# Names for JK (ISBT 009) Blood Group Alleles

## Intro

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|---|---|
| General Description: | The Kidd blood group system consists of 3 antigens carried on a multipass type 3 membrane glycoprotein that functions as the primary urea transporter on RBCs. It consists of 389 amino acids and has 10 membrane-spanning domains. |
| Gene name: | *SLC14A1* |
| Number of exons: | 10 |
| Initiation codon: | Exon 3 at c.179 |
| Stop codon: | Exon 10 at c.1348 |
| Entrez Gene ID: | 6563 |
| LRG: | LRG 802 |
| LRG sequence | NG_011775.4 (genomic)<br>NM_015865.7 (transcript) |
| Reference allele: | *JK*01* (shaded)<br>Acceptable: *JK*A* or $Jk^a$ if inferred by hemagglutination |
| Reference allele *JK*01* encodes: | JK1, JK3 |
| Antithetical antigens: | [JK1 JK2] |

| Phenotype | Allele name | Nucleotide change | Exon Intron | Predicted amino acid change | (Reference No.) PMID | Accession number | rs number |
|---|---|---|---|---|---|---|---|
| JK:1 or Jk(a+) | ***JK*01* or *JK*A*** | c.838G | | | PMID: 8647271 | NG_011775.4 | |
| JK:2 or Jk(b+) | ***JK*02* or *JK*B*** | c.838G>A | 8 | p.Asp280Asn | PMID: 8647271 | n.a. | rs1058396 |
| **Weak *JK*01* phenotypes** | | | | | | | |
| Jk(a+$^{W}$) | ***JK*01W.01*** | c.130G>A | 3 | p.Glu44Lys | PMID: 21309779 | MG601100 | rs2298720 |
| Jk(a+$^{W}$) | ***JK*01W.02*** | c.511T>C | 6 | p.Trp171Arg | (1), Abstract | n.a. | rs9948825 |
| Jk(a+$^{W}$) | ***JK*01W.03*** | c.28G>A | 3 | p.Val10Met | (2), Abstract | n.a. | rs113578396 |
| Jk(a+$^{W}$) | ***JK*01W.04*** | c.226G>A | 4 | p.Val76Ile | (2), Abstract | n.a. | rs113029149 |
| Jk(a+$^{W}$) | ***JK*01W.05*** | c.742G>A | 7 | p.Ala248Thr | (3), Abstract<br>(4), Abstract | JN410949 | rs763095261 |
| Jk(a+w) | ***JK*01W.06*** | c.130G>A<br>c.588A>G | 3<br>6 | p.Glu44Lys<br>p.Pro196Pro | PMID: 21309779 | n.a. | rs2298720<br>rs2298718 |
| Jk(a+$^{W}$) | ***JK*01W.07*** | c.486T>A | 6 | p.Ser162Arg | (5), Abstract | n.a. | rs753809770 |
| Jk(a+$^{W}$) | ***JK*01W.08*** | c.814C>T | 8 | p.Leu272Phe | (6), Abstract | n.a. | rs757895930 |
| Jk(a+$^{W}$) | ***JK*01W.09*** | c.134T>C | 3 | p.Leu45Pro | (7), Abstract | n.a. | rs537028614 |
| Jk(a+$^{W}$) | ***JK*01W.10*** | c.350T>C | 5 | p.Ile117Thr | (7), Abstract | n.a. | rs374022751 |
| Jk(a+$^{W}$) | ***JK*01W.11*** | c.28G>A<br>c.226G>A | 3<br>4 | p.Val10Met<br>p.Val76Ile | PMID: 27834480 | n.a. | rs113578396<br>rs113029149 |
| Jk(a+$^{W}$) | ***JK*01W.12*** | c.130G>A<br>c.1068insA | 3<br>10 | p.Glu44Lys<br>p.Asp356Lysfs*11 | (15), Abstract | n.a. | rs2298720<br>rs756548295 |
| **Weak *JK*02* phenotypes** | | | | | | | |
| Jk(b+$^{W}$) | ***JK*02W.01*** | c.548C>T<br>c.838G>A | 6<br>8 | p.Ala183Val<br>p.Asp280Asn | (1), Abstract | n.a. | rs367901541<br>rs1058396 |

| Phenotype | Allele name | Nucleotide change | Exon Intron | Predicted amino acid change | (Reference No.) PMID | Accession number | rs number |
|---|---|---|---|---|---|---|---|
| Jk(b+$^{W}$) | ***JK*02W.02*** | c.718T>A<br>c.838G>A | 7<br>8 | p.Trp240Arg<br>p.Asp280Asn | (9), Abstract | n.a. | rs760579000<br>rs1058396 |
| Jk(b+w) | ***JK*02W.03*** | c.130G>A<br>c.588A>G<br>c.838G>A | 3<br>6<br>8 | p.Glu44Lys<br>p.Pro196Pro<br>p.Asp280Asn | PMID: 23225053 | n.a. | rs2298720<br>rs2298718<br>rs1058396 |
| Jk(b+$^{W}$) | ***JK*02W.04*** | c.130G>A<br>c.838G>A | 3<br>8 | p.Glu44Lys<br>p.Asp280Asn | (10), Abstract | n.a. | rs2298720<br>rs1058396 |
| Jk(b+$^{W}$) | ***JK*02W.05*** | c.277G>A<br>c.838G>A | 4<br>8 | p.Ala93Thr<br>p.Asp280Asn | (11), Abstract | MF588960 | n.a.<br>rs1058396 |
| Jk(b+$^{W}$) | ***JK*02W.06*** | c.838G>A<br>c.998T>A<br>c.1095T>C | 8<br>10<br>10 | p.Asp280Asn<br>p.VAl333Asp<br>p.Ser365Ser | (12), Abstract | LK391765 | rs1058396<br>rs774982134<br>rs28898897 |
| **Null phenotypes, *JK*01 alleles*** | | | | | | | |
| JK:–3 or Jk(a–b–) | ***JK*01N.01*** | c.1_341del | 3 - 4 | p.0 | PMID:11807016 | AF328892 | n.a. |
| JK:–3 or Jk(a–b–) | ***JK*01N.02*** | c.202C>T | 4 | p.Gln68Ter | PMID:18028269 | EF571316 | rs142529927 |
| JK:–3 or Jk(a–b–) | ***JK*01N.03*** | c.582C>G | 6 | p.Tyr194Ter | PMID:11841450 | AF328890 | rs34756616 |
| JK:–3 or Jk(a–b–) | ***JK*01N.04*** | c.956C>T | 9 | p.Thr319Met | PMID:18028269 | EF571318 | rs565898944 |
| JK:–3 or Jk(a–b–) | ***JK*01N.05*** | c.561C>A | 6 | p.Tyr187Ter | PMID:22023394 | JN104323 | rs778172038 |
| JK:–3 or Jk(a–b–) | ***JK*01N.06*** | c.342-1G>A | i4 | p.Arg114Ter | PMID:10924622 | n.a. | rs78937798 |
| JK:–3 or Jk(a–b–) | ***JK*01N.07*** | c.723delA | 7 | p.Gly243Alafs*20 | (13), Abstract | n.a. | rs759505281 |
| JK:–3 or Jk(a–b–) | ***JK*01N.08*** | c.866A>G | 8 | p.Asn289Ser | (14), Abstract | n.a. | n.a. |
| JK:–3 or Jk(a–b–) | ***JK*01N.09*** | c.27_50del | 3 | p.Val10_Arg17del | (15), Abstract | n.a. | n.a. |
| JK:–3 or Jk(a–b–) | ***JK*01N.10*** | c.811+5G>A | i7 | p.Leu272Glufs*29 | PMID: 22738189 | HQ709264 | rs1414947682 |
| JK:–3 or Jk(a–b–) | ***JK*01N.11*** | Obsolete | | | | | |
| JK:–3 or Jk(a–b–) | ***JK*01N.12*** | c.516_530del | 6 | pVal175_Pro179 | (12), Abstract | n.a. | rs772726215 |

| Phenotype | Allele name | Nucleotide change | Exon Intron | Predicted amino acid change | (Reference No.) PMID | Accession number | rs number |
|---|---|---|---|---|---|---|---|
| JK:–3 or Jk(a–b–) | ***JK*01N.13*** | c.327delG | 4 | p.Leu109Phefs*8 | PMID: 24877238 | AB845711 | n.a. |
| JK:–3 or Jk(a–b–) | ***JK*01N.14*** | c.432G>A | 5 | p.Gly298Glu | PMID: 24877238 | AB845712 | n.a. |
| JK:–3 or Jk(a–b–) | ***JK*01N.15*** | c.757_759delTCC | 7 | p.Ser253del | PMID: 24877238 | AB845716 | n.a. |
| JK:–3 or Jk(a–b–) | ***JK*01N.16*** | c.893G>A | 8 | p.Gly298Glu | PMID: 24877238 | AB845717 | n.a. |
| JK:–3 or Jk(a–b–) | ***JK*01N.17*** | c.118G>A<br>c.499A>G | 3<br>6 | p.Gly40Ser<br>p.Met167Val | (16), Abstract | n.a. | rs145283450<br>rs2298719 |
| JK:–3 or Jk(a–b–) | ***JK*01N.18*** | c.190C>T | 4 | p.Arg64Trp | (13), Abstract | n.a. | rs552191196 |
| JK:–3 or Jk(a–b–) | ***JK*01N.19*** | c.810G>A | 7 | p.Ala270Ala | (17), Abstract | n.a. | rs17675299 |
| JK:–3 or Jk(a–b–) | ***JK*01N.20*** | c.28G>A<br>c.226G>A<br>c.303G>A<br>c.588A>G | 3<br>4<br>4<br>6 | p.Val10Met<br>p.Val76Ile<br>pVal101Val<br>p.Pro196Pro | (18), Abstract | n.a. | rs113578396<br>rs113029149<br>rs28994287<br>rs2298718 |
| JK:–3 or Jk(a–b–) | ***JK*01N.21*** | c.130G>A<br>c.220A>G | 3<br>4 | p.Glu44Lys<br>p.Asn74Asp | PMID: 26969102 | n.a. | rs2298720<br>n.a. |
| JK:–3 or Jk(a–b–) | ***JK*01N.22*** | c.737T>G | 7 | p.Leu246Arg | PMID: 25807964 | n.a. | n.a. |
| JK:–3 or Jk(a–b–) | ***JK*01N.23*** | c.996+5G>C | 9 | splice variant | PMID: 30964549 | n.a. | rs1568049596 |
| **Null phenotypes, *JK*02 alleles*** | | | | | | | |
| JK:–3 or Jk(a–b–) | ***JK*02N.01*** | c.342-1G>A<br>c.838G>A | i4<br>8 | p.Arg114Ter<br>p.Asp280Asn | PMID: 9582331<br>PMID: 10644814 | n.a. | rs78937798<br>rs1058396 |
| JK:–3 or Jk(a–b–) | ***JK*02N.02*** | c.342-1G>C<br>c.838G>A | i4<br>8 | p.Arg114Ter<br>p.Asp280Asn | PMID: 16483143 | n.a. | rs78937798<br>rs1058396 |
| JK:–3 or Jk(a–b–) | ***JK*02N.03*** | c.222C>A<br>c.838G>A | 4<br>8 | p.Asn74Lys<br>p.Asp280Asn | PMID: 18980618<br>PMID: 23225053 | HQ834248 | rs749037771<br>rs1058396 |
| JK:–3 or Jk(a–b–) | ***JK*02N.04*** | c.663+1G>T<br>c.838G>A | i6<br>8 | p.Leu222Valfs*46<br>p.Asp280Asn | unknown | n.a. | rs77744921<br>rs1058396 |

| Phenotype | Allele name | Nucleotide change | Exon Intron | Predicted amino acid change | (Reference No.) PMID | Accession number | rs number |
|---|---|---|---|---|---|---|---|
| JK:–3 or Jk(a–b–) | ***JK*02N.05*** | c.723delA<br>c.838G>A | 7<br>8 | p.Gly243Alafs*20<br>p.Asp280Asn | PMID: 18028269 | EF571317 | rs759505281<br>rs1058396 |
| JK:–3 or Jk(a–b–) | ***JK*02N.06*** | c.838G>A<br>c.871T>C | 8<br>8 | p.Asp280Asn<br>p.Ser291Pro | PMID: 10942407 | n.a. | rs1058396<br>rs78242949 |
| JK:–3 or Jk(a–b–) | ***JK*02N.07*** | c.838G>A<br>c.896G>A | 8<br>8 | p.Asp280Asn<br>p.Gly299Glu | PMID: 18980618<br>PMID: 23225053 | HQ729920 | rs1058396<br>rs538368217 |
| JK:–3 or Jk(a–b–) | ***JK*02N.08*** | c.838G>A<br>c.956C>T | 8<br>9 | p.Asp280Asn<br>p.Thr319Met | PMID: 18028269 | EF571318 | rs1058396<br>rs565898944 |
| JK:–3 or Jk(a–b–) | ***JK*02N.09*** | c.191G>A<br>c.838G>A | 4<br>8 | p.Arg64Gln<br>p.Asp280Asn | PMID: 24689685 | JN104324 | rs114362217<br>rs1058396 |
| JK:–3 or Jk(a–b–) | ***JK*02N.10*** | c.194G>A<br>c.838G>A | 4<br>8 | p.Gly65Asp<br>p.Asp280Asn | PMID: 23710545 | | rs778150490<br>rs1058396 |
| JK:–3 or Jk(a–b–) | ***JK*02N.11*** | c.499A>G<br>c.512G>A<br>c.838G>A | 6<br>6<br>8 | p.Met167Val<br>p.Trp171*<br>p.Asp280Asn | PMID: 22738189 | HQ729921 | rs2298719<br>n.a.<br>rs1058396 |
| JK:–3 or Jk(a–b–) | ***JK*02N.12*** | c.437T>C<br>c.499A>G<br>c.838G>A | 5<br>6<br>8 | p.Leu146Pro<br>p.Met167Val<br>p.Asp280Asn | PMID: 22738189 | HQ834246 | n.a.<br>rs2298719<br>rs1058396 |
| JK:–3 or Jk(a–b–) | ***JK*02N.13*** | c.499A>G<br>c.536C>G<br>c.838G>A | 6<br>6<br>8 | p.Met167Val<br>p.Pro179Arg<br>p.Asp280Asn | PMID: 22738189 | HQ834247 | rs2298719<br>rs201612170<br>rs1058396 |
| JK:–3 or Jk(a–b–) | ***JK*02N.14*** | c.838G>A<br>c.1038delG | 8<br>10 | p.Asp280Asn<br>p.Leu347Tyrfs*6 | PMID: 27834480 | n.a. | rs1058396<br>rs746265611 |
| JK:–3 or Jk(a–b–) | ***JK*02N.15*** | c.838G>A<br>c.160insC | 8<br>4 | p.Asp280Asn<br>p.Val54Argfs*7 | (15), Abstract | n.a. | rs1058396<br>rs377124382 |
| JK:–3 or Jk(a–b–) | ***JK*02N.16*** | c.838G>A<br>c.856delT | 8<br>8 | p.Asp280Asn<br>p.Trp286Glyfs*67 | (11), Abstract | n.a. | rs1058396<br>rs1444093504 |
| JK:–3 or Jk(a–b–) | ***JK*02N.17*** | c.810G>A<br>c.838G>A | 7<br>8 | p.Ala270Ala<br>p.Asp280Asn | (12), Abstract | n.a. | rs17675299<br>rs1058396 |

| Phenotype | Allele name | Nucleotide change | Exon Intron | Predicted amino acid change | (Reference No.) PMID | Accession number | rs number |
|---|---|---|---|---|---|---|---|
| JK:–3 or Jk(a–b–) | ***JK*02N.18*** | c.561C>A<br>c.838G>A | 6<br>8 | p.Tyr187Ter<br>p.Asp280Asn | PMID: 24877238 | AB845713 | rs778172038<br>rs1058396 |
| JK:–3 or Jk(a–b–) | ***JK*02N.19*** | c.719G>A<br>c.838G>A | 7<br>8 | p.Trp240Ter<br>p.Asp280Asn | PMID: 24877238 | AB845715 | n.a.<br>rs1058396 |
| JK:–3 or Jk(a–b–) | ***JK*02N.20*** | c.647_648delAC<br>c.838G>A | 6<br>8 | p.Asp216Alafs*21<br>p.Asp280Asn | PMID: 24877238 | AB845714 | rs1223735153<br>rs1058396 |
| JK:–3 or Jk(a–b–) | ***JK*02N.21*** | c.118G>A<br>c.838G>A | 3<br>8 | p.Gly40Ser<br>p.Asp280Asn | PMID: 27834480 | n.a. | n.a.<br>rs1058396 |
| JK:–3 or Jk(a–b–) | ***JK*02N.22*** | c.157_166del<br>c.838G>A | 4<br>8 | p.Pro53Serfs77<br>p.Asp280Asn | PMID: 33539287 | n.a. | n.a.<br>rs1058396 |

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PMID 30964549 Castilho L, Bub CB, Aravechia MG, Kutner JM, Berlivet I, Férec C, Fichou Y. A novel JK null allele in a Brazilian patient with sickle cell disease (SCD). Transfusion 2019;59:2459-2460

## Track of changes

| | | | from | to |
|---|---|---|---|---|
| **1** | **Version** | | **v7.0 29-JUN-2021** | **v8.0 31-MAR-2022** |
| **2** | Author | created: | Greg Denomme Feb. 2020 | Greg Denomme, March 2022 |
| **3** | Reviewer | reviewed: | Nuria Nogues, June 2021 | Nuria Nogues, March 2022 |
| **3** | | *JK*01W.06* updated<br>*JK*02W.03* updated | | c.588G has been observed in *cis* with c.130A in either *JK*A* (Ref 2,19) or *JK*B* (Ref 13). *JK*01W.06* and *JK*02W.03* have been updated to reflect the two SNVs. The presence of c.588G without c.130A has not been reported as a Jk(a+w) nor a Jk(b+w) phenotype. |
| **4** | Allele table | *JK*01N.11* removed | | The *JK*01N.11* allele was reported to have a Jk(a+$^{w}$) phenotype, which might be due to the insertion of an incomplete JK glycoprotein into the RBC membrane since the c.1068insA occurs in exon 10. The *JK*01N.11* 'null' allele has been made obsolete and a *JK*01W.12* 'weak' allele added. |
| **5** | Allele table | Antigen/allele added: | | *JK*01W.12* |
| **6** | Allele table | Antigen/allele added: | | *JK*01N.22* (Reference PMID: 25807964) |
| **7** | Allele table | Antigen/allele added: | | *JK*02N.23* (Reference PMID: 28608429) |
| **8** | Allele table | Antigen/allele added: | | *JK*02N.24* (Reference PMID: 29399811) |
| **9** | Allele table | Antigen/allele added: | | *JK*01N.23* (Reference PMID: 30964549) |
| **10** | References | numbering changed | | Abstract 3. to (1) |
| **11** | References | numbering changed | | Abstract 4. to (2) |
| **12** | References | numbering changed | | Abstract 5. to (3) |
| **13** | References | numbering changed | | Abstract 6. to (4) |
| **14** | References | numbering changed | | Abstract 8. to (5) |
| **15** | References | numbering changed | | Abstract 9. to (6) |
| **16** | References | numbering changed | | Abstract 10. to (7) |
| **17** | References | numbering changed | | Abstract 11. to (8) |
| **18** | References | numbering changed | | Abstract 12. to (9) |
| **19** | References | numbering changed | | Abstract 14. to (10) |
| **20** | References | numbering changed | | Abstract 15. to (11) |

**Track of changes**

| | | | from | to |
|---|---|---|---|---|
| **1** | **Version** | | **v7.0 29-JUN-2021** | **v8.0 31-MAR-2022** |
| **21** | References | numbering changed | | Abstract 16. to (12) |
| **22** | References | numbering changed | | Abstract 22. to (13) |
| **23** | References | numbering changed | | Abstract 23. to (14) |
| **24** | References | numbering changed | | Abstract 24. to (15) |
| **25** | References | numbering changed | | Abstract 27. to (16) |
| **26** | References | numbering changed | | Abstract 28. to (17) |
| **27** | References | numbering changed | | Abstract 29. to (18) |
| **28** | Allele table | added specific mutuation | | added *JK*02* -specific mutation c.838G>A and rs1058396 to all *JK*02* derivatives |
| **29** | **End Version** | | **v7.0 30-JUN-2021** | **v8.0 31-MAR-2022** |

## Track of changes

| | | | from | to |
|---|---|---|---|---|
| **1** | **Version** | | **v6.0 25-FEB-2020** | **v7.0 30-JUN-2021** |
| **2** | Author | created: | Greg Denomme, v5.1 190123 | Greg Denomme February 15, 2020 |
| **3** | Reviewer | reviewed: | n.a. | Nuria Nogues, June 2021 |
| **4** | Typo | corrected | | LU*A changed to JK*A on the front page |
| **5** | Allele | changed | | Jk(a+w) changed to Jk(a+$^{w}$) |
| **6** | Allele | changed | | Jk(b+w) changed to Jk(b+$^{w}$) |
| **7** | Reference | changed | | Reference for JK*01W.6 corrected to reference 2 (PMID: 21309779) |
| **8** | Reference | changed | | Reference 13 removed from JK*02W.03 |
| **9** | Reference | changed | | Reference for JK*01N.03 corrected |
| **10** | Allele | renumbered | | Duplicate JK*02N.20 renumbered |
| **11** | Allele | added | | Second allele from reference 11 (new (8)) added |
| **12** | **End Version** | | **v6.0 25-FEB-2020** | **v7.0 30-JUN-2021** |

## Track of changes

| | | | from | to |
|---|---|---|---|---|
| **1** | **Version** | | **v5.1 190123** | **v6.0 25-FEB-2020** |
| **2** | Author | created: | Greg Denomme, v5.1 190123 | Greg Denomme February 15, 2020 |
| **3** | Reviewer | reviewed: | n.a. | Peter Ligthart, February 2020 |
| **4** | General | | Last word version publiced on ISBT website | First Excel map version. Spread-sheets "Intro", "Allele Table", "References", and "Versioning" created. |
| **5** | Intro | Text changed | The Kidd blood group system consists of 3 antigens carried on a multipass type 3 membrane glycoprotein that functions as the primary urea transporter on RBCs. It consists of 389 amino acids and has 10 membrane-spanning domains. | The Kidd blood group system consists of 3 antigens carried on a multipass type 3 membrane glycoprotein that functions as the primary urea transporter on RBCs. It consists of 389 amino acids and has 10 membrane-spanning domains. |
| **6** | Intro | LRG ID line added: | n.a. | LRG_802 |
| **7** | Intro | Reference allele line moved from Allele Table to Intro: | n.a. | Reference allele JK*01 encodes JK1, JK3 |
| **8** | Intro | Antithetical Antigens line created in Intro: | n.a. | Antithetical antigens: [JK1, JK2] |
| **9** | Allele Table | | | Table columns "(Reference No.) PMID", "Accession number" and "rs-number" added, content added. |
| **10** | Allele Table | Text change: Line moved to Intro: | n.a. | see above |
| **11** | Allele Table | Text change: | JK*01 made the reference allele to coincide with LRG; exons changed to match LRG | Added to Table: *JK*01W.06 - JK*01W.11; JK*02W.03 - JK*02W.06; JK*01N.11 - JK*01N.21; JK*02N.15 - JK*02N.20* |

## Track of changes

| | | | from | to |
|---|---|---|---|---|
| **1** | **Version** | | **v5.1 190123** | **v6.0 25-FEB-2020** |
| **12** | Reference | Renumbered References: | Original numbering:<br>1. Whorley T et al. Transfusion 2009;49(Suppl):48A.<br>2. Deal, T et al. Transfusion 011;51(Suppl):24-25A<br>3. St-Louis, M et al Transfusion 2012 :52(Suppl) :160-161A .<br>4. Crews, WS et al. Transfusion 2013;53(Suppl):164A<br>5. Moulds JM. Personal communication 2012-08-22 | New numbering:<br>3. Whorley T et al. Transfusion 2009;49(Suppl):48A.<br>4. Deal, T et al. Transfusion 011;51(Suppl):24-25A<br>12. St-Louis, M et al Transfusion 2012 :52(Suppl) :160-161A .<br>22. Crews, WS et al. Transfusion 2013;53(Suppl):164A<br>23. Moulds JM. Personal communication 2012-08-22 |
| **13** | Allele Table | Antigen/allele added: | n.a.<br>n.a. | JK1 weak phenotypes: *JK*01W.06* to *JK*01W.11*<br>**References:** 7 - 11 |
| **14** | Allele Table | Antigen/allele added: | n.a.<br>n.a. | JK2 weak phenotypes: *JK*02W.03* to *JK*02W.06*<br>**References:** 2, 13 - 16 |
| **15** | Allele Table | Antigen/allele added: | n.a.<br>n.a. | JK1 null phenotypes: *JK*01N.11* to *JK*01N.21*<br>**References:** 16, 22, 24, 26 - 30 |
| **16** | Allele Table | Antigen/allele added: | n.a.<br>n.a. | JK2 null phenotypes: *JK*02N.15* to *JK*02N.20*<br>**References:** 11, 15, 16, 24, 26 |
| **17** | | New References: | n.a. | New references added see above |
| **18** | **End Version** | | **v5.1 190123** | **v6.0 25-FEB-2020** |