**Figure 3-source data 2.** Competing models for fitting T cell reconstitution with respective AIC values. Best fit in bold-red (lowest AIC). The AIC values presented for each statistical assumption is the lowest of 10 runs of the SAEM algorithm with different randomly selected initial guesses.

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| --- | --- | --- | --- |
| **Model** | **Mechanistic Assumptions** | **Statistical Assumptions** | **ΔAIC** |
| 1 | * Full model as in **eq. 2** in main text. * Does not include compartment *Np2* | * All random effects>0. * No correlations among parameters. | 42.4 |
| * All random effects>0. * , * ,. | 24.9 |
| * All random effects>0. * , * ,. * ,. * ,. | 26.8 |
| 2 | * CD4+CCR5+ T cells do not downregulate CCR5 (). * Does not include compartment *Np2* | * All random effects>0. * No correlations among parameters. | 78.4 |
| 3 | * Thymic export rate of naïve CD4+ and CD8+ T cells is the same (). * Does not include compartment *Np2* | * All random effects>0. * No correlations among parameters. | 41.7 |
| * All random effects>0. * , * ,. | 25.9 |
| * All random effects>0. * , * ,. * ,. * ,. | 28.1 |
| 4 | * CD4+CCR5+ T cells do not downregulate CCR5 (). * Thymic export rate of naïve CD4+ and CD8+ T cells is the same () . * Does not include compartment *Np2* | * All random effects>0. * No correlations among parameters. | 69.2 |
| 5 | * CD4+CCR5- T cells are long-lived and do not proliferate (). * Does not include compartment *Np2* | * All random effects>0. * No correlations among parameters. | 45.9 |
| 6 | * CD4+CCR5- T cells are long-lived and do not proliferate (). * CD4+CCR5+ T cells do not downregulate CCR5 (). * Does not include compartment *Np2* | * All random effects>0. * No correlations among parameters. | 70.1 |
| 7 | * CD4+CCR5- T cells are long-lived and do not proliferate (). * Thymic export rate of naïve CD4+ and CD8+ T cells is the same (). * Does not include compartment *Np2* | * All random effects>0. * No correlations among parameters. | 53.5 |
| 8 | * CD4+CCR5- T cells are long-lived and do not proliferate (). * Thymic export rate of naïve CD4+ and CD8+ T cells is the same (). * CD4+CCR5+ T cells do not downregulate CCR5 (). * Does not include compartment *Np2* | * All random effects>0. * No correlations among parameters. | 91.1 |
| 9 | * CD4+CCR5- T cells do not proliferate (). * Does not include compartment *Np2* | * All random effects>0. * No correlations among parameters. | 44.5 |
| * All random effects>0. * , * ,. | 27.3 |
| * All random effects>0. * , * ,. * ,. * ,. | 23.2 |
| 10 | * CD4+CCR5- T cells do not proliferate (). * CD4+CCR5+ T cells do not downregulate CCR5 (). * Does not include compartment *Np2* | * All random effects>0. * No correlations among parameters. | 67.0 |
| 11 | * CD4+CCR5- T cells do not proliferate (). * Thymic export rate of naïve CD4+ and CD8+ T cells is the same (). * Does not include compartment *Np2* | * All random effects>0, * no correlations. | 45.7 |
| * All random effects>0. * , * ,. | 21.2 |
| * All random effects>0. * , * ,. * ,. * ,. | 18.7 |
| * Random effects equal to zero for parameters: , , , , , and * All random effects>0. * , * ,. * ,. * ,. | 2.8 |
| * Random effects equal to zero for parameters: , , , , and * , * ,. * ,. * ,. | **0.0** |
| 12 | * CD4+CCR5- T cells do not proliferate (). * Thymic export rate of naïve CD4+ and CD8+ T cells is the same (). * CD4+CCR5+ T cells do not downregulate CCR5 (). * Does not include compartment *Np2* | * All random effects>0. * No correlations among parameters. | 63.8 |
| 13 | * Full model as in **eq. 2** in main text. * Includes compartment *Np2* | * All random effects>0. * No correlations among parameters. | 42.2 |
| * All random effects>0. * , * ,. | 26.1 |
| * All random effects>0. * , * ,. * ,. * ,. | 30.5 |
| 14 | * CD4+CCR5+ T cells do not downregulate CCR5 (). * Includes compartment *Np2* | * All random effects>0. * No correlations among parameters. | 81.3 |
| 15 | * Thymic export rate of naïve CD4+ and CD8+ T cells is the same (). * Includes compartment *Np2* | * All random effects>0. * No correlations among parameters. | 55.3 |
| * All random effects>0. * , * ,. | 47.1 |
| 16 | * CD4+CCR5+ T cells do not downregulate CCR5 (). * Thymic export rate of naïve CD4+ and CD8+ T cells is the same () . * Includes compartment *Np2* | * All random effects>0. * No correlations among parameters. | 71.7 |
| 17 | * CD4+CCR5- T cells are long-lived and do not proliferate (). * Includes compartment *Np2* | * All random effects>0. * No correlations among parameters. | 44.5 |
| 18 | * CD4+CCR5- T cells are long-lived and do not proliferate (). * CD4+CCR5+ T cells do not downregulate CCR5 (). * Includes compartment *Np2* | * All random effects>0. * No correlations among parameters. | 67.3 |
| 19 | * CD4+CCR5- T cells are long-lived and do not proliferate (). * Thymic export rate of naïve CD4+ and CD8+ T cells is the same (). * Includes compartment *Np2* | * All random effects>0. * No correlations among parameters. | 52.6 |
| 20 | * CD4+CCR5- T cells are long-lived and do not proliferate (). * Thymic export rate of naïve CD4+ and CD8+ T cells is the same (). * CD4+CCR5+ T cells do not downregulate CCR5 (). * Includes compartment *Np2* | * All random effects>0. * No correlations among parameters. | 87.4 |
| 21 | * CD4+CCR5- T cells do not proliferate (). * Includes compartment *Np2* | * All random effects>0. * No correlations among parameters. | 44.4 |
| * All random effects>0. * , * ,. | 18.6 |
| * All random effects>0. * , * ,. * ,. * ,. | 15.0 |
| 22 | * CD4+CCR5- T cells do not proliferate (). * CD4+CCR5+ T cells do not downregulate CCR5 (). * Includes compartment *Np2* | * All random effects>0. * No correlations among parameters. | 68.0 |
| 23 | * CD4+CCR5- T cells do not proliferate (). * Thymic export rate of naïve CD4+ and CD8+ T cells is the same (). * Includes compartment *Np2* | * All random effects>0, * no correlations. | 44.3 |
| * All random effects>0. * , * ,. | 21.3 |
| * All random effects>0. * , * ,. * ,. * ,. | 18.5 |
| * Random effects equal to zero for parameters: , , , , , and * All random effects>0. * , * ,. * ,. * ,. | 2.2 |
| * Random effects equal to zero for parameters: , , , , and * , * ,. * ,. * ,. | **0.2** |
| 24 | * CD4+CCR5- T cells do not proliferate (). * Thymic export rate of naïve CD4+ and CD8+ T cells is the same (). * CD4+CCR5+ T cells do not downregulate CCR5 (). * Includes compartment *Np2* | * All random effects>0. * No correlations among parameters. | 64.2 |