

**Supplemental Table S1. Adult HSV-2 genomes (58 total) used for comparative genomic analyses.**

| <b>Virus Isolate</b> | <b>Country (with location, if available)</b> | <b>GenBank Accession #</b> | <b>References</b> |
|----------------------|--|----------------------------|-------------------|
| H1227*               | Finland                                      | KY922721                   | In process        |
| H1229*               | Finland                                      | KY922722                   | In process        |
| H12212*              | Finland                                      | KY922726                   | In process        |
| Uganda.2*            | Uganda                                       | KX574906                   | (1)               |
| Peru.8*              | Peru   | KX574874                   | (1)               |
| Zambia.4*            | Zambia                                       | KX574883                   | (1)               |
| HG52*                | Scotland                                     | NC_001798                  | (2)               |
| CtSF-R*              | USA  | KP334093                   | (3)               |
| 1192*                | Wisconsin, USA                               | KP334095                   | (3)               |
| SD90e*               | Carletonville, South Africa                  | KF781518                   | (4, 5)            |
| Peru.1               | Peru   | KX574860                   | (1, 6)            |
| Peru.12              | Peru   | KX574861                   | (1, 6)            |
| Zambia.3             | Zambia                                       | KX574862                   | (1, 6)            |
| Zimbabwe.2           | Zimbabwe                                     | KX574863                   | (1, 6)            |
| Zambia.2             | Zambia                                       | KX574864                   | (1, 6)            |
| Peru.9               | Peru   | KX574865                   | (1, 6)            |
| Peru.11              | Peru   | KX574866                   | (1, 6)            |
| Peru.10              | Peru   | KX574867                   | (1, 6)            |
| USA.8a               | USA  | KX574868                   | (1, 6)            |
| USA.8b               | USA  | KX574869                   | (1, 6)            |
| USA.1b               | USA  | KX574870                   | (1, 6)            |
| Zimbabwe.1           | Zimbabwe                                     | KX574871                   | (1, 6)            |
| Peru.7               | Peru   | KX574872                   | (1, 6)            |
| Peru.2               | Peru   | KX574873                   | (1, 6)            |
| Peru.6               | Peru   | KX574875                   | (1, 6)            |
| Peru.4               | Peru   | KX574876                   | (1, 6)            |
| Peru.3               | Peru   | KX574877                   | (1, 6)            |
| Peru.5               | Peru   | KX574878                   | (1, 6)            |
| South Africa.2       | South Africa                                 | KX574879                   | (1, 6)            |
| South Africa.3       | South Africa                                 | KX574880                   | (1, 6)            |
| South Africa.4       | South Africa                                 | KX574881                   | (1, 6)            |
| USA.3a               | USA  | KX574882                   | (1, 6)            |
| USA.3b               | USA  | KX574884                   | (1, 6)            |
| USA.2b               | USA  | KX574885                   | (1, 6)            |
| USA.10               | USA  | KX574886                   | (1, 6)            |
| USA.4a               | USA  | KX574887                   | (1, 6)            |
| USA.7a               | USA  | KX574888                   | (1, 6)            |

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|----------------------|--|----------------------------|-------------------|
| USA.6a               | USA  | KX574889                   | (1, 6)            |
| USA.6b               | USA  | KX574890                   | (1, 6)            |
| USA.5a               | USA  | KX574891                   | (1, 6)            |
| South Africa.1       | South Africa                                 | KX574892                   | (1, 6)            |
| Kenya.2              | Kenya  | KX574893                   | (1, 6)            |
| Kenya.1              | Kenya  | KX574894                   | (1, 6)            |
| USA.7b               | USA  | KX574895                   | (1, 6)            |
| USA.5b               | USA  | KX574896                   | (1, 6)            |
| USA.11               | USA  | KX574897                   | (1, 6)            |
| USA.4b               | USA  | KX574898                   | (1, 6)            |
| Uganda.1             | Uganda                                       | KX574899                   | (1, 6)            |
| USA.9                | USA  | KX574901                   | (1, 6)            |
| Tanzania.1           | Tanzania                                     | KX574902                   | (1, 6)            |
| USA.1a               | USA  | KX574903                   | (1, 6)            |
| USA.2a               | USA  | KX574904                   | (1, 6)            |
| Zambia.1             | Zambia                                       | KX574905                   | (1, 6)            |
| 2011-21400           | USA  | KX574908                   | (1, 6)            |
| H12211               | Finland                                      | KY922725                   | In process        |
| H1226                | Finland                                      | KY922720                   | In process        |
| H1421                | Finland                                      | KY922723                   | In process        |
| H1526                | Finland                                      | KY922724                   | In process        |

\*Indicates 10 adult HSV-2 strains used for AA comparisons in Figure 5.

## References for Supplemental Table S1

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5. Lai W, Chen CY, Morse SA, Htun Y, Fehler HG, Liu H, Ballard RC. 2003. Increasing relative prevalence of HSV-2 infection among men with genital ulcers from a mining community in South Africa. *Sex Transm Infect* 79:202–207.
6. Koelle DM, Norberg P, Fitzgibbon MP, Russell RM, Greninger AL, Huang M-L, Stensland L, Jing L, Magaret AS, Diem K, Selke S, Xie H, Celum C, Lingappa JR, Jerome KR, Wald A, Johnston C. 2017. Worldwide circulation of HSV-2 × HSV-1 recombinant strains. *Sci Rep* 7:44084.