**Supplementary Table 4.** A summary of selected class 1-3 Structural Equation Models showing the latent variables and observed variables used. *L* is a latent variable, *O* is an observed variable. 1Previous Infection is the number of microbial infections, and so an observed variable. Relevant SEM diagrams are shown in **Supplementary Fig. 3.**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Model** | **Age** | **Size** | **Season** | **Condition** | **Infcetion** | | | | | | **Immune State** | | | | | | | | | |
| **Previous Infection** | **Current Infection** | **Infection** | **Mites** | **Worms** | **Microbial Infections** | **Activated Immune State** | **Adaptive Immunity** | | **Innate Immunity** | **Immune Experience** | **Immune Capacity** | **Immune State** | **IgG** | **T cells** | **B cells** |
| *L/O* | *O* | *L* | *O* | *L* | *L* | *L* | *L* | *O* | *O* | *O* | *L* | *L* | *L* | | *L* | *L* | *L* | *O* | *L* | *L* |
| **1.10** | x | x |  |  | x | x |  |  |  |  | x |  |  | |  |  |  |  |  |  |
| **1.49** | x | x |  | x | x | x |  |  |  |  |  | x | x | |  |  |  |  |  |  |
| **1.66** | x |  |  | x |  |  |  |  |  | x |  | x | x | |  |  |  | x |  |  |
| **2.2** | x |  | x | x |  |  | x |  |  |  |  |  |  | | x | x |  |  |  |  |
| **2.4** | x |  | x | x |  |  | x |  |  |  |  |  |  | | x |  |  |  |  |  |
| **2.5** | x |  | x | x |  |  | x |  |  |  |  |  |  | |  | x |  |  |  |  |
| **2.14** | x |  | x | x | x1 | x |  |  |  | 1 |  |  |  | |  |  |  |  | x | x |
| **2.19** | x |  | x | x | x1 | x |  |  |  | 1 |  |  |  | | x | x |  |  |  |  |
| **3.1** | x | x | x | x |  |  |  | x |  | x |  |  |  | |  |  | x |  |  |  |
| **3.7** | x |  | x | x |  |  | x |  |  |  |  |  |  | |  |  | x |  |  |  |
| **3.10** | x |  | x | x |  |  |  | x | x | x |  |  |  | |  |  | x |  |  |  |
| **3.11** | x | x | x | x |  |  | x |  |  |  |  |  |  | |  |  | x |  |  |  |
| **3.12** | x | x | x | x |  |  | x |  |  |  |  |  |  | |  |  | x |  |  |  |