**Infection round 1: Antigenic shift and drift**

**Dice rules**

|  |  |
| --- | --- |
| **Roll** | **Outcome** |
| 1 | Pre-existing immunity: virus does not infect/replicate |
| 2 | Infection: record genome & pass on to next person |
| 3 | Co-infection! [draw a new virus packet, mix 🡪 assemble new viral genome, record genome and pass on to next person] |
| 4 | Infection: record genome & pass on to next person |
| 5 | Infection: record genome & pass on to next person |
| 6 | superspreader! virus infects and replicates [record genome and pass on to 2 people] |

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | PB2 | PB1 | PA | NP | HA | NA | M | NS |
| 1 |  |  |  |  |  |  |  |  |
| 2 |  |  |  |  |  |  |  |  |
| 3 |  |  |  |  |  |  |  |  |
| 4 |  |  |  |  |  |  |  |  |
| 5 |  |  |  |  |  |  |  |  |
| 6 |  |  |  |  |  |  |  |  |
| 7 |  |  |  |  |  |  |  |  |
| 8 |  |  |  |  |  |  |  |  |
| 9 |  |  |  |  |  |  |  |  |
| 10 |  |  |  |  |  |  |  |  |

**Record the allele number for each genome section, for each infection**

**[insert tree instructions & space here]**

**Infection round 2: Vaccination**

**Dice rules**

|  |  |  |
| --- | --- | --- |
|  | **First roll of the die** | **Second roll of the die** |
| 1 | Pre-existing immunity | Virus replicates as normal (record genome & pass on) |
| 2 | Infection | Co-infection! (draw another virus & reassort) |
| 3 | Infection | Virus replicates as normal (record genome & pass on) |
| 4 | Vaccine-derived immunity (immune IF virus type in vaccine) | Virus replicates as normal (record genome & pass on) |
| 5 | Virus replicates as normal (record genome & pass on) |
| 6 | Infection | Superspreader! (pass on to 2 people) |

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | PB2 | PB1 | PA | NP | HA | NA | M | NS |
| 1 |  |  |  |  |  |  |  |  |
| 2 |  |  |  |  |  |  |  |  |
| 3 |  |  |  |  |  |  |  |  |
| 4 |  |  |  |  |  |  |  |  |
| 5 |  |  |  |  |  |  |  |  |
| 6 |  |  |  |  |  |  |  |  |
| 7 |  |  |  |  |  |  |  |  |
| 8 |  |  |  |  |  |  |  |  |
| 9 |  |  |  |  |  |  |  |  |
| 10 |  |  |  |  |  |  |  |  |

**Record the allele number for each genome section, for each infection**

**[insert tree instructions & space here]**

**Infection round 3: Zoonotic infections**

**Dice rules**

|  |  |  |  |
| --- | --- | --- | --- |
|  | **First roll** | **Second roll** | **Third roll** |
| 1 | No animal contact | Pre-existing immunity | Virus replicates as normal (record genome & pass on) |
| 2 | Animal contact (draw a random genome) | Infection | Co-infection! (draw another virus & reassort) |
| 3 | No animal contact | Infection | Virus replicates as normal (record genome & pass on) |
| 4 | No animal contact | Vaccine-derived immunity (immune IF virus type in vaccine) | Virus replicates as normal (record genome & pass on) |
| 5 | No animal contact | Virus replicates as normal (record genome & pass on) |
| 6 | No animal contact | Infection | Superspreader! (pass on to 2 people) |

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | PB2 | PB1 | PA | NP | HA | NA | M | NS |
| 1 |  |  |  |  |  |  |  |  |
| 2 |  |  |  |  |  |  |  |  |
| 3 |  |  |  |  |  |  |  |  |
| 4 |  |  |  |  |  |  |  |  |
| 5 |  |  |  |  |  |  |  |  |
| 6 |  |  |  |  |  |  |  |  |
| 7 |  |  |  |  |  |  |  |  |
| 8 |  |  |  |  |  |  |  |  |
| 9 |  |  |  |  |  |  |  |  |
| 10 |  |  |  |  |  |  |  |  |

**Record the allele number for each genome section, for each infection**

**[insert tree instructions & space here]**