Bibliography


[8] Opravil M., B. Ledergerber, H. Furrer, S. Gallant, B. Hirschel, F. Meienberg, T. Wagels, E. Bernasconi, M. Rickenbach, R. Weberand The Swiss HIV Cohort Study


[75] Gumel A.B., Shivakumar P.N. and Sahai B.M. “A mathematical model for the
dynamics of HIV-1 during the typical course of infection”, *Nonlin. Anal.*, 47, pp.

[76] Hraba T. and J. Dolezal, “A mathematical model and CD4+ lymphocyte dynamics

[77] Kirschner D. “Using mathematics to understand HIV immune dynamics”, *AMS

[78] Kirschner D. and Perelson A.S. “A model for the immune system response to HIV:
AZT treatment studies”, in: *Mathematical Population Dynamics: Analysis of Heter-


[80] Kramer I., “Modeling the dynamical impact of HIV on the immune system: viral


[84] Nowak M.A. and May R.M. *Virus Dynamics: mathematical principles of immunol-


[86] Tan W-Y. and Wu H. “Stochastic modeling of the dynamics of CD4+ T-cell infection

[87] Wodarz D. “Helper-dependent vs. helper-independent CTL responses in HIV in-


Appendix A

Parameter Estimates

Table A.1: Parameter estimates for the latently infected model: Set 1.

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>$s_T$</td>
<td>$10 \text{ mm}^{-3} \text{ day}^{-1}$</td>
</tr>
<tr>
<td>$p$</td>
<td>0.03 day$^{-1}$</td>
</tr>
<tr>
<td>$T_{max}$</td>
<td>$1500 \text{ mm}^{-3}$</td>
</tr>
<tr>
<td>$d_T$</td>
<td>0.01 day$^{-1}$</td>
</tr>
<tr>
<td>$\beta_T$</td>
<td>$7.5 \times 10^{-6} \text{ mm}^3 \text{ day}^{-1}$</td>
</tr>
<tr>
<td>$\delta_l$</td>
<td>0.01 day$^{-1}$</td>
</tr>
<tr>
<td>$\delta_a$</td>
<td>0.5 day$^{-1}$</td>
</tr>
<tr>
<td>$k$</td>
<td>0.075</td>
</tr>
<tr>
<td>$q_l$</td>
<td>0.05</td>
</tr>
<tr>
<td>$q_a$</td>
<td>0.55</td>
</tr>
<tr>
<td>$r_T$</td>
<td>2000 cell$^{-1}$ day$^{-1}$</td>
</tr>
<tr>
<td>$c$</td>
<td>5 day$^{-1}$</td>
</tr>
</tbody>
</table>

[84, 85, 50, 46]
Table A.2: Parameter estimates for the latently infected model: Set 2.

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>$s_T$</td>
<td>10 mm$^{-3}$ day$^{-1}$</td>
</tr>
<tr>
<td>$p$</td>
<td>0.03 day$^{-1}$</td>
</tr>
<tr>
<td>$T_{max}$</td>
<td>1000 mm$^{-3}$</td>
</tr>
<tr>
<td>$d_T$</td>
<td>0.01 day$^{-1}$</td>
</tr>
<tr>
<td>$\beta_T$</td>
<td>$4 \times 10^{-5}$ mm$^3$ day$^{-1}$</td>
</tr>
<tr>
<td>$\delta_l$</td>
<td>0.01 day$^{-1}$</td>
</tr>
<tr>
<td>$\delta_a$</td>
<td>0.5 day$^{-1}$</td>
</tr>
<tr>
<td>$k$</td>
<td>0.025</td>
</tr>
<tr>
<td>$q_l$</td>
<td>0.005</td>
</tr>
<tr>
<td>$q_a$</td>
<td>0.55</td>
</tr>
<tr>
<td>$r_T$</td>
<td>240 cell$^{-1}$ day$^{-1}$</td>
</tr>
<tr>
<td>$c$</td>
<td>5 day$^{-1}$</td>
</tr>
</tbody>
</table>

Table A.3: Parameter estimates for the latently infected model: Set 3.

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>$s_T$</td>
<td>10 mm$^{-3}$ day$^{-1}$</td>
</tr>
<tr>
<td>$d_T$</td>
<td>0.01 day$^{-1}$</td>
</tr>
<tr>
<td>$\beta_T$</td>
<td>$7.5 \times 10^{-6}$ mm$^3$ day$^{-1}$</td>
</tr>
<tr>
<td>$q_l$</td>
<td>0.05</td>
</tr>
<tr>
<td>$q_a$</td>
<td>0.8</td>
</tr>
<tr>
<td>$\delta_l$</td>
<td>0.01 day$^{-1}$</td>
</tr>
<tr>
<td>$\delta_a$</td>
<td>0.5 day$^{-1}$</td>
</tr>
<tr>
<td>$k$</td>
<td>0.075</td>
</tr>
<tr>
<td>$r_T$</td>
<td>2000 virions cell$^{-1}$ day$^{-1}$</td>
</tr>
<tr>
<td>$c$</td>
<td>5 day$^{-1}$</td>
</tr>
</tbody>
</table>

[85, 50, 84, 7, 90].
Table A.4: Typical parameters estimates for the extended model.

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Typical Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>$T(0)$</td>
<td>$10^6$ mL$^{-1}$</td>
</tr>
<tr>
<td>$M(0)$</td>
<td>$3 \times 10^4$ mL$^{-1}$</td>
</tr>
<tr>
<td>$V(0)$</td>
<td>$10$ mL$^{-1}$</td>
</tr>
<tr>
<td>$s_T$</td>
<td>$10^4$ mL$^{-1}$day$^{-1}$</td>
</tr>
<tr>
<td>$d_T$</td>
<td>0.01 day$^{-1}$</td>
</tr>
<tr>
<td>$\beta_T$</td>
<td>$4.5 \times 10^{-8}$ mL day$^{-1}$</td>
</tr>
<tr>
<td>$p$</td>
<td>0.02 day$^{-1}$</td>
</tr>
<tr>
<td>$T_m$</td>
<td>$10^6$ mL$^{-1}$</td>
</tr>
<tr>
<td>$q_l$</td>
<td>0.005</td>
</tr>
<tr>
<td>$q_a$</td>
<td>0.55</td>
</tr>
<tr>
<td>$\delta_l$</td>
<td>0.01 day$^{-1}$</td>
</tr>
<tr>
<td>$\delta_a$</td>
<td>0.5 day$^{-1}$</td>
</tr>
<tr>
<td>$k$</td>
<td>0.025 day$^{-1}$</td>
</tr>
<tr>
<td>$s_M$</td>
<td>150 mL$^{-1}$day$^{-1}$</td>
</tr>
<tr>
<td>$d_M$</td>
<td>0.005 day$^{-1}$</td>
</tr>
<tr>
<td>$\beta_M$</td>
<td>$1.75 \times 10^{-8}$ mL day$^{-1}$</td>
</tr>
<tr>
<td>$q_M$</td>
<td>1</td>
</tr>
<tr>
<td>$\mu$</td>
<td>0.05 day$^{-1}$</td>
</tr>
<tr>
<td>$r_T$</td>
<td>240 cell$^{-1}$day$^{-1}$</td>
</tr>
<tr>
<td>$r_M$</td>
<td>35 cell$^{-1}$day$^{-1}$</td>
</tr>
<tr>
<td>$c$</td>
<td>5 day$^{-1}$</td>
</tr>
<tr>
<td>$\eta_{rt}$</td>
<td>[0, 1]</td>
</tr>
<tr>
<td>$\eta_{pi}$</td>
<td>[0, 1]</td>
</tr>
<tr>
<td>$\alpha_{rt}$</td>
<td>(0, 1]</td>
</tr>
<tr>
<td>$\alpha_{pi}$</td>
<td>(0, 1]</td>
</tr>
<tr>
<td>$\eta_{ps}$</td>
<td>[0, 1]</td>
</tr>
<tr>
<td>$\eta_{da}$</td>
<td>[0, 1]</td>
</tr>
</tbody>
</table>

[46, 71, 78, 84, 176]