

# 基于 InDel 标记开发兼容双平台的玉米品种真实性鉴定技术

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## Development of a Dual-Platform-Compatible Maize Variety Authenticity Identification Technology Based on InDel Markers

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附表1 用于评估InDel标记引物的20套杂交种及其双亲的样品信息

Table S1 Samples information of 20 sets hybrids and their parents for InDel primer evaluation

| 序号  | 品种                         | 母本                 | 父本               |
|-----|----------------------------|--------------------|------------------|
| No. | Variety                    | Female parent      | Male parent      |
| N01 | SC704                      | B73                | Mo17             |
| N02 | 登海 11 Denghai 11           | DH65232            | DH40             |
| N03 | 东单 60 Dongdan 60           | A801               | 丹 598 Dan 598    |
| N04 | 京单 28 Jingdan 28           | 郑 58 Zhen 58       | 京 24 Jing 24     |
| N05 | 京科 968 Jingke 968          | 京 724 Jing 724     | 京 92 Jing 92     |
| N06 | 京科糯 2000 Jingkenuo 2000    | 京糯 6 Jingnuo 6     | 白糯 6 Bainuo 6    |
| N07 | 京科青贮 301 Jingkeqingchu 301 | CH3                | 1145             |
| N08 | 京科甜 183 Jingketian 183     | 双金 11 Shuangjin 11 | SH 251           |
| N09 | 京农科 728 Jingnongke 728     | MC01               | 京 2416 Jing 2416 |
| N10 | 京玉 7 号 Jingyu 7            | 京 501 Jing 501     | 京 24 Jing 24     |
| N11 | 浚单 20 Xundan 20            | 浚 9058 Xun 9058    | 浚 92-8 Xun 92-8  |
| N12 | 蠡玉 6 号 Liyu 6              | 543                | 连 87 Lian 87     |

|     |         |              |       |         |             |           |
|-----|---------|--------------|-------|---------|-------------|-----------|
| N13 | 龙单 13   | Longdan 13   | K10   | 龙抗 11   | Longkang 11 |           |
| N14 | 鲁单 981  | Ludan 981    | 齐 319 | Qi 319  | Lx9801      |           |
| N15 | 农大 108  | Nongda108    | X178  | 黄 C     | Huang C     |           |
| N16 | 沈单 16   | Shendan16    | K12   | 沈 137   | Shen 137    |           |
| N17 | 苏玉糯 2 号 | Suyunuo 2    | 通 361 | Tong361 | 通 366       | Tong 366  |
| N18 | 掖单 13   | Yedan 13     | 掖 478 | Ye 478  | 丹 340       | Dan 340   |
| N19 | 郑单 958  | Zhengdan 958 | 郑 58  | Zhen 58 | 昌 7-2       | Chang 7-2 |
| N20 | 中单 2 号  | Zhongdan 2   | Mo17  | 自 330   | Zi 330      |           |

附表2 玉米品种真实性鉴定96个InDel核心位点及引物信息

Table S2 Detailed information of the 96 InDel core loci and primers for maize variety genuineness identification

| 位点      | 染色体  | 物理位置              | InDel 序列       | 毛细管电泳引物序列（5'—3'）                                             | 产物      | 荧光           | 组别    | 浓度(μmol/L)    | KASP 引物序列（5'—3'）                                                                                                         |
|---------|------|-------------------|----------------|--------------------------------------------------------------|---------|--------------|-------|---------------|--------------------------------------------------------------------------------------------------------------------------|
| Locus   | Chr. | Physical location | InDel sequence | Capillary electrophoresis primer sequence                    | Product | Fluorescence | Group | Concentration | KASP primer sequence                                                                                                     |
| MIDEK01 | 1    | 3276318           | GTT            | F: CCCCTTCGTCAAGTCTGCATCC<br>R: GGACCTTCTGATAACTCGGGTGGCA    | 186/191 | FAM          | 1     | 20            | FAM: TATTTGCGGAATACTGTGAGGATGA<br>HEX: TTGCGGAATACTGTGAGGATGG<br>Common: CCCAGCATTTCAAACGCTCAGTCAC                       |
| MIDEK02 | 1    | 31744551          | GCGTTGCC       | F: CTGTAATAGGGAGCGAGTGGAATTG<br>R: AACTGACCAGGAGAGCAGAAGG    | 321/329 | ROX          | 2     | 30            | FAM: CCTTTACCAGAGATCCAACGCG<br>HEX: CCTTTACCAGAGATCCAACGCT<br>Common: TTTCTCGAGCTGTGAATCTCTTACTGTTA                      |
| MIDEK03 | 1    | 56227616          | CTAGCA         | F: TTGTTCTGTTCTCGGACGACCTT<br>R: ATCTCAACACTAGACAACGACTGCT   | 133/139 | FAM          | 5     | 20            | FAM: GTCCATAGGCAGTTTGCTAGCAC<br>HEX: GTCCATAGGCAGTTTGCTAGCAG<br>Common: GCGCTCACATCTCAACACTAGACAA                        |
| MIDEK04 | 1    | 94890565          | TCGCTTCGC      | F: GCTTATGATGAGCTGCTGCTGTTAC<br>R: CCTTCGTCTCTGTACTCCAGGCATA | 248/257 | FAM          | 2     | 20            | FAM: TGGACGGTCATAACAAGAGTCTAG<br>HEX: AATTGGACGGTCATAACAAGAGTCTAT<br>Common: GTTCAAATGGCATCTACTCGTTGTCAATT               |
| MIDEK05 | 1    | 148076589         | CTC            | F: CTGACTCAGTGTGCCTGTGGTTG<br>R: GCTGGTCTCGCAAGAACTGAAGAT    | 227/230 | ROX          | 2     | 20            | FAM: ACTTTAGTTTCAGTTCAGCTCTCC<br>HEX: CTACTTTAGTTTCAGTTCAGCTCTCA<br>Common: CATTGGCCTGCAAAAGCTCAGGAAA                    |
| MIDEK06 | 1    | 164507390         | CTCC           | F: TGATTAGGCAGTAGTTCGGTGTAGT<br>R: GCACTGGCAGCAACAGCATTATG   | 306/310 | FAM          | 5     | 25            | FAM: AAATAGAAAACCTCAAGATTTTGAACAGAGG<br>HEX: ATAAATAGAAAACCTCAAGATTTTGAACAGAGT<br>Common: GCTTTACATAGACAAAACCAGTTGCTTGTA |
| MIDEK07 | 1    | 212213176         | GTAACA         | F: TGAAGTGGAAGTGAAGTGGGG<br>R: CAGTTTGTGATCGGTGGCTTG         | 124/129 | FAM          | 3     | 20            | FAM: GTGAAGTGAATGACAGTGTTACT<br>HEX: GTGAAGTGAATGACAGTGTTACC<br>Common: TGAAGTGGAAGTGAAGTGGGG                            |

| 位点      | 染色体  | 物理位置              | InDel 序列       | 毛细管电泳引物序列（5'—3'）                                            | 产物      | 荧光           | 组别    | 浓度(μmol/L)    | KASP 引物序列（5'—3'）                                                                                              |
|---------|------|-------------------|----------------|-------------------------------------------------------------|---------|--------------|-------|---------------|---------------------------------------------------------------------------------------------------------------|
| Locus   | Chr. | Physical location | InDel sequence | Capillary electrophoresis primer sequence                   | Product | Fluorescence | Group | Concentration | KASP primer sequence                                                                                          |
| MIDEK08 | 1    | 253958296         | CGTAAAGC       | F: GTGTGACAACCGATAGAAGGACCAT<br>R: AAGCCACAAGCTCCTGCTTCAAT  | 248/255 | ROX          | 5     | 20            | FAM: ACCACTACAATCTTACTAGCGTAAAG<br>HEX: GTACCACTACAATCTTACTAGCGTAAAT<br>Common: TTCACCTATTCCCATAACATACCTGCATT |
| MIDEK09 | 1    | 279944612         | ATACTAAC       | F: TGGAGCCACGAAGCAGTCAG<br>R: GTTAGAGCAGAGACGCACTTGGT       | 178/186 | FAM          | 2     | 20            | FAM: GAGCAGAGACGCACTTGGTATG<br>HEX: AGAGCAGAGACGCACTTGGTATA<br>Common: GAAATCGACTGCTGTGCCTTCGTT               |
| MIDEK10 | 1    | 299827493         | CAAG           | F: CCGTCGTCAGAAATGCAGGCA<br>R: GTGAACTGCATTGCCGTAAACTGC     | 238/242 | ROX          | 1     | 20            | FAM: TGTATGTACCCTTTACCTAGAACAC<br>HEX: CTTGTATGTACCCTTTACCTAGAACAT<br>Common: GAGCAGTCATGTAACACACAAAGTGATT    |
| MIDEK11 | 2    | 5826845           | GAGTTAT        | F: ACTGGTCGTTGGGTAAGGTCACT<br>R: CGCTGATTGATAACACGCAAGGC    | 117/124 | FAM          | 2     | 20            | FAM: ACGCAAGGCTCGTAAGATAACTCA<br>HEX: CGCAAGGCTCGTAAGATAACTCG<br>Common: AACAAGTCCAGCAGCACTTTCGCAT            |
| MIDEK12 | 2    | 20612541          | AGCT           | F: GGTCTGCACTGGATGGGGAATG<br>R: TGAGTGCAATTCCTGGGTCT        | 160/163 | ROX          | 1     | 20            | FAM: AACTGGAAGTCAAGGAGTGTGCTA<br>HEX: CTGGAAGTCAAGGAGTGTGCTG<br>Common: GGCTTGGCAGCATGCAACGTGAT               |
| MIDEK13 | 2    | 52440769          | CTGGC          | F: GCCTGTTCAATGCACTAGTTCTAGC<br>R: CGCTGAAGATGAGCACTGGATGT  | 254/259 | FAM          | 3     | 20            | FAM: AGTACTACGTGTCATTTAGTCCAGG<br>HEX: AGTACTACGTGTCATTTAGTCCAGC<br>Common: GCTGGATTTTCGATCGAAAACACTCGTA      |
| MIDEK14 | 2    | 61294539          | TCCTGAAC       | F: CGATGAGATATGCCAACTACAGACG<br>R: GCAAGTCAGTGCCTAACAACCTAC | 319/327 | ROX          | 4     | 30            | FAM: CGACGAAGCAATAACTAGTCTGAA<br>HEX: GACGAAGCAATAACTAGTCTGAC<br>Common: GCTTAAGTGAAGTAAACCCTAAGCTCAAA        |
| MIDEK15 | 2    | 68910281          | GGAGAA         | F: ATTGCCAAGTACCAGCTCCTAACG<br>R: GCGGCTAAGGTCTTGTGCTCTG    | 152/158 | FAM          | 3     | 20            | FAM: GCCTAGGCGTGAGCATCTCCT<br>HEX: CCTAGGCGTGAGCATCTCCG<br>Common: CAAGTACCAGCTCCTAACGGACTTA                  |

| 位点      | 染色体  | 物理位置              | InDel 序列       | 毛细管电泳引物序列（5'—3'）                                            | 产物      | 荧光           | 组别    | 浓度(μmol/L)    | KASP 引物序列（5'—3'）                                                                                          |
|---------|------|-------------------|----------------|-------------------------------------------------------------|---------|--------------|-------|---------------|-----------------------------------------------------------------------------------------------------------|
| Locus   | Chr. | Physical location | InDel sequence | Capillary electrophoresis primer sequence                   | Product | Fluorescence | Group | Concentration | KASP primer sequence                                                                                      |
| MIDEK16 | 2    | 135475254         | GAG            | F: GCCTCTGTGGGTGCTACTGT<br>R: CTGCAACAGGTGCTTCTTTCTC        | 171/174 | ROX          | 3     | 20            | FAM: TGGTTCATCTTCTCCATCTCC<br>HEX: TGGTTCATCTTCTCCATCTCA<br>Common: AGCTCTAGTTATTGTTGAAG                  |
| MIDEK17 | 2    | 204285262         | GTT            | F: CGCCAAGATGGTAACCGCCTTC<br>R: AAGAAATACAAGCACCGAGGATGGG   | 312/317 | ROX          | 5     | 35            | FAM: AACAGCCACCGACCAAGTTAAACA<br>HEX: CAGCCACCGACCAAGTTAAACC<br>Common: CTGTTTTCACTTCCATTTCTGGATGTGAT     |
| MIDEK18 | 2    | 220528660         | CCA            | F: ACGGTGGATACGCTAATATAGTTGT<br>R: AGGCTAGGAGGACGACTGCTA    | 260/264 | FAM          | 5     | 20            | FAM: GAGCACTTATGCAGGAATCCACC<br>HEX: GAGCACTTATGCAGGAATCCACA<br>Common: AACAGCTCAAACCTTTGTTACTGCTCGAT     |
| MIDEK19 | 2    | 226983963         | TTC            | F: GAGAGGGAGGGAGGACGAGTG<br>R: GGTAGCTTGCGTTGAAGGTGATG      | 109/114 | FAM          | 1     | 20            | FAM: CTATACATAGAAGGAATCCTCCTCC<br>HEX: CTATACATAGAAGGAATCCTCTCA<br>Common: CACACATCAGGCAATGCAGGCG         |
| MIDEK20 | 2    | 235397586         | GTTGCAGTAG     | F: GCGTCTACCGTAGCTGGAGGAT<br>R: GCTATCTGCATTTCGGATCTGGTCTG  | 132/142 | ROX          | 2     | 20            | FAM: ATCTGGTCTGACCTAGTTACAACC<br>HEX: GATCTGGTCTGACCTAGTTACAACCT<br>Common: AAGTACATGGTTGTACACCTGATAGCTTT |
| MIDEK21 | 3    | 6945444           | GAT            | F: TGGAAAGCCCTACCTGGTCAAAG<br>R: CCGTACACGTCTGACTGAGGAG     | 84/88   | FAM          | 1     | 20            | FAM: TAGTGTTCCCTCAGCATTACATCA<br>HEX: AGTGTTCCCTCAGCATTACATCG<br>Common: GTAGTAGCAACAGGGACCTGGTAAA        |
| MIDEK22 | 3    | 42890326          | ATC            | F: AACGATGTGAGCAGGGAACCTACAC<br>R: TTCTTGCCACTCCAACAGGATTCT | 219/216 | FAM          | 5     | 20            | FAM: GATTCTAGCGTTGCAGACTTGATG<br>HEX: CTAGCGTTGCAGACTTGATA<br>Common: TACTCTAGCACCAAAAAGATGTTGCCAA        |
| MIDEK23 | 3    | 69957289          | ATTCT          | F: CCACGAATGCCTACATCTAGCC<br>R: CAGGATCGTCGGTAGCAAGTGA      | 281/287 | ROX          | 5     | 20            | FAM: CAGTCCATATGCCAGGGATTCTAT<br>HEX: AGTCCATATGCCAGGGATTCTAC<br>Common: GCTAGTTCAGAGATGTGGGTTATATTGTA    |

| 位点      | 染色体  | 物理位置              | InDel 序列       | 毛细管电泳引物序列（5'—3'）                                             | 产物      | 荧光           | 组别    | 浓度(μmol/L)    | KASP 引物序列（5'—3'）                                                                                                   |
|---------|------|-------------------|----------------|--------------------------------------------------------------|---------|--------------|-------|---------------|--------------------------------------------------------------------------------------------------------------------|
| Locus   | Chr. | Physical location | InDel sequence | Capillary electrophoresis primer sequence                    | Product | Fluorescence | Group | Concentration | KASP primer sequence                                                                                               |
| MIDEK24 | 3    | 117281491         | CTC            | F: ACACGAGAAGCAAGACATACAGAGG<br>R: AACCAACATGACAGTGCCATCTAAG | 380/383 | FAM          | 2     | 40            | FAM: CACCGCCTTATGCCCTACTCC<br>HEX: ACACCGCCTTATGCCCTACTCT<br>Common: CGGAGGAAAGGAAGTATGTGTGGTT                     |
| MIDEK25 | 3    | 141006440         | GGC            | F: GCTTCCAGAAGACTTCCACGACAT<br>R: GGCATCGGCTCCAACGTGTTCT     | 212/215 | FAM          | 5     | 20            | FAM: CACCTGCGACAGCACCG<br>HEX: CCTCACCTGCGACAGCACCA<br>Common: CGTGATGCTGTCGTCCTCAAAGTA                            |
| MIDEK26 | 3    | 154056531         | GTC            | F: GCTACTTTCTGTGATCGTCTTTGCT<br>R: GGCAGTGTGATCTTGGTGATGTAAT | 155/158 | ROX          | 5     | 20            | FAM: CAGATAAAATTAAAGGCAGTTATTTAGTCGT<br>HEX: AGATAAAATTAAAGGCAGTTATTTAGTCGC<br>Common: GGGCAGTGTGATCTTGGTGATGTAA   |
| MIDEK27 | 3    | 168345833         | TTG            | F: AAGACCATCTTCCATTGGTGACGAT<br>R: CTCTGGCTGCTTCTCCTGAGTTG   | 230/233 | ROX          | 3     | 20            | FAM: CGAGTTGCACTTCCTAGCCTTTG<br>HEX: CGAGTTGCACTTCCTAGCCTTTA<br>Common: GATGAGCAGAAAGCTCAGCTATCCAT                 |
| MIDEK28 | 3    | 187234741         | CTT            | F: GCTGCTGGAACACCCAAC TTG<br>R: GGCTGATGTCATCCTCGTCTTG TG    | 198/201 | FAM          | 1     | 20            | FAM: CTGGA ACTCAAGGAGTGTGCTA<br>HEX: CTGGA ACTCAAGGAGTGTGCTG<br>Common: CAGCATGCAACGTGATGGCCAC                     |
| MIDEK29 | 3    | 204052253         | GTTTT          | F: ATGGTTGTCTGGTTGATTGATGGGT<br>R: CCGCTGTTGCTCACAAGGTTCT    | 288/293 | FAM          | 2     | 25            | FAM: GGAAACTGCAAAACATTA AAAGTATACAGTT<br>HEX: GAAACTGCAAAACATTA AAAGTATACAGTG<br>Common: GAATACTCGAACGCTTAGGTCCGTA |
| MIDEK30 | 3    | 225557821         | CTC            | F: ACAAAGCCTTAATCCTCTCCAAACG<br>R: GCCTTGTTTCTTTATCGGGTCATCA | 240/243 | FAM          | 5     | 20            | FAM: CTGCCACGTCGACA ACTTCTC<br>HEX: TCTGCCACGTCGACA ACTTCTA<br>Common: ATCAACCATCTGTTTTTGTTCCTGACGAT               |
| MIDEK31 | 4    | 14749162          | AATAT          | F: AGGCGATGTTCTGAAACACAGTAGC<br>R: GCCGAGTAACCGAAGAAGAGAAGTG | 226/231 | FAM          | 2     | 20            | FAM: CAGTAGCGGCCAGAGAAGCAATA<br>HEX: AGTAGCGGCCAGAGAAGCAATG<br>Common: CCATTGGCCTGCTCAACAAACACAT                   |

| 位点      | 染色体  | 物理位置              | InDel 序列       | 毛细管电泳引物序列（5'—3'）                                           | 产物      | 荧光           | 组别    | 浓度(μmol/L)    | KASP 引物序列（5'—3'）                                                                                             |
|---------|------|-------------------|----------------|------------------------------------------------------------|---------|--------------|-------|---------------|--------------------------------------------------------------------------------------------------------------|
| Locus   | Chr. | Physical location | InDel sequence | Capillary electrophoresis primer sequence                  | Product | Fluorescence | Group | Concentration | KASP primer sequence                                                                                         |
| MIDEK32 | 4    | 51895944          | CTC            | F: ACGAGCACCCTACTTGGCAATG<br>R: TCTGTTCTTCTCTCCTCCGCTTCTC  | 286/289 | ROX          | 4     | 20            | FAM: CAACAACCTTTACGAGATTGGAGG<br>HEX: GCTCAACAACCTTTACGAGATTGGAGA<br>Common: CTAGCTTATCTTCTCTTTTCGAGTGCTTAT  |
| MIDEK33 | 4    | 62592185          | CTT            | F: TGCCCACCCTCTGTTGACG<br>R: GGAGGACAGAAGCCATCGGATACG      | 94/98   | FAM          | 1     | 20            | FAM: GGTGGATGAATCAAGTGAATAAAGAGA<br>HEX: GTGGATGAATCAAGTGAATAAAGAGG<br>Common: TCCCTAGTCATGAGCAAACCTTGACAAA  |
| MIDEK34 | 4    | 78345745          | CCT            | F: TGCTGAATAGTGATTGGGCTGAAAG<br>R: TGTGCTCACTCGGTTGTGTCATT | 233/236 | FAM          | 5     | 20            | FAM: TCTGCATCGAGATCCCTCCC<br>HEX: CTTCTGCATCGAGATCCCTCCT<br>Common: GTGTCATTTCAGGACTTGAGAAAGAAAAT            |
| MIDEK35 | 4    | 148623895         | TCT            | F: AGGGCAGCTCAATAGGGGA<br>R: GGTGTTAAGCCCAACGAGAAA         | 225/228 | ROX          | 4     | 20            | FAM: GATTTATGGTTAACACAAGAA<br>HEX: GATTTATGGTTAACACAAGAG<br>Common: ACATCATACACCGTAATTG                      |
| MIDEK36 | 4    | 179690147         | GTG            | F: TCTCAGCCACAGCCACAGCA<br>R: AGCCAGCCGTCCCGAATAGTT        | 97/100  | FAM          | 5     | 20            | FAM: AGCCACAGCAGAGGACTAGTG<br>HEX: CAGCCACAGCAGAGGACTAGTA<br>Common: GTCTCTTTGTCATGGACGAACGCAT               |
| MIDEK37 | 4    | 197562053         | CTTGCTTTG      | F: GGCGAGTGGCAAGCAAATGAG<br>R: GCAAGTCAAGTCAAGGAGGCTAGG    | 238/248 | ROX          | 4     | 20            | FAM: CCACCTCAGTTCAGTTGCATCC<br>HEX: ATCCACCTCAGTTCAGTTGCATCA<br>Common: AACAAATTTGCATCGGTATCATTAGCCTTT       |
| MIDEK38 | 4    | 208032245         | TAG            | F: CCAGCATGTGAGCCTTCTGAACT<br>R: CTAGAGACGAGGATTCCAGGTTAGC | 270/273 | ROX          | 2     | 20            | FAM: GTTTGATCTTTGAAGTACTAAGGCGTTA<br>HEX: TGATCTTTGAAGTACTAAGGCGTTG<br>Common: TCCGTGTACTAAATGCTTTTGTTCAGATA |
| MIDEK39 | 4    | 217131043         | CAC            | F: GGCACTCTTCAGCAAGTTGTTGAT<br>R: CCTCCTCCTCCTCTTATCCTCTC  | 276/279 | ROX          | 3     | 20            | FAM: ATCCATCTGCATCCGGTGTGG<br>HEX: TATCCATCTGCATCCGGTGTGT<br>Common: AAAGAAAACGTCTCTTTTACCGGTTACTAA          |

| 位点      | 染色体  | 物理位置              | InDel 序列       | 毛细管电泳引物序列（5'—3'）                                             | 产物      | 荧光           | 组别    | 浓度(μmol/L)    | KASP 引物序列（5'—3'）                                                                                          |
|---------|------|-------------------|----------------|--------------------------------------------------------------|---------|--------------|-------|---------------|-----------------------------------------------------------------------------------------------------------|
| Locus   | Chr. | Physical location | InDel sequence | Capillary electrophoresis primer sequence                    | Product | Fluorescence | Group | Concentration | KASP primer sequence                                                                                      |
| MIDEK40 | 4    | 241305985         | GTGC           | F: AGCCAGCCAAATCCTAAACGAAG<br>R: GCAGTACCCGAAGCAGGAAATC      | 121/124 | FAM          | 1     | 20            | FAM: TAGTGTTCCTTCAGCATTACATCA<br>HEX: GTGTTCTTCAGCATTACATCG<br>Common: GTAGCAACAGGGACCTGGTAAATAG          |
| MIDEK41 | 5    | 3948109           | ATT            | F: TTTCCAGTGTCTTGCCAGTTTGC<br>R: ATCAACGTCCTCCGATGCTTCTC     | 144/147 | FAM          | 1     | 20            | FAM: ATGTTTAGACGTCCGAGGCACTA<br>HEX: GTTTAGACGTCCGAGGCACTC<br>Common: TTTTAAAAGGCATCAGGCAGGTGCTAA         |
| MIDEK42 | 5    | 16523007          | TTG            | F: TGTCACGACGAATGGAGAGGATG<br>R: ACGTGTTGCCAGGCTAATCATAC     | 170/173 | ROX          | 4     | 20            | FAM: CACGACGAATGGAGAGGATGATT<br>HEX: CACGACGAATGGAGAGGATGATC<br>Common: CGGCTATTAGCAGTGACGAGTGATA         |
| MIDEK43 | 5    | 20332540          | CGT            | F: AAAGGCAGCAGAAATTGAGTGACAG<br>R: CTCCAGCAAGAATTACAAGCGAACG | 117/119 | ROX          | 5     | 20            | FAM: CAGAAATTGAGTGACAGGACGAC<br>HEX: AGCAGAAATTGAGTGACAGGACGAT<br>Common: CGCGTCCTCTTAACATTTCTCTCGAT      |
| MIDEK44 | 5    | 52532552          | CATCTTCG       | F: AACGATGCTCCTGTGTTTCATTGC<br>R: CCACCTCTTCCGCTCAGACTTTG    | 223/231 | FAM          | 3     | 20            | FAM: GTGAGGTTGAGGCCAAAGATGC<br>HEX: AGTGAGGTTGAGGCCAAAGATGT<br>Common: CTGGTCGCCTGCACAGACGAAT             |
| MIDEK45 | 5    | 81193690          | AGC            | F: AAGGCATCAGGCAGGTGCTAAG<br>R: CGCAGGTGACCGTGGTGATC         | 207/210 | FAM          | 1     | 20            | FAM: GAACTGCTAGGATTAAATTAAGGTGC<br>HEX: GAACTGCTAGGATTAAATTAAGGTGG<br>Common: GAAGTTACGGTAATTGTCTGTTGTTCG |
| MIDEK46 | 5    | 132344547         | AAGG           | F: CTTTCTTTCTGGAGCGGAGG<br>R: TGGTACAGAGAAAGAAGAAAGCA        | 255/259 | ROX          | 3     | 25            | FAM: TCAATCTATTACCAATTCTTC<br>HEX: TCAATCTATTACCAATTCTTA<br>Common: ATATATATGGTTGATGGAGC                  |
| MIDEK47 | 5    | 172134573         | ATT            | F: TTATTAAGTGGTGTGCCTGCTTGC<br>R: AGCCTAGAGGTCTGAGGTCTTACAA  | 210/214 | ROX          | 4     | 20            | FAM: GGTGTGCCTGCTTGCCATTATT<br>HEX: GGTGTGCCTGCTTGCCATTATA<br>Common: GTACATCAAGTGCATAGTGCATACAGATT       |

| 位点      | 染色体  | 物理位置              | InDel 序列       | 毛细管电泳引物序列（5'—3'）                                            | 产物      | 荧光           | 组别    | 浓度(μmol/L)    | KASP 引物序列（5'—3'）                                                                                          |
|---------|------|-------------------|----------------|-------------------------------------------------------------|---------|--------------|-------|---------------|-----------------------------------------------------------------------------------------------------------|
| Locus   | Chr. | Physical location | InDel sequence | Capillary electrophoresis primer sequence                   | Product | Fluorescence | Group | Concentration | KASP primer sequence                                                                                      |
| MIDEK48 | 5    | 187074774         | CGAT           | F: AGGACGAGAGGGCAGACGAGAT<br>R: CAGGGAGCGGGAGGAAGACTAAAG    | 248/252 | FAM          | 5     | 20            | FAM: ACGAGTACTCGATTCTTTCTCTCGA<br>HEX: CGAGTACTCGATTCTTTCTCTCGC<br>Common: CAGCTTTCTTCGTTTGCGTTCCACTT     |
| MIDEK49 | 5    | 210933889         | ACGCA          | F: AATGGTTCCAGTGCATGGCAATTC<br>R: GCTTGTGTAGATGTTTCGGGAGGTA | 126/131 | FAM          | 5     | 20            | FAM: TCCATTTGGCGACCACGCAAC<br>HEX: CCATTTGGCGACCACGCAAG<br>Common: GCTTGTGTAGATGTTTCGGGAGGTA              |
| MIDEK50 | 5    | 216127017         | GAAGA          | F: TCACATCCTCTCAGATCCGCACAG<br>R: ATGGTGACAATGGCAAGCCTGATAT | 180/185 | FAM          | 5     | 20            | FAM: AGAGTGTGTATCCAACATGGAAGAG<br>HEX: AAGAGTGTGTATCCAACATGGAAGAT<br>Common: GGCTGCAACTGACAGGCCCAAT       |
| MIDEK51 | 6    | 15562532          | AAG            | F: GAGAAGCTTGCCATCCATGC<br>R: GATGGGGGTCACCTCTGGTA          | 93/100  | FAM          | 5     | 20            | FAM: TGGTAGGGAGTTGAGCTCCTTC<br>HEX: TGGTAGGGAGTTGAGCTCCTTA<br>Common: CCGACGTTCGCCCTCTACGA                |
| MIDEK52 | 6    | 31602488          | CCG            | F: TGCTACTTGTCGTGTTCTGCTCCT<br>R: CACCAGTGACTCCATCGTTACCG   | 328/331 | ROX          | 5     | 30            | FAM: GTCCTTCAAGAGGAGGCAGGC<br>HEX: GTCCTTCAAGAGGAGGCAGGT<br>Common: CAGGCCGCTAGAGAGACCTTGAT               |
| MIDEK53 | 6    | 79625669          | CTCTG          | F: ACATCAAGCACCCACAGAAACAG<br>R: GCGTGGAATCGGTGGATGAATC     | 238/241 | FAM          | 1     | 20            | FAM: GGTGGATGAATCAAGTGAATAAAGAGA<br>HEX: GTGGATGAATCAAGTGAATAAAGAGG<br>Common: CTCCCTAGTCATGAGCAAACCTTGAT |
| MIDEK54 | 6    | 92473763          | TCATCTCA       | F: TCTGTTGATACTGTGCCTCCGAATC<br>R: GCGTCATGTTCTGTTTGCTGCTT  | 206/214 | FAM          | 2     | 20            | FAM: CGACGTTTGAACCTACGTAGATGAT<br>HEX: CGACGTTTGAACCTACGTAGATGAA<br>Common: CTGTGCCTCCGAATCGGCTGTT        |
| MIDEK55 | 6    | 95877496          | CAATGAGC       | F: CAGTGAGACGACGACGGAACA<br>R: AATACTTCTGCCAACGGTCAATTCG    | 192/200 | FAM          | 5     | 20            | FAM: GATGAGCTTCCTTGTGAATCATTGG<br>HEX: GATGAGCTTCCTTGTGAATCATTGC<br>Common: GTGAGACGACGACGGAACAGCTT       |

| 位点      | 染色体  | 物理位置              | InDel 序列       | 毛细管电泳引物序列（5'—3'）                                            | 产物      | 荧光           | 组别    | 浓度(μmol/L)    | KASP 引物序列（5'—3'）                                                                                           |
|---------|------|-------------------|----------------|-------------------------------------------------------------|---------|--------------|-------|---------------|------------------------------------------------------------------------------------------------------------|
| Locus   | Chr. | Physical location | InDel sequence | Capillary electrophoresis primer sequence                   | Product | Fluorescence | Group | Concentration | KASP primer sequence                                                                                       |
| MIDEK56 | 6    | 105156882         | ATC            | F: TGTGAAGGAGTGCTACGAGGTG<br>R: ATGCTTGTAGAATAATGCGGTTGAG   | 156/159 | FAM          | 2     | 20            | FAM: GACACTTATGTCACGTCCTCTG<br>HEX: GACACTTATGTCACGTCCTCTC<br>Common: GCTGTTGATTAGGCGATATGACTACATAA        |
| MIDEK57 | 6    | 124329446         | ATTG           | F: AGAAAGAGCATGACCGTTGAACC<br>R: GTGCCAGCGTTAGAGTGACTG      | 224/228 | FAM          | 1     | 20            | FAM: CCCGTAAGTATTATCCACTGCTG<br>HEX: CTCCCGTAAGTATTATCCACTGCTT<br>Common: AGCAGAAGTCAAACATATTACGAACCAG     |
| MIDEK58 | 6    | 138080350         | GCCACCT        | F: GCAAGCTGGCTTAGGGTAAGTGTT<br>R: TGGAGGGAGACTACAGTGGTTTG   | 207/214 | ROX          | 3     | 20            | FAM: TATCCCTCGCCATGAAAGGCA<br>HEX: ATCCCTCGCCATGAAAGGCC<br>Common: GCAAGCTGGCTTAGGGTAAGTGTTA               |
| MIDEK59 | 6    | 142839510         | TTCTGT         | F: GGCCTTCAGTTATTCACGCACAGA<br>R: CGAGAAGCATACCAGAGCACACA   | 229/234 | FAM          | 5     | 20            | FAM: GCGATCGAGGACTTCGTTCTGTT<br>HEX: CGATCGAGGACTTCGTTCTGTG<br>Common: CATCCAGCAAACAACTCGAGAAGCAT          |
| MIDEK60 | 6    | 165326166         | TCG            | F: GGGCAAGAGCACTGATGAAGGAT<br>R: TGTGCGTTCCACGCAGCAAT       | 109/112 | FAM          | 3     | 20            | FAM: TCGCTATTGATATTCTGTATGAATCATC<br>HEX: CGCTATTGATATTCTGTATGAATCATG<br>Common: ATCTCTCGGACTCGGACAGACTAAA |
| MIDEK61 | 7    | 1227237           | CTGA           | F: TACGAACCAGGCAGAACCAAGC<br>R: GTGTGGGAAAGCAAGGTGTGG       | 103/106 | ROX          | 1     | 20            | FAM: ATTGATCCAGTCAGTCAGTCAGT<br>HEX: ATTGATCCAGTCAGTCAGTCAGG<br>Common: CGTTGCGACAAAGGAGCATCAACAT          |
| MIDEK62 | 7    | 27324615          | ATT            | F: CCACGCACGGGATAAGGATAAACAC<br>R: GGCAGAGGCTTACGAGCTGGTATA | 293/296 | ROX          | 2     | 20            | FAM: GATGACTTCCGTACCGAGAGCAT<br>HEX: ATGACTTCCGTACCGAGAGCAC<br>Common: GACTAGCATGTTTATGCTGAATTGCCTT        |
| MIDEK63 | 7    | 94052417          | TCCGTAC        | F: ACTGGCCGGGTTCTAAACTAC<br>R: TCATGTCTCTCTACACCTGGC        | 132/139 | ROX          | 4     | 20            | FAM: CAAGGTGCATGCATACGGAG<br>HEX: CAAGGTGCATGCATACGGAC<br>Common: CTACTCCAGCATACCAGCAC                     |

| 位点      | 染色体  | 物理位置              | InDel 序列       | 毛细管电泳引物序列（5'—3'）                                               | 产物      | 荧光           | 组别    | 浓度(μmol/L)    | KASP 引物序列（5'—3'）                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|---------|------|-------------------|----------------|----------------------------------------------------------------|---------|--------------|-------|---------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Locus   | Chr. | Physical location | InDel sequence | Capillary electrophoresis primer sequence                      | Product | Fluorescence | Group | Concentration | KASP primer sequence                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| MIDEK64 | 7    | 117550771         | TTG            | F: CGTCAGGCAGTGTGGCATCAAT<br>R: TGTCAATTCTCGTCCGACAATTC        | 155/158 | ROX          | 3     | 20            | FAM: AATTTAGAAATTTTGTAAAGGTTGTTGTGTCTT<br>HEX: TAGAAATTTTGTAAAGGTTGTTGTGTCTG<br>Common: CGTCCGACAATTCTGGGTACCATAA<br>FAM: GTGCTAATTTGAGCATCACCGACTA<br>HEX: GCTAATTTGAGCATCACCGACTG<br>Common: GACGTCACTATTCCCCTCAACAATT<br>FAM: TAGTACGCTGATATTGACCAGCCT<br>HEX: GTACGCTGATATTGACCAGCCC<br>Common: GCACACACAGTTCGTCAGTTCCAAA<br>FAM: AACTTGCAGCAGTGGCGTCAG<br>HEX: AACTTGCAGCAGTGGCGTCAC<br>Common: CGCCTGTGAATATTCTGCGCACATT<br>FAM: GGAATAATATGTAAAGAAGCAGAAGCAGA<br>HEX: GAATAATATGTAAAGAAGCAGAAGCAGC<br>Common: GGCAGATCAAAAGGTACCCCTACAT<br>FAM: CAGCAGCAGTGAGTGAGCTATAT<br>HEX: AGCAGCAGTGAGTGAGCTATAG<br>Common: GTAAATTTGTTATCGTCGTTGCTTTAAACAC<br>FAM: CATGTGTTGGTACACGCGAAGAA<br>HEX: CATGTGTTGGTACACGCGAAGAG<br>Common: CATGCCGTGTCATCGCACTCCTT<br>FAM: CCACTTTTGCAGAGGGGTACAATA<br>HEX: CACTTTTGCAGAGGGGTACAATC<br>Common: GAGTGTCCAACAACAGTGCCCTTTC |
| MIDEK65 | 7    | 143370389         | CTAGCTCGG      | F: CGGATGGATCTTGGCGTGCTAAT<br>R: CGAACCGAGAGCCGAAC TTGT        | 201/210 | ROX          | 2     | 20            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| MIDEK66 | 7    | 157933328         | GGA            | F: ACACAGTTCGTCAGTTCCAAATTC<br>R: GTAGACAACGCAAGCACAGCAA       | 162/165 | FAM          | 5     | 20            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| MIDEK67 | 7    | 159207382         | GCGTCAGT       | F: GACAATTGACAACCATCCGTCCATC<br>R: AGAGGCAGACCGACAGACAGAG      | 184/192 | FAM          | 3     | 20            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| MIDEK68 | 7    | 170068503         | TTGCTT         | F: ATTCAATGTGAACCAACAGAGACAG<br>R: TCAATTCCAACGAAACAAACGG      | 231/238 | ROX          | 5     | 20            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| MIDEK69 | 7    | 174461807         | TTG            | F: TAGAGCGTTCGGATCAGTCAGC<br>R: GCGTGTGTGCGGGATTAGTTGAG        | 115/120 | ROX          | 1     | 20            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| MIDEK70 | 8    | 4282465           | GAA            | F: CTCAAGGCAGGCGGAGTTATGTAG<br>R: ATCATCCTGTGTCGCGTGCATC       | 177/181 | ROX          | 5     | 20            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| MIDEK71 | 8    | 8859947           | TATGC          | F: TAGGTAGCGTTGCGACAAAGGAG<br>R: GTTCTTAAGGCTCAGACTCGTCGTTCTTC | 133/137 | ROX          | 1     | 20            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |

| 位点      | 染色体  | 物理位置              | InDel 序列       | 毛细管电泳引物序列（5'—3'）                                             | 产物      | 荧光           | 组别    | 浓度(μmol/L)    | KASP 引物序列（5'—3'）                                                                                                 |
|---------|------|-------------------|----------------|--------------------------------------------------------------|---------|--------------|-------|---------------|------------------------------------------------------------------------------------------------------------------|
| Locus   | Chr. | Physical location | InDel sequence | Capillary electrophoresis primer sequence                    | Product | Fluorescence | Group | Concentration | KASP primer sequence                                                                                             |
| MIDEK72 | 8    | 15572396          | AAT            | F: CTGTTGAAAGGTGCAGTGGG<br>R: CGGGCATGGCCTAGAACTA            | 241/244 | ROX          | 3     | 20            | FAM: AACTTTACATCTACTACTTA<br>HEX: AACTTTACATCTACTACTTG<br>Common: TGAACAATGCAGATAACAGT                           |
| MIDEK73 | 8    | 61800156          | CTAG           | F: ATTGAGGTTCCACTCTGTCTGTTCC<br>R: TGGGAGTAAAGGTCTCTCAGGTCTG | 270/274 | FAM          | 5     | 25            | FAM: AGATCTTAACAGCTATTAGCTACTAGC<br>HEX: TAGATCTTAACAGCTATTAGCTACTAGT<br>Common: ATACATGTGCATTTGGTATTGTCCTTGTTT  |
| MIDEK74 | 8    | 95291473          | CCAC           | F: TCATGTGACGGTAGGCTTACTATGC<br>R: TGAGAGGGAGTTGTCTTGTTGACT  | 157/161 | FAM          | 5     | 20            | FAM: CCACATAGTATCATCACATCCATCC<br>HEX: ATCCACATAGTATCATCACATCCATCT<br>Common: GAGTGTGGTGTGTTTAGATATGAGATGAT      |
| MIDEK75 | 8    | 121561302         | AACAT          | F: ATCCTTTCCACAAGCCTCACTCAT<br>R: CCACCACCAATCCAACGTATTCTAG  | 326/331 | FAM          | 3     | 35            | FAM: CATCGAAATAAACTGAATGTGTAACCCA<br>HEX: CGAAATAAAACTGAATGTGTAACCCG<br>Common: GGAAATGTACCGAGAAACCAATTCTGTTA    |
| MIDEK76 | 8    | 130526079         | TTGGT          | F: CAGGATGCTTCCATTGCTCACC<br>R: GTGGTTGCGGTTAGTGTTCCTTC      | 147/150 | ROX          | 1     | 20            | FAM: CTATTGATCCAGTCAGTCAGTCAGT<br>HEX: TTGATCCAGTCAGTCAGTCAGG<br>Common: GTAGCGTTGCGACAAAGGAGCATC                |
| MIDEK77 | 8    | 154273285         | TTCAATATC      | F: AGAGCCTAGAGCAATCCCAAACAC<br>R: GGAACAGAGGGTGGTATGAGAGAGT  | 258/250 | FAM          | 5     | 20            | FAM: AATGCAACATAGCAAATTTAACCATGTTCA<br>HEX: GCAACATAGCAAATTTAACCATGTTCC<br>Common: GGTATGAGAGAGTTAGATAGAGAGATGAA |
| MIDEK78 | 8    | 172455707         | AAG            | F: ACAGCACCAAAGGAAGAGAGCAAT<br>R: CACATTGAGCACAAAGCACAGACC   | 214/218 | ROX          | 5     | 20            | FAM: GGTCAGTGTAGCAGTAGATCTTC<br>HEX: AGGGTCAGTGTAGCAGTAGATCTTA<br>Common: GTAGGGCCAGCCAATATACGAGAAA              |
| MIDEK79 | 9    | 7120375           | CATG           | F: GTACTTCGATTGGCACGGAACAAG<br>R: TGCTGCTGGGATAAACTATTCTGGT  | 154/158 | ROX          | 4     | 20            | FAM: ATTGGCACGGAACAAGCCATGC<br>HEX: GGCACGGAACAAGCCATGT<br>Common: GATTGATGACGGGCGTTTCACCATT                     |

| 位点      | 染色体  | 物理位置              | InDel 序列       | 毛细管电泳引物序列（5'—3'）                                               | 产物      | 荧光           | 组别    | 浓度(μmol/L)    | KASP 引物序列（5'—3'）                                                                                                      |
|---------|------|-------------------|----------------|----------------------------------------------------------------|---------|--------------|-------|---------------|-----------------------------------------------------------------------------------------------------------------------|
| Locus   | Chr. | Physical location | InDel sequence | Capillary electrophoresis primer sequence                      | Product | Fluorescence | Group | Concentration | KASP primer sequence                                                                                                  |
| MIDEK80 | 9    | 13761557          | AGCACTGA       | F: GCGGCAGCATTGTTATCCAAAGT<br>R: GTTCTTGAGCAACCTGATGTGTAGT     | 165/173 | ROX          | 2     | 20            | FAM: AAACCTTGAAGTGGTACTGGGCTT<br>HEX: ACTTGGAAGTGGTACTGGGCTG<br>Common: TTATCCAAAGTAACCTCGAGTCAGACAT                  |
| MIDEK81 | 9    | 23269728          | GGTA           | F: CCTGGTAGGAGATGTTGTGGATGC<br>R: TCGTCTGGTGGTGGTGCTTCT        | 112/116 | ROX          | 4     | 20            | FAM: ATGCAGAAAGCGGTCTGGTAGG<br>HEX: GATGCAGAAAGCGGTCTGGTAGT<br>Common: GACTGCATGTCTGTCTGACCATCTT                      |
| MIDEK82 | 9    | 39739271          | CGTC           | F: GCCGACCACATTTAAGATGCTCTG<br>R: GTTCTTTGCTCGGTATTGGCGTCGTAAC | 175/179 | ROX          | 1     | 20            | FAM: TGA CTGAGGAGTGAGGAGGG<br>HEX: CTGACTGAGGAGTGAGGAGGA<br>Common: TACCTGGTCAAAGGCCTCCGTG                            |
| MIDEK83 | 9    | 99356793          | TGG            | F: TCAGGTGGTCAGCTCTTGGTTAGT<br>R: GCAGGTGCGGAATGTGGACAT        | 208/211 | FAM          | 3     | 20            | FAM: ACTTATTTATAATGTTGGCAGATTACTTGG<br>HEX: ATACTTATTTATAATGTTGGCAGATTACTTGT<br>Common: GAATGTGGACATGGCAAGAAATGAGATTA |
| MIDEK84 | 9    | 128731094         | AAT            | F: CCAGAGCAGAGCAGTCATGTAAC<br>R: GCTCACTTGGGCCACACTTCTTC       | 222/226 | ROX          | 1     | 20            | FAM: GACTTTAAATACTTGATGAAACATATAGGAAT<br>HEX: GACTTTAAATACTTGATGAAACATATAGGAAG<br>Common: GTGCATCGGTGTTCCACCTCCTT     |
| MIDEK85 | 9    | 131779509         | TCACCGG        | F: TCGCAACAAGCACCACGTCTC<br>R: TGGCATGAATACAAGCAGGATGGAA       | 313/320 | ROX          | 3     | 40            | FAM: AAAGGAAATCGAGCATTACCCGG<br>HEX: AAAGGAAATCGAGCATTACCCGC<br>Common: TTTT TGAGGACATATATCAGGTGCGGTA                 |
| MIDEK86 | 9    | 139138239         | ATA            | F: CAAGGACAAGCTGGAAGTGCGAAT<br>R: CAGACGGCGTCGAGACTCTACT       | 95/98   | FAM          | 2     | 20            | FAM: GGAAGTGCGAATGGTCGATATAATA<br>HEX: GGAAGTGCGAATGGTCGATATAATG<br>Common: GTTCACCTCATATAAGCCGCTCCAT                 |
| MIDEK87 | 9    | 149649122         | ATAAT          | F: GGACGAGTCAGACAGCTTCCAC<br>R: GAGACAAGACGAGCAGAGCCATC        | 102/107 | ROX          | 5     | 20            | FAM: ACGAGCAGAGCCATCGCATTATA<br>HEX: CGAGCAGAGCCATCGCATTATG<br>Common: GATCGACTGGGACTCGATACTGATT                      |

| 位点      | 染色体  | 物理位置              | InDel 序列       | 毛细管电泳引物序列（5'—3'）                                             | 产物      | 荧光           | 组别    | 浓度(μmol/L)    | KASP 引物序列（5'—3'）                                                                                           |
|---------|------|-------------------|----------------|--------------------------------------------------------------|---------|--------------|-------|---------------|------------------------------------------------------------------------------------------------------------|
| Locus   | Chr. | Physical location | InDel sequence | Capillary electrophoresis primer sequence                    | Product | Fluorescence | Group | Concentration | KASP primer sequence                                                                                       |
| MIDEK88 | 10   | 10198756          | GTAC           | F: CACCTGAACCACTCCCTCTG<br>R: CGAACGCTTCAACTTTCAGCA          | 268/272 | ROX          | 4     | 20            | FAM: CATGACACGATTACTACACG<br>HEX: CATGACACGATTACTACACT<br>Common: CTAAAAACTGGCTAGGAATT                     |
| MIDEK89 | 10   | 26356835          | GTGAG          | F: TGGAGGCACAGAGAGAGTACA<br>R: ACAGTGAAAGGATGCTGACCAA        | 297/302 | ROX          | 3     | 20            | FAM: ACTGTTAAGATGACCTCACC<br>HEX: ACTGTTAAGATGACCTCACT<br>Common: TTGAAATGCCATTAAGCTTTG                    |
| MIDEK90 | 10   | 58404418          | AAATT          | F: GGAACCTGAGTGAAGAAGCCATC<br>R: GTTTACAGGGAACCACAGTGCTACG   | 255/258 | ROX          | 1     | 20            | FAM: CGATTTGAAAAATTAGACCAGAGAGC<br>HEX: ACGATTTGAAAAATTAGACCAGAGAGA<br>Common: GTCGACCCCATCGAACTAGTTTGAC   |
| MIDEK91 | 10   | 85606772          | TTAA           | F: CCATGCCTTCATCTTCCACCAAGT<br>R: GGAATCGTTGGCACCGTAGAATCT   | 137/141 | ROX          | 3     | 20            | FAM: CGAGATGACCAATCAACGTGGTTAAT<br>HEX: GAGATGACCAATCAACGTGGTTAAG<br>Common: CGTAGAATCTAACGTGTACATCATCGTTT |
| MIDEK92 | 10   | 86536675          | TAACAT         | F: GCCAGCACAACTGTAGTTTGAAAAG<br>R: AGAGATGGACGCCATTGCTTCATT  | 294/300 | FAM          | 3     | 25            | FAM: GAATTTTAAATGTAGGCATGTGTTAA<br>HEX: GCTGAATTTTAAATGTAGGCATGTGTTAT<br>Common: GAGCGACACGTTTATCGGCAACAAT |
| MIDEK93 | 10   | 90829383          | GAG            | F: ACCTCAGGTCCTCAGCCACA<br>R: CCGATCGTACGTGTGATTTGGGG        | 201/205 | ROX          | 1     | 20            | FAM: ATACATAGAAGGAATCCTCCTCC<br>HEX: CTATACATAGAAGGAATCCTCCTCA<br>Common: ATCAGGCAATGCAGGCGAAGTAGTA        |
| MIDEK94 | 10   | 112420616         | CATT           | F: CACAACTACCAACTAACCGAGATGC<br>R: TTCCACTGCTTGTTACTCTGCTCTG | 240/244 | ROX          | 2     | 20            | FAM: ACTTCTATGTAGAAGGATACCAACCAT<br>HEX: ACTTCTATGTAGAAGGATACCACCAA<br>Common: GCTCTGGCTAGCTAGGCCTCAT      |
| MIDEK95 | 10   | 114872387         | ATC            | F: TCAGCGAGCAGTGATCCAATGGT<br>R: AGCGAGCAAAGGCGAACATGAAAT    | 100/97  | FAM          | 3     | 20            | FAM: GCGAACATGAAATTTCGAACCTGATG<br>HEX: GCGAACATGAAATTTCGAACCTGATC<br>Common: TCACCGGCCGGTTCGAATCCTT       |

| 位点      | 染色体  | 物理位置              | InDel 序列       | 毛细管电泳引物序列（5'—3'）                                            | 产物      | 荧光           | 组别    | 浓度(μmol/L)    | KASP 引物序列（5'—3'）                                                                            |
|---------|------|-------------------|----------------|-------------------------------------------------------------|---------|--------------|-------|---------------|---------------------------------------------------------------------------------------------|
| Locus   | Chr. | Physical location | InDel sequence | Capillary electrophoresis primer sequence                   | Product | Fluorescence | Group | Concentration | KASP primer sequence                                                                        |
| MIDEK96 | 10   | 128987856         | GCC            | F: CATTGTCAGCCTGTCAGGTAGTAGC<br>R: TCTTGAGACTTTCGGTTGGTGTTC | 104/107 | ROX          | 2     | 20            | FAM: TTGCACGAGGCCACTGCG<br>HEX: ATCTTTGCACGAGGCCACTGCT<br>Common: TAGCCGACTTTACCGGTGGATGTTT |