Supplemental Table 1: Clinical characteristics of the patients in the study

Study ID	age	SLEDAI	Prednisone (mg/day)	Hydroxychloroquine (mg/day)	Other immunosuppressants
1	60	4	7.5	-	Methotrexate
2	38	2	5.0	-	Leuflunomide
3	33	18	-	400	
4	69	0	-	400	Mycophenylate mofetil
5	27	0	11	400	
6	67	2	-	400	
7	29	2	-	-	
8	41	2	7.5	400	
9	45	10	5	-	Mycophenylate mofetil
10	39	10	5	400	
11	54	0	-	200	
12	81	0	-	400	Mycophenylate mofetil
13	36	6	5	400	
14	51	4	20	-	Azathioprine
15	43	0	2.5	400	Leuflunomide

Supplemental table 2: Sequences of primers

Gene	Forward 5'->3'	Reverse 5'-->3'
ARG1	GTCTGTGGGAAAAGCAAGCG	TTGCCAAACTGTGGTCTCCG
BDCA1	GATTGCCTTGGTAGTGATAG	ATGTCCTGATATGAGCAGTG
BDCA3	AAATGCTATGAGATGCATGG	TTGAAAATCAGAGATGGTGC
C1QC	AAAACCAATCAGGTCAACTC	GTCGTAGTAGTCATTGACAG
CCL22	GCGTGGTGTTGCTAACCTT	GCCACGGTCATCAGAGTAGG
CCR2	TGGAGGTCCAGGAGTGAGAC	AGCCAGACGTGTGATTTCCA
CCR4	GCTTTCAGAAAAGCAAGC	TGCTGTATATGCTTTCATCG
CCR5	TATTCTGTGTAGTGGGATGAG	TGCTGTTTCTTTTGAAGGAG
CCR6	TATGCTGGTGAACAGAAATG	CTCAATAAAGAAGGAGCTGTC
CD103	GGTGGGAGAAGAATTTAAGAG	CATGCTGATGATGTTGTACC
CD11b	GGGGTCTCCACTAAATATCTC	CTGACCTGATATTGATGCTG
CD11c	GCCTGGATTATAAGGATGTC	TTGAAAAGCTAATCCAACCC
CD127	ACTCTCTCTCTCTATCTCTCTC	GTCTCCATTTTGAGCATAGC
CD14	GATTACATAAACTGTCAGAGGC	TCCATGGTCGATAAGTCTTC
CD16	CCAGGCTCTTTCCTTCCTGG	GATCTTCAGTCCGCATGCCA
CD32a	GGATTTCAGCCAATTCCAC	GTTGGTTTCTTCAAGTTGTC
CD32b	ACCTTTTCAAGGCTGTATTG	CCCTATCCTATCCATTCCTG
CD36	TGCTGAGACAAGGGAAGAGAG	TCCGGTCACAGCCCATTTTT
CD64	ATCGCTACACATCAGCAGG	CTGCAAGAGCAACTTTGTTTC
CD80	AGGAGGAATGAGAGATTGAG	GACCTTCAGATCTTTTCAGC
CD86	CCCACTGAATTTTGTGTACC	CTCTAGAGCATAGTAATCACAC
CTLA4	TTGCTAAAGAAAAGAAGCCC	AAAGTTAGAATTGCCTCAGC
CXCL9	ATTGGAGTGCAAGGAACCCC	GGGCTTGGGGCAAATTGTTT
CXCR3	GTCCTTGAGGTGAGTGAC	TCTCCATAGTCATAGGAAGAG
CXCR5	AGTATCCTCATTTGGGGTAG	GCATTGGATGATTAGGATGG
CXCR7	ATTTGATTGCCCGCCTCAGA	GACGCTTTTGTTGGGCATGT
E2-2	TCGTAGTTGTGAAACACTTG	CTAAAAGTCCCGTTTGTCTC
FCER1G	ACCCCTATAATGATCCTGTG	AGTCCATGGCAGTTTTATTG
FLT3	CAAATCAGATGTACGTGGAC	GCTGTATCCGTTATCAAGAC

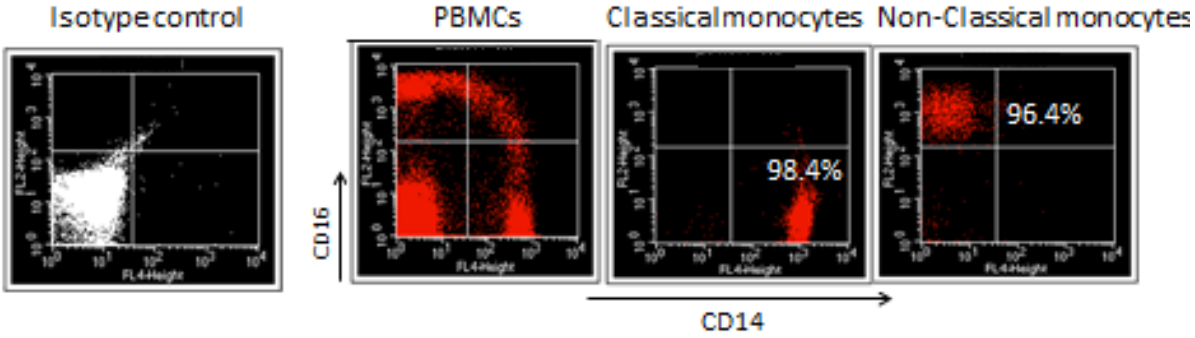
GIP3	CCTCCAAGGTCTAGTGACGGA	TTACCTGCATCCTTACCCGC
GMCSF	AGAGCTAGAAACTCAGGATG	AATATTCCCATTCTTCTGCC
HLADPB1	AACAGGAGCTCCCTTTAGCG	GCCGTCCCTGGAAAAGGTAA
ICOS	CAGGAGAAATCAATGGTTCTG	CTCTTAATGGACACTGTGTTTC
IDO1	TTGTTCTCATTTCGTGATGG	TACTTTGATTGCAGAAGCAG
IFI27	ATCAGCAGTGACCAGTGTGG	GGCCACAACTCCTCCAATCA
IFIH1	GATTAAGTGGTGATACCCAAC	GTCTGACAATTGAACACCAG
IFIT1	CTGCCTAATTTACAGCAACC	TGATCCAAGACTCTGTTTTC
IFIT2	TGTGCAACCTACTGGCCTAT	TTGCCAGTCCAGAGGTGAAT
IFIT3	CACAGACCTAACAGCACCCT	GACCTCACTCATGATGGCTGTTTC
IFIT5	GGCCATTCTGTTGGAGTTAG	GCTTCTTCAAGCTGGTCCAT
IFN B	ATTCTAACTGCAACCTTTCG	GTTGTAGCTCATGGAAAGAG
IFN G	GGTAACTGACTTGAATGTCC	TTTTCGCTTCCCTGTTTTAG
IFNA 2	CTCATGTTTCTGCTATGACC	GTGCCTTAAGAGCTGAATAC
IFNAR1	GCAGCCGCAGGTGGAAAAA	ATTCCCGACAGACTCATCGC
IL12	AGAAAGATAGAGTCTTCACGG	AAGATGAGCTATAGTAGCGG
IL15	AGCAATGTTCCATCATGTTC	ATACGATCTTGTATGGGCTG
IL1A	CATCGCCAATGACTCAGAGAAG	TGCCAAGCACACCCAGTAGTCTTGCTT
IL1B	CTAAACAGATGAAGTGCTCC	GGTCATTCTCCTGGAAGG
IL2	AGGGATCTGAAACAACATTC	GCCTGATATGTTTTAAGTGGG
IL23	AGATAAATCTACCACCCCAG	CACATGTCAGTCAGTATTGG
IL4	TCACATTGTCACTGCAAATC	CCTTCTCAGTTGTGTTCTTC
IL5	AACTGTGCACTGAAGAAATC	CTAGGAATTGGTTTACTCTCC
IL6	GCAGAAAAAGGCAAAGAATC	CTACATTTGCCGAAGAGC
IL8	GTTTTTGAAGAGGGCTGAG	TTTGCTTGAAGTTTCACTGG
ILT7	TCAATCCAGCACAAAAGAAG	CTGAGCCTCAAATAACAGAATC
IRAK1	CCTCTGTGAGATTTCCCGGG-	ACAGCATACACCGTGTTCCTCA
IRAK4	CAGACTCTCTTGCTTGGATGG	AGCTGCACCCTGAGCAATCTT
IRF1	TGGGGATTCCAGCCCTGATA	CTGTGTAGCTGCTGTGGTCA
IRF8	GAATAAGAGCCCAGATTTTGAG	TTGCATTTTTGCTCTTCCTC
JAK1	GAAAAACAAGATCCGGGAAG	TCCATTTTCTTGTTGTCCTG

MAVS	GAAATGAGGAGACCCCAG	CAAGGCCCCTATTCTCAG
MYD88	CATCACCACACTTGATGACCC	TGCACAAACTGGATGTCGC
NFKB1	CACAAGGAGACATGAAACAG	CCCAGAGACCTCATAGTTG
OAS1	AAACCCAGGCCTGTGATCCTG	AGGAGGTCTCACCAGCAGAA
PDL1	ATGCCCCATACAACAAAATC	GACATGTCAGTTCATGTTCAG
PKR	GGTACAGGTTCTACTAAACAG	TTTCACTGAGGTTTCTTCTG
PRDM1	AGAGGTTATTGGAGTGATGAG	GTTCTTAGGAACTGTGTCATTG
RELA	GCAGAAAGAGGACATTGAG	GTGCACATCAGCTTGC
STAT1	ACCCAATCCAGATGTCTATG	GAGCCTGATTAAATCTCTGG
STAT2	ATATAAGATCCAGGCCAAAGG	CAGTAGCTCGATTAGGGTAG
STAT3	GGTACATCATGGGCTTTATC	TTTGCTGCTTTCACTGAATC
STAT4	TCAACAATCCGAAGTGATTC	TTTATCCTGTCATTCAGCAG
STAT5	ATGGGACTCAGTAGATCTTG	CTTCAGTAAAAACCCATCTTCC
STAT6	CTGCCAAAGACCTGTCCATT	GGTAGGCATCTGGAGCTCTG
TGFB	AACCCACAACGAAATCTATG	CTTTTAACTTGAGCCTCAGC
TLR2	CTTTCAACTGGTAGTTGTGG	GGAATGGAGTTTAAAGATCCTG
TLR3	AGATTCAAGGTACATCATGC	CAATTTATGACGAAAGGCAC
TLR4	GATTTATCCAGGTGTGAAATCC	TATTAAGGTAGAGAGGTGGC
TLR5	ATCTTTCACATGGGTTTGTC	TTCCCCCAGAAGGTTATATG
TLR7	AGATATAGGATCACTCCATGC	CTTCCAAAATGGAATGTAGAGG
TLR8	TGGAAAACATGTTCCTTCAG	TGCTTTTTCTCATCACAAGG
TLR9	AAATCCCTCATATCCCTGTC	TTGTAATAACAGTTGCCGTC
TNFA	AGGCAGTCAGATCATCTTC	TTATCTCTCAGCTCCACG
TRAF6	GGTCCGGAATTTCCAGGAAA	CATTTTAGCAGTCAGCTCCCG
TRIF	AGCGCCTTCGACATTCTAGGT-3	AGAACCATGGCATGCAGGA
TYK2	CTCCTTGCTTCAATCTCTTTG	ACCTTATGCGGAAATATAGC
VERSICAN	TCCTCGCAGAAACTGCATCA	CCCAGGGCTTCTTGGTACTG

Supplemental Table 3: IFN-induced genes in monocytes

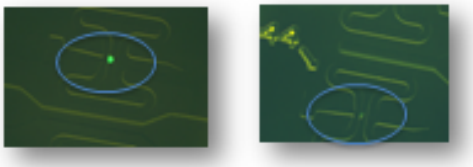
MYD88
STAT1
IL6
BDCA1
IFI27
IFIT1
IFIH1
STAT2
GIP3

Supplemental figure 1: Scatter plots of purified classical and non-classical monocytes



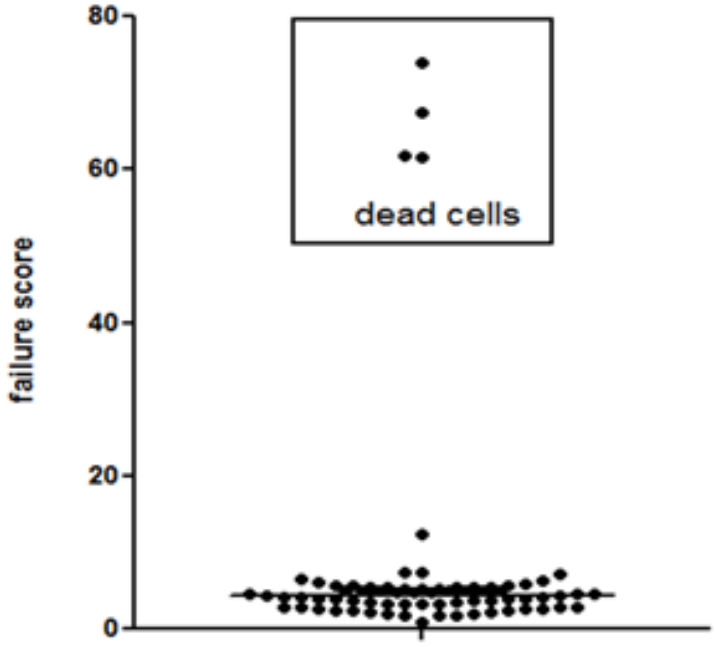
Legend: PBMCs = peripheral blood mononuclear cells, percentages in the gates for classical and non-classical monocytes indicate the purity of populations purified as outlined in the methods

Supplemental figure 2: Visualization of single cell captured in C1 IFC

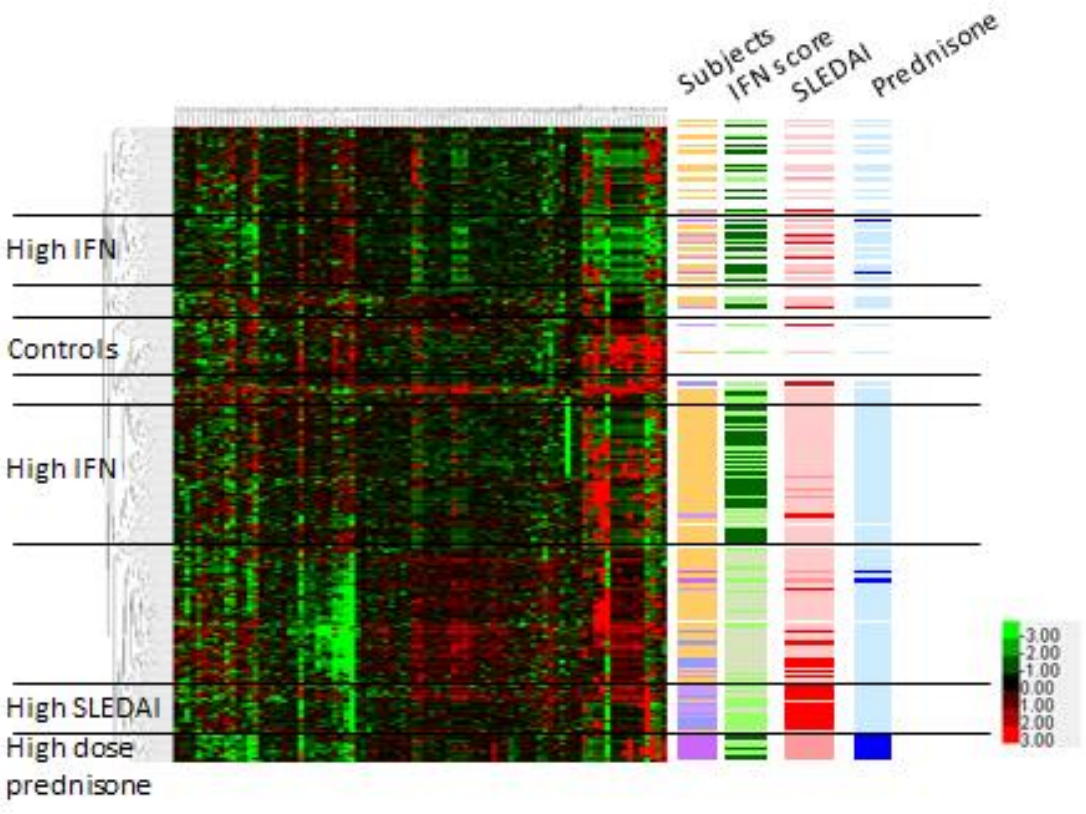


Legend: Left: Single cell captured in a chamber of the C1 IFC, stain positive; Right: single cell was captured in a chamber of the C1 IFC, negative staining.

Supplemental Figure 3: Failure score identifies dead cells



Supplemental Figure 4 Hierarchical clustering of classical monocytes from patients and controls, with tracks indicating individuals, IFN score, SLEDAI score, and prednisone usage



Each single cell forms a single row, and each column corresponds to an individual gene. All non-classical cells and genes are shown. Lower left corner inset shows heat map color scheme key. Color codes for the data columns: Subject - white: healthy subjects; each color represents one SLE subject; IFN score - darker green means higher IFN score; SLEDAI score - Red: SLEDAI ≥10; pink: SLEDAI 3 to 6; white: SLEDAI 0 to 2; Prednisone: dark blue - 20mg/day ; light blue - less than 10mg/day; white - no prednisone. Black horizontal bars demarcate groups of cells that correspond to controls, high IFN, high SLEDAI, and high dose prednisone.