

# Appendix

## CRISPR-Enabled Point-of-Care Genotyping for *APOL1* Genetic Risk Assessment

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**Appendix Table S1: Oligonucleotides included in this study.**

| Description  | Used in         | Sequence (5' - 3')   |
|--|-----------------|--|
| <i>APOL1</i> G1 wildtype;<br>Construct for <i>Off-target (A)</i> | Fig. 1b         | gaaattaatacactcactataggGCCAATCTCAGCTGAAAG<br>CGGTGAACAGGTGGAGAGGGTTAATGAACCCA<br>GCATCCTGGAAATGAGCAGAGGAGTCAAGCTC<br>ACGGATGTGGCCCCTGTAAGCTTCTTTCTTGTG<br>CTGGATGTAGTCTACCTCGTGTACGAATCAAAG<br>CACTTACATGAGGGGGCAAAGTCAGAGACAGC<br>TGAGGAGCTGAAGAAGGTGGC |
| <i>APOL1</i> G1 mutant;<br>Construct for <i>On-target (G)</i>    | Figs. 1b,<br>2a | gaaattaatacactcactataggGCCAATCTCAGCTGAAAG<br>CGGTGAACAGGTGGAGAGGGTTAATGAACCCA<br>GCATCCTGGAAATGAGCAGAGGAGTCAAGCTC<br>ACGGATGTGGCCCCTGTAGGCTTCTTTCTTGTG<br>CTGGATGTAGTCTACCTCGTGTACGAATCAAAG<br>CACTTACATGAGGGGGCAAAGTCAGAGACAGC<br>TGAGGAGCTGAAGAAGGTGGC |
| Construct for crRNA1   | Fig. 1b         | CAAGCTCACGGATGTGGCCCCTGTGGGCGTTTT<br>AGTCCCCTTCGTTTTTGGGGTAGTCTAAATCccat<br>agtgagtcgtattaatttc  |
| Construct for crRNA2   | Fig. 1b         | CAAGCTCACGGATGTGGCCCCTGTAGGAGTTTT<br>AGTCCCCTTCGTTTTTGGGGTAGTCTAAATCccat<br>agtgagtcgtattaatttc  |
| Construct for crRNA3   | Fig. 1b         | CAAGCTCACGGATGTGGCCCCTGTAGGGGTTTT<br>AGTCCCCTTCGTTTTTGGGGTAGTCTAAATCccat<br>agtgagtcgtattaatttc  |
| Construct for crRNA4   | Fig. 1b         | CAAGCTCACGGATGTGGCCCCTGTAGGTGTTTT<br>AGTCCCCTTCGTTTTTGGGGTAGTCTAAATCccat<br>agtgagtcgtattaatttc  |
| Construct for crRNA5   | Fig. 1b         | CAAGCTCACGGATGTGGCCCCTGTGGGGGTTTT<br>AGTCCCCTTCGTTTTTGGGGTAGTCTAAATCccat<br>agtgagtcgtattaatttc  |
| Construct for crRNA6   | Fig. 1b         | CAAGCTCACGGATGTGGCCCCTGTGGCCGTTTT<br>AGTCCCCTTCGTTTTTGGGGTAGTCTAAATCccat<br>agtgagtcgtattaatttc  |
| Construct for crRNA7   | Fig. 1b         | CAAGCTCACGGATGTGGCCCCTGAGGGCGTTTT<br>AGTCCCCTTCGTTTTTGGGGTAGTCTAAATCccat<br>agtgagtcgtattaatttc  |
| Construct for crRNA8   | Fig. 1b         | CAAGCTCACGGATGTGGCCCCTCTGGGCGTTTT<br>AGTCCCCTTCGTTTTTGGGGTAGTCTAAATCccat<br>agtgagtcgtattaatttc  |
| Construct for crRNA9   | Fig. 1b         | CAAGCTCACGGATGTGGCCCCAGTGGGCGTTTT<br>AGTCCCCTTCGTTTTTGGGGTAGTCTAAATCccat<br>agtgagtcgtattaatttc  |

|  |                       |   |
|--|-----------------------|---|
| <i>APOL1</i> G2 mutant;<br>Construct for <i>Off-target</i><br>( <i>delTTATAA</i> ) | Figs. 1d,<br>EV3d     | gaaattaatacgaactcactataggATCAAAGCACTTACATGA<br>GGGGGCAAAGTCAGAGACAGCTGAGGAGCTGA<br>AGAAGGTGGCTCAGGAGCTGGAGGAGAAGCTA<br>AACATTCTCAACAATAAGATTCTGCAGGCGGAC<br>CAAGAACTGTGACCACAGGGCAGGGCAGCCAC<br>CAGGAGAGATATGCCTGGCAGGGGCCAGGACA<br>AAATGCAAACCTT       |
| <i>APOL1</i> G2 wildtype;<br>Construct for <i>On-target</i><br>( <i>TTATAA</i> )   | Figs. 1d,<br>2d, EV3d | gaaattaatacgaactcactataggATCAAAGCACTTACATGA<br>GGGGGCAAAGTCAGAGACAGCTGAGGAGCTGA<br>AGAAGGTGGCTCAGGAGCTGGAGGAGAAGCTA<br>AACATTCTCAACAATAATTATAAGATTCTGCAG<br>GCGGACCAAGAACTGTGACCACAGGGCAGGGC<br>AGCCACCAGGAGAGATATGCCTGGCAGGGGCC<br>AGGACAAAATGCAAACCTT |
| Construct for crRNA10  | Fig. 1d               | GTTGTCATACCTATCCAAACGATAAGCTTCTAC<br>AACGAGGAGAAGCTAAACATTCTCAACAATAA<br>Tcctatagtgaagtcgtattaatttc   |
| Construct for crRNA11  | Fig. 1d               | GTTGTCATACCTATCCAAACGATAAGCTTCTAC<br>AACAGGAGAAGCTAAACATTCTCAACAATAAT<br>Tcctatagtgaagtcgtattaatttc   |
| Construct for crRNA12  | Fig. 1d               | GTTGTCATACCTATCCAAACGATAAGCTTCTAC<br>AACGGAGAAGCTAAACATTCTCAACAATAATT<br>Acctatagtgaagtcgtattaatttc   |
| Construct for crRNA13  | Fig. 1d               | GTTGTCATACCTATCCAAACGATAAGCTTCTAC<br>AACGAGAAGCTAAACATTCTCAACAATAATTAT<br>cctatagtgaagtcgtattaatttc   |
| Construct for crRNA14  | Fig. 1d               | GTTGTCATACCTATCCAAACGATAAGCTTCTAC<br>AACAGAAGCTAAACATTCTCAACAATAATTATA<br>cctatagtgaagtcgtattaatttc   |
| Construct for crRNA15  | Fig. 1d               | GTTGTCATACCTATCCAAACGATAAGCTTCTAC<br>AACGAAGCTAAACATTCTCAACAATAATTATAA<br>cctatagtgaagtcgtattaatttc   |
| Construct for crRNA16  | Fig. 1d               | GTTGTCATACCTATCCAAACGATAAGCTTCTAC<br>AACAAGCTAAACATTCTCAACAATAATTATAAG<br>cctatagtgaagtcgtattaatttc   |
| Construct for crRNA17  | Fig. 1d               | GTTGTCATACCTATCCAAACGATAAGCTTCTAC<br>AACAGCTAAACATTCTCAACAATAATTATAAGA<br>cctatagtgaagtcgtattaatttc   |
| Construct for crRNA18  | Fig. 1d               | GTTGTCATACCTATCCAAACGATAAGCTTCTAC<br>AACGCTAAACATTCTCAACAATAATTATAAGAT<br>cctatagtgaagtcgtattaatttc   |
| Construct for crRNA19  | Fig. 1d               | GTTGTCATACCTATCCAAACGATAAGCTTCTAC<br>AACCTAAACATTCTCAACAATAATTATAAGATT<br>cctatagtgaagtcgtattaatttc   |
| Construct for crRNA20  | Fig. 1d               | GTTGTCATACCTATCCAAACGATAAGCTTCTAC<br>AACTAAACATTCTCAACAATAATTATAAGATT<br>cctatagtgaagtcgtattaatttc  |

|                       |                         |   |
|-----------------------|-------------------------|---|
| Construct for crRNA21 | Fig. 1d                 | GTTGTCATACCTATCCAAACGATAAGCTTCTAC<br>AACAAACATTCTCAACAATAATTATAAGATTCT<br>cctatagtgagtcgtattaatttc  |
| Construct for crRNA22 | Fig. 1d                 | GTTGTCATACCTATCCAAACGATAAGCTTCTAC<br>AACAAACATTCTCAACAATAATTATAAGATTCTG<br>cctatagtgagtcgtattaatttc |
| Construct for crRNA23 | Fig. 1d                 | GTTGTCATACCTATCCAAACGATAAGCTTCTAC<br>AACACATTCTCAACAATAATTATAAGATTCTGC<br>cctatagtgagtcgtattaatttc  |
| Construct for crRNA24 | Fig. 1d                 | GTTGTCATACCTATCCAAACGATAAGCTTCTAC<br>AACCATTCTCAACAATAATTATAAGATTCTGCA<br>cctatagtgagtcgtattaatttc  |
| Construct for crRNA25 | Fig. 1d                 | GTTGTCATACCTATCCAAACGATAAGCTTCTAC<br>AACATTCTCAACAATAATTATAAGATTCTGCAG<br>cctatagtgagtcgtattaatttc  |
| Construct for crRNA26 | Fig. 1d                 | GTTGTCATACCTATCCAAACGATAAGCTTCTAC<br>AACTTCTCAACAATAATTATAAGATTCTGCAGG<br>cctatagtgagtcgtattaatttc  |
| Construct for crRNA27 | Fig. 1d                 | GTTGTCATACCTATCCAAACGATAAGCTTCTAC<br>AACTCTCAACAATAATTATAAGATTCTGCAGGC<br>cctatagtgagtcgtattaatttc  |
| Construct for crRNA28 | Fig. 1d                 | GTTGTCATACCTATCCAAACGATAAGCTTCTAC<br>AACCTCAACAATAATTATAAGATTCTGCAGGCG<br>cctatagtgagtcgtattaatttc  |
| Construct for crRNA29 | Fig. 1d                 | GTTGTCATACCTATCCAAACGATAAGCTTCTAC<br>AACTCAACAATAATTATAAGATTCTGCAGGCGG<br>cctatagtgagtcgtattaatttc  |
| Construct for crRNA30 | Fig. 1d                 | GTTGTCATACCTATCCAAACGATAAGCTTCTAC<br>AACCAACAATAATTATAAGATTCTGCAGGCGG<br>Acctatagtgagtcgtattaatttc  |
| Construct for crRNA31 | Fig. 1d                 | GTTGTCATACCTATCCAAACGATAAGCTTCTAC<br>AACCAACAATAATTATAAGATTCTGCAGGCGGA<br>Ccctatagtgagtcgtattaatttc |
| Construct for crRNA32 | Fig. 1d                 | GTTGTCATACCTATCCAAACGATAAGCTTCTAC<br>AACACAATAATTATAAGATTCTGCAGGCGGAC<br>Ccctatagtgagtcgtattaatttc  |
| Construct for crRNA33 | Fig. 1d                 | GTTGTCATACCTATCCAAACGATAAGCTTCTAC<br>AACCAATAATTATAAGATTCTGCAGGCGGACC<br>Acctatagtgagtcgtattaatttc  |
| Construct for crRNA34 | Fig. 1d                 | GTTGTCATACCTATCCAAACGATAAGCTTCTAC<br>AACAAATAATTATAAGATTCTGCAGGCGGACCA<br>Acctatagtgagtcgtattaatttc |
| Construct for crRNA35 | Fig. 1d                 | GTTGTCATACCTATCCAAACGATAAGCTTCTAC<br>AACATAATTATAAGATTCTGCAGGCGGACCAA<br>Gcctatagtgagtcgtattaatttc  |
| <i>APOLI</i> G0G0     | Figs. 3a-<br>d, 3f, 4c- | gaaattaatacgaactcactataggGCGGTGAACAGGTGGAGA<br>GGGTTAATGAACCCAGCATCCTGGAAATGAGC                     |

|                       |   |   |
|-----------------------|---|---|
|                       | e, 5b, 6b, EV3                          | AGAGGAGTCAAGCTCACGGATGTGGCCCCTGT<br>AAGCTTCTTTCTTGTGCTGGATGTAGTCTACCTC<br>GTGTACGAATCAAAGCACTTACATGAGGGGGC<br>AAAGTCAGAGACAGCTGAGGAGCTGAAGAAGG<br>TGGCTCAGGAGCTGGAGGAGAAGCTAAACATT<br>CTCAACAATAATTATAAGATTCTGCAGGCGGAC<br>CAAGAACTGTGACCACAGGGCAGGGCAGCCAC<br>CAGGAGAGATA  |
| <i>APOL1</i> G1G1     | Figs. 2c, 3a-e, 4c-e, 5b, 6b, EV2, EV3c | gaaattaatacactcactataggGCGGTGAACAGGTGGAGA<br>GGGTTAATGAACCCAGCATCCTGGAAATGAGC<br>AGAGGAGTCAAGCTCACGGATGTGGCCCCTGT<br>AGGCTTCTTTCTTGTGCTGGATGTAGTCTACCTC<br>GTGTACGAATCAAAGCACTTACATGAGGGGGC<br>AAAGTCAGAGACAGCTGAGGAGCTGAAGAAGG<br>TGGCTCAGGAGCTGGAGGAGAAGCTAAACATT<br>CTCAACAATAATTATAAGATTCTGCAGGCGGAC<br>CAAGAACTGTGACCACAGGGCAGGGCAGCCAC<br>CAGGAGAGATA |
| <i>APOL1</i> G2G2     | Figs 3a-e, 4c-e, 5b, 6b, EV2, EV3c      | gaaattaatacactcactataggAAAGCGGTGAACAGGTGG<br>AGAGGGTGAATGAACCCAGCATCCTGGAAATG<br>AGCAGAGGAGTCAAGCTCACGGATGTGGCCCC<br>TGTAAGCTTCTTTCTTGTGCTGGATGTAGTCTAC<br>CTCGTGTACGAATCAAAGCACTTACATGAGGG<br>GGCAAAGTCAGAGACAGCTGAGGAGCTGAAGA<br>AGGTGGCTCAGGAGCTGGAGGAGAAGCTAAAC<br>ATTCTCAACAATAAGATTCTGCAGGCGGACCAA<br>GAACTGTGACCACAGGGCAGGGCAGCCACCAG<br>GAGAGATATGC |
| Construct for crRNA36 | Fig. 3e                                 | GCCTGCAGAATCTTATTGTTATCTACACTTAGT<br>AGAAATTAcctatagtgagtcgtattaatttc   |
| Construct for crRNA37 | Fig. 3e                                 | AAGCTAAACATTCTCAACAAATCTACACTTAGT<br>AGAAATTAcctatagtgagtcgtattaatttc   |
| RPA primer: F1        | Figs. 2a, c                             | gaaattaatacactcactataggGTTAATGAACCCAGCATC<br>CTGGAAATGAGC   |
| RPA primer: F2        | Fig. 2a                                 | gaaattaatacactcactataggTGAACAGGTGGAGAGGGT<br>TAATGAACCCAG   |
| RPA primer: F3        | Fig. 2a                                 | gaaattaatacactcactataggTCAGCTGAAAGCGGTGAA<br>CAGGTGGAGAGG   |
| RPA primer: R1        | Fig. 2a                                 | ATGTAAGTGCTTTGATTTCGTACACGAGGTAGA   |
| RPA primer: R2        | Fig. 2a                                 | CCCTCATGTAAGTGCTTTGATTTCGTACACG   |
| RPA primer: R3        | Fig. 2a                                 | CCTCAGCTGTCTCTGACTTTGCCCCCTCAT  |
| RPA primer: F4        | Fig. 2b                                 | gaaattaatacactcactataggCTGAAGAAGGTGGCTCAG<br>GAGCTGGAGGAG   |
| RPA primer: F5        | Fig. 2b                                 | gaaattaatacactcactataggATCAAAGCACTTACATGA<br>GGGGGCAAAGTC   |
| RPA primer: F6        | Fig. 2b                                 | gaaattaatacactcactataggAAGTCAGAGACAGCTGAG<br>GAGCTGAAGAAG   |

|                                   |           |  |
|-----------------------------------|-----------|--|
| RPA primer: R4                    | Fig. 2b   | CTGCCCTGCCCTGTGGTCACAGTTCTTGGT   |
| RPA primer: R5                    | Fig. 2b   | CCCTGCCAGGCATATCTCTCCTGGTGGCTG   |
| RPA primer: R6                    | Fig. 2b   | AAGTTTGCATTTTGTCTGCCCCCTGCCAG  |
| RPA primer: F8                    | Fig. 2c   | gaaattaatacactcactataggTTAATGAACCCAGCATC<br>CTGGAAATGAG  |
| RPA primer: F9                    | Fig. 2c   | gaaattaatacactcactataggTTAATGAACCCAGCATCC<br>TGGAAATGAGC   |
| RPA primer: R7                    | Fig. 2c   | ACAGTTCTTGGTCCGCCTGCAGAAT  |
| RPA primer: R8                    | Fig. 2c   | TGCCCTGTGGTCACAGTTCTTGGTC  |
| RPA primer: R9                    | Fig. 2c   | CTGCCCTGTGGTCACAGTTCTTGGT  |
| AU-Texas Red reporter molecule    | Fig. 4a   | 5TEX615/TArArUGC/3IAbRQSp  |
| UUUUU-Fam reporter molecule       | Fig. 4a   | 56-FAM/rUrUrUrUrU/3IABkFQ  |
| AAAAA-Fam reporter molecule       | Fig. 4a   | 56-FAM/rArArArArA/3IABkFQ  |
| AAAAA-Texas Red reporter molecule | Fig. 4a   | 5TEX615/rArA rArArA /3IAbRQSp  |
| TTATT-Hex reporter molecule       | Fig. 4a   | 5HEX/TTATT/3IABkFQ   |
| Digoxigenin-Fam reporter          | Fig. 6b   | 56-FAM/TTATTATT/3DigN  |
| Biotin-Fam reporter               | Fig. 6b   | 56-FAM/UUUUUUUUUUUUUUU/3Bio  |
| Construct for crRNA38             | Fig. EV3c | GCTCACGGATGTGGCCCCTGATCTACACTTAGT<br>AGAAATTACCTATAGTGAGTCGTATTAATTTC                            |
| Construct for crRNA39             | Fig. EV3c | GCTTACAGGGGCCACATCCGATCTACACTTAGT<br>AGAAATTACCTATAGTGAGTCGTATTAATTTC                            |
| Construct for crRNA40             | Fig. EV3c | CTCACGGATGTGGCCCCTGTATCTACACTTAGT<br>AGAAATTACCTATAGTGAGTCGTATTAATTTC                            |
| Construct for crRNA41             | Fig. EV3c | CAGCACAAGAAAGAAGCTTAATCTACACTTAG<br>TAGAAATTACCTATAGTGAGTCGTATTAATTTC                            |
| Construct for crRNA42             | Fig. EV3c | CCAGCACAAGAAAGAAGCTTATCTACACTTAGT<br>AGAAATTACCTATAGTGAGTCGTATTAATTTC                            |
| Construct for crRNA43             | Fig. EV3c | TCCAGCACAAGAAAGAAGCTATCTACACTTAGT<br>AGAAATTACCTATAGTGAGTCGTATTAATTTC                            |
| Construct for crRNA44             | Fig. EV3c | AGCTCACGGATGTGGCCCCTATCTACACTTAGT<br>AGAAATTACCTATAGTGAGTCGTATTAATTTC                            |
| Construct for crRNA45             | Fig. EV3c | GCACAAGAAAGAAGCTTACAATCTACACTTAG<br>TAGAAATTACCTATAGTGAGTCGTATTAATTTC                            |
| Construct for crRNA46             | Fig. EV3d | CTCAACAATAATTATAAGATTCTGCAGGGTTTT<br>AGTCCCCTTCGTTTTTGGGGTAGTCTAAATCcctat<br>agtgagtcgtattaatttc |
| Construct for crRNA47             | Fig. EV3d | TCAACAATAATTATAAGATTCTGCAGGCGTTTT<br>AGTCCCCTTCGTTTTTGGGGTAGTCTAAATCCCT<br>ATAGTGAGTCGTATTAATTTC |
| Construct for crRNA48             | Fig. EV3d | CAACAATAATTATAAGATTCTGCAGGCGTTTT<br>AGTCCCCTTCGTTTTTGGGGTAGTCTAAATCCCT<br>ATAGTGAGTCGTATTAATTTC  |

|                       |           |  |
|-----------------------|-----------|--|
| Construct for crRNA49 | Fig. EV3d | AACAATAATTATAAGATTCTGCAGGCGGGTTTT<br>AGTCCCCTTCGTTTTTTGGGGTAGTCTAAATCCCT<br>ATAGTGAGTCGTATTAATTTC  |
| Construct for crRNA50 | Fig. EV3d | ACAATAATTATAAGATTCTGCAGGCGGAGTTTT<br>AGTCCCCTTCGTTTTTTGGGGTAGTCTAAATCCCT<br>ATAGTGAGTCGTATTAATTTC  |
| Construct for crRNA51 | Fig. EV3d | CAATAATTATAAGATTCTGCAGGCGGACGTTTT<br>AGTCCCCTTCGTTTTTTGGGGTAGTCTAAATCCCT<br>ATAGTGAGTCGTATTAATTTC  |
| Construct for crRNA52 | Fig. EV3d | AATAATTATAAGATTCTGCAGGCGGACCGTTTT<br>AGTCCCCTTCGTTTTTTGGGGTAGTCTAAATCCCT<br>ATAGTGAGTCGTATTAATTTC  |
| Construct for crRNA53 | Fig. EV3d | TCTCAACAATAATTATAAGATTCTGCAGGTTTT<br>AGTCCCCTTCGTTTTTTGGGGTAGTCTAAATCCCT<br>ATAGTGAGTCGTATTAATTTC  |
| Construct for crRNA54 | Fig. EV3d | TTCTCAACAATAATTATAAGATTCTGCAGTTTT<br>AGTCCCCTTCGTTTTTTGGGGTAGTCTAAATCCCT<br>ATAGTGAGTCGTATTAATTTC  |
| Construct for crRNA55 | Fig. EV3d | ATTCTCAACAATAATTATAAGATTCTGCGTTTT<br>AGTCCCCTTCGTTTTTTGGGGTAGTCTAAATCCCT<br>ATAGTGAGTCGTATTAATTTC  |
| Construct for crRNA56 | Fig. EV3d | CATTCTCAACAATAATTATAAGATTCTGGTTTT<br>AGTCCCCTTCGTTTTTTGGGGTAGTCTAAATCCCT<br>ATAGTGAGTCGTATTAATTTC  |
| Construct for crRNA57 | Fig. EV3d | ACATTCTCAACAATAATTATAAGATTCTGTTTT<br>AGTCCCCTTCGTTTTTTGGGGTAGTCTAAATCCCT<br>ATAGTGAGTCGTATTAATTTC  |
| Construct for crRNA58 | Fig. EV3d | AACATTCTCAACAATAATTATAAGATTCTGTTTT<br>AGTCCCCTTCGTTTTTTGGGGTAGTCTAAATCCCT<br>ATAGTGAGTCGTATTAATTTC |
| Construct for crRNA59 | Fig. EV3d | AAACATTCTCAACAATAATTATAAGATTGTTTT<br>AGTCCCCTTCGTTTTTTGGGGTAGTCTAAATCCCT<br>ATAGTGAGTCGTATTAATTTC  |
| Construct for crRNA60 | Fig. EV3d | AGCTAAACATTCTCAACAATAATTATAAGTTTT<br>AGTCCCCTTCGTTTTTTGGGGTAGTCTAAATCccat<br>agtgagtcgtattaatttc   |
| Construct for crRNA61 | Fig. EV3d | AGAAGCTAAACATTCTCAACAATAATTAGTTTT<br>AGTCCCCTTCGTTTTTTGGGGTAGTCTAAATCCCT<br>ATAGTGAGTCGTATTAATTTC  |
| Construct for crRNA62 | Fig. EV3d | TAAACATTCTCAACAATAATTATAAGATGTTTT<br>AGTCCCCTTCGTTTTTTGGGGTAGTCTAAATCCCT<br>ATAGTGAGTCGTATTAATTTC  |
| Construct for crRNA63 | Fig. EV3d | CTAAACATTCTCAACAATAATTATAAGAGTTTT<br>AGTCCCCTTCGTTTTTTGGGGTAGTCTAAATCCCT<br>ATAGTGAGTCGTATTAATTTC  |

|                                   |           |   |
|-----------------------------------|-----------|---|
| Construct for crRNA64             | Fig. EV3d | GCTAAACATTCTCAACAATAATTATAAGGTTTT<br>AGTCCCCTTCGTTTTTTGGGGTAGTCTAAATCCCT<br>ATAGTGAGTCGTATTAATTTC |
| Construct for crRNA65             | Fig. EV3d | AAGCTAAACATTCTCAACAATAATTATAGTTTT<br>AGTCCCCTTCGTTTTTTGGGGTAGTCTAAATCCCT<br>ATAGTGAGTCGTATTAATTTC |
| Construct for crRNA66             | Fig. EV3d | GAAGCTAAACATTCTCAACAATAATTATGTTTT<br>AGTCCCCTTCGTTTTTTGGGGTAGTCTAAATCCCT<br>ATAGTGAGTCGTATTAATTTC |
| PCR reverse primer for sequencing |           | CTGCCAGGCATATCTCTCCT  |
| PCR forward primer for sequencing |           | gaaattaatacgactcactataggACCAACTCACACGAGGCA<br>TT  |



**Appendix Table S2: P values.**

| <b>Description</b> | <b>Figure</b> | <b>P value</b> |
|--------------------|---------------|----------------|
| crRNA 1            | Fig. 1b       | 0.0007         |
| crRNA 2            | Fig. 1b       | <0.0001        |
| crRNA 3            | Fig. 1b       | <0.0001        |
| crRNA 4            | Fig. 1b       | 0.0004         |
| crRNA 5            | Fig. 1b       | 0.0024         |
| crRNA 6            | Fig. 1b       | 0.0063         |
| crRNA 7            | Fig. 1b       | 0.0006         |
| crRNA 8            | Fig. 1b       | 0.007          |
| crRNA 9            | Fig. 1b       | <0.0001        |
| crRNA 10           | Fig. 1d       | 0.3263         |
| crRNA 11           | Fig. 1d       | 0.0004         |
| crRNA 12           | Fig. 1d       | <0.0001        |
| crRNA 13           | Fig. 1d       | 0.0004         |
| crRNA 14           | Fig. 1d       | 0.0002         |
| crRNA 15           | Fig. 1d       | 0.0002         |
| crRNA 16           | Fig. 1d       | <0.0001        |
| crRNA 17           | Fig. 1d       | <0.0001        |
| crRNA 18           | Fig. 1d       | <0.0001        |
| crRNA 19           | Fig. 1d       | <0.0001        |
| crRNA 20           | Fig. 1d       | <0.0001        |
| crRNA 21           | Fig. 1d       | <0.0001        |
| crRNA 22           | Fig. 1d       | <0.0001        |
| crRNA 23           | Fig. 1d       | 0.0001         |
| crRNA 24           | Fig. 1d       | 0.0027         |
| crRNA 25           | Fig. 1d       | <0.0001        |
| crRNA 26           | Fig. 1d       | <0.0001        |
| crRNA 27           | Fig. 1d       | <0.0001        |

|              |         |         |
|--------------|---------|---------|
| crRNA 28     | Fig. 1d | 0.0002  |
| crRNA 29     | Fig. 1d | <0.0001 |
| crRNA 30     | Fig. 1d | 0.0002  |
| crRNA 31     | Fig. 1d | <0.0001 |
| crRNA 32     | Fig. 1d | 0.0008  |
| crRNA 33     | Fig. 1d | <0.0001 |
| crRNA 34     | Fig. 1d | <0.0001 |
| crRNA 35     | Fig. 1d | 0.0017  |
| F2R1 (1 pM)  | Fig. 2a | 0.9980  |
| F2R1 (10 fM) | Fig. 2a | 0.0392  |
| F3R1 (1 pM)  | Fig. 2a | 0.0376  |
| F3R1 (10 fM) | Fig. 2a | 0.1417  |
| F1R2 (1 pM)  | Fig. 2a | <0.0001 |
| F1R2 (10 fM) | Fig. 2a | <0.0001 |
| F2R2 (1 pM)  | Fig. 2a | <0.0001 |
| F2R2 (10 fM) | Fig. 2a | <0.0001 |
| F3R2 (1 pM)  | Fig. 2a | <0.0001 |
| F3R2 (10 fM) | Fig. 2a | <0.0001 |
| F1R3 (1 pM)  | Fig. 2a | <0.0001 |
| F1R3 (10 fM) | Fig. 2a | <0.0001 |
| F2R3 (1 pM)  | Fig. 2a | <0.0001 |
| F2R3 (10 fM) | Fig. 2a | <0.0001 |
| F3R3 (1 pM)  | Fig. 2a | <0.0001 |
| F3R3 (10 fM) | Fig. 2a | <0.0001 |
| F4R4 (1 pM)  | Fig. 2b | <0.0001 |
| F4R4 (10 fM) | Fig. 2b | <0.0001 |
| F5R4 (1 pM)  | Fig. 2b | <0.0001 |
| F5R4 (10 fM) | Fig. 2b | <0.0001 |
| F6R4 (1 pM)  | Fig. 2b | <0.0001 |
| F6R4 (10 fM) | Fig. 2b | <0.0001 |

|              |           |         |
|--------------|-----------|---------|
| F4R5 (1 pM)  | Fig. 2b   | 0.9970  |
| F4R5 (10 fM) | Fig. 2b   | <0.0001 |
| F6R5 (1 pM)  | Fig. 2b   | 0.5757  |
| F6R5 (10 fM) | Fig. 2b   | <0.0001 |
| F4R6 (1 pM)  | Fig. 2b   | 0.9220  |
| F4R6 (10 fM) | Fig. 2b   | <0.0001 |
| F5R6 (1 pM)  | Fig. 2b   | 0.9690  |
| F5R6 (10 fM) | Fig. 2b   | <0.0001 |
| F6R6 (1 pM)  | Fig. 2b   | 0.2113  |
| F6R6 (10 fM) | Fig. 2b   | <0.0001 |
| F1R7 (1 pM)  | Fig. 2c   | 0.9997  |
| F1R7 (10 fM) | Fig. 2c   | <0.0001 |
| F8R7 (1 pM)  | Fig. 2c   | >0.9999 |
| F8R7 (10 fM) | Fig. 2c   | <0.0001 |
| F7R8 (1 pM)  | Fig. 2c   | <0.0001 |
| F7R8 (10 fM) | Fig. 2c   | <0.0001 |
| F8R8 (1 pM)  | Fig. 2c   | <0.0001 |
| F8R8 (10 fM) | Fig. 2c   | <0.0001 |
| F9R8 (1 pM)  | Fig. 2c   | 0.9971  |
| F9R8 (10 fM) | Fig. 2c   | <0.0001 |
| F7R9 (1 pM)  | Fig. 2c   | <0.0001 |
| F7R9 (10 fM) | Fig. 2c   | <0.0001 |
| F8R9 (1 pM)  | Fig. 2c   | <0.0001 |
| F8R9 (10 fM) | Fig. 2c   | <0.0001 |
| F9R9 (1 pM)  | Fig. 2c   | 0.0001  |
| F9R9 (10 fM) | Fig. 2c   | <0.0001 |
| crRNA 36     | Fig. 3f   | <0.0001 |
| crRNA 37     | Fig. 3f   | <0.0001 |
| crRNA 38     | Fig. EV3b | 0.8309  |
| crRNA 39     | Fig. EV3b | 0.204   |

|          |           |         |
|----------|-----------|---------|
| crRNA 40 | Fig. EV3b | 0.0448  |
| crRNA 41 | Fig. EV3b | <0.0001 |
| crRNA 42 | Fig. EV3b | <0.0001 |
| crRNA 43 | Fig. EV3b | 0.5172  |
| crRNA 44 | Fig. EV3b | 0.9474  |
| crRNA 45 | Fig. EV3b | <0.0001 |
| crRNA 46 | Fig. EV3d | 0.0054  |
| crRNA 47 | Fig. EV3d | 0.0001  |
| crRNA 48 | Fig. EV3d | 0.0106  |
| crRNA 49 | Fig. EV3d | <0.0001 |
| crRNA 50 | Fig. EV3d | <0.0001 |
| crRNA 51 | Fig. EV3d | 0.0004  |
| crRNA 52 | Fig. EV3d | 0.1664  |
| crRNA 53 | Fig. EV3d | <0.0001 |
| crRNA 54 | Fig. EV3d | 0.0042  |
| crRNA 55 | Fig. EV3d | <0.0001 |
| crRNA 56 | Fig. EV3d | <0.0001 |
| crRNA 57 | Fig. EV3d | 0.0033  |
| crRNA 58 | Fig. EV3d | <0.0001 |
| crRNA 59 | Fig. EV3d | 0.0011  |
| crRNA 60 | Fig. EV3d | 0.0008  |
| crRNA 61 | Fig. EV3d | 0.0001  |
| crRNA 62 | Fig. EV3d | <0.0001 |
| crRNA 63 | Fig. EV3d | <0.0001 |
| crRNA 64 | Fig. EV3d | <0.0001 |
| crRNA 65 | Fig. EV3d | 0.0017  |
| crRNA 66 | Fig. EV3d | 0.0011  |

**Appendix Table S3: APOL1 Genotyping Cost Analysis.**

| APOL1 genotyping methods                             | PCR followed by Sanger sequencing                                      | Clinical diagnostics service  | CRISPR (lateral-flow)                           | CRISPR (fluorescence)     |
|--|--|---|---|---------------------------|
| Reference  | New England Biolabs <sup>a</sup> .<br>Eurofins Genomics <sup>b</sup> . | Wake Forest University School of Medicine <sup>c</sup> .<br>Mass General Brigham Laboratory for Molecular Medicine <sup>d</sup> . | This paper.                                     | This paper.               |
| Time to result                                       | ~ 1 day  | 7 days - 21 days  | ~ 2.5 hours                                     | ~ 2.5 hours               |
| Service cost (€)                                     | ~ 4 (sequencing)   | ~ 360 - 550   | NA  | NA                        |
| Equipment cost (€)                                   | >10,000 (cyclor)   | NA  | 2.90/ stick <sup>e</sup><br>250<br>(heatblock*) | >10,000<br>(plate reader) |
| Reagent costs (€)                                    |  |   |   |                           |
| PCR reagents   | 1.101  | NA  | NA  | NA                        |
| PCR primers  | 0.002  | NA  | NA  | NA                        |
| RPA reagents   | NA   | NA  | 0.45  | 0.45                      |
| RPA primers  | NA   | NA  | 0.02  | 0.02                      |
| Cas enzymes  | NA   | NA  | 1.24  | 0.86                      |
| crRNAs   | NA   | NA  | 0.04  | 0.01                      |
| Reporter molecules                                   | NA   | NA  | 0.06  | 0.64                      |
| Other (buffer/ mase inhibitor/ rNTPs/ T7 polymerase) | NA   | NA  | 1.22  | 0.64                      |
| Total reagent costs (€)                              | 1.1  | NA  | 3.02  | 2.62                      |
| Hands-on time  | <1 hr  | NA  | <1 hr   | <1 hr                     |
| POC compatibility                                    |  |   |   |                           |
| Isothermal incubation                                | No   | No  | Yes   | Yes                       |
| Minimal equipment                                    | No   | No  | Yes   | No                        |
| Visual output  | No   | No  | Yes   | No                        |

a. New England Biolabs Q5 High Fidelity DNA Polymerase (<https://www.neb-online.de/art/M0491>).

b. Eurofins Genomics Mix2Seq Kits (<https://eurofinsgenomics.eu/de/custom-dna-sequencing/eurofins-services/mix2seq-kits/>).

c. Wake Forest University School of Medicine; APOL1 Genetic Test (<https://school.wakehealth.edu/departments/internal-medicine/nephrology/nephrology-research/apol1-genetic-test>).

d. Mass General Brigham Laboratory for Molecular Medicine (<https://www.massgeneralbrigham.org/en/research-and-innovation/centers-and-programs/personalized-medicine/molecular-medicine/tests/pricing-turnaround-time-cpt-codes>).

e. Milenia Biotec HybriDetect 2T (<https://www.milenia-biotec.com/en/product/hybridetect-2t/>).

\* CRISPR-based diagnostics assays have been reported which could be completed without heatblocks and simply used body heat as a heat source: Arizti-Sanz *et al.* Simplified Cas13-based assays for the fast identification of SARS-CoV-2 and its variants. *Nat. Biomed. Eng* 6, 932–943 (2022).