 M/WT	III.4 WT/del	III.5 M/Del (Proband)	III.6 M/WT	Reference Range
Apoptosis	77%	72%	44% (L)	74%	56% (L)	2% (L)	58% (L)	68-93%
Serum FasL (pg/ml)	147	129	274 (H)	184	233 (H)			37-226
						758 (H)	271	70-308

Supplemental Table 7: Fas-mediated apoptosis and serum FasL levels.

Supplemental Table 8

ALPs Testing	II.1 (M/WT)		II.2 (WT/del)		III.5 (M/del) (Proband)		Reference	
	Patient Value	Positive/Negative	Patient Value	Positive/Negative	Patient Value	Positive/Negative	Reference Range	Criteria
TCRαβ+ CD4-CD8- (Double Negative T cells)	NR (1.3%)	Negative	16 (0.8%)	Negative	411 (4.7%)	Positive	11-37 (0.3-1.7%)	>2% or >68 cells/ mcl
B220 TCR a/b DNTCs >60%	22%	Negative	16%	Negative	61%	Positive	5-25%	>60%
CD3+CD25+/HLA DR Ratio	3.4	Negative	4.7	Negative	1.6	Negative	1.1-10.6	<1.0
CD27+ B cells <15%	68%	Negative	24%	Negative	6%	Positive	11-51%	<15%
Total Score	0/4		0/4		3/4			

Lymphocyte Proliferation	II.1 (M/WT)	II.2 (WT/del)	Reference
	Patient Value	Patient Value	Reference Range
PHA	236,195	258,199	≥135,000
Tetanus	8,273	1,753	≥4,761
Candida	246,973	96,263	≥15,289

Supplemental Table 8: ALPs testing and lymphocyte proliferation assays. NR (Not reportable) - Absolute values for II.1 not available due to lack of simultaneous CBC with differential. Testing performed by Cincinnati Children’s Hospital Medical Center Cancer and Blood Diseases Institute – Diagnostic Immunology Laboratory