Table 1: Statistical Analysis Summary by Phase

Methodological overview for manuscript methods section

| Analysis Phase | Model IDs | Number of Tests | Sample Size Range | Phase Objective |
| --- | --- | --- | --- | --- |
| Biological Validation | PROOF-1, PROOF-2 | 2 | 305-336 | Biological Relevance Proof |
| Biological Validation | PROOF-1, PROOF-2 | 2 | 305-336 | Biological Relevance Proof |
| Cross-Population Translation | TRANS-1 | 1 | 305-305 | Gene Conservation Assessment |
| Field Translation | FIELD-1, FIELD-2, FIELD-3 | 3 | 169-305 | Field Application Success |
| Field Translation | FIELD-1, FIELD-2, FIELD-3 | 3 | 169-305 | Field Application Success |
| Field Translation | FIELD-1, FIELD-2, FIELD-3 | 3 | 169-305 | Field Application Success |
| Laboratory Development | DISC-1, DISC-2, DISC-3 | 3 | 136-136 | Model Development & Validation |
| Laboratory Development | DISC-1, DISC-2, DISC-3 | 3 | 136-136 | Model Development & Validation |
| Laboratory Development | DISC-1, DISC-2, DISC-3 | 3 | 136-136 | Model Development & Validation |