**Supplementary Table 3**.Viruence-related genes of uropathogenic *M. morganii* strains.

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| **Category** |  **MM 1** | **MM 4** | **MM190** |
| **No. of genes** | **Locus** | **No. of genes** | **Locus** | **No. of genes** | **Locus** |
| Fimbriae and adhesins(MS, MR, type IV fimbriae, adhesins,secretion system proteinsetc.) | 70 | DYH52\_RS01195-DYH52\_RS01205,DYH52\_RS03770,DYH52\_RS03815-DYH52\_RS03910,DYH52\_RS03965-DYH52\_RS03980,DYH52\_RS04460-DYH52\_RS04485,DYH52\_RS04580,DYH52\_RS05455,DYH52\_RS05460,DYH52\_RS05720-DYH52\_RS05735,DYH52\_RS11255-DYH52\_RS11310,DYH52\_RS14560,DYH52\_RS14585,DYH52\_RS16240,DYH52\_RS16495,DYH52\_RS16500,DYH52\_RS17235-DYH52\_RS17255,DYH52\_RS17520-DYH52\_RS17535,DYH52\_RS17635,DYH52\_RS17650, DYH52\_RS17895 | 73 | DVJ80\_RS01445,DVJ80\_RS03400,DVJ80\_RS03405,DVJ80\_RS05635,DVJ80\_RS05640,DVJ80\_RS05725-DVJ80\_RS05755,DVJ80\_RS05950,DVJ80\_RS06225-DVJ80\_RS06240,DVJ80\_RS06295-DVJ80\_RS06390,DVJ80\_RS06440,DVJ80\_RS07640,DVJ80\_RS08290,DVJ80\_RS08315,DVJ80\_RS10230-DVJ80\_RS10250,DVJ80\_RS10980,DVJ80\_RS12155-DVJ80\_RS12165,DVJ80\_RS12540,DVJ80\_RS14525,DVJ80\_RS14745-DVJ80\_RS14760,DVJ80\_RS15005,DVJ80\_RS15295-DVJ80\_RS15310,DVJ80\_RS15575-DVJ80\_RS15595,DVJ80\_RS15840,DVJ80\_RS15845,DVJ80\_RS16110-DVJ80\_RS16125,DVJ80\_RS16740 | 75 | DQ401\_RS01455,DQ401\_RS03410,DQ401\_RS04710,DQ401\_RS05560-DQ401\_RS05580,DQ401\_RS06310,DQ401\_RS07830,DQ401\_RS07835,DQ401\_RS07920-DQ401\_RS07950,DQ401\_RS08420-DQ401\_RS08435,DQ401\_RS08490-DQ401\_RS08585,DQ401\_RS08635,DQ401\_RS10685,DQ401\_RS10710,DQ401\_RS12620-DQ401\_RS12630,DQ401\_RS14595,DQ401\_RS14840-DQ401\_RS14855,DQ401\_RS15075,DQ401\_RS15660-DQ401\_RS15675,DQ401\_RS15775-DQ401\_RS15790,DQ401\_RS16055-DQ401\_RS16075,DQ401\_RS16710,DQ401\_RS17415,DQ401\_RS17605,DQ401\_RS17610,DQ401\_RS17875-DQ401\_RS17890 |
| Motility(flagellar proteins, T3SS components, transcriptional regulators etc.) | 60 | DYH52\_RS02520,DYH52\_RS03040,DYH52\_RS04050,DYH52\_RS04155-DYH52\_RS04170,DYH52\_RS04190,DYH52\_RS11330,DYH52\_RS12265-DYH52\_RS12335,DYH52\_RS12350-DYH52\_RS12370,DYH52\_RS12380-DYH52\_RS12415,DYH52\_RS12430-DYH52\_RS12495,DYH52\_RS12645-DYH52\_RS12675,DYH52\_RS16055,DYH52\_RS17890,DYH52\_RS18210 | 63 | DVJ80\_RS00620-DVJ80\_RS00690,DVJ80\_RS00705-DVJ80\_RS00770,DVJ80\_RS00785-DVJ80\_RS00850,DVJ80\_RS00890-DVJ80\_RS00920,DVJ80\_RS06015,DVJ80\_RS06030-DVJ80\_RS06050,DVJ80\_RS06155,DVJ80\_RS10205,DVJ80\_RS13805,DVJ80\_RS13940,DVJ80\_RS14095,DVJ80\_RS15055,DVJ80\_RS16745,DVJ80\_RS17805 | 65 | DQ401\_RS04175-DQ401\_RS04205,DQ401\_RS04245-DQ401\_RS04310,DQ401\_RS04325-DQ401\_RS04390,DQ401\_RS04405-DQ401\_RS04475,DQ401\_RS05535,DQ401\_RS08210,DQ401\_RS08225-DQ401\_RS08245,DQ401\_RS08350,DQ401\_RS09055,DQ401\_RS14270,DQ401\_RS14400,DQ401\_RS14405,DQ401\_RS15510,DQ401\_RS15535,DQ401\_RS17420,DQ401\_RS18125 |

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| Toxins(hemolysins, hemagglutinins, insecticidal toxins, secretion system proteinsetc.) | 30 | DYH52\_RS02010-DYH52\_RS02025,DYH52\_RS02050,DYH52\_RS02160,DYH52\_RS02165,DYH52\_RS02870,DYH52\_RS03715,DYH52\_RS04415,DYH52\_RS06560,DYH52\_RS09205,DYH52\_RS09210,DYH52\_RS09485,DYH52\_RS11500,DYH52\_RS11655,DYH52\_RS12340,DYH52\_RS12345,DYH52\_RS14045,DYH52\_RS14380,DYH52\_RS14385,DYH52\_RS14405,DYH52\_RS14415,DYH52\_RS14800,DYH52\_RS15150,DYH52\_RS15885,DYH52\_RS15940,DYH52\_RS15945,DYH52\_RS15965,DYH52\_RS16640 | 32 | DVJ80\_RS00025,DVJ80\_RS00055,DVJ80\_RS00695,DVJ80\_RS01165-DVJ80\_RS01180,DVJ80\_RS04055,DVJ80\_RS04060,DVJ80\_RS04275,DVJ80\_RS05255,DVJ80\_RS05800,DVJ80\_RS07190,DVJ80\_RS07890,DVJ80\_RS08075,DVJ80\_RS08465,DVJ80\_RS08475,DVJ80\_RS08495,DVJ80\_RS08500,DVJ80\_RS08835,DVJ80\_RS09890,DVJ80\_RS10035,DVJ80\_RS13135,DVJ80\_RS13145,DVJ80\_RS13850,DVJ80\_RS14605,DVJ80\_RS16360,DVJ80\_RS17460,DVJ80\_RS17465,DVJ80\_RS17470,DVJ80\_RS17475,DVJ80\_RS18145 | 31 | DQ401\_RS00790,DQ401\_RS00795,DQ401\_RS03630,DQ401\_RS03635,DQ401\_RS03640,DQ401\_RS03915-DQ401\_RS03930,DQ401\_RS04400,DQ401\_RS05040,DQ401\_RS05075,DQ401\_RS07450,DQ401\_RS07995,DQ401\_RS09490,DQ401\_RS09995,DQ401\_RS10000,DQ401\_RS10130-DQ401\_RS10145,DQ401\_RS10470,DQ401\_RS10870,DQ401\_RS10890,DQ401\_RS10895,DQ401\_RS11230,DQ401\_RS13600,DQ401\_RS13610,DQ401\_RS14315,DQ401\_RS14995,DQ401\_RS17035 |

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| Biofilm formation (AI-2, biofilm formation regulators) | 9 | DYH52\_RS08815,DYH52\_RS08825-DYH52\_RS08850,DYH52\_RS09170,DYH52\_RS12205 | 8 | DVJ80\_RS00565,DVJ80\_RS01995-DVJ80\_RS02030 | 11 | DQ401\_RS02825-DQ401\_RS02860,DQ401\_RS03160,DQ401\_RS04530,DQ401\_RS10475 |
| Ureases | 7 | DYH52\_RS16945-DYH52\_RS16975 | 7 | DVJ80\_RS14270-DVJ80\_RS14300 | 7 | DQ401\_RS15300-DQ401\_RS15330 |
| Capsule synthesis regulation  | 4 | DYH52\_RS12795-DYH52\_RS12805,DYH52\_RS16225 | 4 | DVJ80\_RS01040-DVJ80\_RS01050,DVJ80\_RS15020 | 4 | DQ401\_RS04045-DQ401\_RS04055,DQ401\_RS14580 |
| Cell invasion | 3 | DYH52\_RS04140,DYH52\_RS04330,DYH52\_RS04340 | 1 | DVJ80\_RS06060 | 1 | DQ401\_RS08255 |