Table 1 – costs of immune activity

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Response** | **Predictor** | **Estimate** | **SE** | **CI** | **p\_value** |
| C-peptide | Intercept | 9.532 | 0.708 | [8.14,10.92] | <0.001 |
|  | Sex | -0.302 | 0.155 | [-0.61,0] | 0.059 |
|  | Age | 0.088 | 0.047 | [0,0.18] | 0.07 |
|  | Maternal Rank | -0.062 | 0.251 | [-0.55,0.43] | 0.806 |
|  | **log2 Neopterin** | 0.328 | 0.075 | [0.18,0.48] | <0.001 |
| ∆ELBM month | Intercept | 0.617 | 0.237 | [0.15,1.08] | 0.01 |
|  | Age | 0.008 | 0.009 | [-0.01,0.03] | 0.372 |
|  | Sex | -0.023 | 0.031 | [-0.08,0.04] | 0.444 |
|  | Maternal Rank | 0.009 | 0.049 | [-0.09,0.1] | 0.846 |
|  | log2 Neopterin | -0.011 | 0.021 | [-0.05,0.03] | 0.587 |
|  | **log2 C-peptide** | -0.04 | 0.015 | [-0.07,-0.01] | 0.01 |
| ∆ELBM samplet1-t0 | Intercept | 1.033 | 0.246 | [0.55,1.51] | <0.001 |
|  | Age | 0.01 | 0.008 | [-0.01,0.03] | 0.202 |
|  | Sex | -0.005 | 0.027 | [-0.06,0.05] | 0.85 |
|  | **log2 Neopterin** t0 | -0.102 | 0.025 | [-0.15,-0.05] | <0.001 |
|  | log2 C-peptide t0 | -0.019 | 0.016 | [-0.05,0.01] | 0.246 |
|  | **Sample interval** | -0.033 | 0.013 | [-0.06,-0.01] | 0.011 |
|  | **log2 Neo x Sample interval** | 0.003 | 0.001 | [0,0.01] | 0.023 |
|  | log2 CP x Sample interval | 0.001 | 0.001 | [0,0] | 0.271 |

Table 2 – constraints on immune activity

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Response** | **Predictor** | **Estimate** | **SE** | **CI** | **p\_value** |
| Neopterin | Intercept | 7.144 | 0.641 | [5.89,8.4] | <0.001 |
|  | Sex | -0.041 | 0.099 | [-0.23,0.15] | 0.678 |
|  | Age | 0.001 | 0.032 | [-0.06,0.06] | 0.975 |
|  | Maternal Rank | 0.051 | 0.158 | [-0.26,0.36] | 0.748 |
|  | **ELBM** | 1.447 | 0.239 | [0.98,1.91] | <0.001 |
|  | **log2 C-peptide** | 0.14 | 0.042 | [0.06,0.22] | 0.001 |
|  | Monthly rainfall | -0.016 | 0.031 | [-0.08,0.05] | 0.63 |
|  | N social partners | 0.007 | 0.01 | [-0.01,0.03] | 0.476 |

Supp table X

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Response | Predictor | Estimate | SE | CI | p\_value |
| Time feeding | Intercept | 0.279 | 0.061 | [0.16,0.4] | 0\* |
|  | Sex | -0.006 | 0.009 | [-0.02,0.01] | 0.545 |
|  | Age | 0 | 0.003 | [-0.01,0.01] | 0.982 |
|  | log2 Neopterin | -0.007 | 0.005 | [-0.02,0] | 0.197 |
|  | log2 C-peptide | 0.006 | 0.004 | [0,0.01] | 0.114 |
| Time resting | Intercept | 0.28 | 0.055 | [0.17,0.39] | 0\* |
|  | Sex | 0.026 | 0.011 | [0,0.05] | 0.025\* |
|  | Age | 0.009 | 0.003 | [0,0.02] | 0.01\* |
|  | **log2 Neopterin** | **0.014** | 0.005 | [0,0.02] | 0.003\* |
|  | **log2 C-peptide** | **-0.007** | 0.004 | [-0.01,0] | 0.04\* |
| Time moving | Intercept | 0.215 | 0.027 | [0.16,0.27] | 0\* |
|  | Sex | -0.003 | 0.005 | [-0.01,0.01] | 0.536 |
|  | Age | -0.007 | 0.002 | [-0.01,0] | 0\* |
|  | log2 Neopterin | -0.001 | 0.002 | [-0.01,0] | 0.77 |
|  | log2 C-peptide | 0.001 | 0.002 | [0,0] | 0.712 |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Response | Predictor | Estimate | SE | CI | p\_value |
| Time feeding | Intercept | 0.279 | 0.061 | [0.16,0.4] | 0\* |
|  | Sex | -0.006 | 0.009 | [-0.02,0.01] | 0.545 |
|  | Age | 0 | 0.003 | [-0.01,0.01] | 0.982 |
|  | log2 Neopterin | -0.007 | 0.005 | [-0.02,0] | 0.197 |
|  | log2 C-peptide | 0.006 | 0.004 | [0,0.01] | 0.114 |
| Time resting | Intercept | 0.28 | 0.055 | [0.17,0.39] | 0\* |
|  | Sex | 0.026 | 0.011 | [0,0.05] | 0.025\* |
|  | Age | 0.009 | 0.003 | [0,0.02] | 0.01\* |
|  | log2 Neopterin | 0.014 | 0.005 | [0,0.02] | 0.003\* |
|  | log2 C-peptide | -0.007 | 0.004 | [-0.01,0] | 0.04\* |
| Time moving | Intercept | 0.215 | 0.027 | [0.16,0.27] | 0\* |
|  | Sex | -0.003 | 0.005 | [-0.01,0.01] | 0.536 |
|  | Age | -0.007 | 0.002 | [-0.01,0] | 0\* |
|  | log2 Neopterin | -0.001 | 0.002 | [-0.01,0] | 0.77 |
|  | log2 C-peptide | 0.001 | 0.002 | [0,0] | 0.712 |

Estimate 95% CI Lower 95% CI Upper p-value

ACME 0.01069 -0.00175 0.03 0.11

ADE 0.21192 0.13033 0.29 <2e-16 \*\*\*

Total Effect 0.22261 0.13836 0.30 <2e-16 \*\*\*

Prop. Mediated 0.04295 -0.00925 0.14 0.11