**Table S2**. Design of simulated “GENE-A” across 25 families. Scenarios 5FCx0FNC, 5FCx5FNC, 5FCx10FNC, 5FCx15FNC, 5FCx20FNC.

|  | | | | | |  | 5FCx0FNC | | | | |  | 5FCx5FNC | | | | |  | 5FCx10FNC | | | | |  | 5FCx15FNC | | | | |  | 5FCx20FNC | | | | |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| FID | IID | PID | MID | SEX | STATUS |  | a1 | a2 | a3 | a4 | a5 |  | a1 | a2 | a3 | a4 | a5 |  | a1 | a2 | a3 | a4 | a5 |  | a1 | a2 | a3 | a4 | a5 |  | a1 | a2 | a3 | a4 | a5 |
| FAM1 | FAM1\_1 | FAM1\_5 | FAM1\_4 | 2 | 2 |  | 1 | 0 | 0 | 0 | 0 |  | 1 | 0 | 0 | 0 | 0 |  | 1 | 0 | 0 | 0 | 0 |  | 1 | 0 | 0 | 0 | 0 |  | 1 | 0 | 0 | 0 | 0 |
| FAM1 | FAM1\_7 | FAM1\_5 | FAM1\_4 | 1 | 1 |  | 0 | 0 | 0 | 0 | 0 |  | 0 | 0 | 0 | 0 | 0 |  | 0 | 0 | 0 | 0 | 0 |  | 0 | 0 | 0 | 0 | 0 |  | 0 | 0 | 0 | 0 | 0 |
| FAM1 | FAM1\_8 | FAM1\_5 | FAM1\_4 | 2 | 2 |  | 1 | 0 | 0 | 0 | 0 |  | 1 | 0 | 0 | 0 | 0 |  | 1 | 0 | 0 | 0 | 0 |  | 1 | 0 | 0 | 0 | 0 |  | 1 | 0 | 0 | 0 | 0 |
| FAM2 | FAM2\_19 | FAM2\_22 | FAM2\_23 | 1 | 1 |  | 0 | 0 | 0 | 0 | 0 |  | 0 | 0 | 0 | 0 | 0 |  | 0 | 0 | 0 | 0 | 0 |  | 0 | 0 | 0 | 0 | 0 |  | 0 | 0 | 0 | 0 | 0 |
| FAM2 | FAM2\_23 | FAM2\_41 | FAM2\_42 | 2 | 2 |  | 0 | 1 | 0 | 0 | 0 |  | 0 | 1 | 0 | 0 | 0 |  | 0 | 1 | 0 | 0 | 0 |  | 0 | 1 | 0 | 0 | 0 |  | 0 | 1 | 0 | 0 | 0 |
| FAM2 | FAM2\_27 | FAM2\_41 | FAM2\_42 | 2 | 2 |  | 0 | 1 | 0 | 0 | 0 |  | 0 | 1 | 0 | 0 | 0 |  | 0 | 1 | 0 | 0 | 0 |  | 0 | 1 | 0 | 0 | 0 |  | 0 | 1 | 0 | 0 | 0 |
| FAM2 | FAM2\_33 | FAM2\_41 | FAM2\_42 | 2 | 2 |  | 0 | 1 | 0 | 0 | 0 |  | 0 | 1 | 0 | 0 | 0 |  | 0 | 1 | 0 | 0 | 0 |  | 0 | 1 | 0 | 0 | 0 |  | 0 | 1 | 0 | 0 | 0 |
| FAM3 | FAM3\_21 | FAM3\_20 | FAM3\_19 | 1 | 2 |  | 0 | 0 | 1 | 0 | 0 |  | 0 | 0 | 1 | 0 | 0 |  | 0 | 0 | 1 | 0 | 0 |  | 0 | 0 | 1 | 0 | 0 |  | 0 | 0 | 1 | 0 | 0 |
| FAM3 | FAM3\_28 | FAM3\_34 | FAM3\_33 | 2 | 2 |  | 0 | 0 | 1 | 0 | 0 |  | 0 | 0 | 1 | 0 | 0 |  | 0 | 0 | 1 | 0 | 0 |  | 0 | 0 | 1 | 0 | 0 |  | 0 | 0 | 1 | 0 | 0 |
| FAM3 | FAM3\_19 | FAM3\_34 | FAM3\_33 | 2 | 2 |  | 0 | 0 | 1 | 0 | 0 |  | 0 | 0 | 1 | 0 | 0 |  | 0 | 0 | 1 | 0 | 0 |  | 0 | 0 | 1 | 0 | 0 |  | 0 | 0 | 1 | 0 | 0 |
| FAM3 | FAM3\_27 | FAM3\_34 | FAM3\_33 | 1 | 1 |  | 0 | 0 | 0 | 0 | 0 |  | 0 | 0 | 0 | 0 | 0 |  | 0 | 0 | 0 | 0 | 0 |  | 0 | 0 | 0 | 0 | 0 |  | 0 | 0 | 0 | 0 | 0 |
| FAM3 | FAM3\_29 | FAM3\_34 | FAM3\_33 | 2 | 2 |  | 0 | 0 | 1 | 0 | 0 |  | 0 | 0 | 1 | 0 | 0 |  | 0 | 0 | 1 | 0 | 0 |  | 0 | 0 | 1 | 0 | 0 |  | 0 | 0 | 1 | 0 | 0 |
| FAM4 | FAM4\_1 | FAM4\_47 | FAM4\_48 | 1 | 2 |  | 0 | 0 | 0 | 1 | 0 |  | 0 | 0 | 0 | 1 | 0 |  | 0 | 0 | 0 | 1 | 0 |  | 0 | 0 | 0 | 1 | 0 |  | 0 | 0 | 0 | 1 | 0 |
| FAM4 | FAM4\_4 | FAM4\_47 | FAM4\_48 | 2 | 2 |  | 0 | 0 | 0 | 1 | 0 |  | 0 | 0 | 0 | 1 | 0 |  | 0 | 0 | 0 | 1 | 0 |  | 0 | 0 | 0 | 1 | 0 |  | 0 | 0 | 0 | 1 | 0 |
| FAM4 | FAM4\_34 | FAM4\_47 | FAM4\_48 | 1 | 2 |  | 0 | 0 | 0 | 1 | 0 |  | 0 | 0 | 0 | 1 | 0 |  | 0 | 0 | 0 | 1 | 0 |  | 0 | 0 | 0 | 1 | 0 |  | 0 | 0 | 0 | 1 | 0 |
| FAM4 | FAM4\_39 | FAM4\_47 | FAM4\_48 | 2 | 1 |  | 0 | 0 | 0 | 0 | 0 |  | 0 | 0 | 0 | 0 | 0 |  | 0 | 0 | 0 | 0 | 0 |  | 0 | 0 | 0 | 0 | 0 |  | 0 | 0 | 0 | 0 | 0 |
| FAM4 | FAM4\_42 | FAM4\_47 | FAM4\_48 | 1 | 1 |  | 0 | 0 | 0 | 0 | 0 |  | 0 | 0 | 0 | 0 | 0 |  | 0 | 0 | 0 | 0 | 0 |  | 0 | 0 | 0 | 0 | 0 |  | 0 | 0 | 0 | 0 | 0 |
| FAM4 | FAM4\_62 | FAM4\_61 | FAM4\_60 | 2 | 2 |  | 0 | 0 | 0 | 1 | 0 |  | 0 | 0 | 0 | 1 | 0 |  | 0 | 0 | 0 | 1 | 0 |  | 0 | 0 | 0 | 1 | 0 |  | 0 | 0 | 0 | 1 | 0 |
| FAM5 | FAM5\_1 | FAM5\_48 | FAM5\_49 | 1 | 2 |  | 0 | 0 | 0 | 0 | 1 |  | 0 | 0 | 0 | 0 | 1 |  | 0 | 0 | 0 | 0 | 1 |  | 0 | 0 | 0 | 0 | 1 |  | 0 | 0 | 0 | 0 | 1 |
| FAM5 | FAM5\_15 | FAM5\_13 | FAM5\_14 | 2 | 1 |  | 0 | 0 | 0 | 0 | 0 |  | 0 | 0 | 0 | 0 | 0 |  | 0 | 0 | 0 | 0 | 0 |  | 0 | 0 | 0 | 0 | 0 |  | 0 | 0 | 0 | 0 | 0 |
| FAM5 | FAM5\_22 | FAM5\_48 | FAM5\_49 | 2 | 2 |  | 0 | 0 | 0 | 0 | 1 |  | 0 | 0 | 0 | 0 | 1 |  | 0 | 0 | 0 | 0 | 1 |  | 0 | 0 | 0 | 0 | 1 |  | 0 | 0 | 0 | 0 | 1 |
| FAM5 | FAM5\_27 | FAM5\_26 | FAM5\_25 | 2 | 2 |  | 0 | 0 | 0 | 0 | 1 |  | 0 | 0 | 0 | 0 | 1 |  | 0 | 0 | 0 | 0 | 1 |  | 0 | 0 | 0 | 0 | 1 |  | 0 | 0 | 0 | 0 | 1 |
| FAM5 | FAM5\_33 | FAM5\_48 | FAM5\_49 | 2 | 2 |  | 0 | 0 | 0 | 0 | 1 |  | 0 | 0 | 0 | 0 | 1 |  | 0 | 0 | 0 | 0 | 1 |  | 0 | 0 | 0 | 0 | 1 |  | 0 | 0 | 0 | 0 | 1 |
| FAM5 | FAM5\_37 | FAM5\_48 | FAM5\_49 | 2 | 2 |  | 0 | 0 | 0 | 0 | 1 |  | 0 | 0 | 0 | 0 | 1 |  | 0 | 0 | 0 | 0 | 1 |  | 0 | 0 | 0 | 0 | 1 |  | 0 | 0 | 0 | 0 | 1 |
| FAM5 | FAM5\_45 | FAM5\_48 | FAM5\_49 | 2 | 1 |  | 0 | 0 | 0 | 0 | 0 |  | 0 | 0 | 0 | 0 | 0 |  | 0 | 0 | 0 | 0 | 0 |  | 0 | 0 | 0 | 0 | 0 |  | 0 | 0 | 0 | 0 | 0 |
| FAM6 | FAM6\_1 | FAM6\_5 | FAM6\_4 | 2 | 2 |  |  |  |  |  |  |  | 0 | 0 | 0 | 0 | 0 |  | 0 | 0 | 0 | 0 | 0 |  | 0 | 0 | 0 | 0 | 0 |  | 0 | 0 | 0 | 0 | 0 |
| FAM6 | FAM6\_7 | FAM6\_5 | FAM6\_4 | 2 | 2 |  |  |  |  |  |  |  | 0 | 0 | 0 | 0 | 0 |  | 0 | 0 | 0 | 0 | 0 |  | 0 | 0 | 0 | 0 | 0 |  | 0 | 0 | 0 | 0 | 0 |
| FAM6 | FAM6\_16 | FAM6\_17 | FAM6\_15 | 2 | 1 |  |  |  |  |  |  |  | 0 | 0 | 0 | 0 | 0 |  | 0 | 0 | 0 | 0 | 0 |  | 0 | 0 | 0 | 0 | 0 |  | 0 | 0 | 0 | 0 | 0 |
| FAM7 | FAM7\_1 | FAM7\_43 | FAM7\_44 | 2 | 2 |  |  |  |  |  |  |  | 0 | 0 | 0 | 0 | 0 |  | 0 | 0 | 0 | 0 | 0 |  | 0 | 0 | 0 | 0 | 0 |  | 0 | 0 | 0 | 0 | 0 |
| FAM7 | FAM7\_12 | FAM7\_43 | FAM7\_44 | 2 | 2 |  |  |  |  |  |  |  | 0 | 0 | 0 | 0 | 0 |  | 0 | 0 | 0 | 0 | 0 |  | 0 | 0 | 0 | 0 | 0 |  | 0 | 0 | 0 | 0 | 0 |
| FAM7 | FAM7\_17 | FAM7\_43 | FAM7\_44 | 2 | 2 |  |  |  |  |  |  |  | 0 | 0 | 0 | 0 | 0 |  | 0 | 0 | 0 | 0 | 0 |  | 0 | 0 | 0 | 0 | 0 |  | 0 | 0 | 0 | 0 | 0 |
| FAM7 | FAM7\_19 | FAM7\_18 | FAM7\_17 | 2 | 1 |  |  |  |  |  |  |  | 0 | 0 | 0 | 0 | 0 |  | 0 | 0 | 0 | 0 | 0 |  | 0 | 0 | 0 | 0 | 0 |  | 0 | 0 | 0 | 0 | 0 |
| FAM8 | FAM8\_2 | FAM8\_0 | FAM8\_0 | 1 | 2 |  |  |  |  |  |  |  | 0 | 0 | 0 | 0 | 0 |  | 0 | 0 | 0 | 0 | 0 |  | 0 | 0 | 0 | 0 | 0 |  | 0 | 0 | 0 | 0 | 0 |
| FAM8 | FAM8\_28 | FAM8\_65 | FAM8\_66 | 2 | 2 |  |  |  |  |  |  |  | 0 | 0 | 0 | 0 | 0 |  | 0 | 0 | 0 | 0 | 0 |  | 0 | 0 | 0 | 0 | 0 |  | 0 | 0 | 0 | 0 | 0 |
| FAM8 | FAM8\_57 | FAM8\_65 | FAM8\_66 | 2 | 2 |  |  |  |  |  |  |  | 0 | 0 | 0 | 0 | 0 |  | 0 | 0 | 0 | 0 | 0 |  | 0 | 0 | 0 | 0 | 0 |  | 0 | 0 | 0 | 0 | 0 |
| FAM8 | FAM8\_69 | FAM8\_65 | FAM8\_66 | 2 | 2 |  |  |  |  |  |  |  | 0 | 0 | 0 | 0 | 0 |  | 0 | 0 | 0 | 0 | 0 |  | 0 | 0 | 0 | 0 | 0 |  | 0 | 0 | 0 | 0 | 0 |
| FAM8 | FAM8\_83 | FAM8\_2 | FAM8\_1 | 2 | 1 |  |  |  |  |  |  |  | 0 | 0 | 0 | 0 | 0 |  | 0 | 0 | 0 | 0 | 0 |  | 0 | 0 | 0 | 0 | 0 |  | 0 | 0 | 0 | 0 | 0 |
| FAM9 | FAM9\_1 | FAM9\_61 | FAM9\_62 | 2 | 2 |  |  |  |  |  |  |  | 0 | 0 | 0 | 0 | 0 |  | 0 | 0 | 0 | 0 | 0 |  | 0 | 0 | 0 | 0 | 0 |  | 0 | 0 | 0 | 0 | 0 |
| FAM9 | FAM9\_7 | FAM9\_5 | FAM9\_4 | 2 | 1 |  |  |  |  |  |  |  | 0 | 0 | 0 | 0 | 0 |  | 0 | 0 | 0 | 0 | 0 |  | 0 | 0 | 0 | 0 | 0 |  | 0 | 0 | 0 | 0 | 0 |
| FAM9 | FAM9\_13 | FAM9\_61 | FAM9\_62 | 1 | 2 |  |  |  |  |  |  |  | 0 | 0 | 0 | 0 | 0 |  | 0 | 0 | 0 | 0 | 0 |  | 0 | 0 | 0 | 0 | 0 |  | 0 | 0 | 0 | 0 | 0 |
| FAM9 | FAM9\_18 | FAM9\_61 | FAM9\_62 | 2 | 2 |  |  |  |  |  |  |  | 0 | 0 | 0 | 0 | 0 |  | 0 | 0 | 0 | 0 | 0 |  | 0 | 0 | 0 | 0 | 0 |  | 0 | 0 | 0 | 0 | 0 |
| FAM9 | FAM9\_36 | FAM9\_61 | FAM9\_62 | 2 | 2 |  |  |  |  |  |  |  | 0 | 0 | 0 | 0 | 0 |  | 0 | 0 | 0 | 0 | 0 |  | 0 | 0 | 0 | 0 | 0 |  | 0 | 0 | 0 | 0 | 0 |
| FAM9 | FAM9\_49 | FAM9\_61 | FAM9\_62 | 1 | 2 |  |  |  |  |  |  |  | 0 | 0 | 0 | 0 | 0 |  | 0 | 0 | 0 | 0 | 0 |  | 0 | 0 | 0 | 0 | 0 |  | 0 | 0 | 0 | 0 | 0 |
| FAM10 | FAM10\_2 | FAM10\_72 | FAM10\_73 | 1 | 2 |  |  |  |  |  |  |  | 0 | 0 | 0 | 0 | 0 |  | 0 | 0 | 0 | 0 | 0 |  | 0 | 0 | 0 | 0 | 0 |  | 0 | 0 | 0 | 0 | 0 |
| FAM10 | FAM10\_3 | FAM10\_2 | FAM10\_1 | 1 | 1 |  |  |  |  |  |  |  | 0 | 0 | 0 | 0 | 0 |  | 0 | 0 | 0 | 0 | 0 |  | 0 | 0 | 0 | 0 | 0 |  | 0 | 0 | 0 | 0 | 0 |
| FAM10 | FAM10\_24 | FAM10\_72 | FAM10\_73 | 2 | 2 |  |  |  |  |  |  |  | 0 | 0 | 0 | 0 | 0 |  | 0 | 0 | 0 | 0 | 0 |  | 0 | 0 | 0 | 0 | 0 |  | 0 | 0 | 0 | 0 | 0 |
| FAM10 | FAM10\_26 | FAM10\_25 | FAM10\_24 | 1 | 2 |  |  |  |  |  |  |  | 0 | 0 | 0 | 0 | 0 |  | 0 | 0 | 0 | 0 | 0 |  | 0 | 0 | 0 | 0 | 0 |  | 0 | 0 | 0 | 0 | 0 |
| FAM10 | FAM10\_37 | FAM10\_34 | FAM10\_35 | 2 | 2 |  |  |  |  |  |  |  | 0 | 0 | 0 | 0 | 0 |  | 0 | 0 | 0 | 0 | 0 |  | 0 | 0 | 0 | 0 | 0 |  | 0 | 0 | 0 | 0 | 0 |
| FAM10 | FAM10\_55 | FAM10\_72 | FAM10\_73 | 1 | 2 |  |  |  |  |  |  |  | 0 | 0 | 0 | 0 | 0 |  | 0 | 0 | 0 | 0 | 0 |  | 0 | 0 | 0 | 0 | 0 |  | 0 | 0 | 0 | 0 | 0 |
| FAM10 | FAM10\_57 | FAM10\_55 | FAM10\_56 | 2 | 1 |  |  |  |  |  |  |  | 0 | 0 | 0 | 0 | 0 |  | 0 | 0 | 0 | 0 | 0 |  | 0 | 0 | 0 | 0 | 0 |  | 0 | 0 | 0 | 0 | 0 |
| FAM11 | FAM11\_1 | FAM11\_6 | FAM11\_5 | 2 | 2 |  |  |  |  |  |  |  |  |  |  |  |  |  | 0 | 0 | 0 | 0 | 0 |  | 0 | 0 | 0 | 0 | 0 |  | 0 | 0 | 0 | 0 | 0 |
| FAM11 | FAM11\_2 | FAM11\_6 | FAM11\_5 | 2 | 2 |  |  |  |  |  |  |  |  |  |  |  |  |  | 0 | 0 | 0 | 0 | 0 |  | 0 | 0 | 0 | 0 | 0 |  | 0 | 0 | 0 | 0 | 0 |
| FAM11 | FAM11\_4 | FAM11\_6 | FAM11\_5 | 2 | 1 |  |  |  |  |  |  |  |  |  |  |  |  |  | 0 | 0 | 0 | 0 | 0 |  | 0 | 0 | 0 | 0 | 0 |  | 0 | 0 | 0 | 0 | 0 |
| FAM12 | FAM12\_1 | FAM12\_57 | FAM12\_58 | 2 | 2 |  |  |  |  |  |  |  |  |  |  |  |  |  | 0 | 0 | 0 | 0 | 0 |  | 0 | 0 | 0 | 0 | 0 |  | 0 | 0 | 0 | 0 | 0 |
| FAM12 | FAM12\_3 | FAM12\_2 | FAM12\_1 | 2 | 1 |  |  |  |  |  |  |  |  |  |  |  |  |  | 0 | 0 | 0 | 0 | 0 |  | 0 | 0 | 0 | 0 | 0 |  | 0 | 0 | 0 | 0 | 0 |
| FAM12 | FAM12\_29 | FAM12\_57 | FAM12\_58 | 1 | 2 |  |  |  |  |  |  |  |  |  |  |  |  |  | 0 | 0 | 0 | 0 | 0 |  | 0 | 0 | 0 | 0 | 0 |  | 0 | 0 | 0 | 0 | 0 |
| FAM12 | FAM12\_41 | FAM12\_57 | FAM12\_58 | 1 | 2 |  |  |  |  |  |  |  |  |  |  |  |  |  | 0 | 0 | 0 | 0 | 0 |  | 0 | 0 | 0 | 0 | 0 |  | 0 | 0 | 0 | 0 | 0 |
| FAM13 | FAM13\_1 | FAM13\_68 | FAM13\_69 | 2 | 2 |  |  |  |  |  |  |  |  |  |  |  |  |  | 0 | 0 | 0 | 0 | 0 |  | 0 | 0 | 0 | 0 | 0 |  | 0 | 0 | 0 | 0 | 0 |
| FAM13 | FAM13\_19 | FAM13\_2 | FAM13\_1 | 2 | 1 |  |  |  |  |  |  |  |  |  |  |  |  |  | 0 | 0 | 0 | 0 | 0 |  | 0 | 0 | 0 | 0 | 0 |  | 0 | 0 | 0 | 0 | 0 |
| FAM13 | FAM13\_49 | FAM13\_68 | FAM13\_69 | 2 | 2 |  |  |  |  |  |  |  |  |  |  |  |  |  | 0 | 0 | 0 | 0 | 0 |  | 0 | 0 | 0 | 0 | 0 |  | 0 | 0 | 0 | 0 | 0 |
| FAM13 | FAM13\_54 | FAM13\_68 | FAM13\_69 | 2 | 2 |  |  |  |  |  |  |  |  |  |  |  |  |  | 0 | 0 | 0 | 0 | 0 |  | 0 | 0 | 0 | 0 | 0 |  | 0 | 0 | 0 | 0 | 0 |
| FAM13 | FAM13\_59 | FAM13\_68 | FAM13\_69 | 1 | 2 |  |  |  |  |  |  |  |  |  |  |  |  |  | 0 | 0 | 0 | 0 | 0 |  | 0 | 0 | 0 | 0 | 0 |  | 0 | 0 | 0 | 0 | 0 |
| FAM14 | FAM14\_1 | FAM14\_79 | FAM14\_80 | 2 | 2 |  |  |  |  |  |  |  |  |  |  |  |  |  | 0 | 0 | 0 | 0 | 0 |  | 0 | 0 | 0 | 0 | 0 |  | 0 | 0 | 0 | 0 | 0 |
| FAM14 | FAM14\_25 | FAM14\_79 | FAM14\_80 | 2 | 2 |  |  |  |  |  |  |  |  |  |  |  |  |  | 0 | 0 | 0 | 0 | 0 |  | 0 | 0 | 0 | 0 | 0 |  | 0 | 0 | 0 | 0 | 0 |
| FAM14 | FAM14\_27 | FAM14\_26 | FAM14\_25 | 1 | 1 |  |  |  |  |  |  |  |  |  |  |  |  |  | 0 | 0 | 0 | 0 | 0 |  | 0 | 0 | 0 | 0 | 0 |  | 0 | 0 | 0 | 0 | 0 |
| FAM14 | FAM14\_44 | FAM14\_79 | FAM14\_80 | 2 | 2 |  |  |  |  |  |  |  |  |  |  |  |  |  | 0 | 0 | 0 | 0 | 0 |  | 0 | 0 | 0 | 0 | 0 |  | 0 | 0 | 0 | 0 | 0 |
| FAM14 | FAM14\_49 | FAM14\_79 | FAM14\_80 | 2 | 2 |  |  |  |  |  |  |  |  |  |  |  |  |  | 0 | 0 | 0 | 0 | 0 |  | 0 | 0 | 0 | 0 | 0 |  | 0 | 0 | 0 | 0 | 0 |
| FAM14 | FAM14\_71 | FAM14\_79 | FAM14\_80 | 2 | 2 |  |  |  |  |  |  |  |  |  |  |  |  |  | 0 | 0 | 0 | 0 | 0 |  | 0 | 0 | 0 | 0 | 0 |  | 0 | 0 | 0 | 0 | 0 |
| FAM15 | FAM15\_1 | FAM15\_34 | FAM15\_35 | 2 | 2 |  |  |  |  |  |  |  |  |  |  |  |  |  | 0 | 0 | 0 | 0 | 0 |  | 0 | 0 | 0 | 0 | 0 |  | 0 | 0 | 0 | 0 | 0 |
| FAM15 | FAM15\_26 | FAM15\_34 | FAM15\_35 | 2 | 2 |  |  |  |  |  |  |  |  |  |  |  |  |  | 0 | 0 | 0 | 0 | 0 |  | 0 | 0 | 0 | 0 | 0 |  | 0 | 0 | 0 | 0 | 0 |
| FAM15 | FAM15\_27 | FAM15\_34 | FAM15\_35 | 2 | 2 |  |  |  |  |  |  |  |  |  |  |  |  |  | 0 | 0 | 0 | 0 | 0 |  | 0 | 0 | 0 | 0 | 0 |  | 0 | 0 | 0 | 0 | 0 |
| FAM15 | FAM15\_31 | FAM15\_34 | FAM15\_35 | 2 | 2 |  |  |  |  |  |  |  |  |  |  |  |  |  | 0 | 0 | 0 | 0 | 0 |  | 0 | 0 | 0 | 0 | 0 |  | 0 | 0 | 0 | 0 | 0 |
| FAM15 | FAM15\_33 | FAM15\_34 | FAM15\_35 | 2 | 2 |  |  |  |  |  |  |  |  |  |  |  |  |  | 0 | 0 | 0 | 0 | 0 |  | 0 | 0 | 0 | 0 | 0 |  | 0 | 0 | 0 | 0 | 0 |
| FAM15 | FAM15\_115 | FAM15\_110 | FAM15\_25 | 1 | 2 |  |  |  |  |  |  |  |  |  |  |  |  |  | 0 | 0 | 0 | 0 | 0 |  | 0 | 0 | 0 | 0 | 0 |  | 0 | 0 | 0 | 0 | 0 |
| FAM15 | FAM15\_185 | FAM15\_181 | FAM15\_33 | 2 | 1 |  |  |  |  |  |  |  |  |  |  |  |  |  | 0 | 0 | 0 | 0 | 0 |  | 0 | 0 | 0 | 0 | 0 |  | 0 | 0 | 0 | 0 | 0 |
| FMA16 | FAM16\_1 | FAM16\_6 | FAM16\_5 | 1 | 2 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | 0 | 0 | 0 | 0 | 0 |  | 0 | 0 | 0 | 0 | 0 |
| FMA16 | FAM16\_2 | FAM16\_6 | FAM16\_5 | 2 | 2 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | 0 | 0 | 0 | 0 | 0 |  | 0 | 0 | 0 | 0 | 0 |
| FMA16 | FAM16\_3 | FAM16\_6 | FAM16\_5 | 2 | 1 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | 0 | 0 | 0 | 0 | 0 |  | 0 | 0 | 0 | 0 | 0 |
| FAM17 | FAM17\_1 | FAM17\_30 | FAM17\_31 | 2 | 2 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | 0 | 0 | 0 | 0 | 0 |  | 0 | 0 | 0 | 0 | 0 |
| FAM17 | FAM17\_12 | FAM17\_2 | FAM17\_1 | 2 | 1 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | 0 | 0 | 0 | 0 | 0 |  | 0 | 0 | 0 | 0 | 0 |
| FAM17 | FAM17\_20 | FAM17\_30 | FAM17\_31 | 1 | 2 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | 0 | 0 | 0 | 0 | 0 |  | 0 | 0 | 0 | 0 | 0 |
| FAM17 | FAM17\_23 | FAM17\_30 | FAM17\_31 | 2 | 2 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | 0 | 0 | 0 | 0 | 0 |  | 0 | 0 | 0 | 0 | 0 |
| FAM18 | FAM18\_13 | FAM18\_8 | FAM18\_9 | 2 | 2 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | 0 | 0 | 0 | 0 | 0 |  | 0 | 0 | 0 | 0 | 0 |
| FAM18 | FAM18\_22 | FAM18\_8 | FAM18\_9 | 2 | 2 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | 0 | 0 | 0 | 0 | 0 |  | 0 | 0 | 0 | 0 | 0 |
| FAM18 | FAM18\_25 | FAM18\_8 | FAM18\_9 | 2 | 2 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | 0 | 0 | 0 | 0 | 0 |  | 0 | 0 | 0 | 0 | 0 |
| FAM18 | FAM18\_28 | FAM18\_8 | FAM18\_9 | 2 | 2 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | 0 | 0 | 0 | 0 | 0 |  | 0 | 0 | 0 | 0 | 0 |
| FAM18 | FAM18\_45 | FAM18\_44 | FAM18\_16 | 1 | 1 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | 0 | 0 | 0 | 0 | 0 |  | 0 | 0 | 0 | 0 | 0 |
| FAM19 | FAM19\_1 | FAM19\_72 | FAM19\_73 | 2 | 2 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | 0 | 0 | 0 | 0 | 0 |  | 0 | 0 | 0 | 0 | 0 |
| FAM19 | FAM19\_3 | FAM19\_2 | FAM19\_1 | 2 | 1 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | 0 | 0 | 0 | 0 | 0 |  | 0 | 0 | 0 | 0 | 0 |
| FAM19 | FAM19\_13 | FAM19\_72 | FAM19\_73 | 1 | 2 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | 0 | 0 | 0 | 0 | 0 |  | 0 | 0 | 0 | 0 | 0 |
| FAM19 | FAM19\_17 | FAM19\_72 | FAM19\_73 | 2 | 2 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | 0 | 0 | 0 | 0 | 0 |  | 0 | 0 | 0 | 0 | 0 |
| FAM19 | FAM19\_25 | FAM19\_72 | FAM19\_73 | 1 | 2 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | 0 | 0 | 0 | 0 | 0 |  | 0 | 0 | 0 | 0 | 0 |
| FAM19 | FAM19\_35 | FAM19\_72 | FAM19\_73 | 2 | 2 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | 0 | 0 | 0 | 0 | 0 |  | 0 | 0 | 0 | 0 | 0 |
| FAM20 | FAM20\_1 | FAM20\_4 | FAM20\_3 | 2 | 2 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | 0 | 0 | 0 | 0 | 0 |  | 0 | 0 | 0 | 0 | 0 |
| FAM20 | FAM20\_2 | FAM20\_0 | FAM20\_0 | 1 | 1 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | 0 | 0 | 0 | 0 | 0 |  | 0 | 0 | 0 | 0 | 0 |
| FAM20 | FAM20\_10 | FAM20\_4 | FAM20\_3 | 1 | 2 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | 0 | 0 | 0 | 0 | 0 |  | 0 | 0 | 0 | 0 | 0 |
| FAM20 | FAM20\_12 | FAM20\_4 | FAM20\_3 | 2 | 2 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | 0 | 0 | 0 | 0 | 0 |  | 0 | 0 | 0 | 0 | 0 |
| FAM20 | FAM20\_14 | FAM20\_4 | FAM20\_3 | 1 | 1 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | 0 | 0 | 0 | 0 | 0 |  | 0 | 0 | 0 | 0 | 0 |
| FAM20 | FAM20\_15 | FAM20\_4 | FAM20\_3 | 2 | 2 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | 0 | 0 | 0 | 0 | 0 |  | 0 | 0 | 0 | 0 | 0 |
| FAM20 | FAM20\_16 | FAM20\_4 | FAM20\_3 | 1 | 2 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | 0 | 0 | 0 | 0 | 0 |  | 0 | 0 | 0 | 0 | 0 |
| FAM21 | FAM21\_1 | FAM21\_6 | FAM21\_5 | 1 | 2 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | 0 | 0 | 0 | 0 | 0 |
| FAM21 | FAM21\_2 | FAM21\_6 | FAM21\_5 | 1 | 1 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | 0 | 0 | 0 | 0 | 0 |
| FAM21 | FAM21\_4 | FAM21\_6 | FAM21\_5 | 2 | 2 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | 0 | 0 | 0 | 0 | 0 |
| FAM22 | FAM22\_1 | FAM22\_36 | FAM22\_37 | 2 | 2 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | 0 | 0 | 0 | 0 | 0 |
| FAM22 | FAM22\_4 | FAM22\_36 | FAM22\_37 | 2 | 2 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | 0 | 0 | 0 | 0 | 0 |
| FAM22 | FAM22\_16 | FAM22\_36 | FAM22\_37 | 2 | 2 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | 0 | 0 | 0 | 0 | 0 |
| FAM22 | FAM22\_29 | FAM22\_36 | FAM22\_37 | 2 | 1 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | 0 | 0 | 0 | 0 | 0 |
| FAM23 | FAM23\_1 | FAM23\_13 | FAM23\_12 | 2 | 2 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | 0 | 0 | 0 | 0 | 0 |
| FAM23 | FAM23\_2 | FAM23\_13 | FAM23\_12 | 2 | 2 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | 0 | 0 | 0 | 0 | 0 |
| FAM23 | FAM23\_3 | FAM23\_13 | FAM23\_12 | 2 | 2 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | 0 | 0 | 0 | 0 | 0 |
| FAM23 | FAM23\_4 | FAM23\_13 | FAM23\_12 | 1 | 1 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | 0 | 0 | 0 | 0 | 0 |
| FAM23 | FAM23\_5 | FAM23\_13 | FAM23\_12 | 1 | 2 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | 0 | 0 | 0 | 0 | 0 |
| FAM24 | FAM24\_3 | FAM24\_2 | FAM24\_1 | 2 | 1 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | 0 | 0 | 0 | 0 | 0 |
| FAM24 | FAM24\_7 | FAM24\_2 | FAM24\_1 | 2 | 2 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | 0 | 0 | 0 | 0 | 0 |
| FAM24 | FAM24\_37 | FAM24\_59 | FAM24\_60 | 1 | 2 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | 0 | 0 | 0 | 0 | 0 |
| FAM24 | FAM24\_41 | FAM24\_59 | FAM24\_60 | 1 | 2 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | 0 | 0 | 0 | 0 | 0 |
| FAM24 | FAM24\_43 | FAM24\_41 | FAM24\_42 | 2 | 1 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | 0 | 0 | 0 | 0 | 0 |
| FAM24 | FAM24\_46 | FAM24\_59 | FAM24\_60 | 1 | 2 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | 0 | 0 | 0 | 0 | 0 |
| FAM25 | FAM25\_1 | FAM25\_10 | FAM25\_11 | 2 | 2 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | 0 | 0 | 0 | 0 | 0 |
| FAM25 | FAM25\_2 | FAM25\_10 | FAM25\_11 | 2 | 2 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | 0 | 0 | 0 | 0 | 0 |
| FAM25 | FAM25\_3 | FAM25\_10 | FAM25\_11 | 2 | 2 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | 0 | 0 | 0 | 0 | 0 |
| FAM25 | FAM25\_4 | FAM25\_10 | FAM25\_11 | 2 | 2 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | 0 | 0 | 0 | 0 | 0 |
| FAM25 | FAM25\_5 | FAM25\_10 | FAM25\_11 | 1 | 1 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | 0 | 0 | 0 | 0 | 0 |
| FAM25 | FAM25\_6 | FAM25\_10 | FAM25\_11 | 1 | 1 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | 0 | 0 | 0 | 0 | 0 |
| FAM25 | FAM25\_99 | FAM25\_10 | FAM25\_11 | 2 | 2 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | 0 | 0 | 0 | 0 | 0 |