

Table S1. Influenza A virus in swine detected in ISU VDL cases from the recent sustained human to swine spillover from 2017-2020 in the US.

| No. | Case | State | Date | HA | NA | WGS | HA Genbank Accession | NA GenBank Accession |
|-----|---------------------------------|-------|------------|-----|-----|-----|----------------------|----------------------|
| 1 | A/swine/Oklahoma/A02216474/2017 | OK | 3/1/2017 | Yes | No | No | MF280178 | None |
| 2 | A/swine/Indiana/A02216475/2017 | IN | 4/4/2017 | Yes | Yes | No | MF280176 | MF280177 |
| 3 | A/swine/Oklahoma/A02216476/2017 | OK | 4/6/2017 | Yes | Yes | No | MF280175 | MF280175 |
| 4 | A/swine/Oklahoma/25864/2017 | OK | 4/10/2017 | Yes | No | No | MN931819 | None |
| 5 | A/swine/Oklahoma/24795/2017 | OK | 4/13/2017 | Yes | No | No | MN931818 | None |
| 6 | A/swine/Oklahoma/A02218159/2017 | OK | 6/13/2017 | Yes | Yes | No | MF471676 | MF471677 |
| 7 | A/swine/Oklahoma/A02218157/2017 | OK | 7/10/2017 | Yes | Yes | No | MF471685 | MF471686 |
| 8 | A/swine/Oklahoma/A02218158/2017 | OK | 7/10/2017 | Yes | Yes | Yes | MF471687 | MF471688 |
| 9 | A/swine/Oklahoma/65260/2017 | OK | 9/29/2017 | Yes | No | No | MW361495 | None |
| 10 | A/swine/Indiana/66099/2017 | IN | 10/3/2017 | Yes | No | No | MN931828 | None |
| 11 | A/swine/Oklahoma/65980/2017 | OK | 10/3/2017 | Yes | No | No | MW361496 | None |
| 12 | A/swine/Ohio/70258/2017 | OH | 10/20/2017 | Yes | No | No | MN931829 | None |
| 13 | A/swine/Ohio/71681/2017 | OH | 10/26/2017 | Yes | No | No | MN931830 | None |
| 14 | A/swine/Oklahoma/21234/2018 | OK | 3/23/2018 | Yes | No | No | MN931831 | None |
| 15 | A/swine/Iowa/27393/2018 | IA | 4/16/2018 | Yes | No | No | MN931832 | None |
| 16 | A/swine/Indiana/A02254461/2018 | IN | 7/27/2018 | Yes | Yes | Yes | MH802666 | MH802667 |
| 17 | A/swine/Indiana/A02256610/2018 | IN | 8/22/2018 | Yes | Yes | Yes | MH910359 | MH910360 |
| 18 | A/swine/Indiana/71153/2018 | IN | 10/11/2018 | Yes | No | Yes | MN931836 | None |
| 19 | A/swine/Indiana/A02267494/2018 | IN | 10/12/2018 | Yes | Yes | Yes | MK129518 | MK129519 |
| 20 | A/swine/Indiana/A02267447/2018 | IN | 10/15/2018 | Yes | Yes | Yes | MK156662 | MK156663 |
| 21 | A/swine/Iowa/A02269644/2018 | IA | 11/12/2018 | Yes | Yes | No | MK358896 | MK358897 |
| 22 | A/swine/Illinois/89785/2018 | IL | 12/20/2018 | Yes | No | No | MN931841 | None |
| 23 | A/swine/Illinois/90957/2018 | IL | 12/27/2018 | Yes | No | No | MN931843 | None |
| 24 | A/swine/Indiana/A02427957/2018 | IN | 12/27/2018 | Yes | Yes | Yes | MK418462 | MK418463 |
| 25 | A/swine/Iowa/A02429496/2019 | IA | 1/14/2019 | Yes | Yes | No | MK477689 | MK477690 |
| 26 | A/swine/Iowa/A02430102/2019 | IA | 2/4/2019 | Yes | Yes | Yes | MK564265 | MK564266 |
| 27 | A/swine/Indiana/A02430356/2019 | IN | 2/14/2019 | Yes | Yes | Yes | MK640458 | MK640459 |
| 28 | A/swine/Indiana/A02430541/2019 | IN | 2/20/2019 | Yes | Yes | Yes | MK622823 | MK622824 |
| 29 | A/swine/Illinois/13663/2019 | IL | 2/20/2019 | Yes | No | No | MN931848 | None |
| 30 | A/swine/Illinois/A02430694/2019 | IL | 2/25/2019 | Yes | Yes | Yes | MK640446 | MK640447 |

| | | | | | | | | |
|----|---------------------------------|----|------------|-----|-----|----|----------|----------|
| 31 | A/swine/Iowa/A02478495/2019 | IA | 5/20/2019 | Yes | Yes | No | MN066327 | MN066328 |
| 32 | A/swine/Oklahoma/A02478518/2019 | OK | 5/30/2019 | Yes | Yes | No | MN086856 | MN086857 |
| 33 | A/swine/Indiana/47676/2019 | IN | 6/21/2019 | Yes | No | No | MN931853 | None |
| 34 | A/swine/Ohio/A02478957/2019 | OH | 12/5/2019 | Yes | Yes | No | MN931961 | MN931962 |
| 35 | A/swine/Ohio/A02478941/2019 | IN | 12/6/2019 | Yes | Yes | No | MN931923 | MN931924 |
| 36 | A/swine/Indiana/A02479222/2020 | IN | 4/20/2020 | Yes | Yes | No | MT476724 | MT476725 |
| 37 | A/swine/Indiana/A02479308/2020 | IN | 5/11/2020 | Yes | Yes | No | MT554117 | MT554118 |
| 38 | A/swine/Indiana/A02479362/2020 | IN | 5/26/2020 | Yes | Yes | No | MT588206 | MT588208 |
| 39 | A/swine/Ohio/A02524449/2020 | OH | 6/29/2020 | Yes | Yes | No | MT772150 | MT772151 |
| 40 | A/swine/Iowa/A02524572/2020 | IA | 8/31/2020 | Yes | Yes | No | MW023637 | MW023638 |
| 41 | A/swine/Iowa/72078/2020 | IA | 9/15/2020 | Yes | No | No | MW361506 | None |
| 42 | A/swine/Illinois/A02524654/2020 | IL | 9/29/2020 | Yes | Yes | No | MW127128 | MW127129 |
| 43 | A/swine/Iowa/76794/2020 | IA | 10/1/2020 | Yes | No | No | MW361508 | None |
| 44 | A/swine/Indiana/A02524710/2020 | IN | 10/12/2020 | Yes | Yes | No | MW204487 | MW204488 |
| 45 | A/swine/Indiana/80683/2020 | IN | 10/15/2020 | Yes | No | No | MW361510 | None |

HA (Hemagglutinin gene); NA (Neuraminidase gene); WGS (Whole genome sequencing)