The invention claimed is:

1. A method for the identification of clonal lymphoproliferative cells in a sample from a subject, the method comprising:
a) staining cells comprised in the sample of said subject with one or more B-cell specific markers selected from CD19, CD20, CD79a and Ki-67;
b) loading the cells from (a) onto a microfluidic cartridge that allows the separation of single cells into individual dielectrophoretic cages;
c) detecting individual positively-stained B cells and isolating each of said positively-stained B cells;
d) amplifying individually the whole genome of each of said isolated single cell;
e) performing a specific amplification on the product obtained from each single cell from (d) with primers directed to immunoglobulin heavy-chain (IgH) and/or immunoglobulin light-chain (IgK);
f) separating and isolating amplicons corresponding to IgH and/or IgK obtained for each single cell from (e) ;
g) sequencing said amplicons corresponding to IgH and/or IgK ,
and
h) determining whether there is a copy number aberration and/or a BCL2/JH t(14;18) translocation and/or a MYD88 L265P mutation in said isolated positively-stained B cell from c)
wherein the presence of IgH and/or IgK amplicons with the same sequence in said isolated positively-stained B cells and/or the presence of said copy number aberration and/or a BCL2/JH t(14;18) translocation indicates the presence of clonal lymphoproliferative cells and/or a MYD88 L265P mutation indicates the cells are lymphoproliferative,
wherein the lymphoproliferative cells are selected from the group consisting of vitreoretinal lymphoma (VRL) cells, central nervous system lymphoma (CNSL) cells, VRL-specific minimal residue disease (MRD) cells and CNSL-specific MRD cells.

2. The method of claim 1, wherein the cells in step a) are also stained with DAPI ~~and one or more B-cell markers selected from CD19, CD20, CD79a and Ki-67~~.

3. The method of claim 1 or 2, wherein the cells in step a) are fixed prior to staining.

4. The method of any one of the preceding claims, wherein in step c) B cells are detected based on their positivity for at least one B-cell marker selected from the group comprising

CD19, CD20, CD79a and Ki-67.

5. The method of any one of the preceding claims, wherein in step e) the specific amplification method can be selected from known methods such as polymerase chain reaction (PCR), loop mediated isothermal amplification (LAMP), nucleic acid sequence based amplification (NASBA), self-sustained sequence replication (3SR), rolling circle amplification (RCA).

6. The method of any one of the preceding claims, wherein in step e) the specific amplification method is polymerase chain reaction (PCR).

7. The method of any one of the preceding claims, wherein the primers used in step e) comprise at least one forward oligonucleotide primer and at least one reverse oligonucleotide primer selected from the groups comprising:

IgK primers selected from:
Forward primers comprising the nucleotide sequence set forth in SEQ ID NO: 1, SEQ ID NO: 2, SEQ ID NO: 3, SEQ ID NO: 4, SEQ ID NO: 5 and SEQ ID NO: 6, and
Reverse primers comprising the nucleotide sequence set forth in SEQ ID NO: 7 and SEQ ID NO: 8; and/or

IgK primers selected from:
Forward primers comprising the nucleotide sequence set forth in SEQ ID NO: 9, SEQ ID NO: 10, SEQ ID NO: 11, SEQ ID NO: 12, SEQ ID NO: 13, SEQ ID NO: 14 and SEQ ID NO: 15, and
Reverse primers comprising the nucleotide sequence set forth in SEQ ID NO: 16, SEQ ID NO: 17 and SEQ ID NO: 18; and/or

IgH primers selected from:
Forward primers comprising the nucleotide sequence set forth in SEQ ID NO: 19, SEQ ID NO: 20, SEQ ID NO: 21, SEQ ID NO: 22, SEQ ID NO: 23 and SEQ ID NO: 24, and
Reverse primer comprising the nucleotide sequence set forth in SEQ ID NO: 25; and/or

IgH primers selected from:
Forward primers comprising the nucleotide sequence set forth in SEQ ID NO: 26, SEQ ID NO: 27, SEQ ID NO: 28, SEQ ID NO: 29, SEQ ID NO: 30, SEQ ID NO: 31 and SEQ ID NO:

32, and
Reverse primer comprising the nucleotide sequence set forth in SEQ ID NO: 33; and/or

IgH primers selected from:
Forward primers comprising the nucleotide sequence set forth in SEQ ID NO: 34, SEQ ID NO: 35, SEQ ID NO: 36, SEQ ID NO: 37, SEQ ID NO: 38, SEQ ID NO: 39 and SEQ ID NO: 40, and
Reverse primer comprising the nucleotide sequence set forth in SEQ ID NO: 41; and/or

MYD88 forward primer comprising the nucleotide sequence set forth in SEQ ID NO: 42, and
MYD88 reverse primer comprising the nucleotide sequence set forth in SEQ ID NO: 43.

8. The method of claim 7, wherein the forward primer has a short oligonucleotide tail at the 5' end comprising the sequence set forth in SEQ ID NO: 44 and the reverse PCR primer has a short oligonucleotide tail at the 5' end comprising the sequence set forth in SEQ ID NO: 45 to facilitate sequencing of said amplicons.

9. The method of any one of the preceding claims, wherein in step g) the sequencing is Sanger Sequencing or Next Generation Sequencing.

10. The method of any one of the preceding claims, wherein the presence of IgH and/or IgK amplicons with the same sequence in said isolated positively-stained B cells and/or the presence of said copy number aberration or a BCL2/JH t(14;18) translocation in said isolated positively-stained B cells and/or the presence of a MYD88 L265P mutation is diagnostic of a lymphoproliferative disorder selected from the group consisting of vitreoretinal lymphoma (VRL), central nervous system lymphoma (CNSL), VRL-specific minimal residue disease (MRD) and CNSL-specific MRD, in the subject.

11. The method of claim 10, wherein the presence of at least 60% of single B-cells sharing the same IgH and IgK sequence; and/or at least 85% of single B-cells sharing the same IgH sequence in the absence of IgK sequence; and/or at least 5% of single B-cells sharing the same homozygous MYD88 L265P mutation; and/or at least 30% of single B-cells sharing the same BCL2/JH t(14;18) translocation or similar profiles of copy number aberration is diagnostic of ~~a~~ said lymphoproliferative disorder in the subject.

~~12. The method of any one of the preceding claims wherein the lymphoproliferative disorder~~

~~is selected from vitreoretinal lymphoma (VRL), central nervous system lymphoma (CNSL), VRL-specific minimal residue disease (MRD), or CNSL-specific MRD.~~

~~13~~12. The method of any one of the preceding claims, wherein the sample is from: vitreous fluid, blood, bone marrow or cerebrospinal fluid.

~~14~~13. The method of any one of the preceding claims, wherein the sample is a vitreous fluid and the lymphoproliferative disease is VRL or VRL-specific MRD.

~~15~~14. The method of any one of claims 1 to ~~13~~12, wherein the sample is a cerebrospinal fluid and the lymphoproliferative disease is CNSL or CNSL-specific MRD.

~~16~~15. The method of any one of the preceding claims, wherein the subject is a human.

~~17~~16. A method of monitoring a B cell lymphoproliferative disease, selected from the group consisting of vitreoretinal lymphoma (VRL), central nervous system lymphoma (CNSL), VRL-specific minimal residue disease (MRD) and CNSL-specific MRD, in a subject, comprising screening a sample from said subject using a method according to any one of claims 1 to ~~16~~15.

~~18~~17. A kit ~~for the~~to ~~identification~~ identify ~~of~~ clonal lymphoproliferative cells, wherein the lymphoproliferative cells are selected from the group consisting of vitreoretinal lymphoma (VRL) cells, central nervous system lymphoma (CNSL) cells, VRL-specific minimal residue disease (MRD) cells and CNSL-specific MRD cells, or to ~~diagnosis~~ diagnose ~~of~~ a lymphoproliferative disorder, selected from the group consisting of vitreoretinal lymphoma (VRL), central nervous system lymphoma (CNSL), VRL-specific minimal residue disease (MRD) and CNSL-specific MRD, in a subject according to the method of claim ~~10~~ 9 or ~~11~~10, said kit comprising:

- (i) at least one forward oligonucleotide primer and at least one reverse oligonucleotide primer selected from the groups of IgK primers and/or IgH primers and/or at least one MYD88 forward oligonucleotide primer and at least one MYD88 reverse oligonucleotide primer listed in claim ~~7~~6.

~~19~~18. The kit of claim ~~18~~17, said kit further comprising at least one of the following reagents:

- (ii) at least one antibody targeting at least one B-cell marker selected from the group CD19, CD20, CD79a and Ki-67; and/or
- (iii) suspension buffer for single cell isolation using microfluidic cartridge that allows the separation of each single cells into individual dielectrophoretic cages; and/or
- (iv) reaction buffer, enzymes and reagents for whole genome amplification and -quality check; and/or
- (v) reaction buffer, enzymes and reagents for BCL2/JH t(14;18) translocation assay; and/or
- (vi) reaction buffer, enzymes and reagents to generate barcoded sequencing libraries suitable for genome-wide copy-number profiling.

~~20~~19. The kit according to claim ~~18~~ 17 or ~~19~~18, further comprising at least one of the following reagents selected from the group comprising:

- (vii) methanol-based fixative buffer, which is preferably 35-55% methanol-based;
- (viii) 4',6-diamidino-2-phenylindole (DAPI);
- (ix) sequencing primers for DNA sequencing of IgH and IgK genes;
- (x) a positive control which comprises DNA from clonal B-cells (clonal DNA control); and
-(xi) a negative control which comprises DNA from at least two different B-cells (polyclonal DNA control).