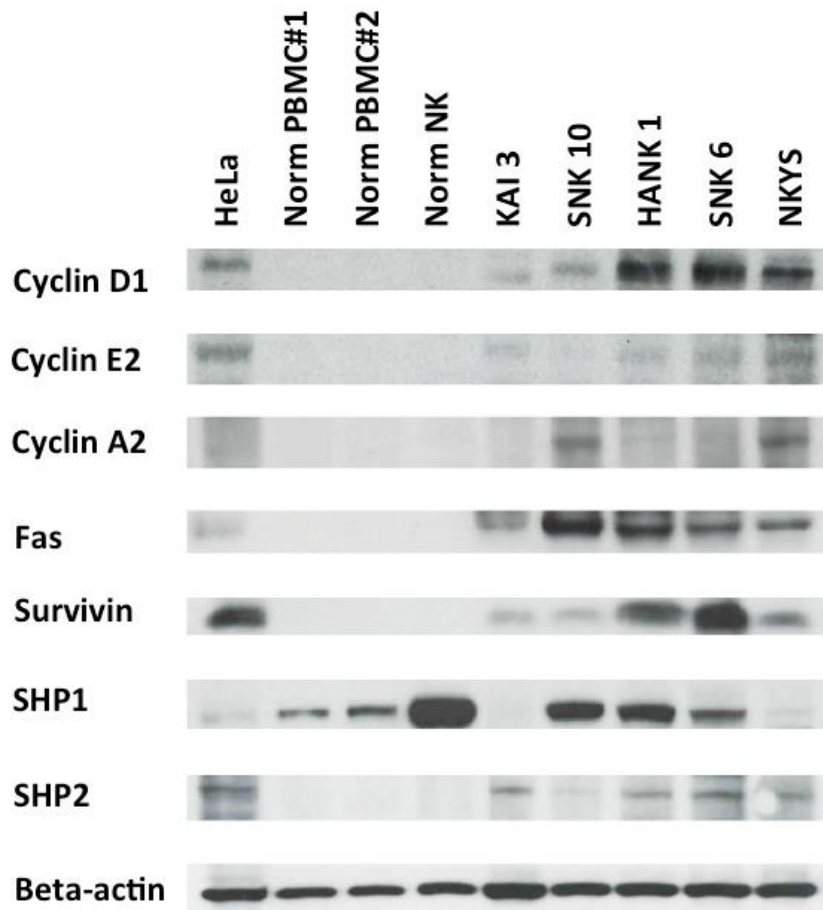


**Figure 1**



A)



B)

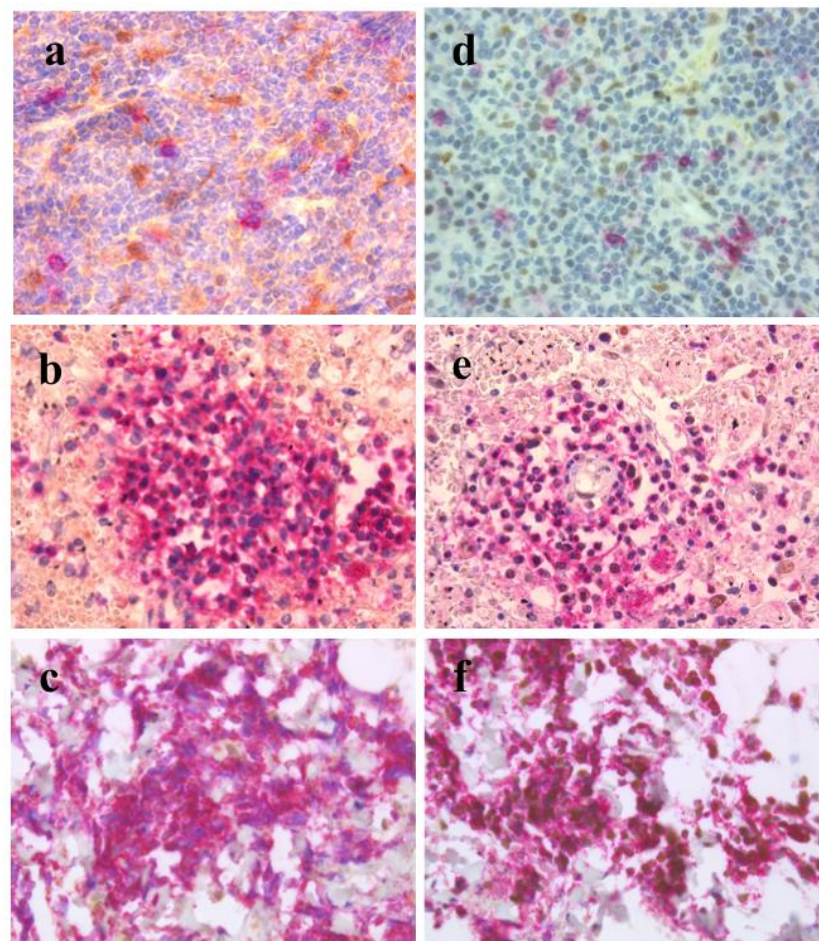


Figure 3

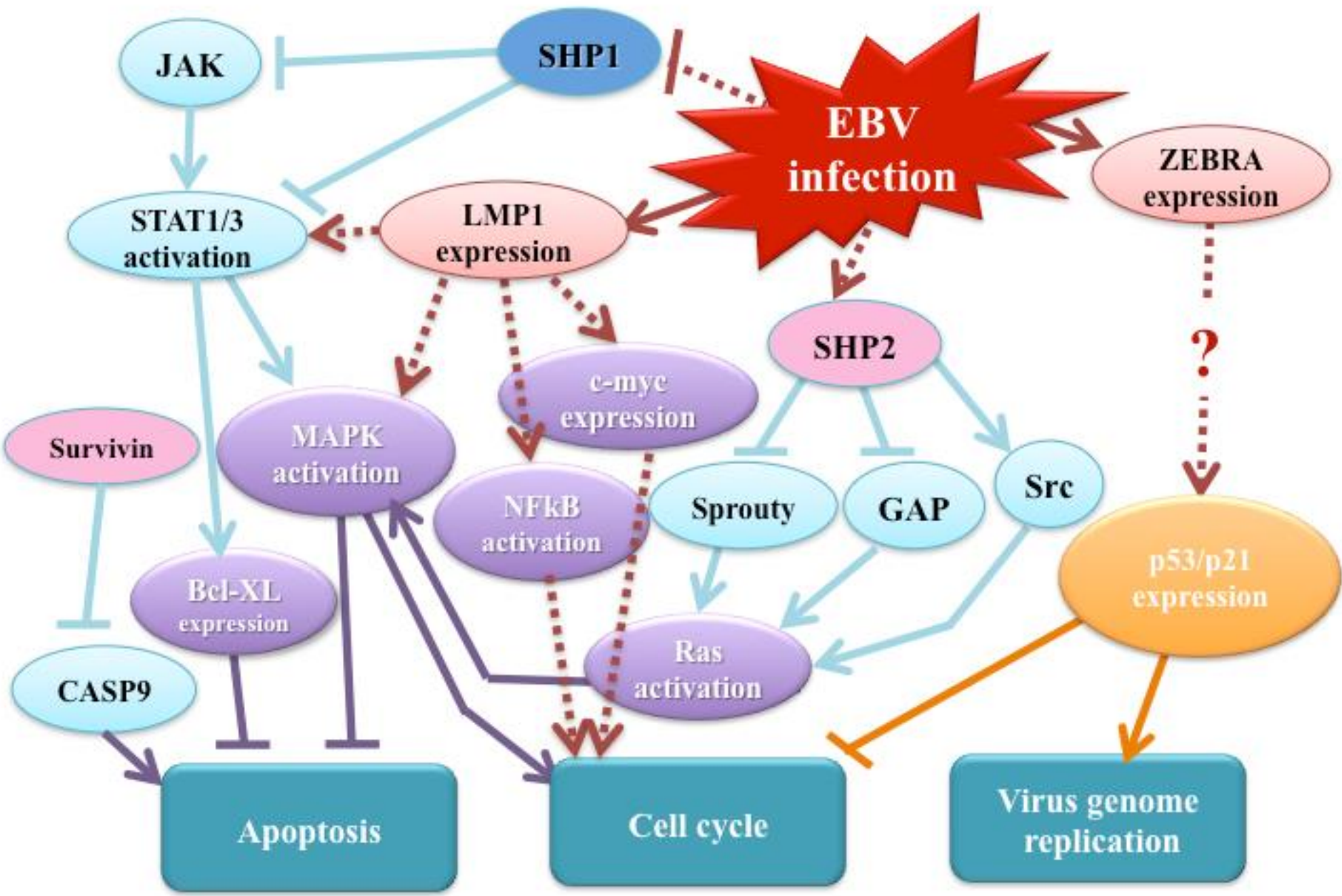


Figure 4

Table I. Functional annotation of gene clusters revealed by Gene Ontology(GO) analysis

| Cluster A-1    |                  |  |                 |          |
|----------------|------------------|--|-----------------|----------|
| Cluster No     | Enrichment score | Cluster name   | Number of genes | P-value  |
| 1              | 2.54             | Src homology-3 domain  | 10              | 1.10E-03 |
| 2              | 1.68             | Immunoglobulin subtype   | 16              | 2.30E-03 |
| 3              | 1.53             | Cytoskeleton   | 24              | 2.60E-01 |
| 4              | 1.45             | Neurotrophin signaling pathway   | 7               | 1.00E-02 |
| 5              | 1.3              | Circadian rhythm   | 4               | 2.00E-02 |
| 6              | 1.2              | Regulation of transcription  | 100             | 6.20E-02 |
| 7              | 1.11             | Lymphocyte mediated immunity   | 5               | 5.90E-02 |
| Cluster A-2    |                  |  |                 |          |
| 1              | 33.05            | Membrane-enclosed lumen  | 199             | 1.70E-36 |
| 2              | 14.77            | DNA replication, DNA metabolic process   | 78              | 7.70E-16 |
| 3              | 13.63            | RNA binding, RNA processing  | 106             | 1.00E-14 |
| 4              | 11.35            | Cellular response to stress  | 99              | 2.60E-12 |
| 5              | 11.32            | Chromosome   | 66              | 2.30E-17 |
| 6              | 11.08            | Cell cycle, Cell division  | 98              | 6.60E-14 |
| 7              | 9.44             | Nucleotide binding   | 174             | 8.00E-14 |
| Clustering B-1 |                  |  |                 |          |
| 1              | 1.77             | Lymphocyte mediated immunity   | 3               | 6.20E-03 |
| 2              | 1.25             | Membrane   | 19              | 3.00E-02 |
| 3              | 0.99             | Disulfide bond   | 14              | 1.70E-02 |
| 4              | 0.81             | Phosphorus metabolic process   | 10              | 2.20E-02 |
| 5              | 0.71             | Immunoglobulin-like  | 3               | 1.80E-01 |
| 6              | 0.59             | receptor   | 11              | 1.20E-01 |
| 7              | 0.39             | Regulation of apoptosis  | 3               | 4.00E-01 |
| Clustering B-2 |                  |  |                 |          |
| 1              | 2.03             | Endoplasmic reticulum  | 7               | 3.40E-02 |
| 2              | 1.17             | Intracellular signaling cascade  | 7               | 2.80E-01 |
| 3              | 1.12             | Membrane fraction  | 6               | 1.50E-01 |
| 4              | 0.74             | Phosphate metabolic process  | 9               | 5.20E-02 |
| 5              | 0.71             | Ion transport  | 7               | 1.50E-02 |
| 6              | 0.64             | Membrane   | 24              | 8.40E-02 |
| 7              | 0.63             | Organelle envelope   | 6               | 7.40E-02 |
| Clustering C   |                  |  |                 |          |
| 1              | 1.7              | Regulation of transcription  | 45              | 1.40E-02 |
| 2              | 1.46             | C2 membrane targeting protein  | 4               | 2.50E-02 |
| 3              | 0.96             | Oxidation reduction  | 8               | 1.70E-01 |
| 4              | 0.92             | Regulation of Wnt receptor signaling pathway                                       | 8               | 7.60E-01 |
| 5              | 0.84             | Transcriptional regulator activity   | 19              | 1.50E-01 |
| 6              | 0.83             | Extrinsic to membrane  | 7               | 1.00E-02 |
| 7              | 0.62             | Activator  | 5               | 1.80E-01 |
| Cluster D-1    |                  |  |                 |          |
| 1              | 4.49             | MHC-II protein complex, Cell adhesion molecule(CAMs)                               | 119             | 7.40E-01 |
| 2              | 2.8              | Lysosome   | 11              | 1.90E-03 |
| 3              | 2.52             | Regulation of transcription  | 88              | 2.00E-03 |
| 4              | 2.28             | Zinc finger, Nuclear hormon receptor   | 15              | 2.60E-04 |
| 5              | 2.26             | Ion binding, metal binding   | 83              | 7.80E-02 |
| 6              | 2.15             | Negative regulation of biosynthetic process, Transcription repressor activity      | 28              | 8.00E-04 |
| 7              | 1.81             | Negative regulation of RNA metabolic process, Negative regulation of transcription | 14              | 7.40E-03 |
| Cluster D-2    |                  |  |                 |          |
| 1              | 2.38             | Protooncogene, Regulation of transcription   | 14              | 2.60E-01 |
| 2              | 2.18             | Short sequence motif: Nuclear localization signal                                  | 7               | 6.00E-03 |
| 3              | 1.35             | Pathway in cancer, Embryonic morphogenesis   | 10              | 4.60E-03 |
| 4              | 1.25             | Positive regulation of growth  | 4               | 1.10E-01 |
| 5              | 0.94             | Calcium ion binding, EF-hand type  | 7               | 6.40E-02 |
| 6              | 0.9              | Potassium transport, Cation channel activity                                       | 10              | 1.30E-01 |
| 7              | 0.81             | Adhesion junction, anchoring junction  | 8               | 6.00E-01 |

Table II. Immunohistochemical & immunofluorescent staining of NK/T lymphomas and CAEBV patient specimen

| Diagnosis               | gender | age | site       | SHP1/CD56+ | SHP2/CD56+ | Survivin/CD56+ | Fas/CD56+  | CD56      |
|-------------------------|--------|-----|------------|------------|------------|----------------|------------|-----------|
| NK/T                    | female | 57  | ovary      | -          | -          | +              | -          | +         |
| NK/T                    | male   | 79  | nose       | -          | w          | +              | -          | +         |
| NK/T                    | female | 69  | BM         | -          | +          | -              | w          | +         |
| NK/T                    | female | 46  | orbita     | -          | -          | +              | -          | +         |
| NK/T                    | male   | 69  | skin       | w          | w          | +              | -          | +         |
| Positivity in NK/T      |        |     |            | 1/5(20.0%) | 3/5(60.0%) | 4/5(80.0%)     | 1/5(20.0%) | 5/5(100%) |
| CAEBV                   | female | 34  | BM         | -          | -          | +              | +          | +         |
| CAEBV                   | female | 34  | BM         | -          | +          | +              | +          | +         |
| CAEBV                   | female | 22  | spleen     | -          | -          | +              | w          | +         |
| CAEBV                   | female | 22  | liver      | -          | -          | +              | -          | +         |
| CAEBV                   | male   | 15  | spleen     | -          | +          | ++             | +          | +         |
| CAEBV                   | female | 51  | liver      | -          | -          | +              | +          | +         |
| CAEBV                   | male   | 20  | spleen     | -          | -          | -              | -          | +         |
| Positivity in CAEBV(NK) |        |     |            | 0/7(0%)    | 2/7(28.6%) | 6/7(85.7%)     | 5/7(71.4%) | 7/7(100%) |
| Positivity in Norm NK   |        |     | RLH/tonsil | 72.00%     | 3.50%      | 6.00%          | 5.00%      | 100%      |
| Diagnosis               | gender | age | site       | SHP1/CD3+  | SHP2/CD3+  | Survivin/CD3+  | CD3        |           |
| CAEBV                   | female | 8   | BM         | -          | -          | +              | +          |           |
| CAEBV                   | female | 32  | heart      | w          | ?          | +              | +          |           |
| CAEBV                   | male   | 14  | BM         | +          | -          | +              | +          |           |
| CAEBV                   | female | 34  | BM         | -          | +          | +              | +          |           |
| CAEBV                   | female | 34  | BM         | -          | +          | +              | +          |           |
| Positivity in CAEBV(T)  |        |     |            | 2/5(40.0%) | 2/5(40.0%) | 5/5(100%)      | 5/5(100%)  |           |
| Positivity in Norm T    |        |     | RLH/tonsil | 98%        | 2.30%      | 1.30%          | 100%       |           |

w: weekly stained. RLH; Reactive lymphoid hyperplasia, BM; bone marrow