

## S3 Text. Profile likelihood and sensitivity of model fit to assumed parameters

In the profile likelihood plots, the red dot indicates the maximum likelihood estimate, the black dots are the best binned output from the global optimization process, the black line shows the continuous approximation to the profile likelihood, and the blue dashed line indicates the threshold value for the confidence interval (the maximum log-likelihood value plus half the 95% percentile for the  $\chi^2$  distribution for  $k$  degrees of freedom; S1 Text). In the sensitivity analysis plots, the red dot indicates the maximum likelihood estimate for the baseline value (Table 1), the black line shows the log-likelihood for the alternative parameter value, and the blue dashed line (the maximum log-likelihood value plus half the 95% percentile for the  $\chi^2$  distribution for one degree of freedom) is an indicator of when the quality of the fit becomes significantly worse.

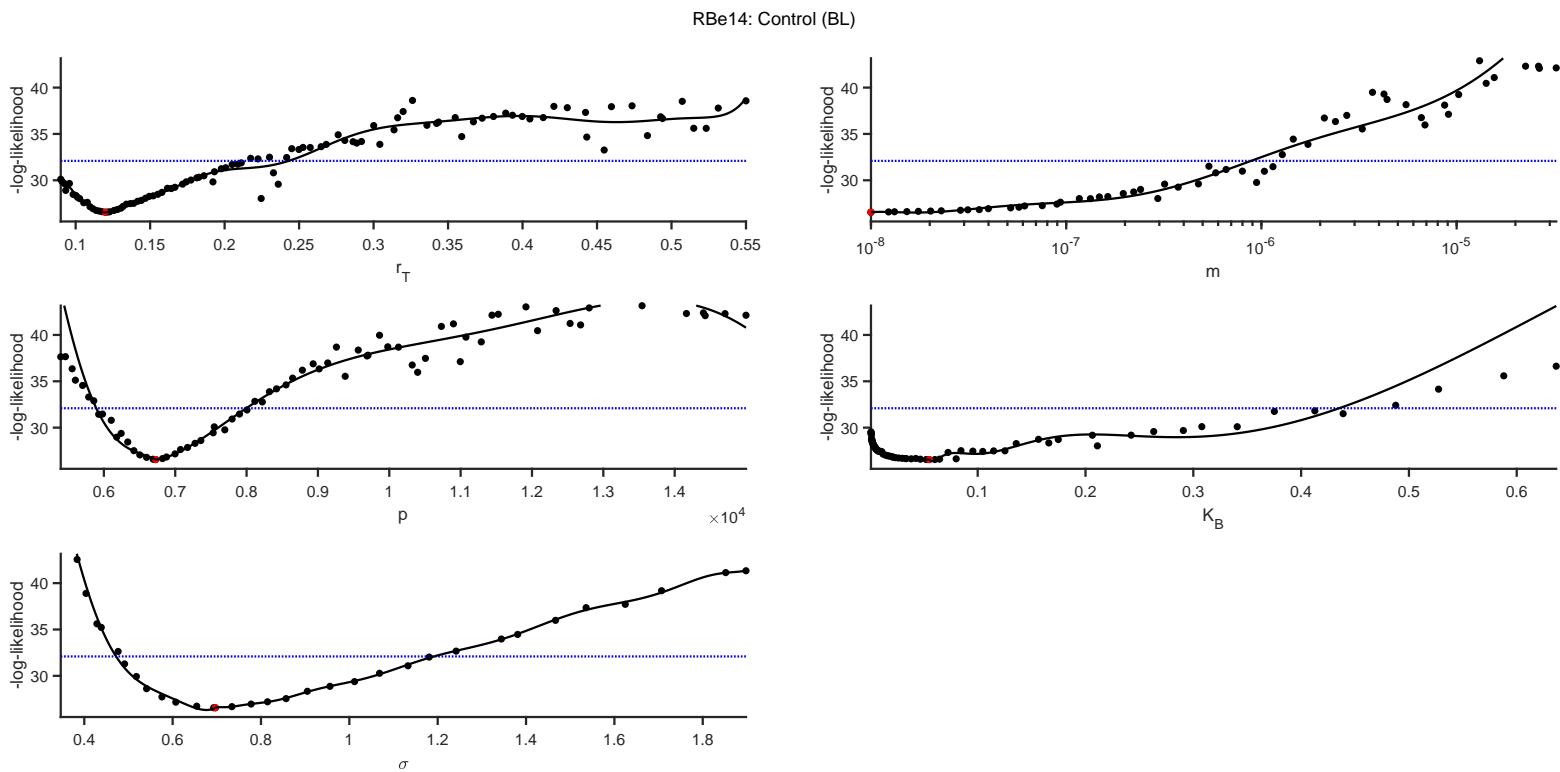
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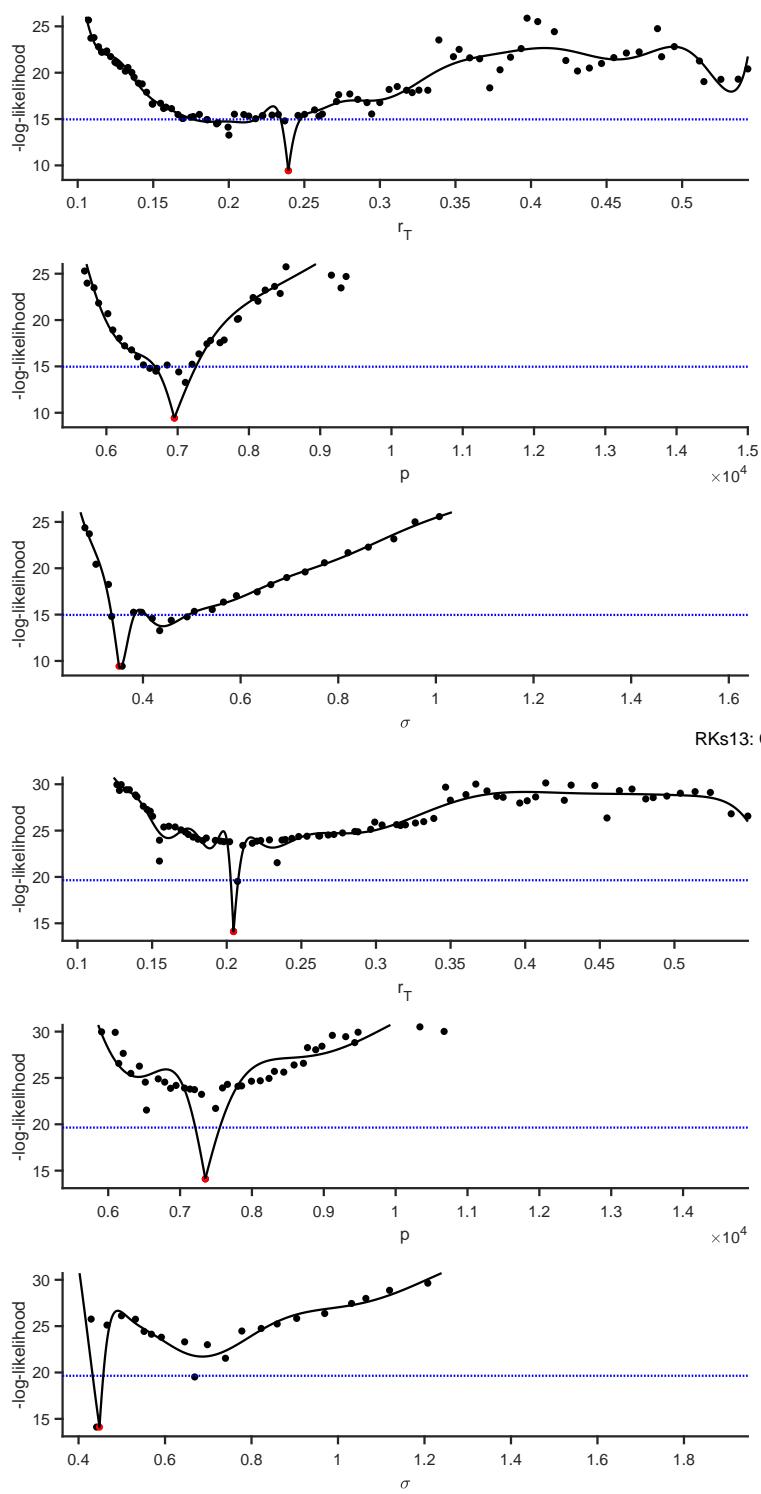
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# 1 Likelihood profiles: Control macaques

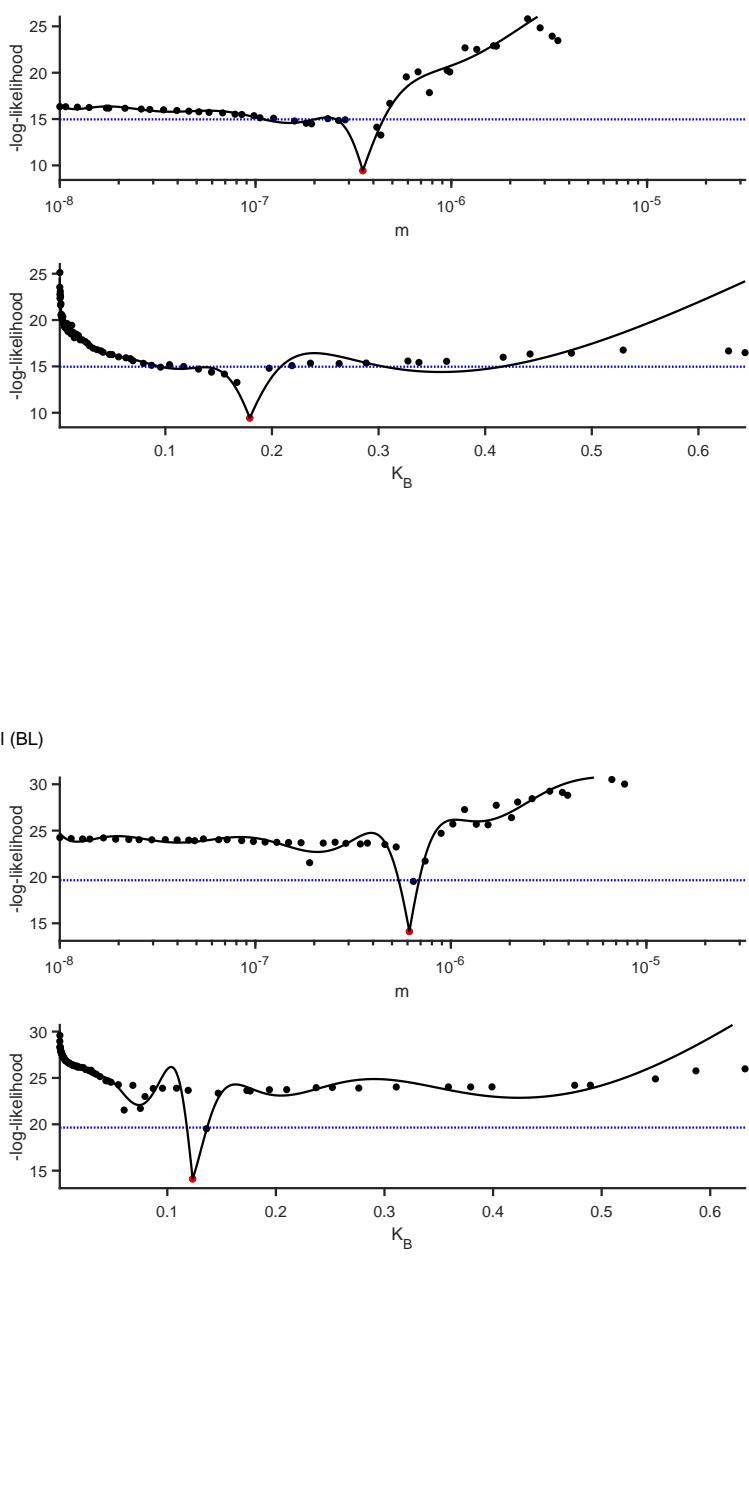
## 1.1 Baseline effector cell source model



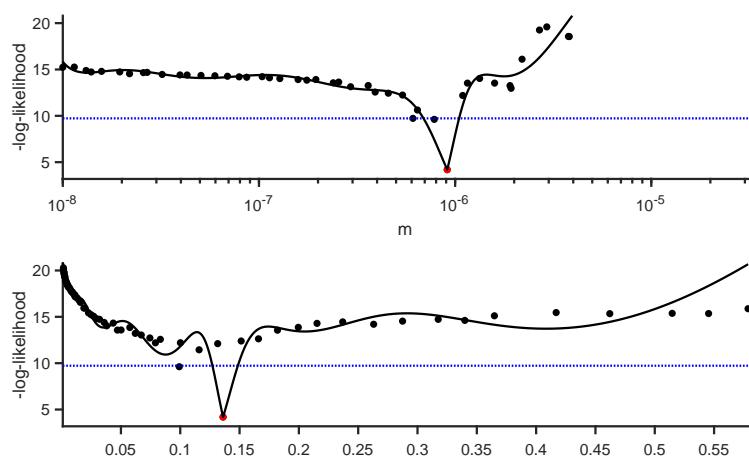
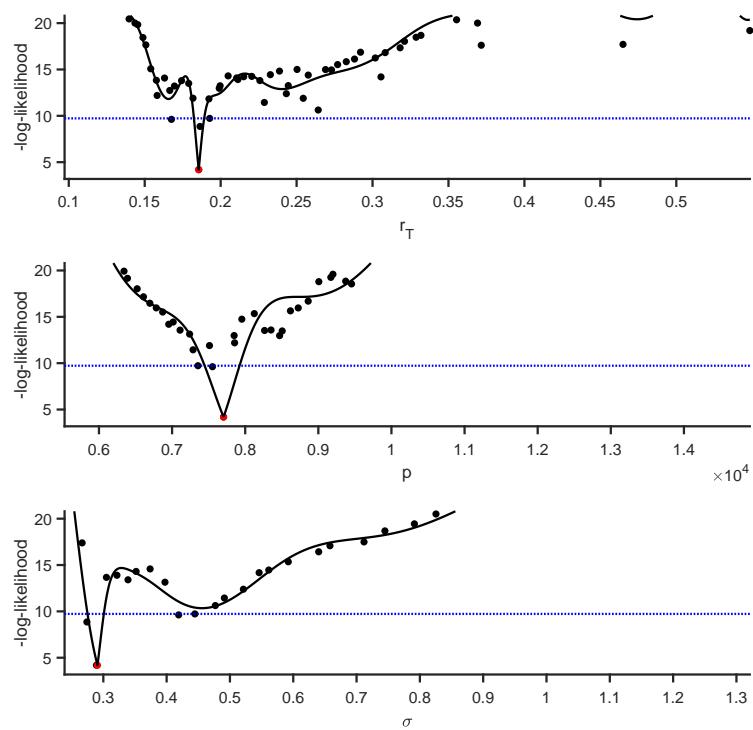
Rlt11: Control (BL)



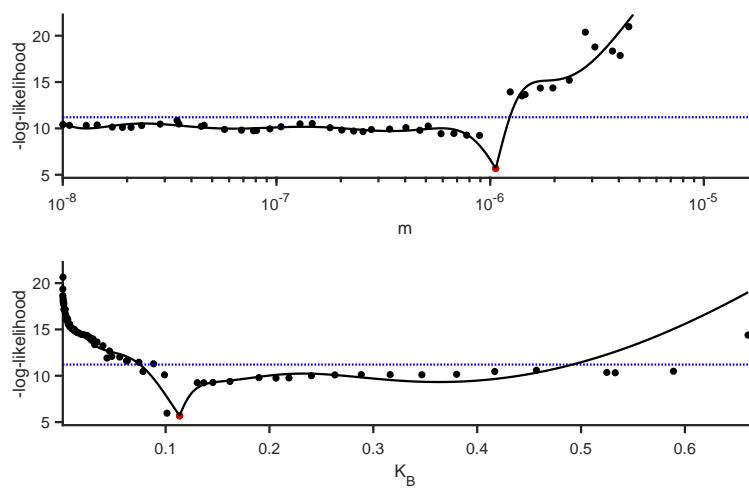
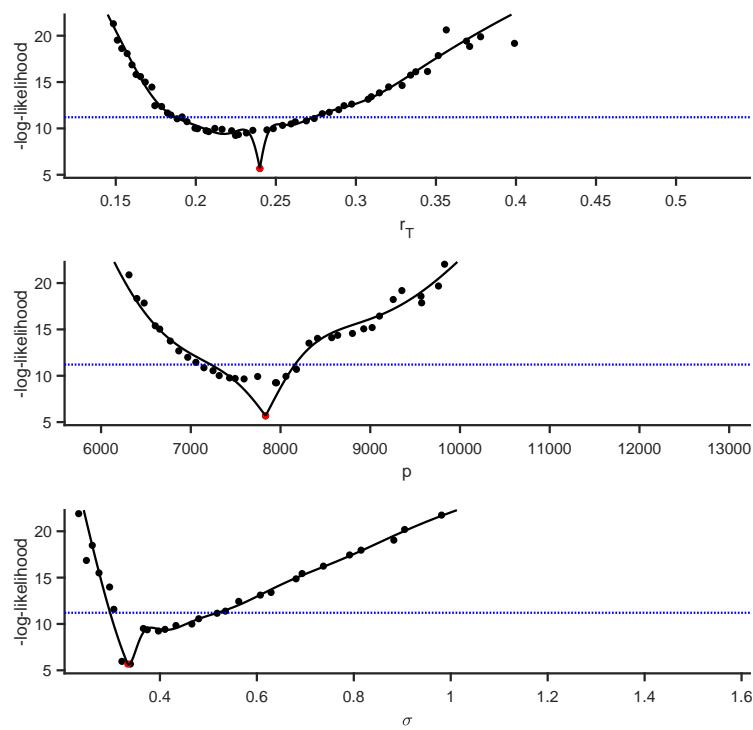
RKs13: Control (BL)



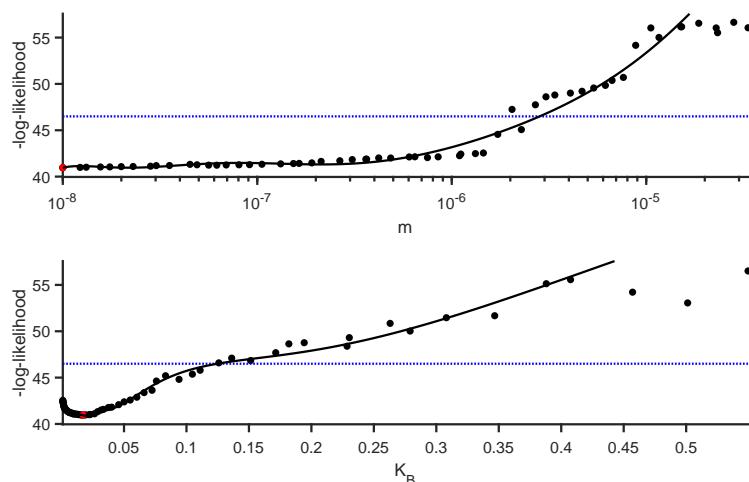
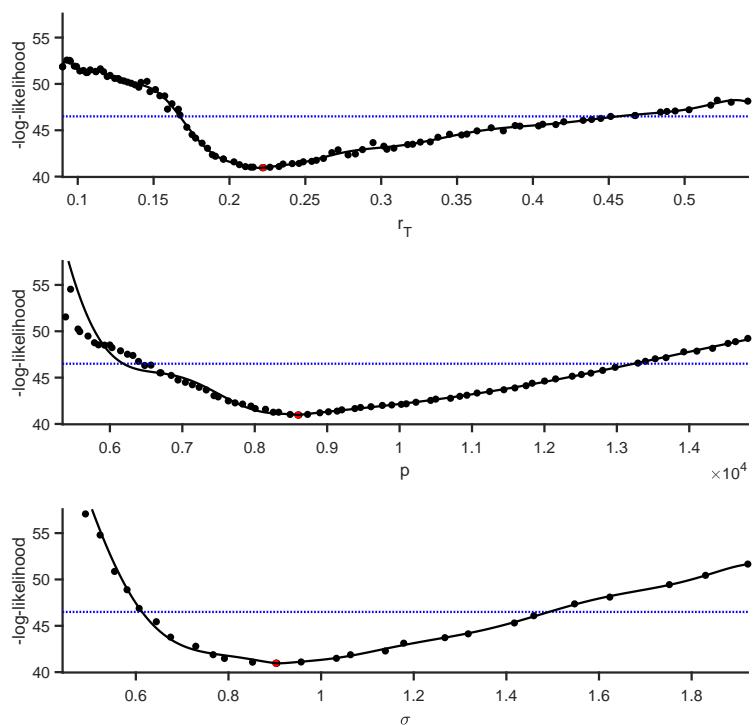
RSy13: Control (BL)



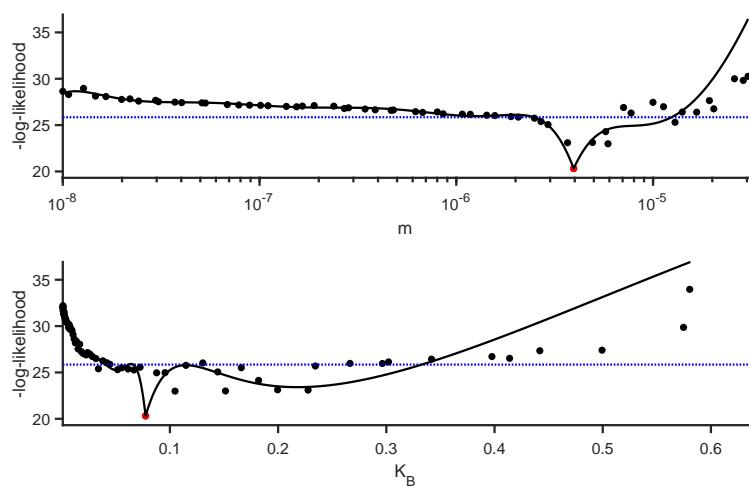
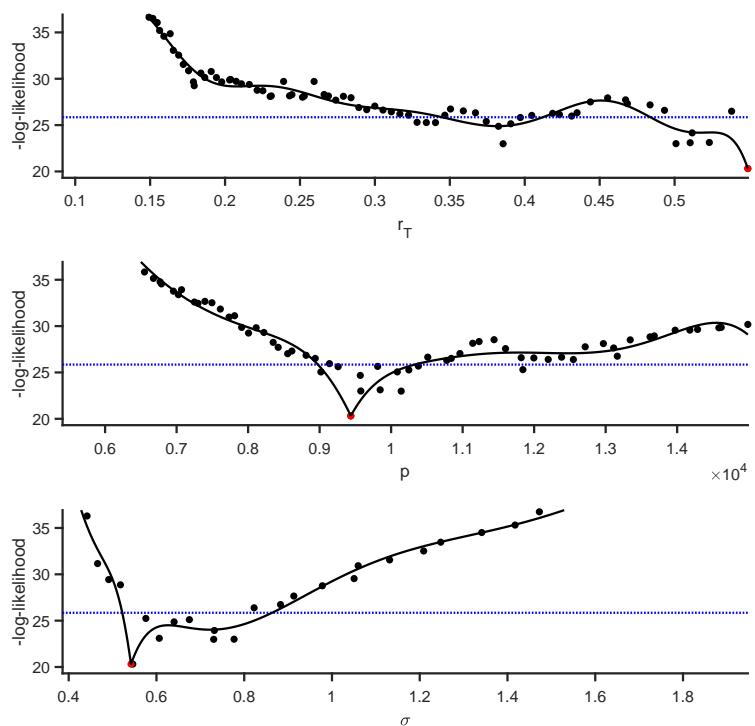
RYy13: Control (BL)



RLo14: Control (BL)

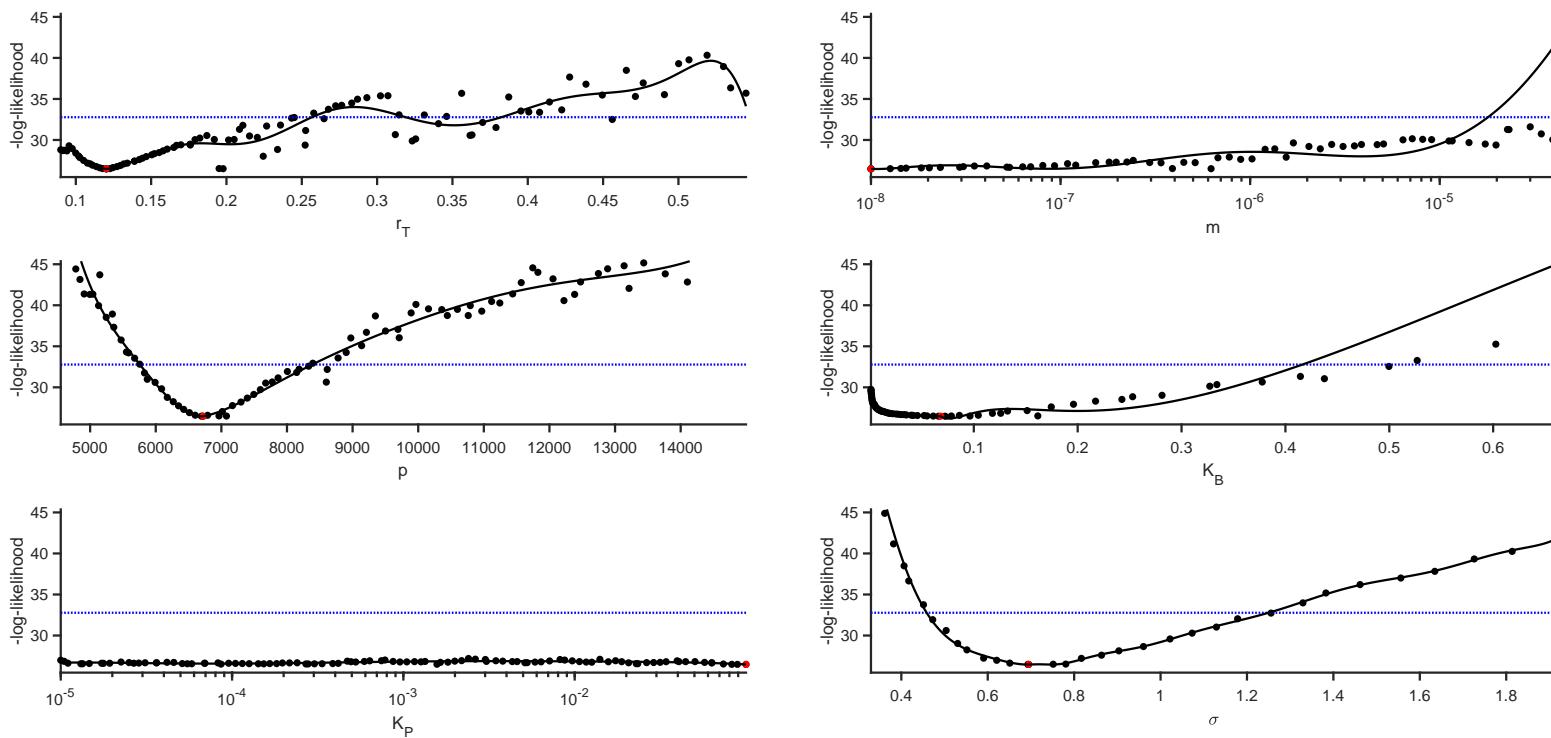


RUs14: Control (BL)

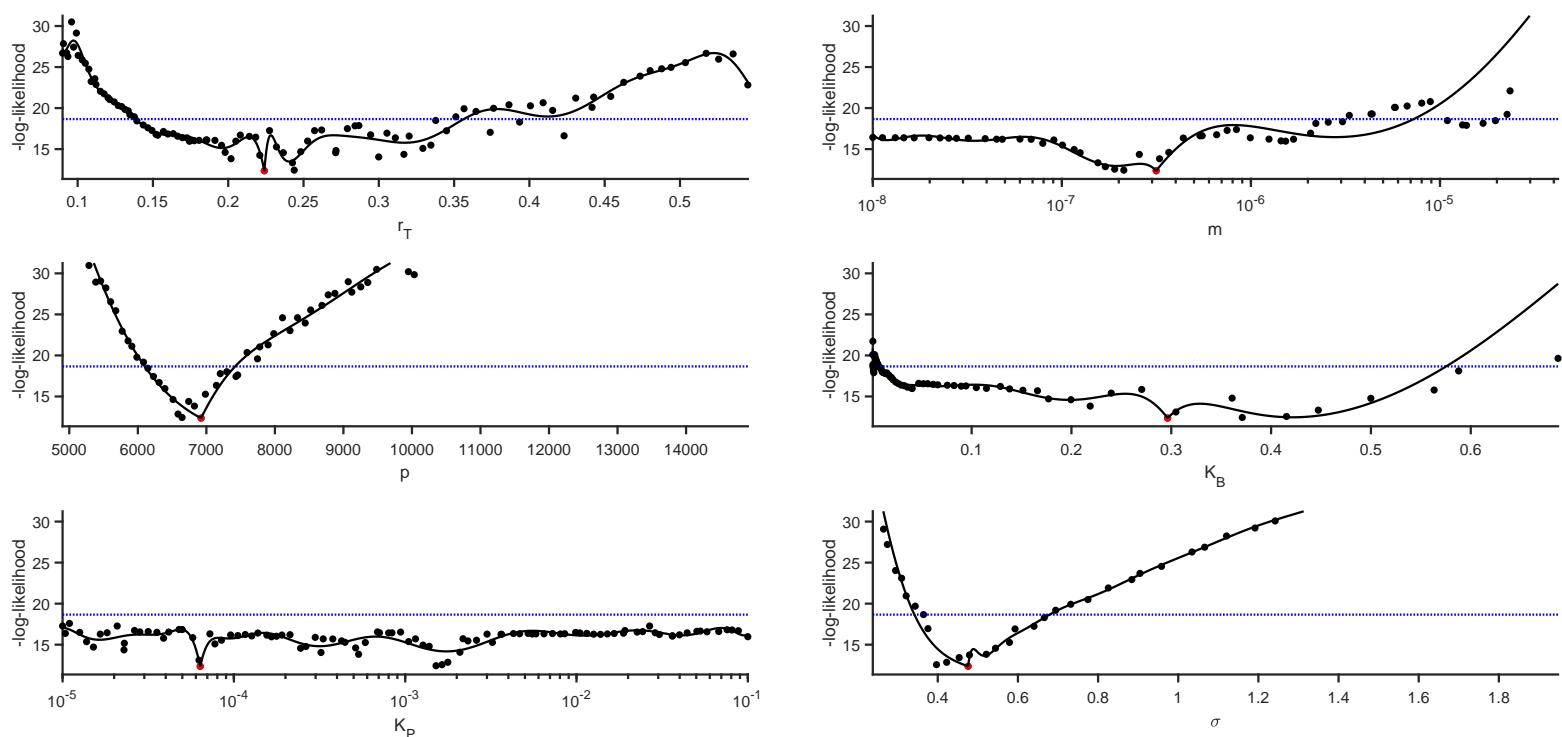


## 1.2 Saturated effector cell source model

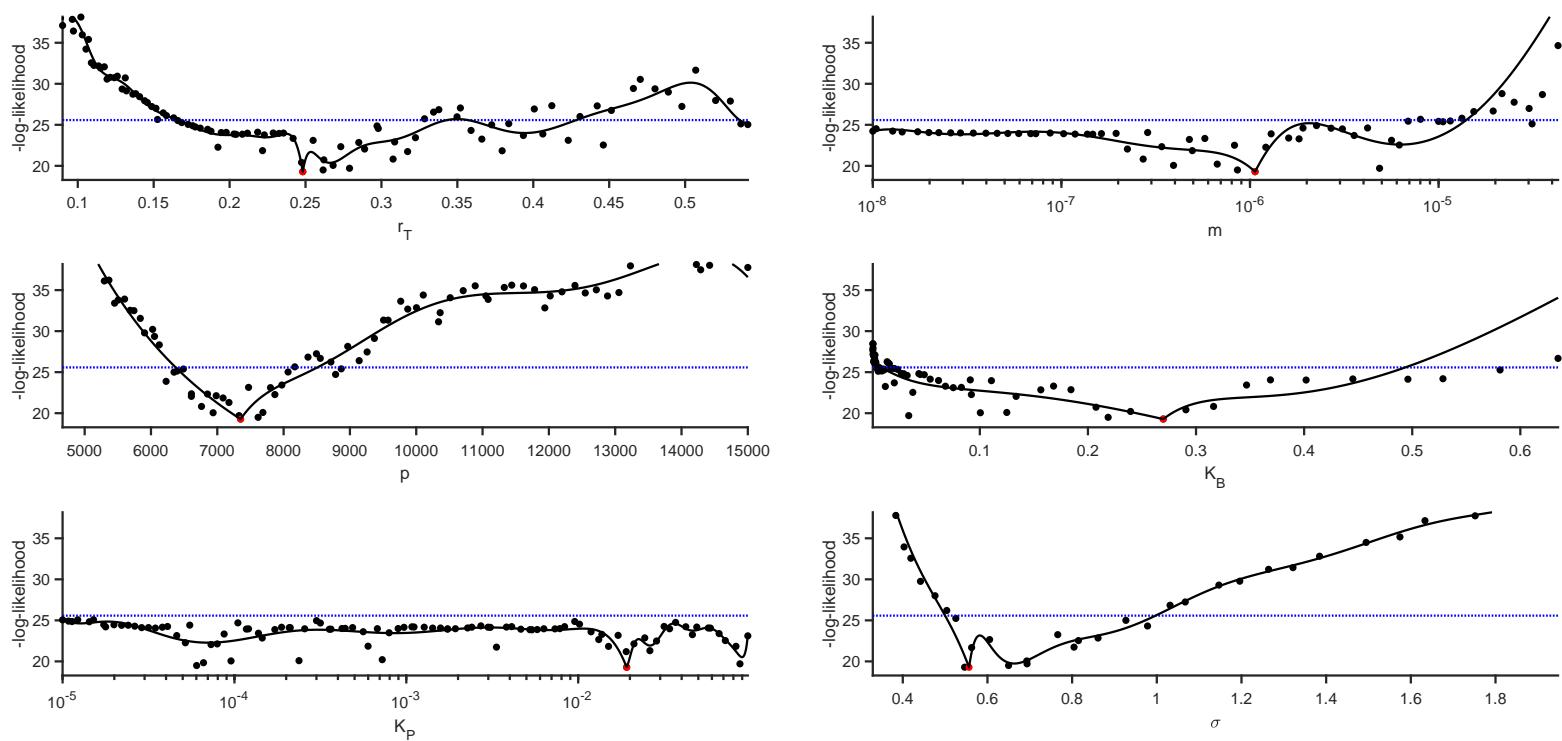
RBe14: Control (SS)



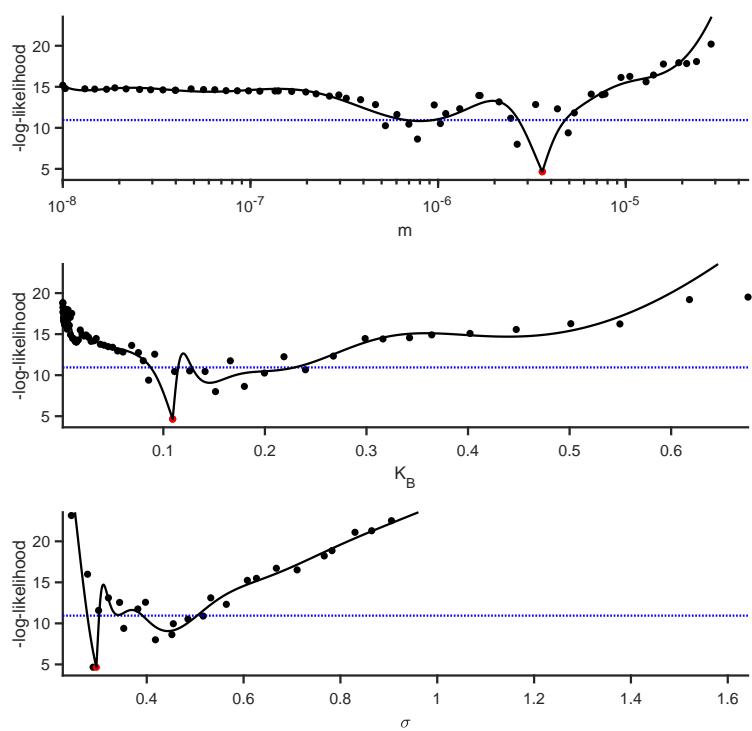
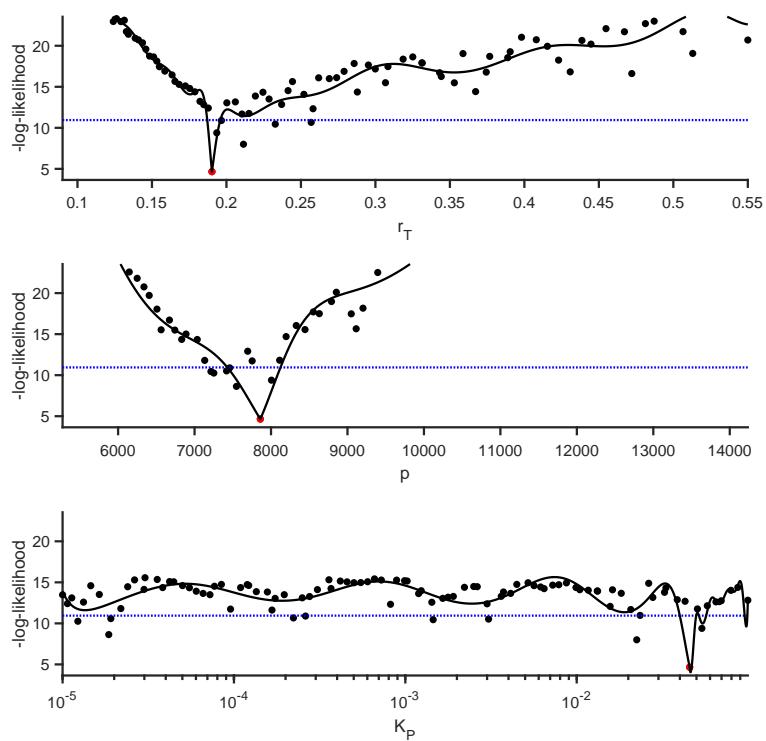
Rlt11: Control (SS)



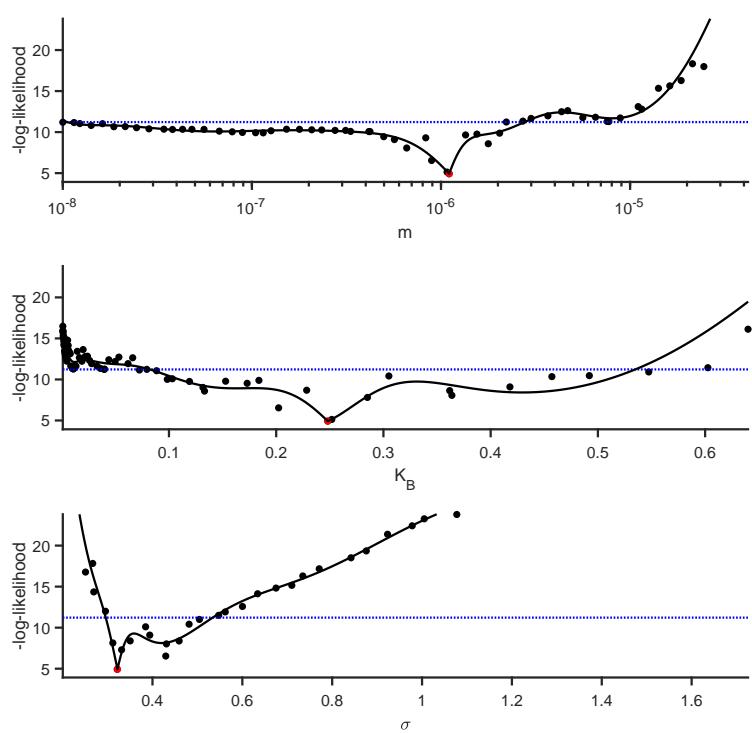
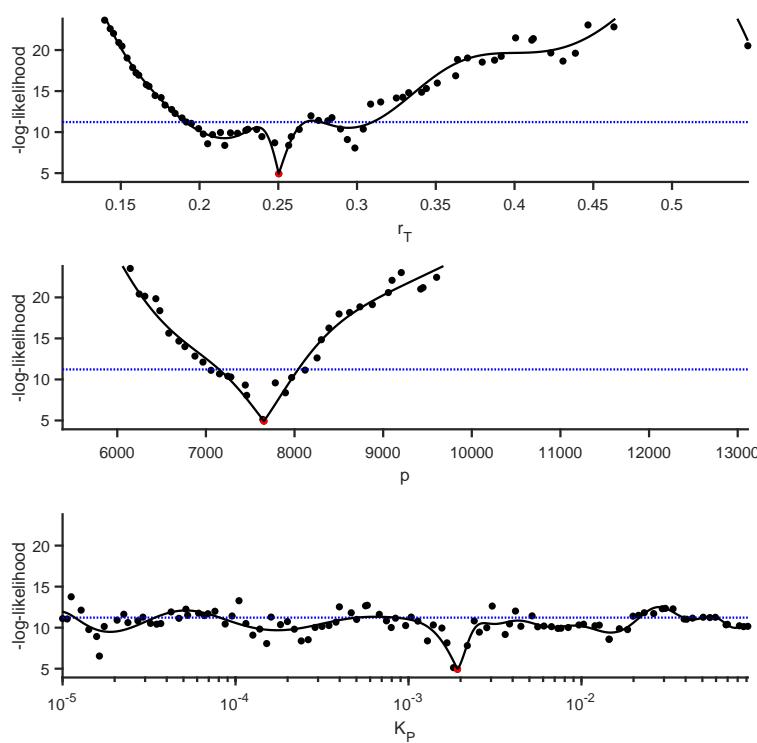
RKs13: Control (SS)



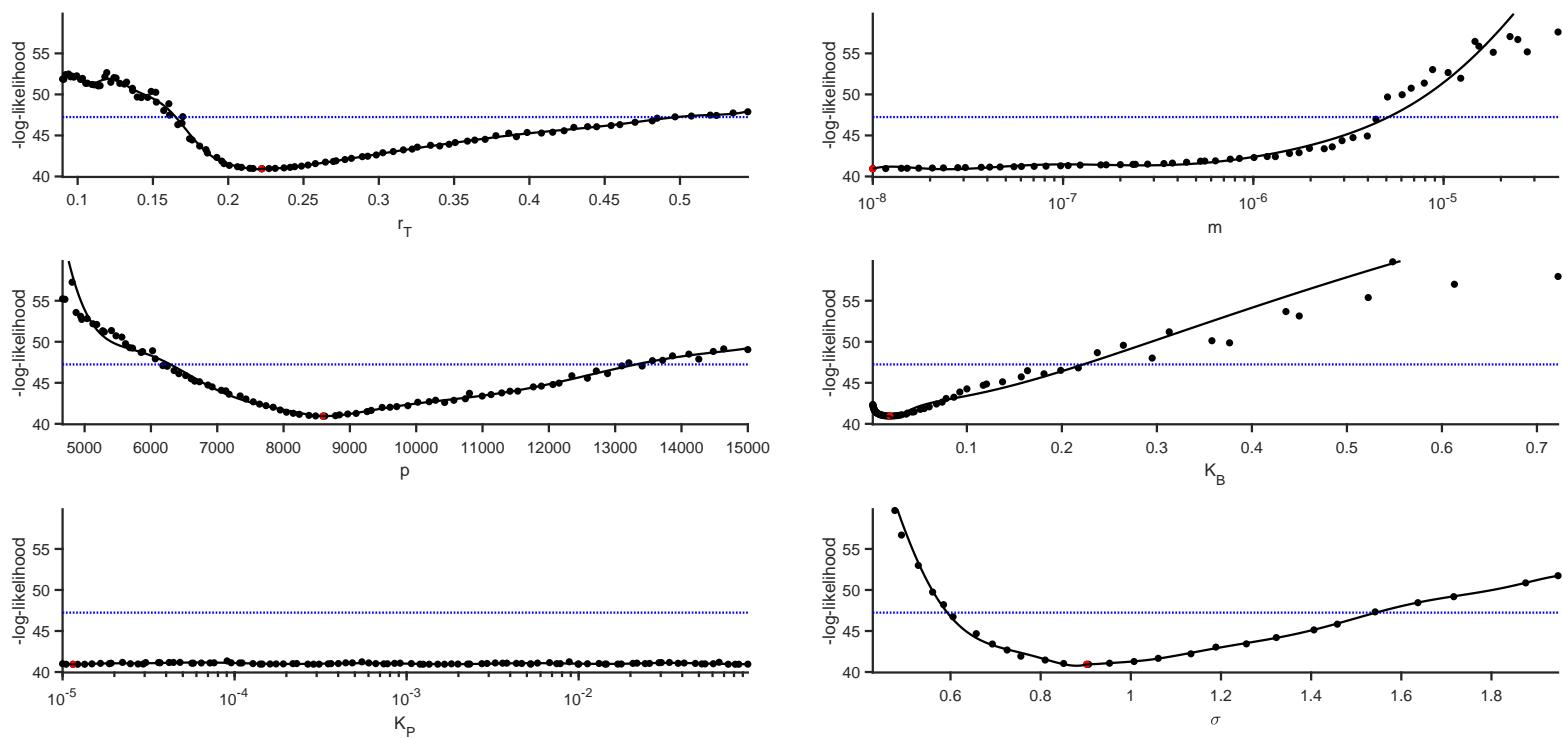
RSy13: Control (SS)



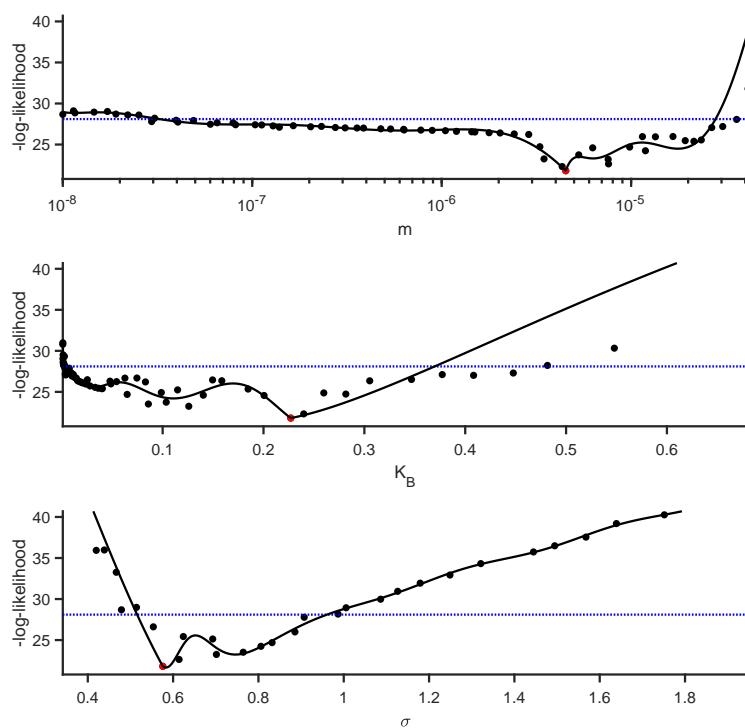
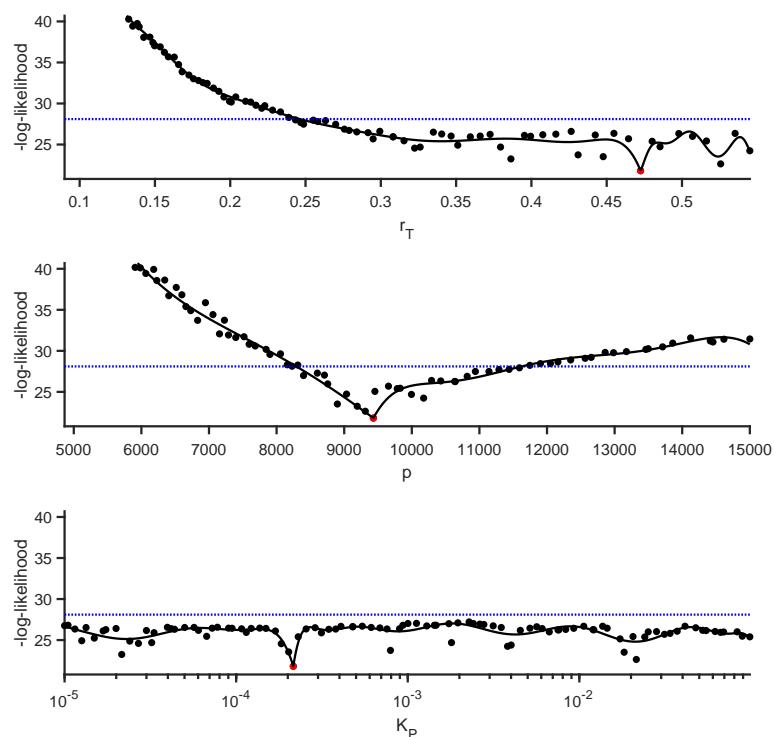
RYy13: Control (SS)



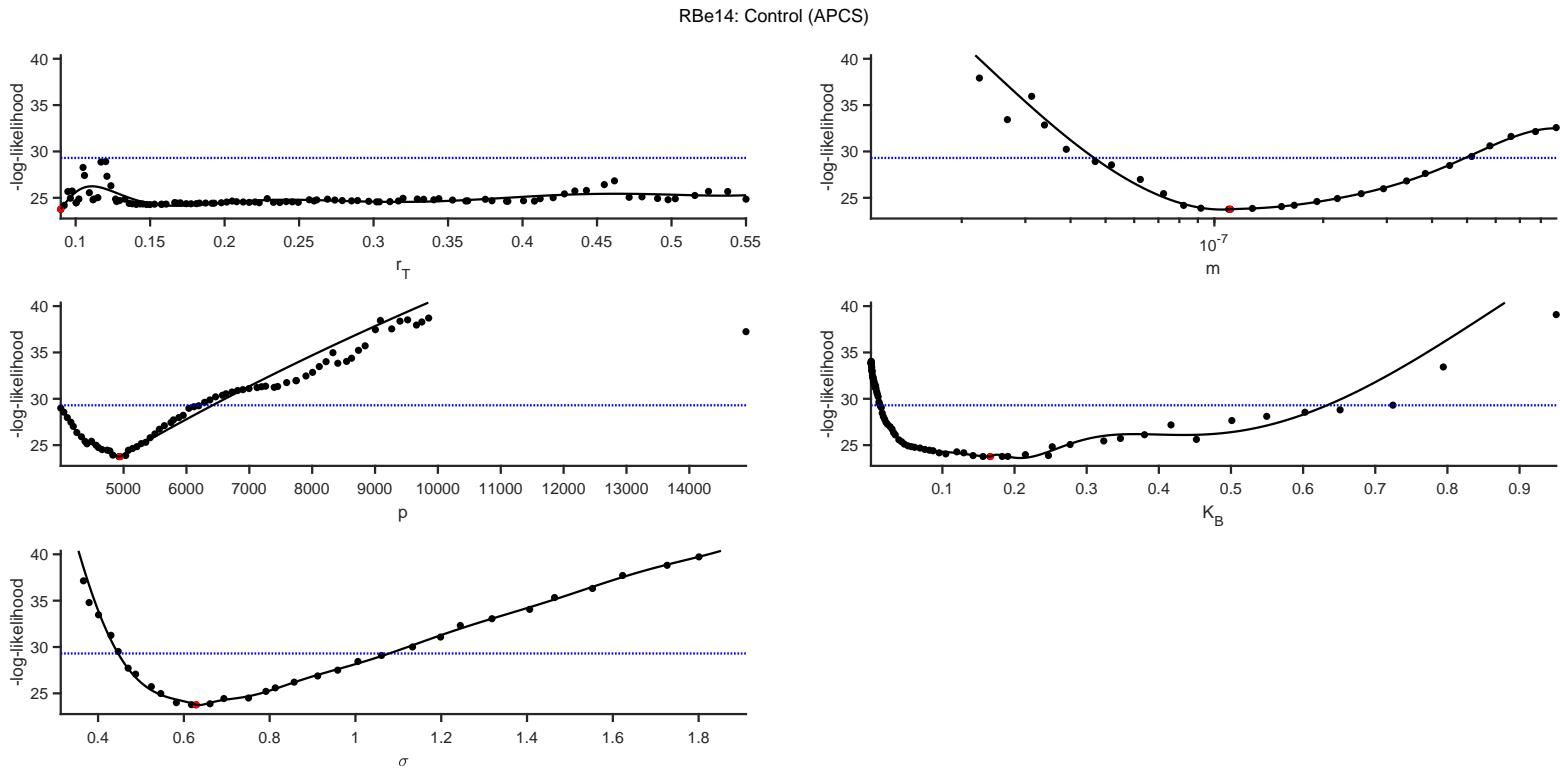
RLo14: Control (SS)



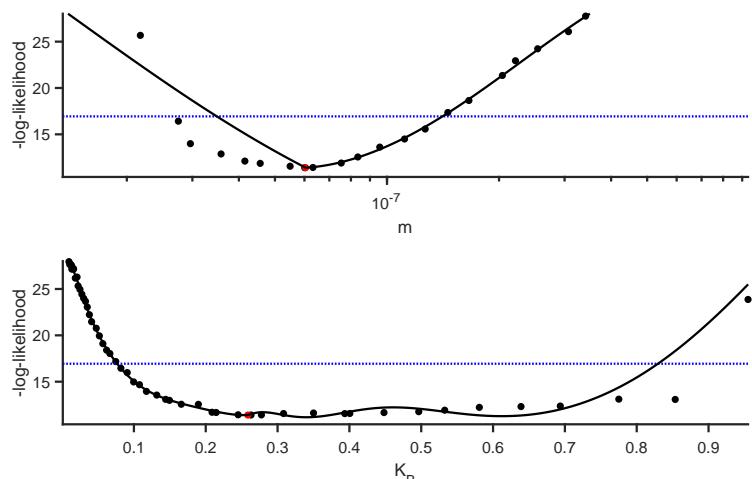
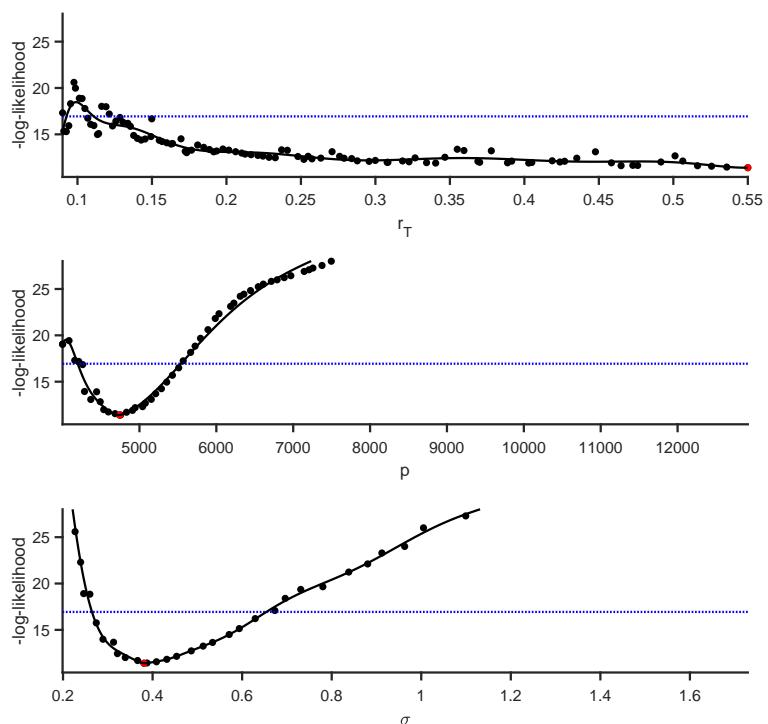
RUs14: Control (SS)



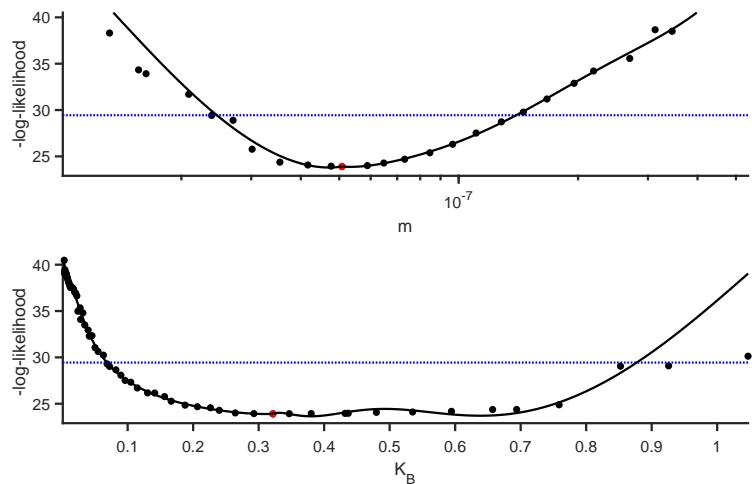
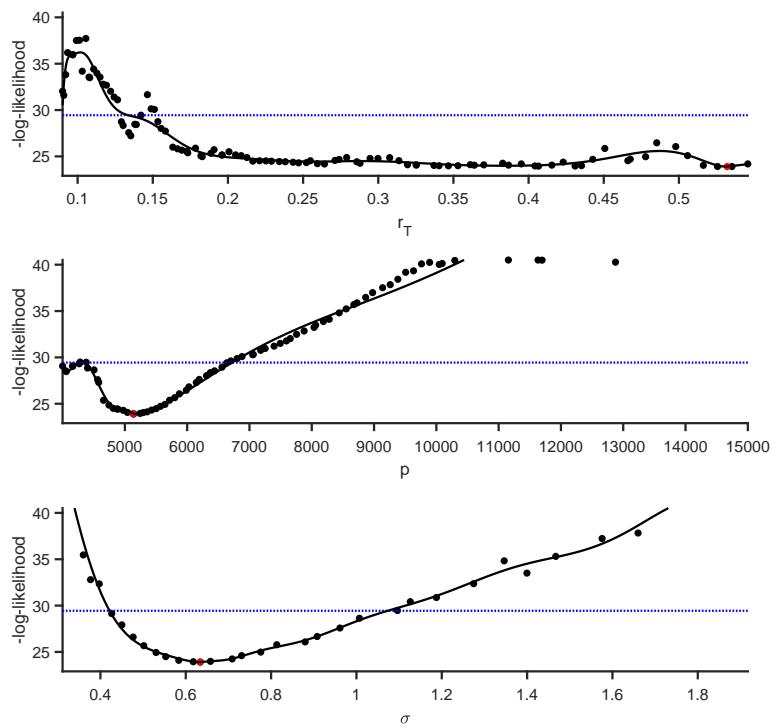
### 1.3 Antigen presenting cell effector cell source model



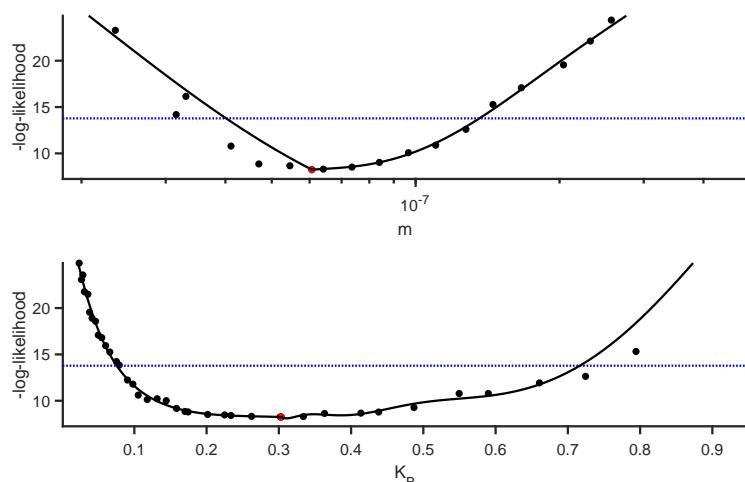
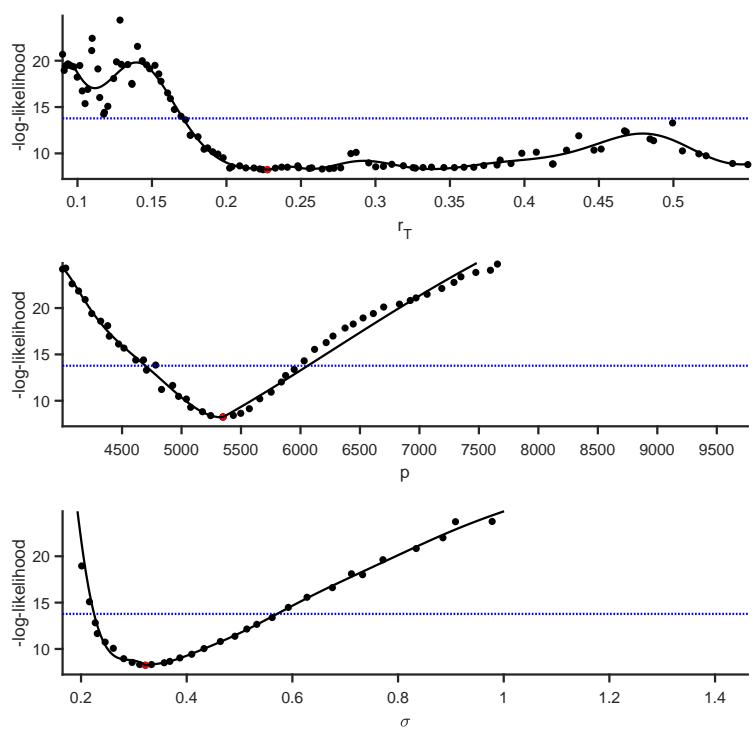
Rlt11: Control (APCS)



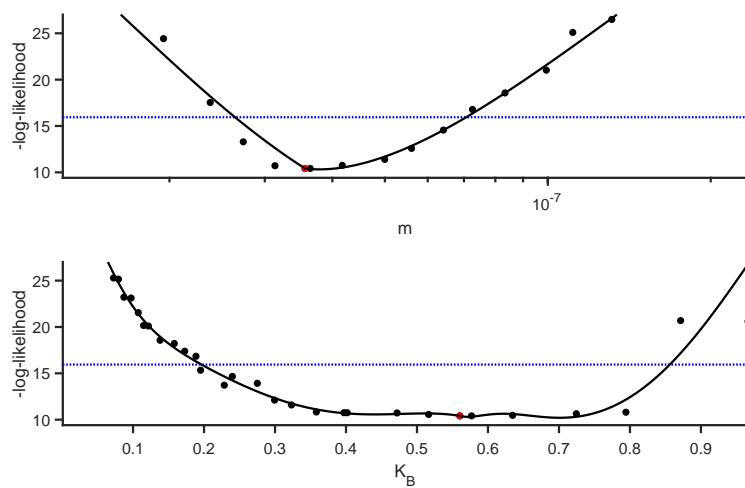
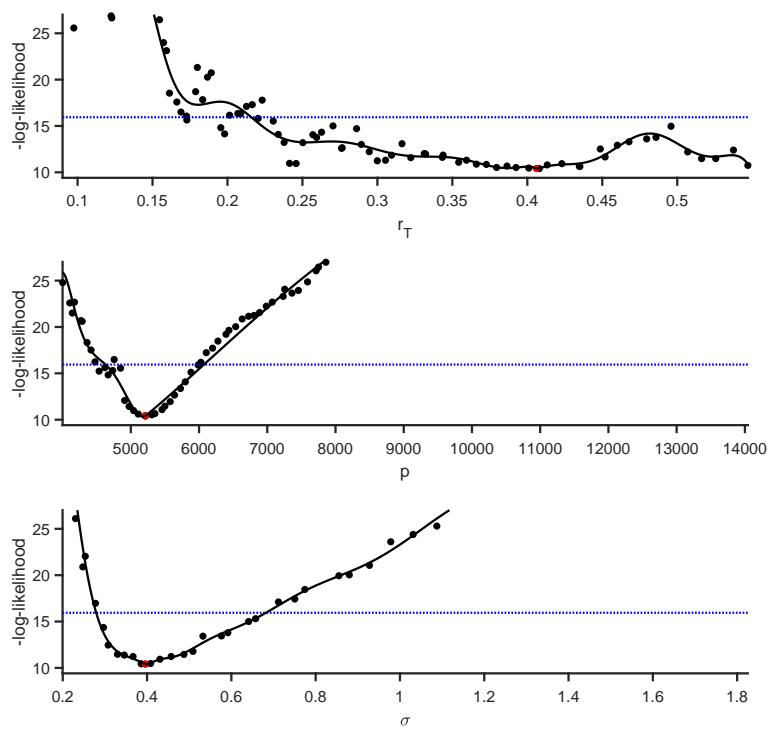
RKs13: Control (APCS)



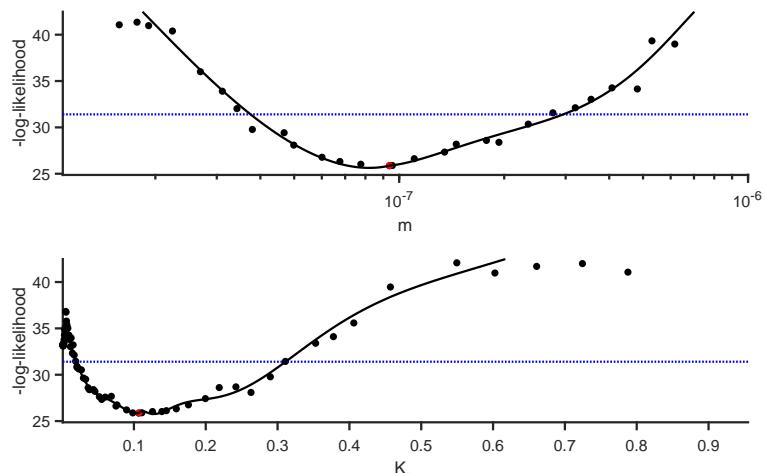
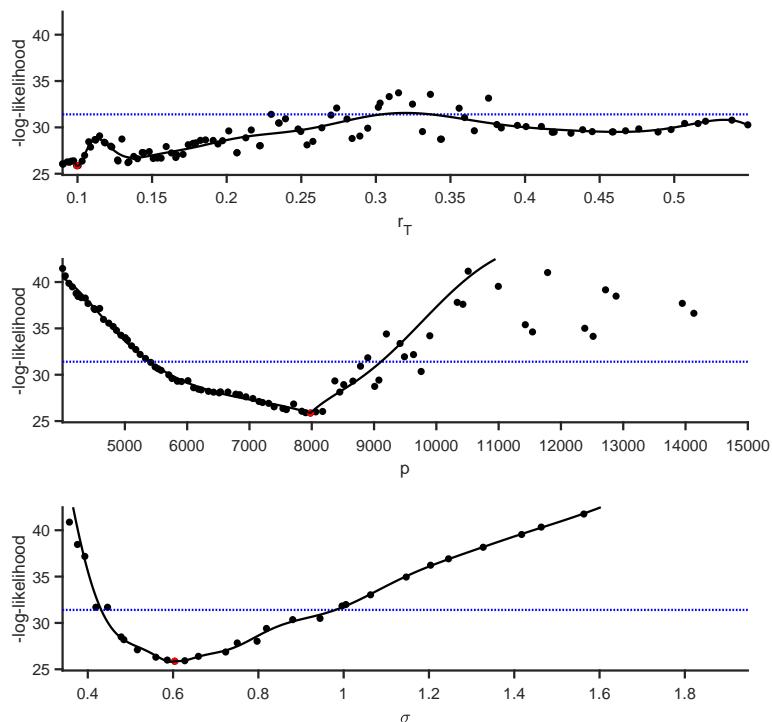
RSy13: Control (APCS)



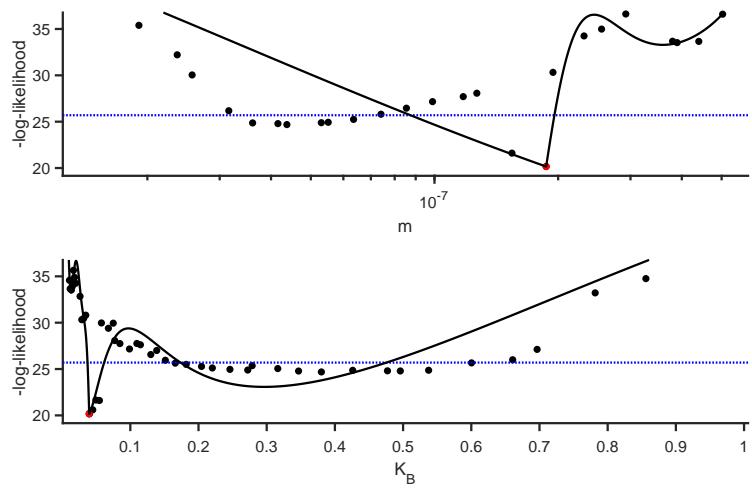
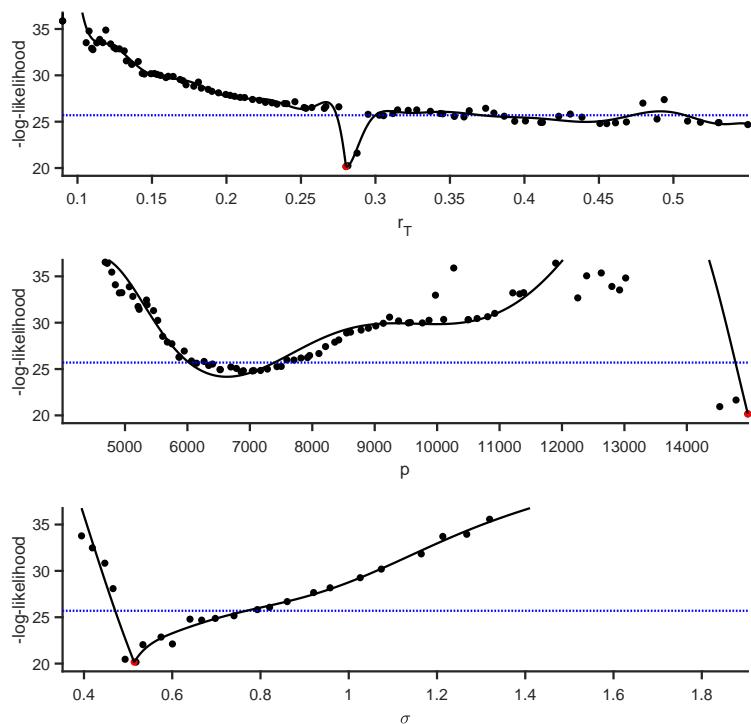
RYy13: Control (APCS)



RLo14: Control (APCS)

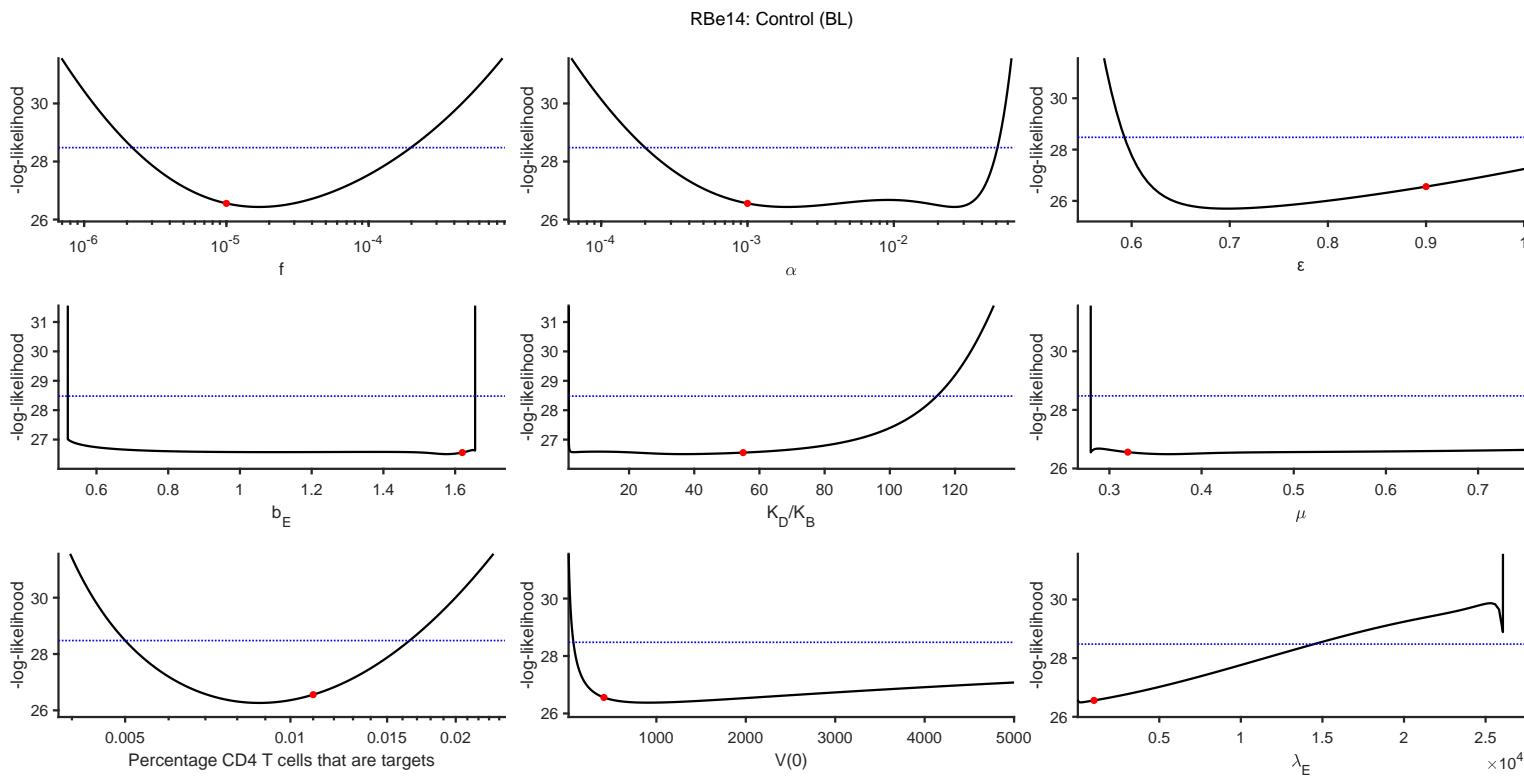


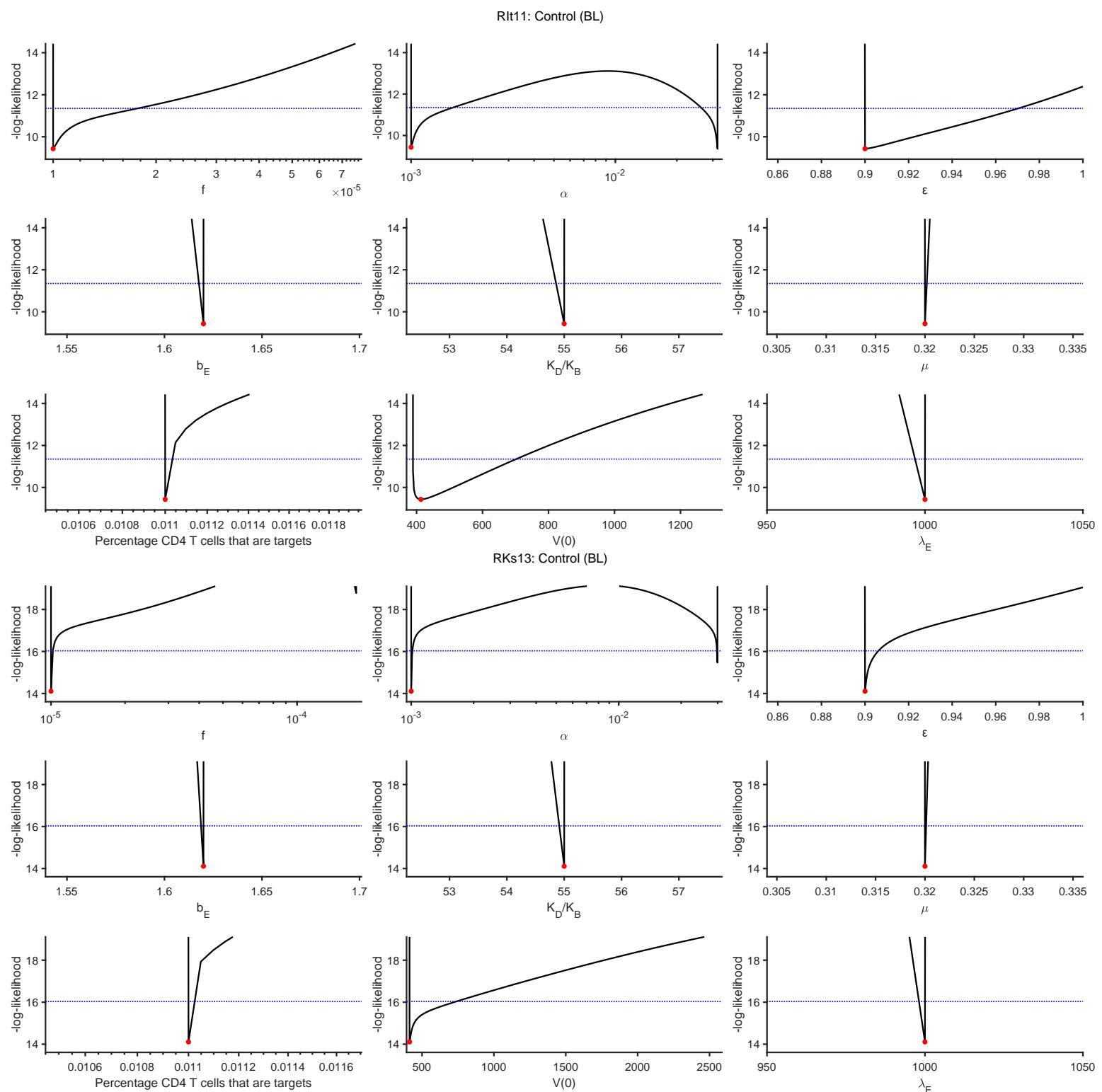
RUs14: Control (APCS)

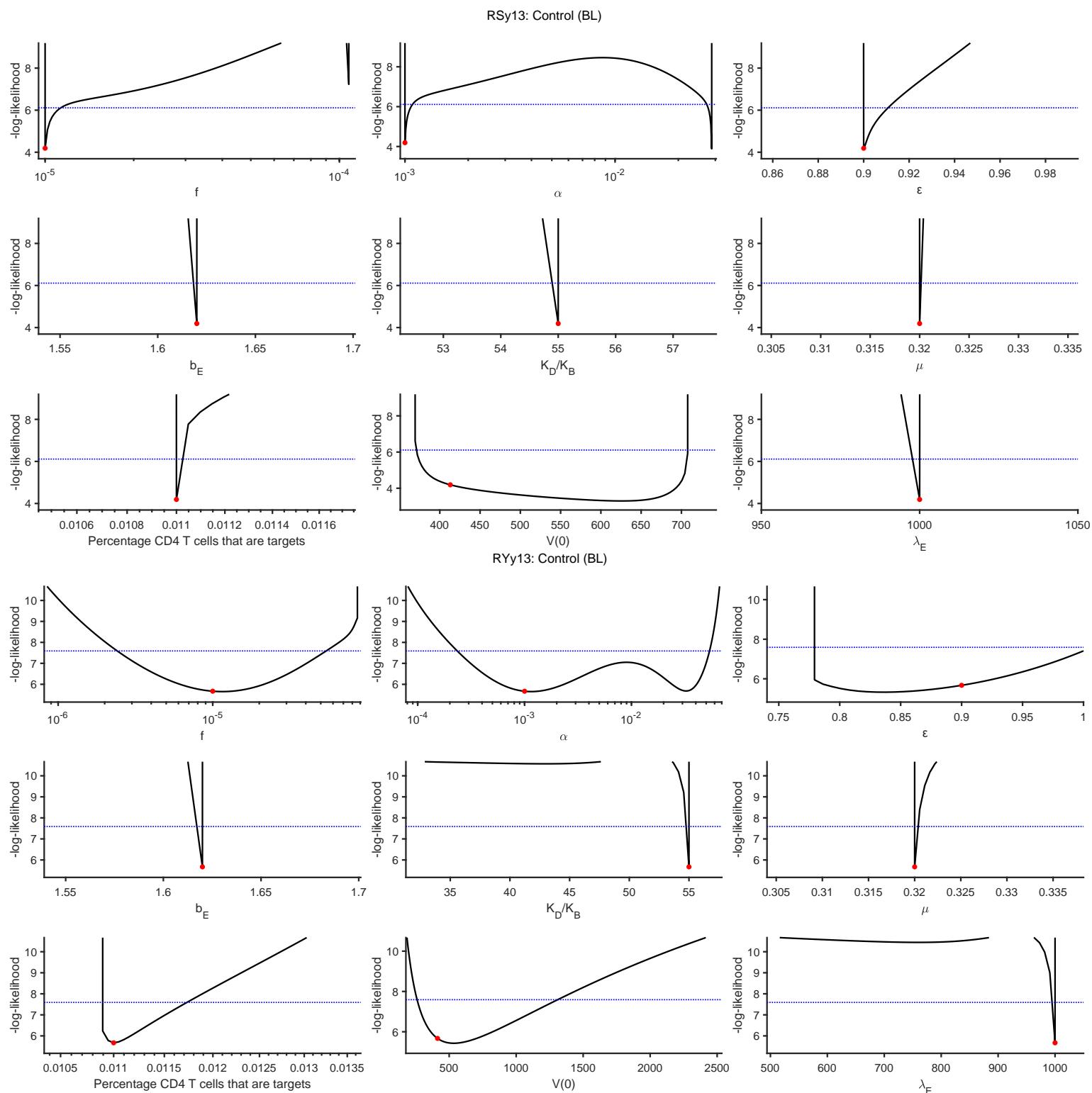


## 2 Sensitivity analysis: Control macaques

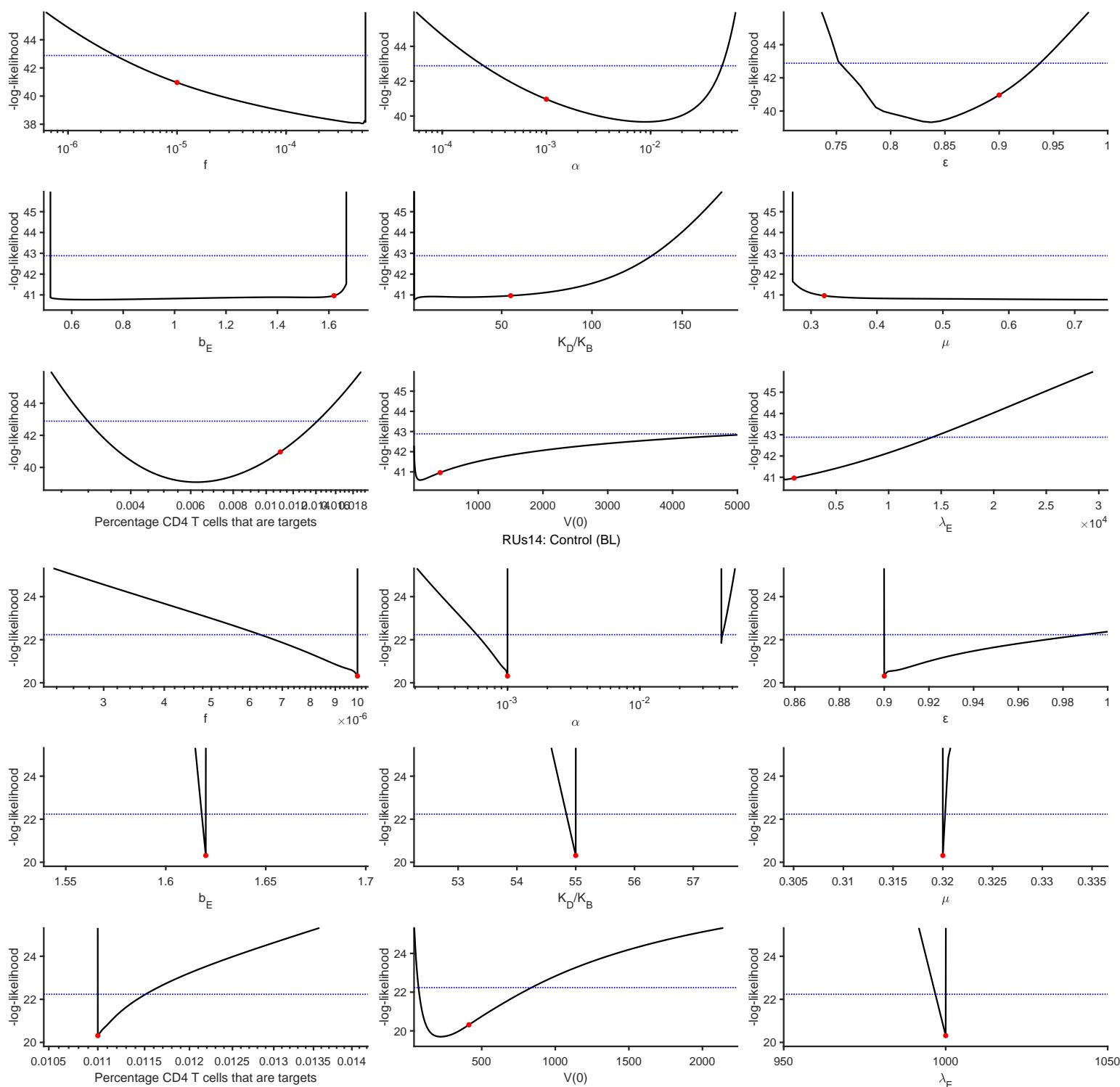
### 2.1 Baseline effector cell source model





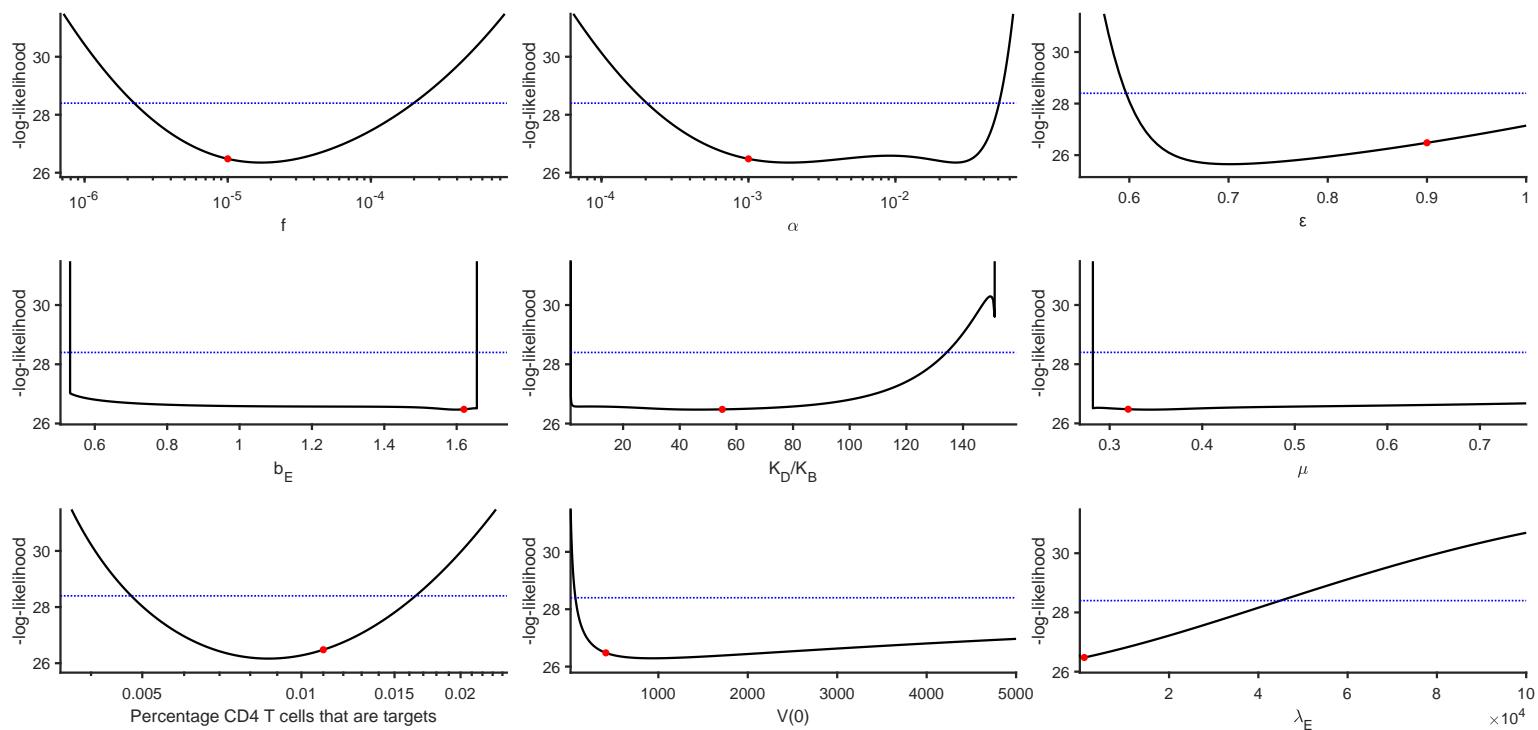


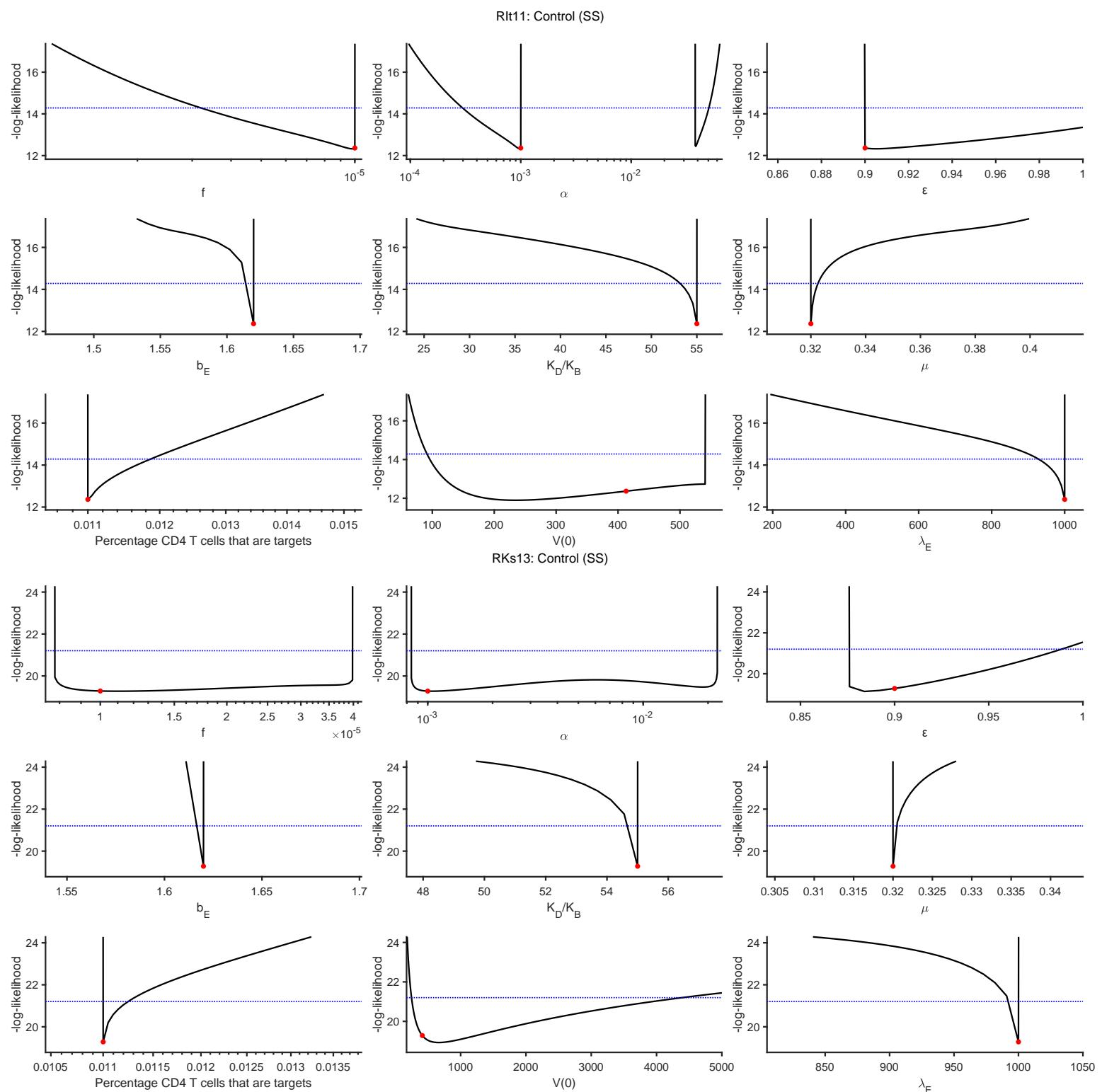
RLo14: Control (BL)



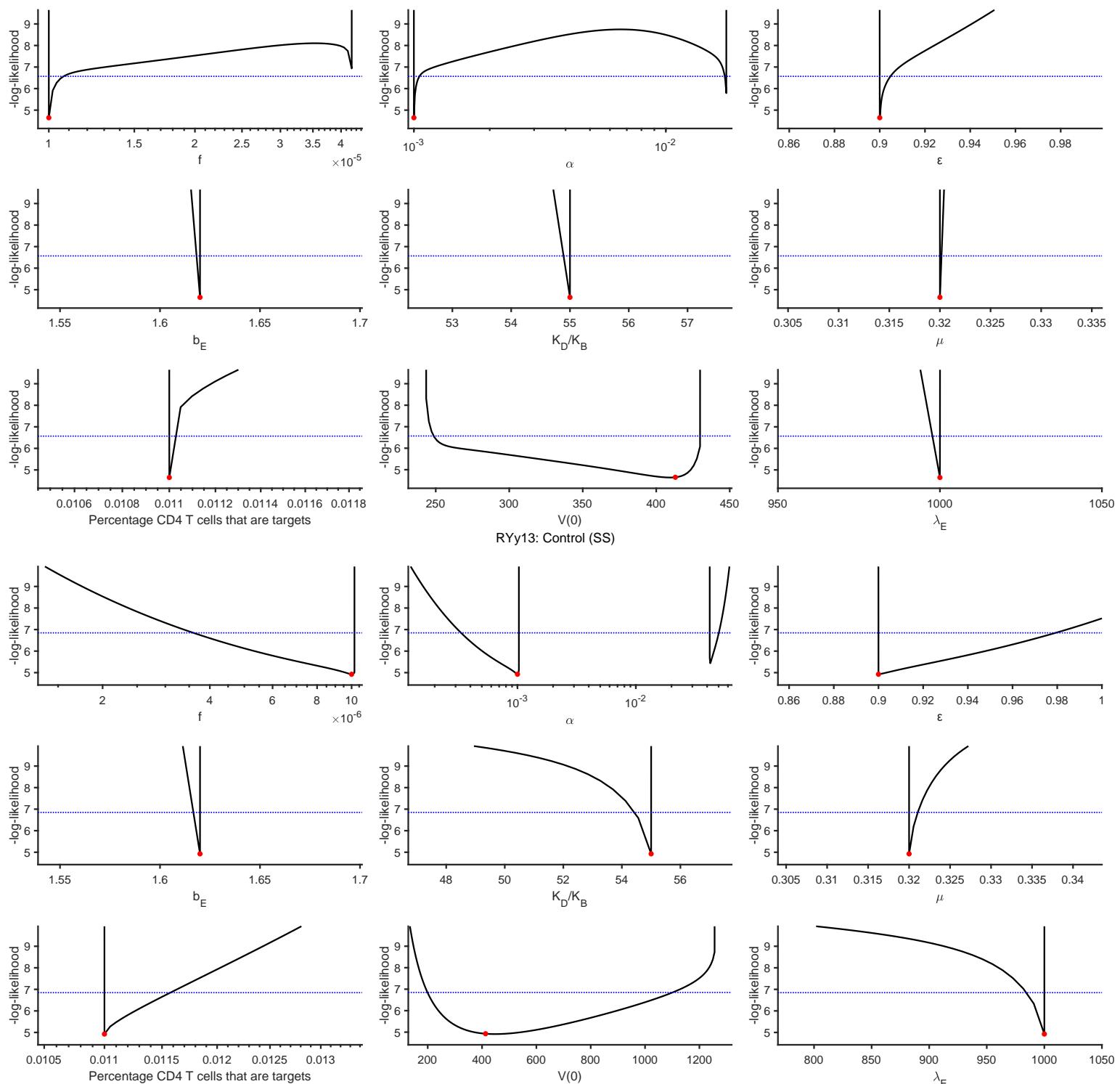
## 2.2 Saturated effector cell source model

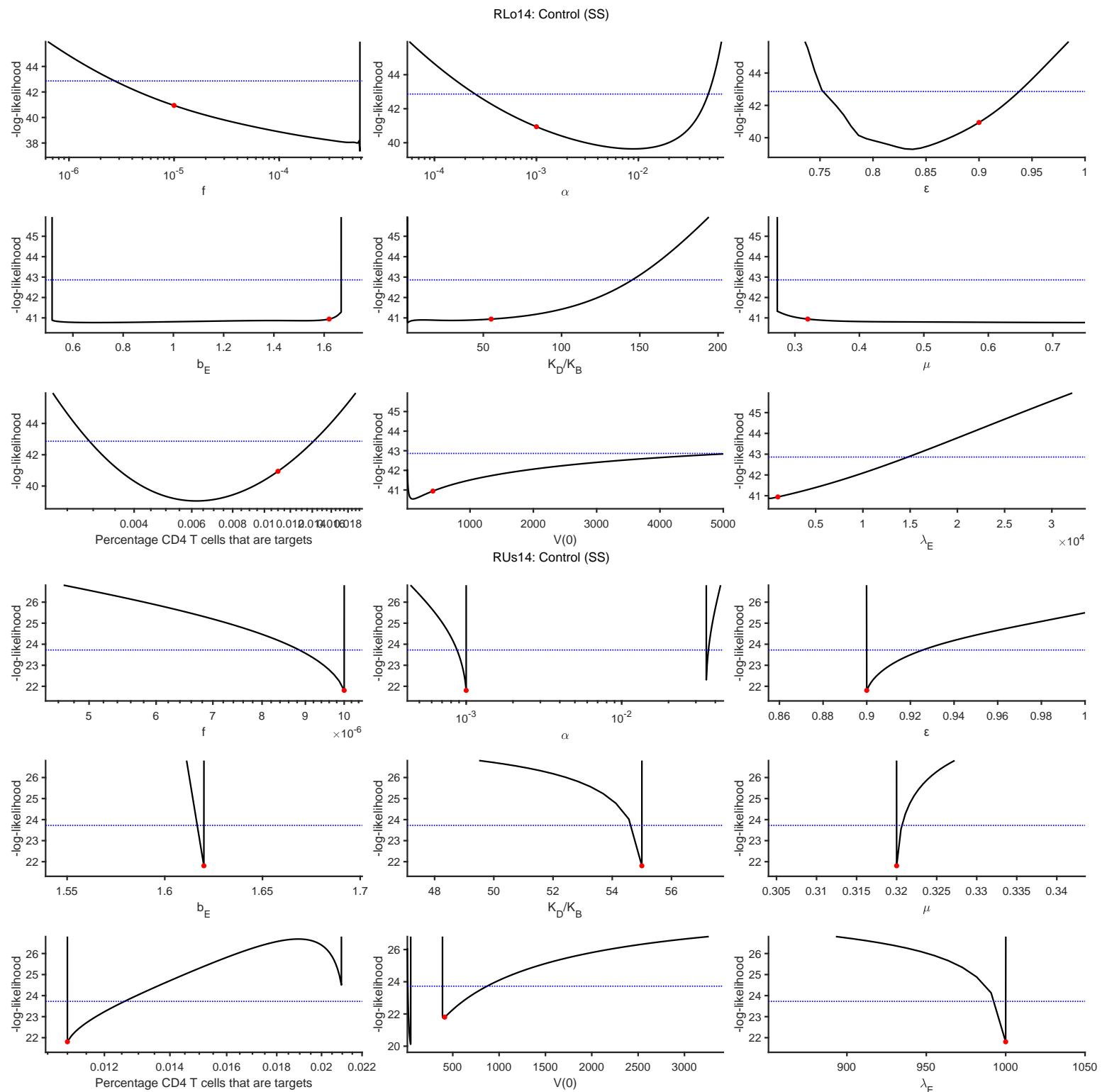
RBe14: Control (SS)



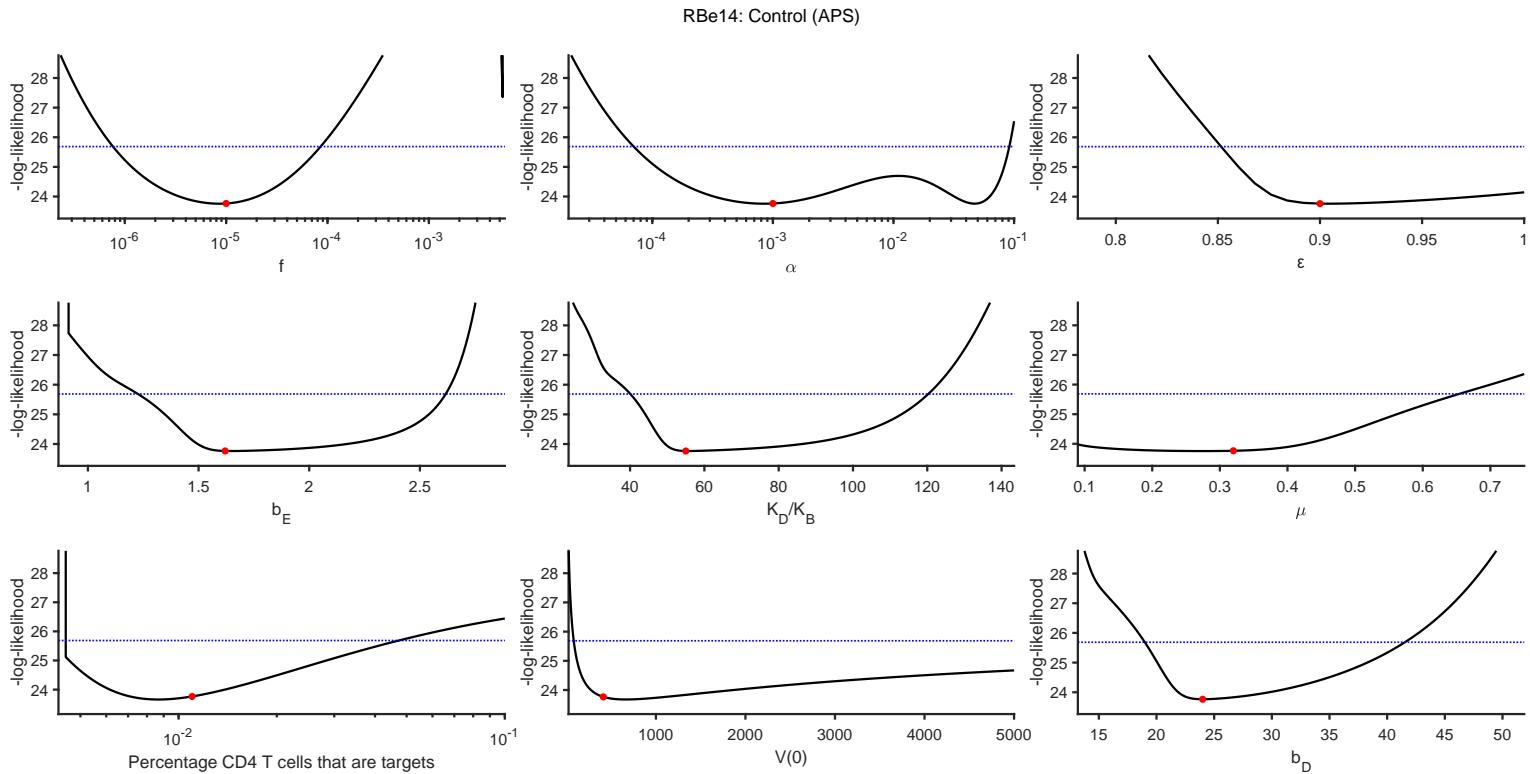


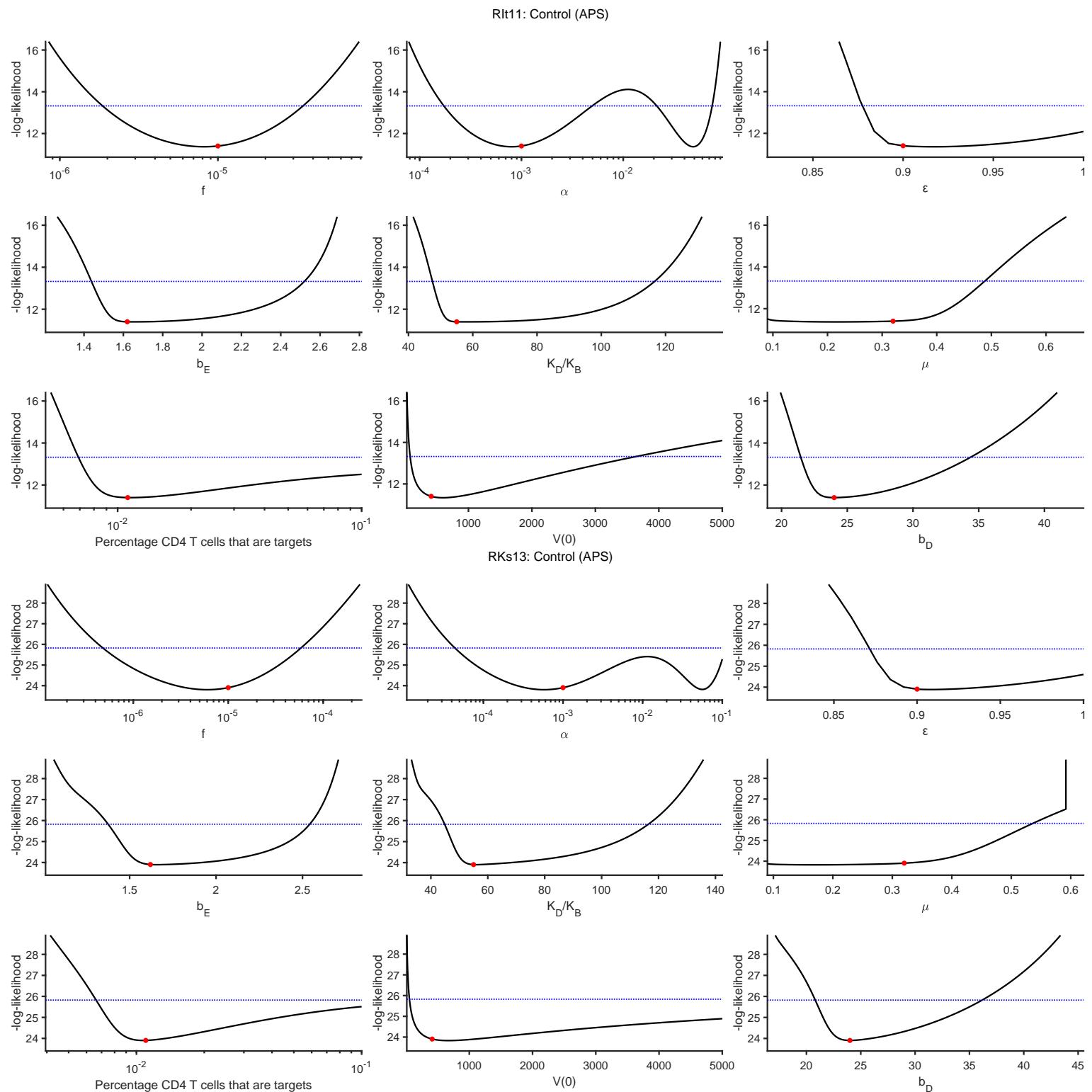
RSy13: Control (SS)

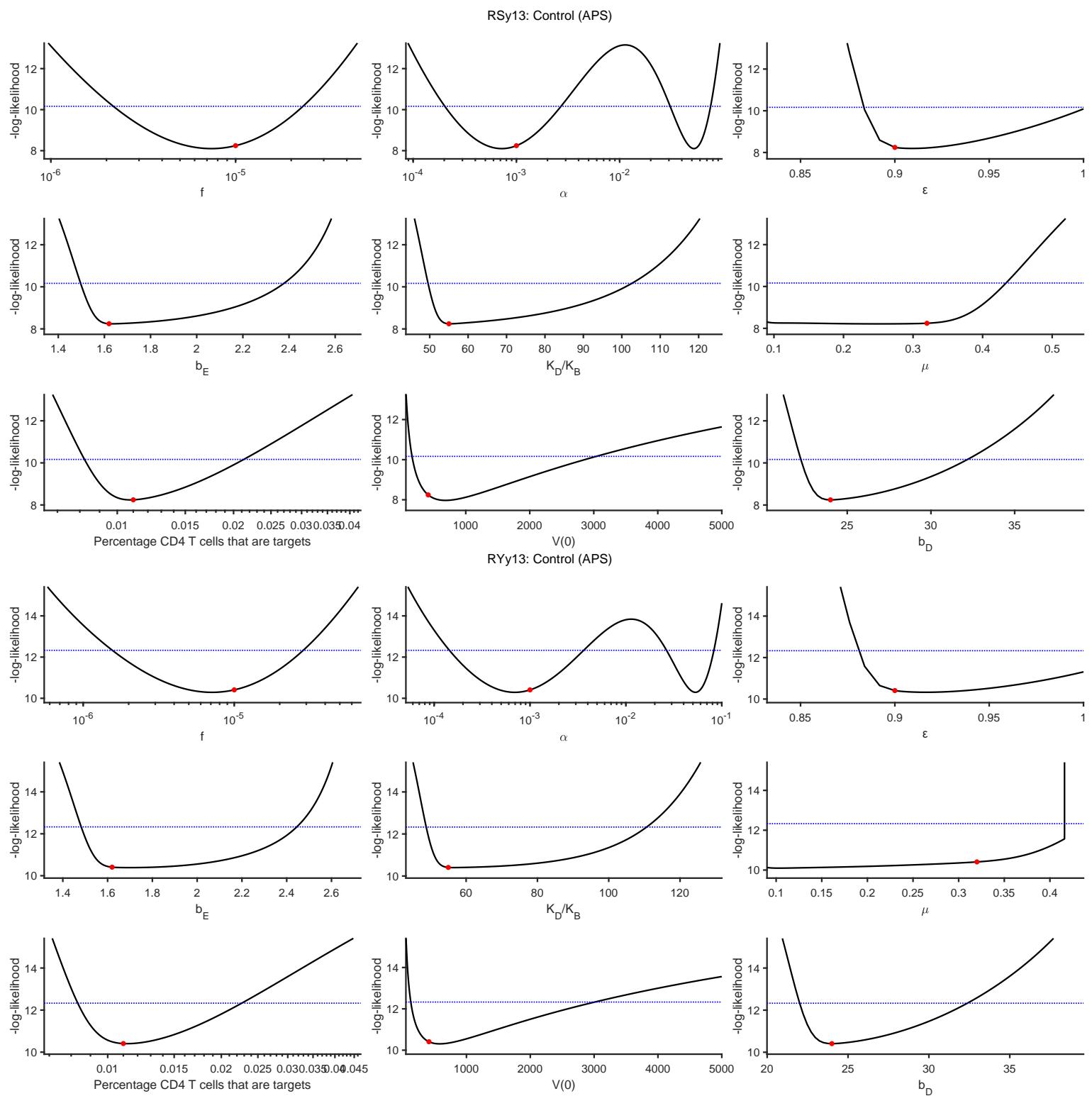


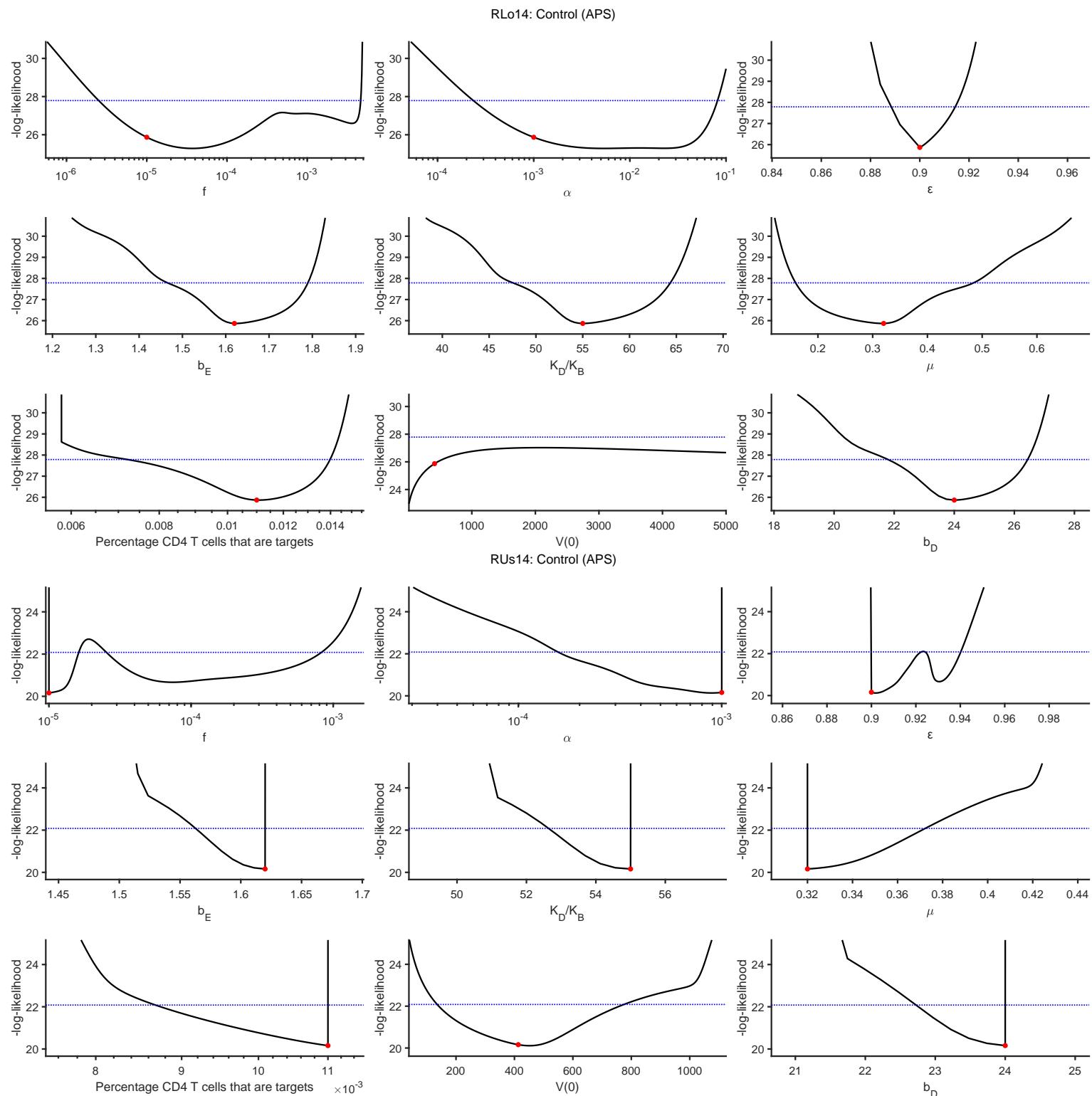


## 2.3 Antigen presenting cell effector cell source model



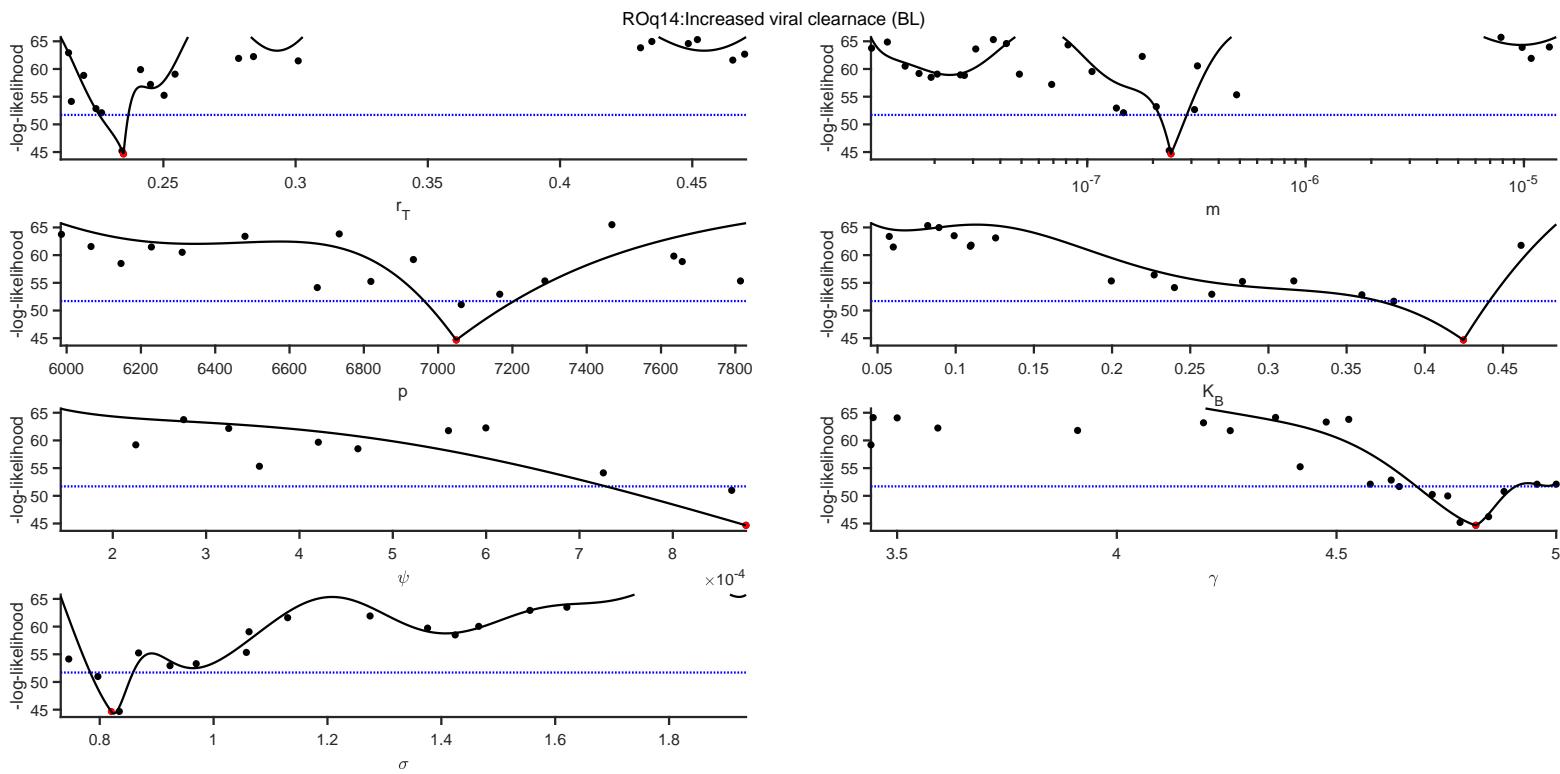


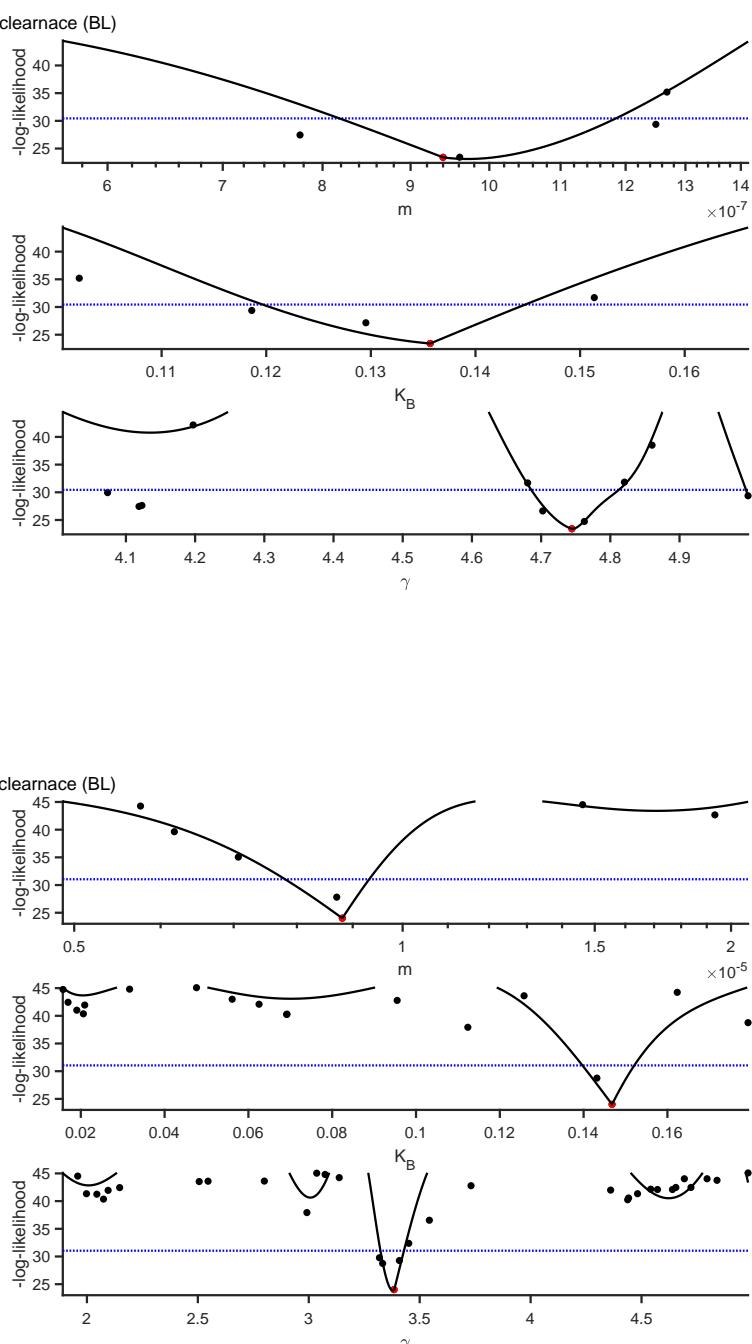
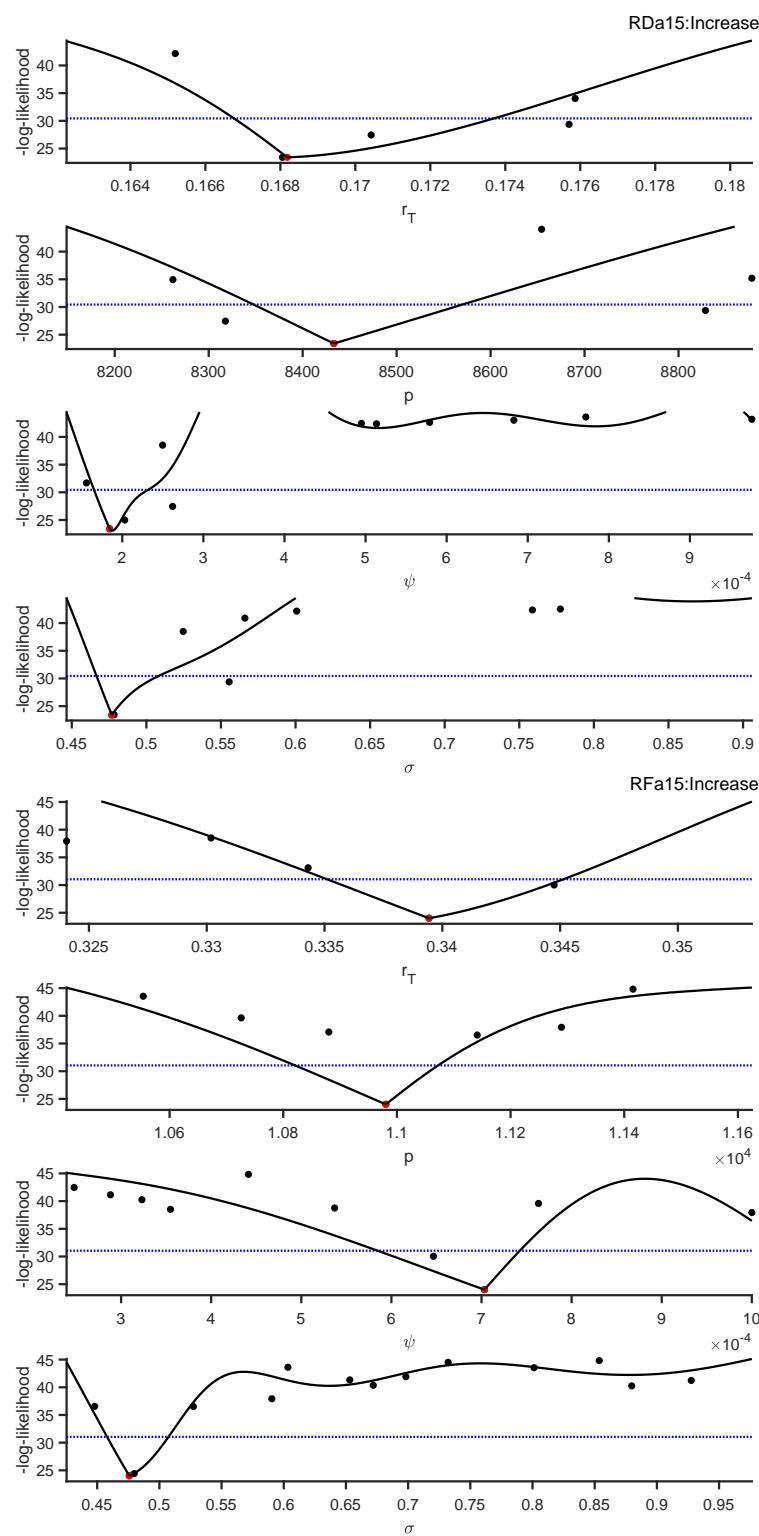


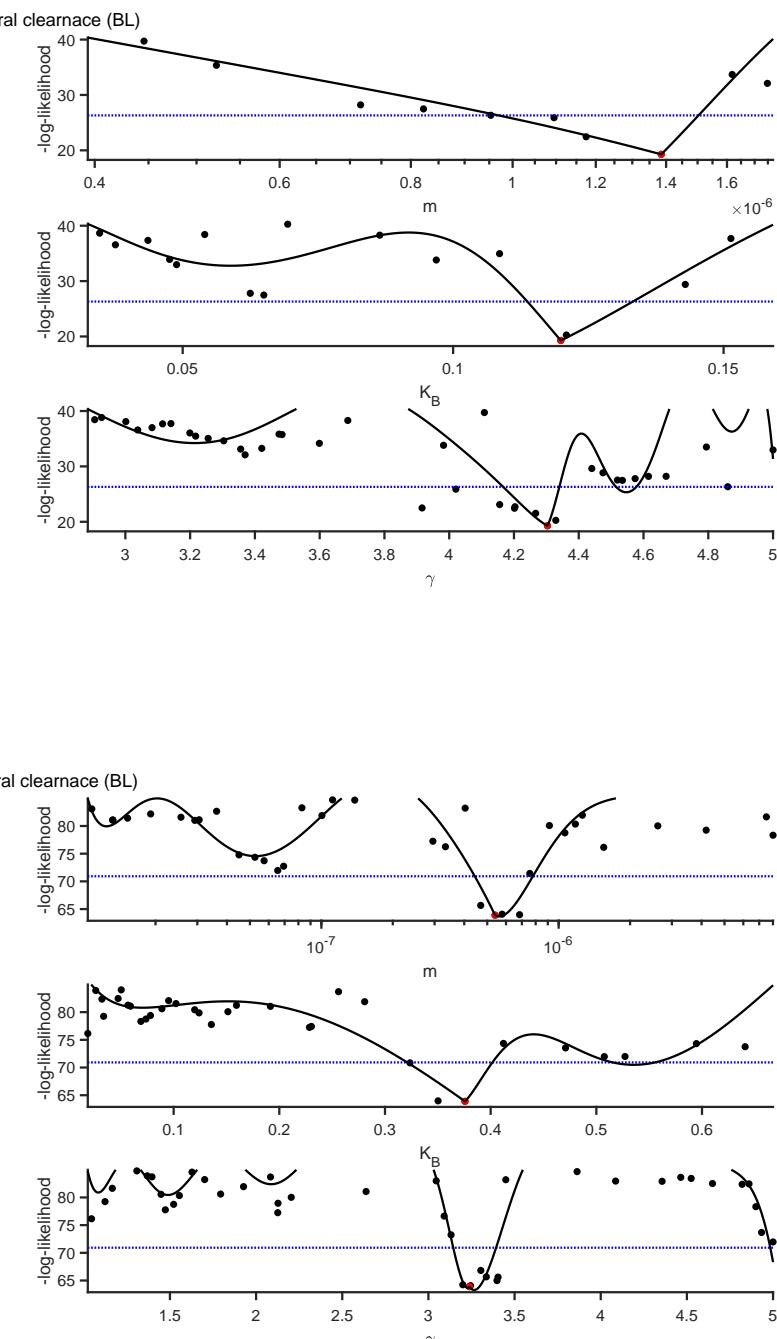
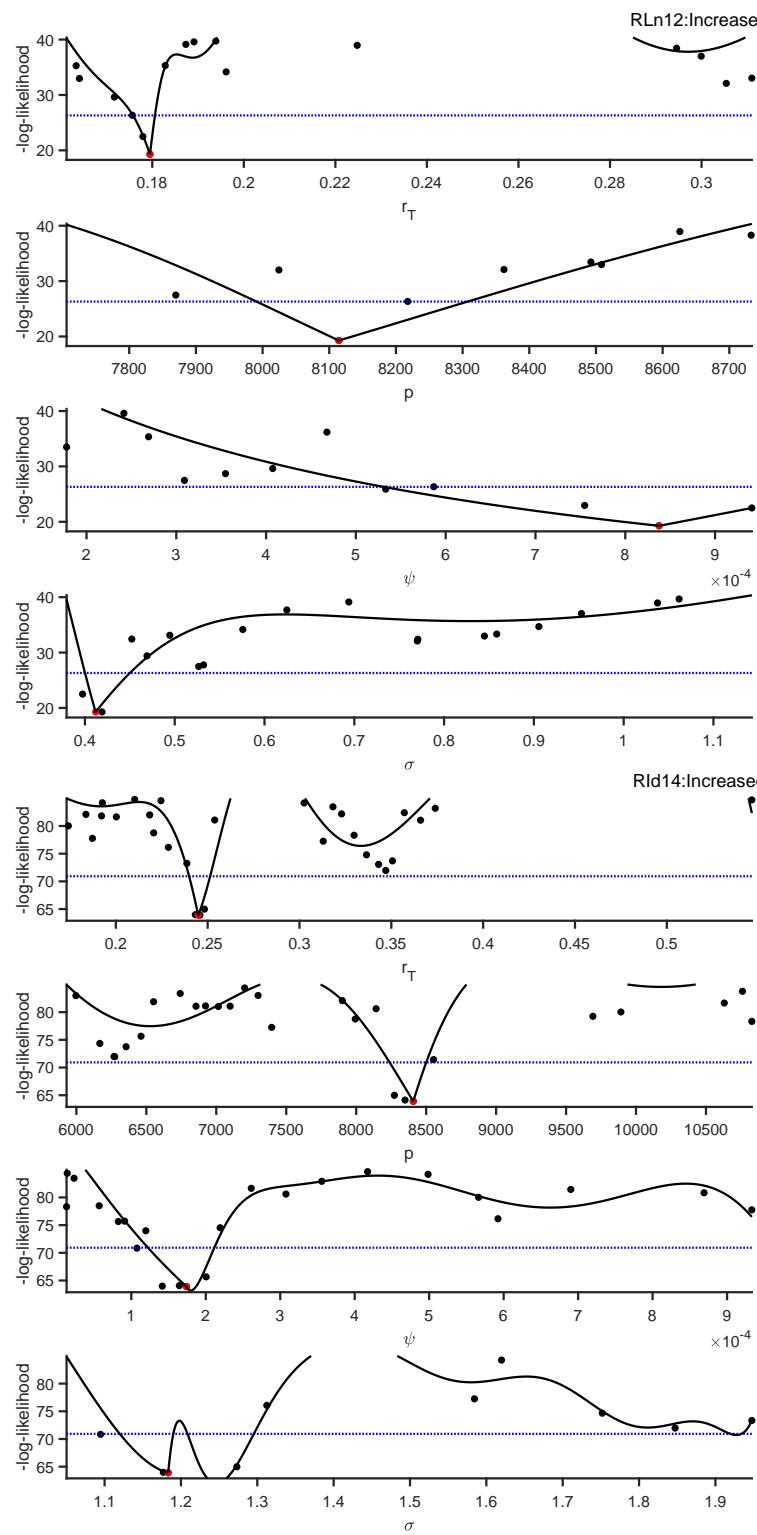


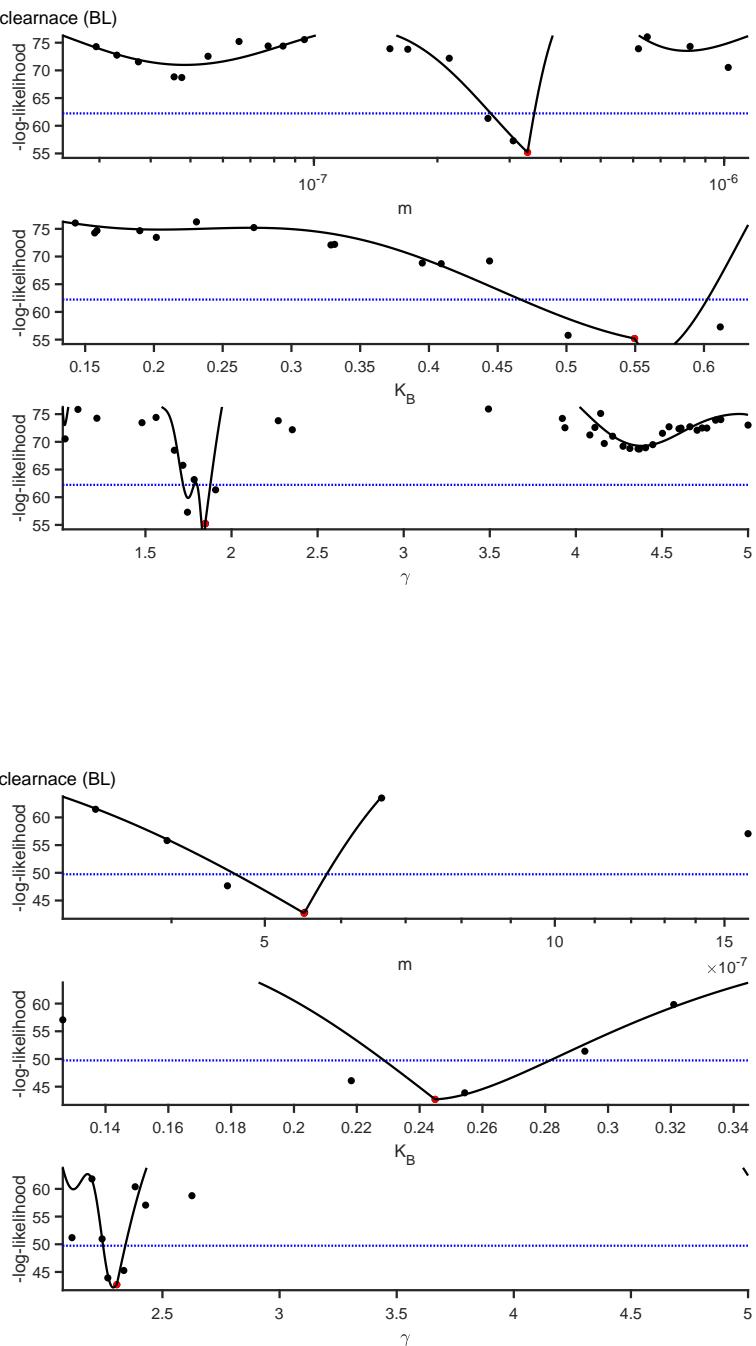
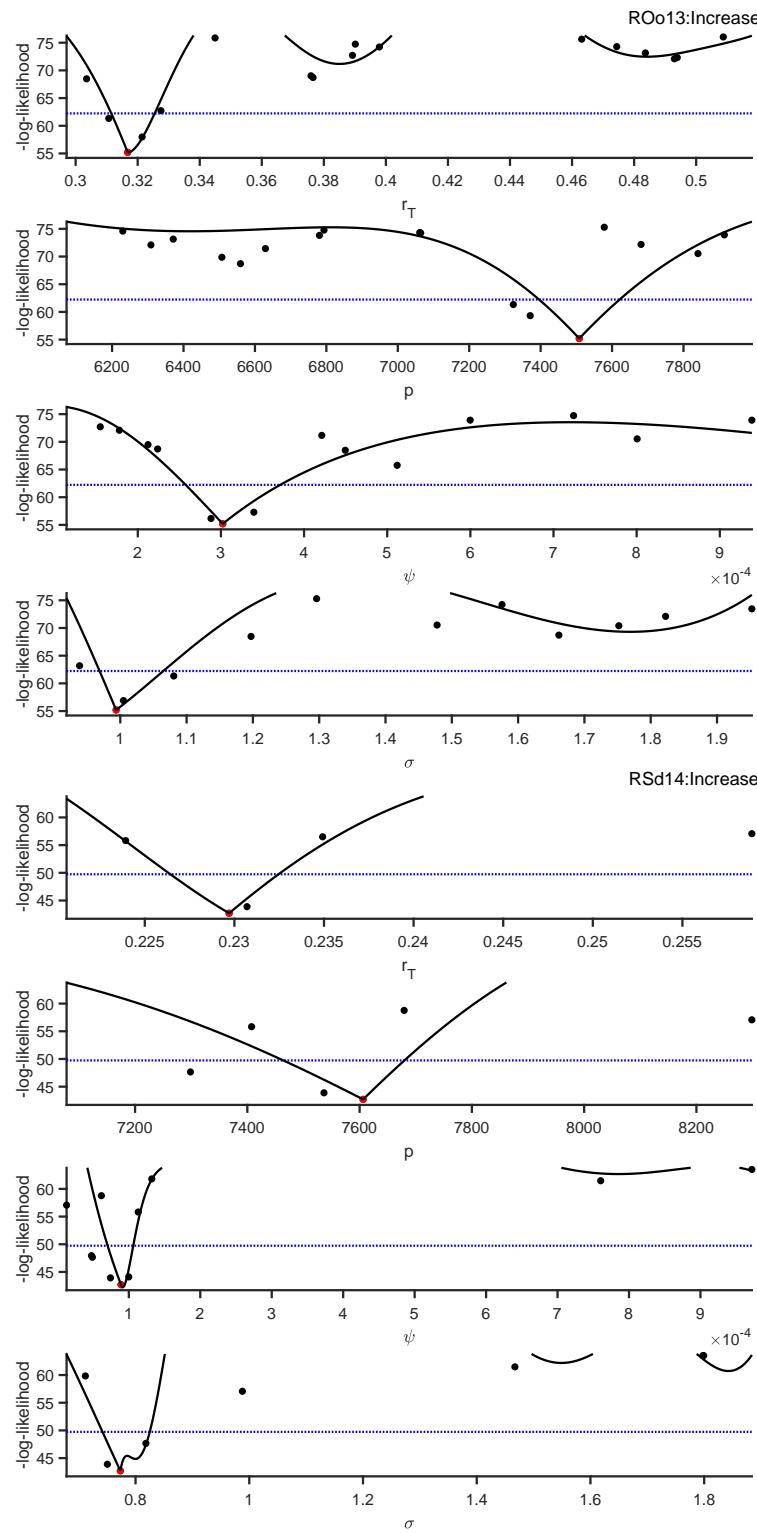
### 3 Likelihood profiles: Increased viral clearance

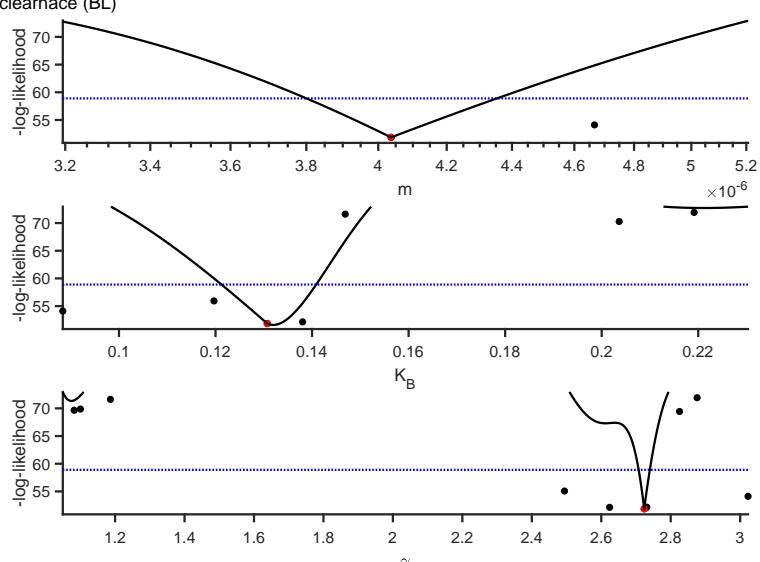
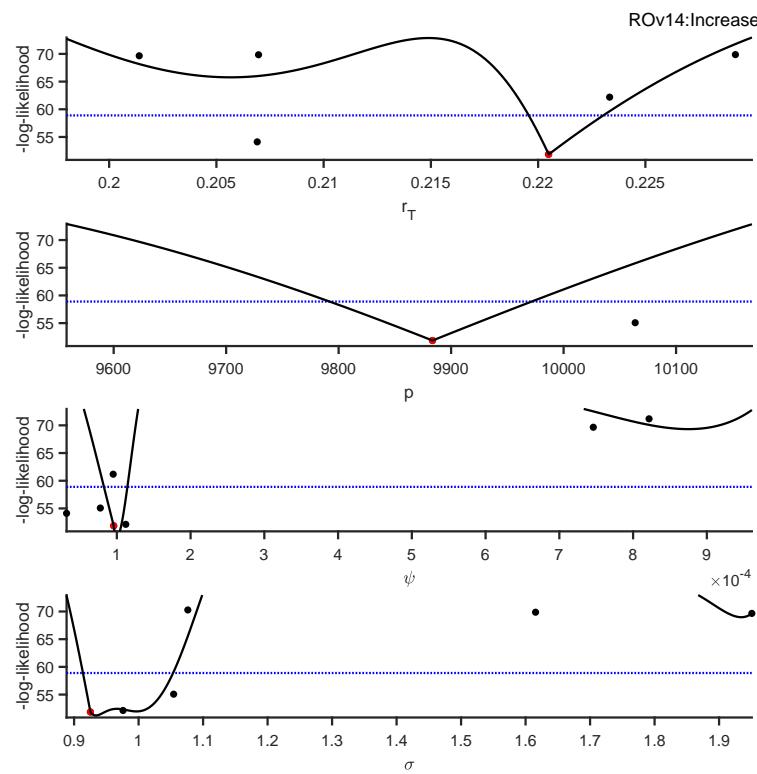
#### 3.1 Baseline effector cell source model





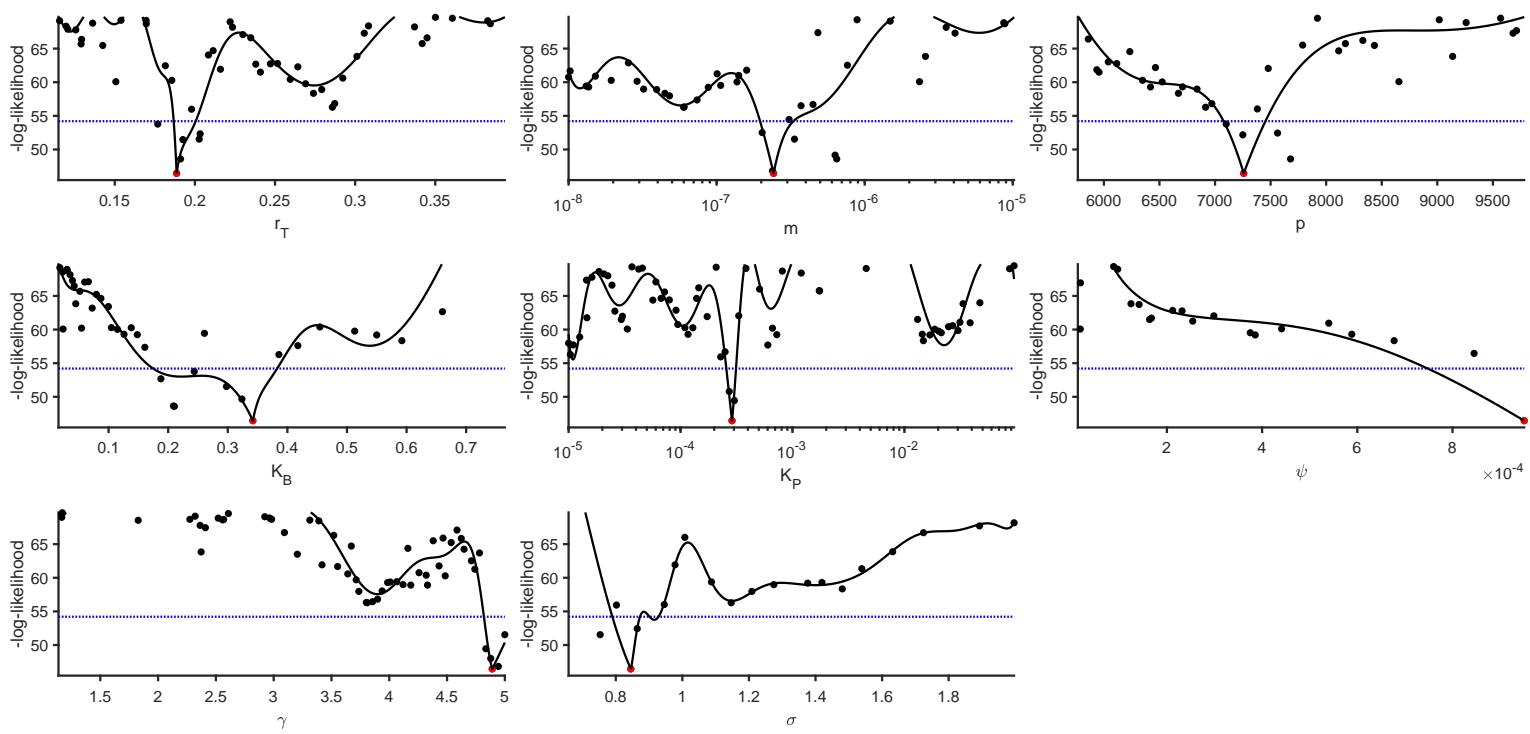


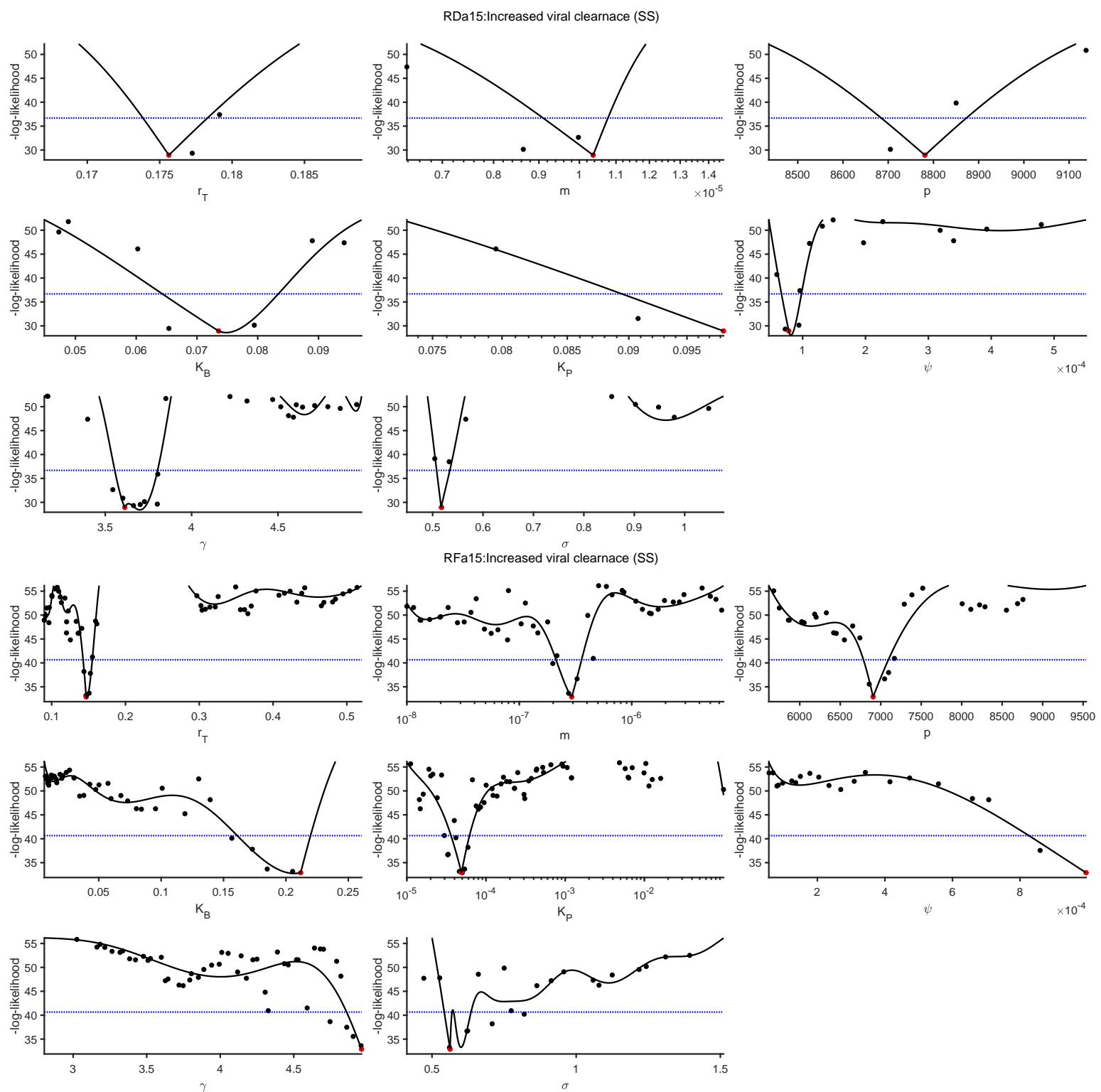


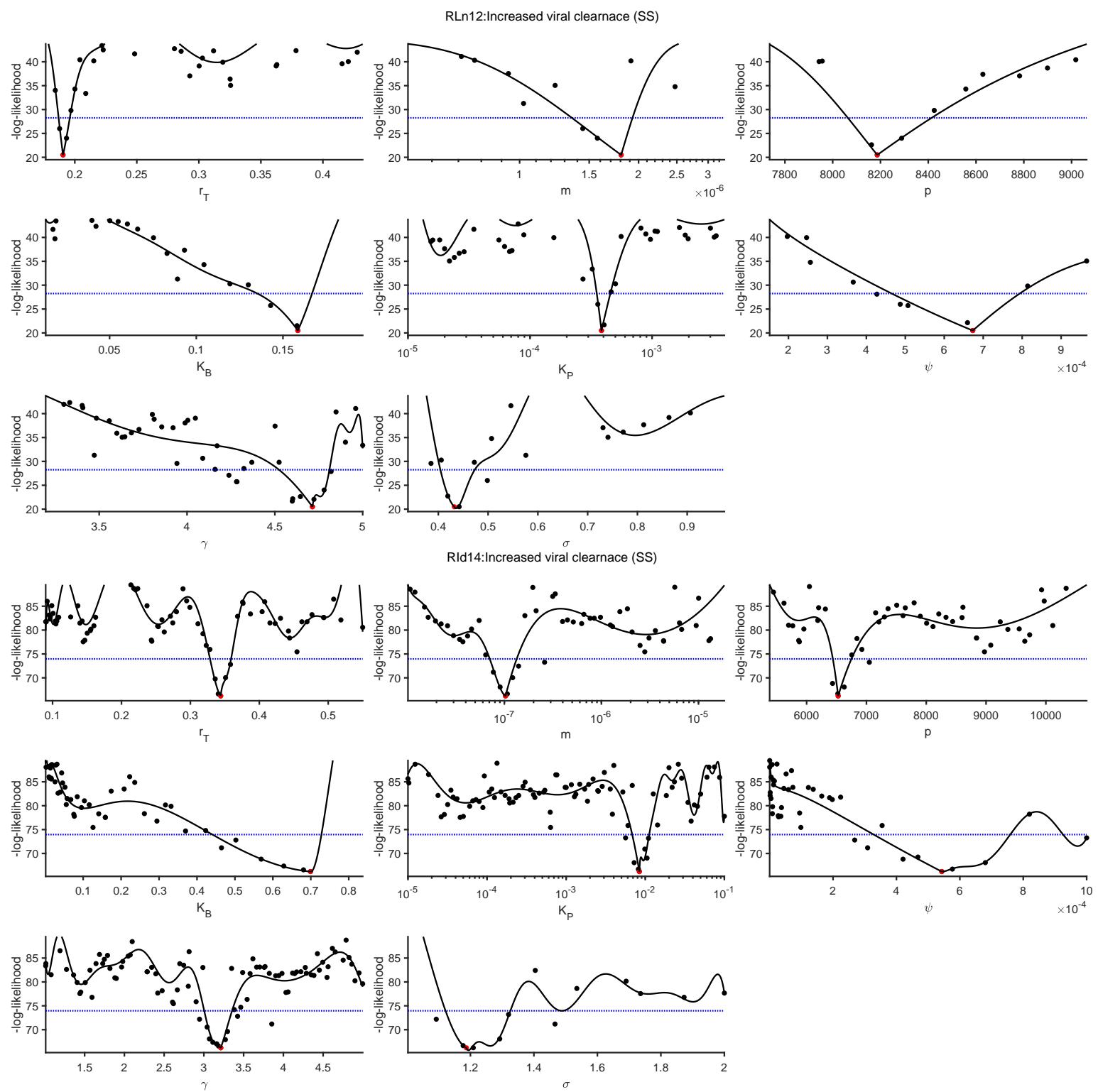


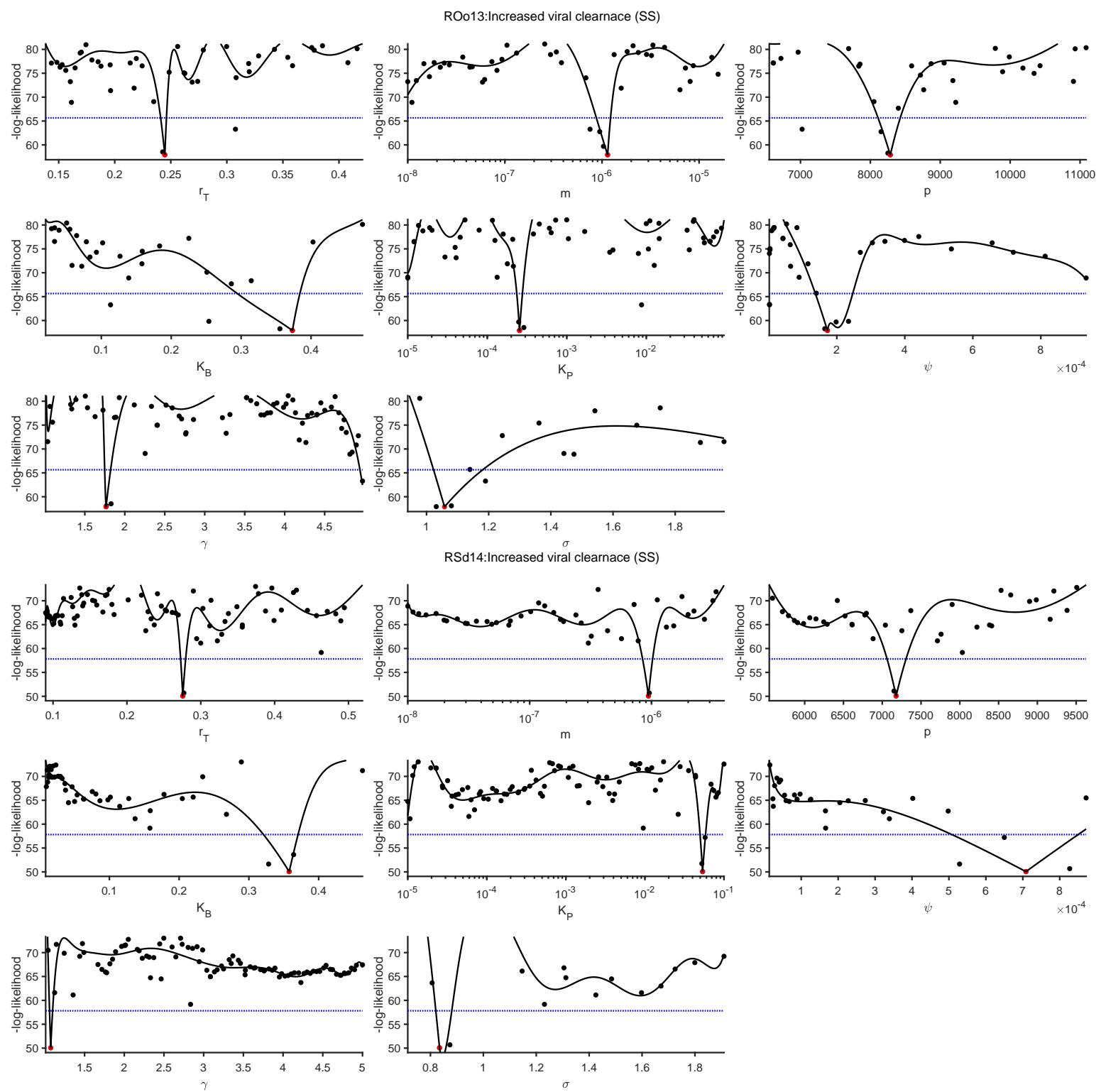
### 3.2 Saturated effector cell source model

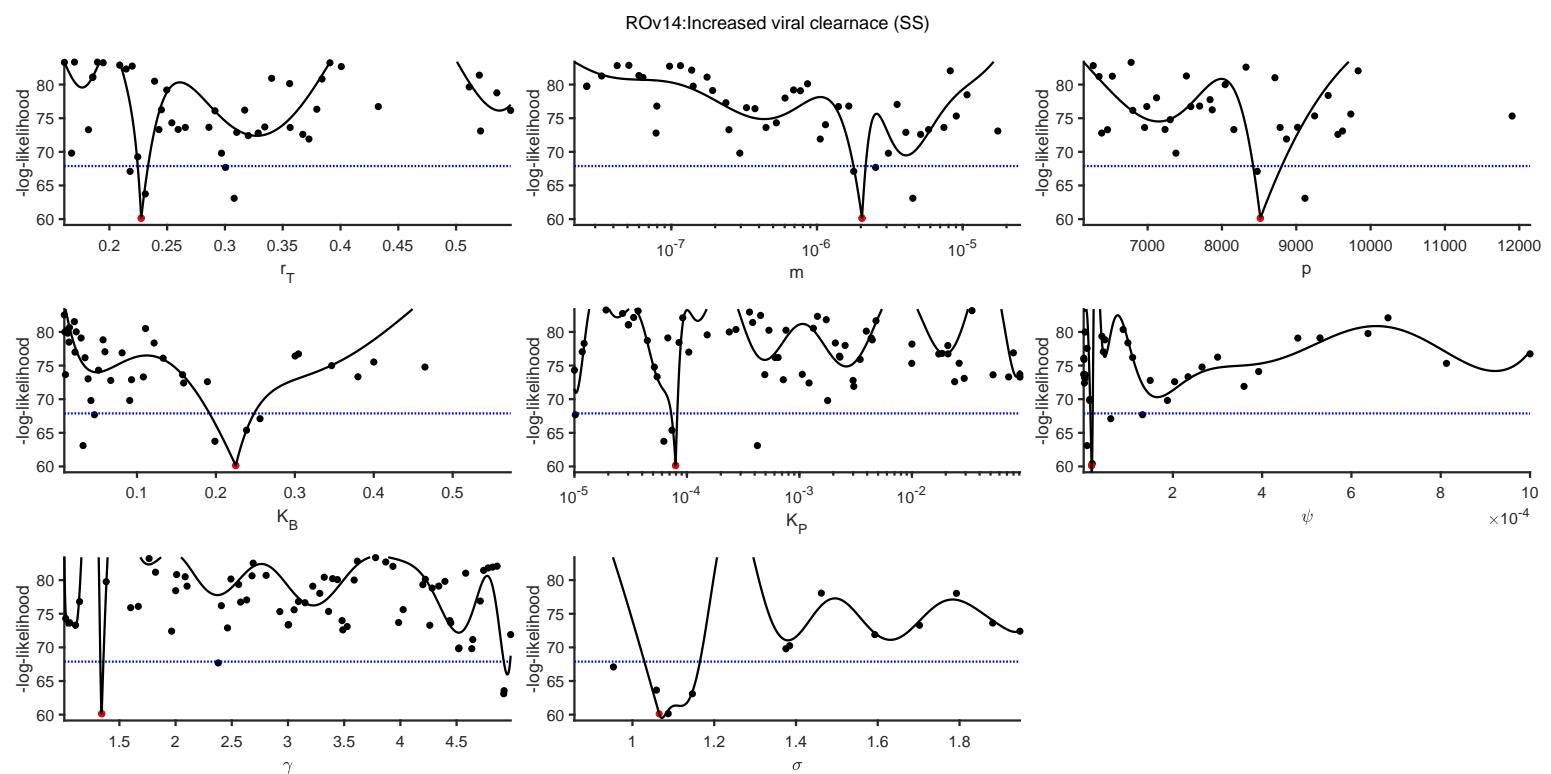
ROq14:Increased viral clearance (SS)



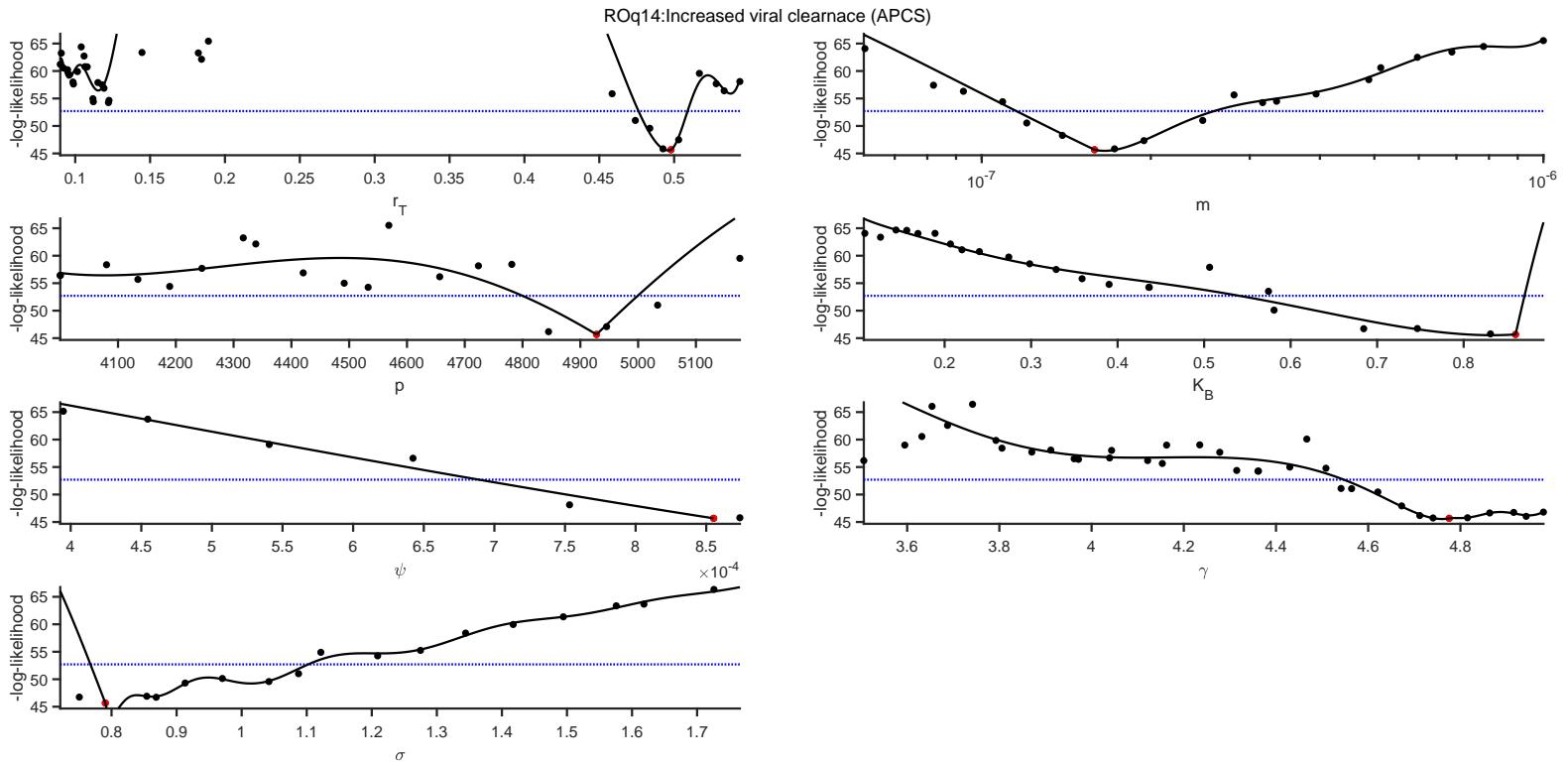


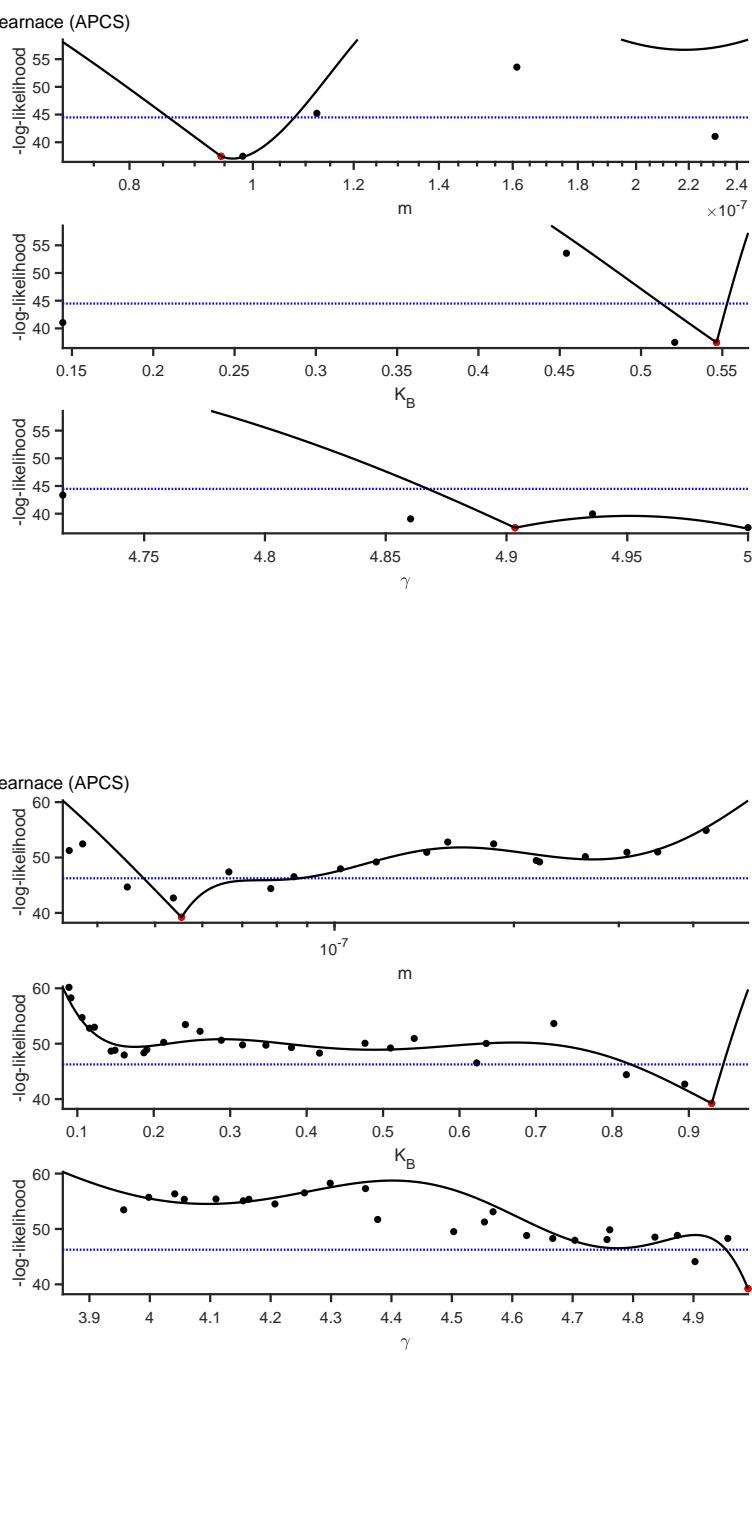
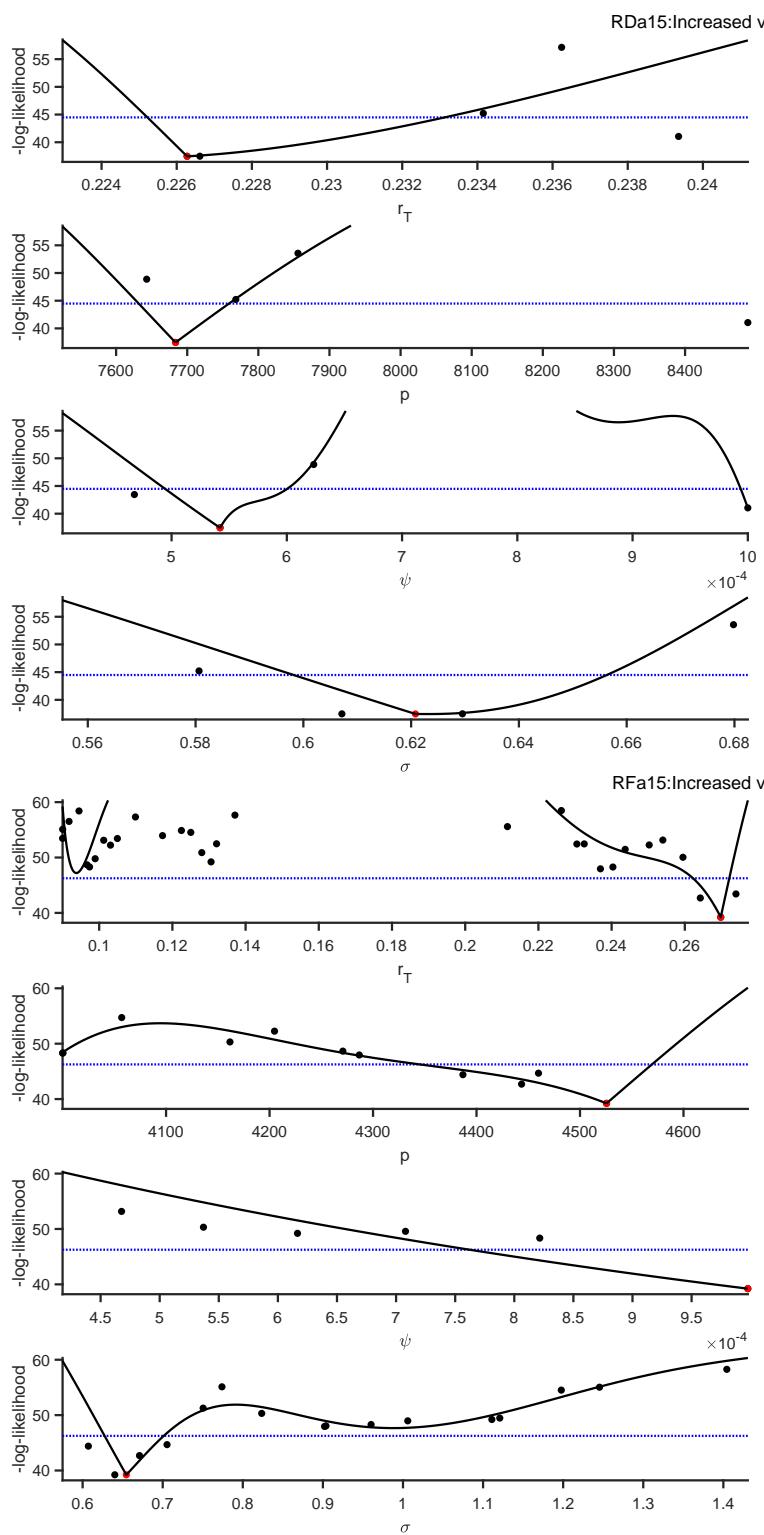


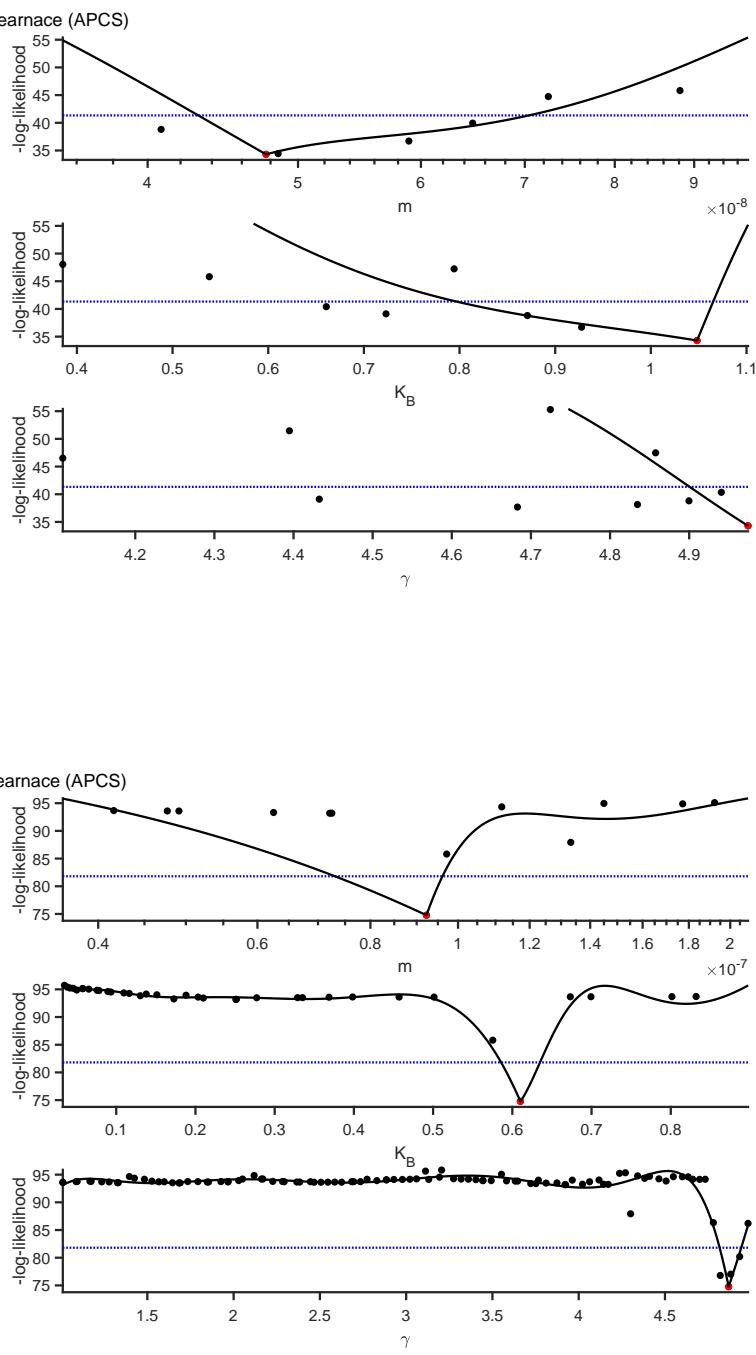
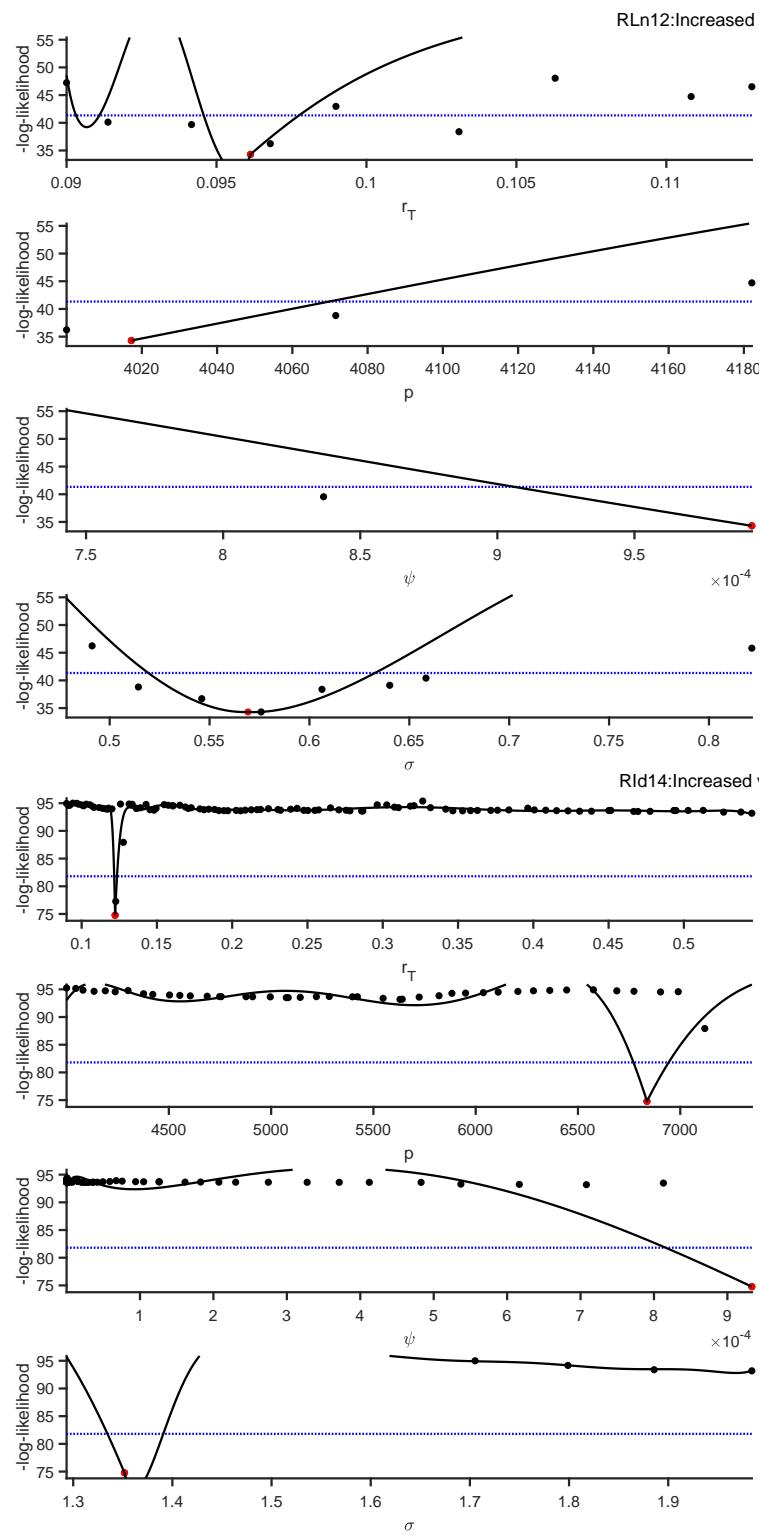


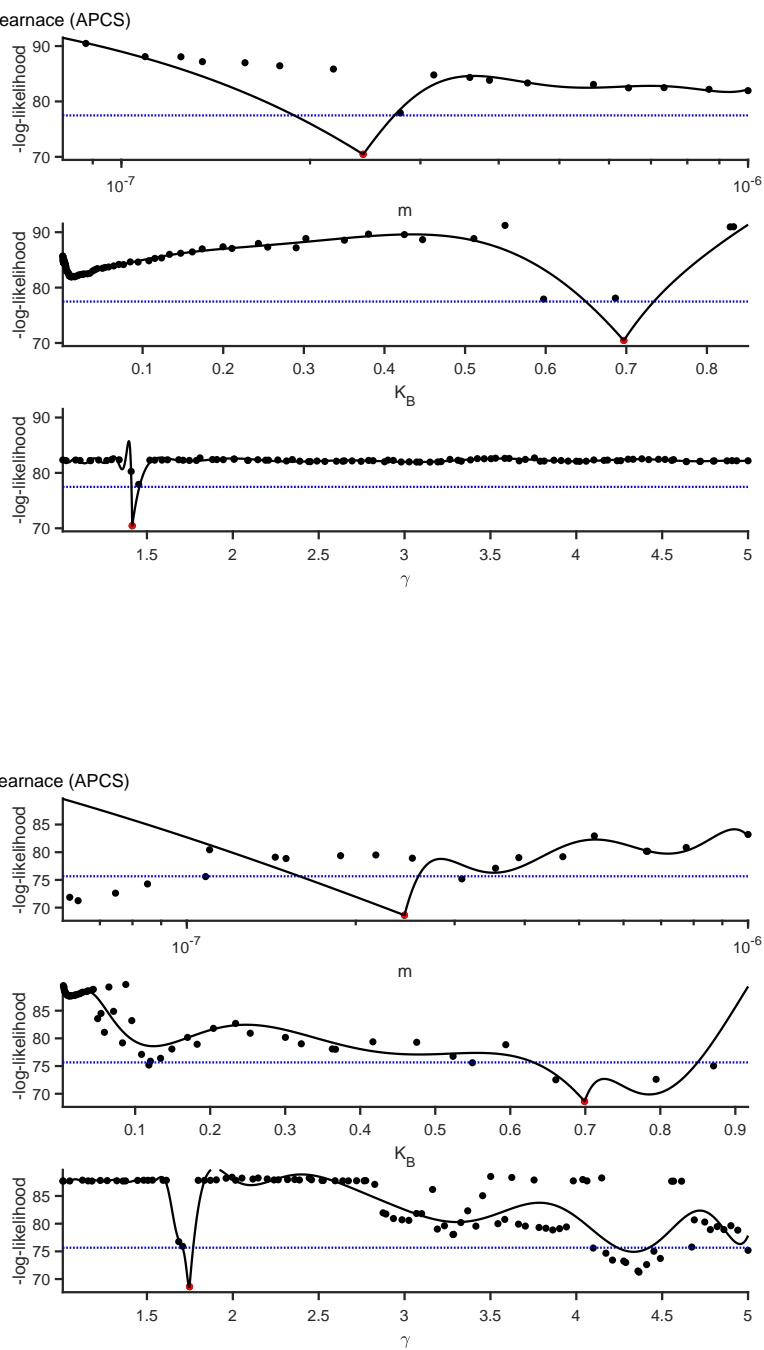
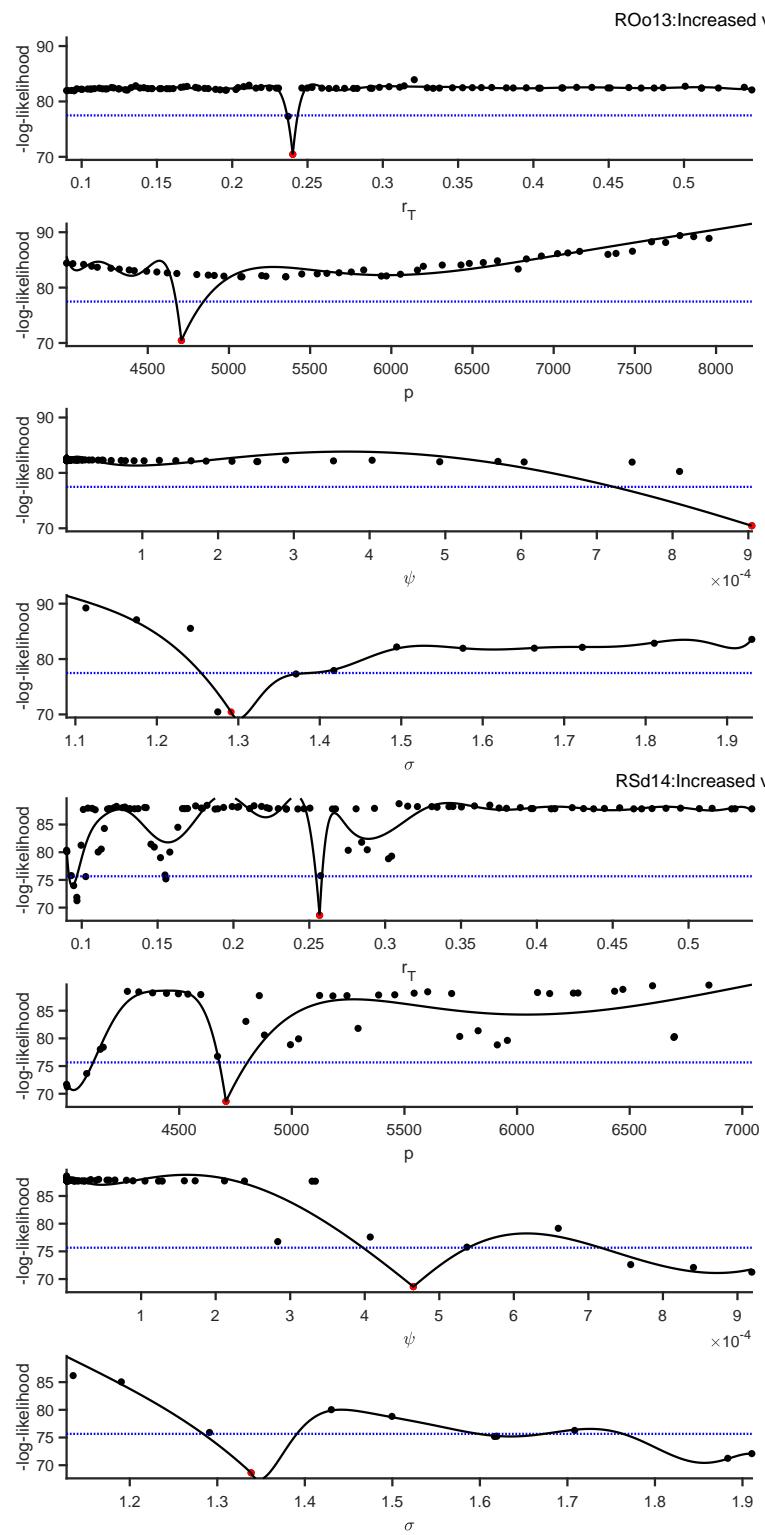


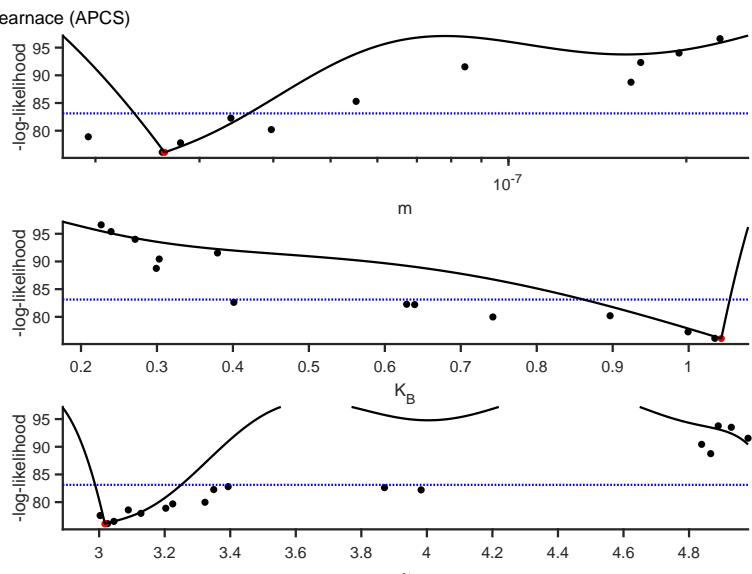
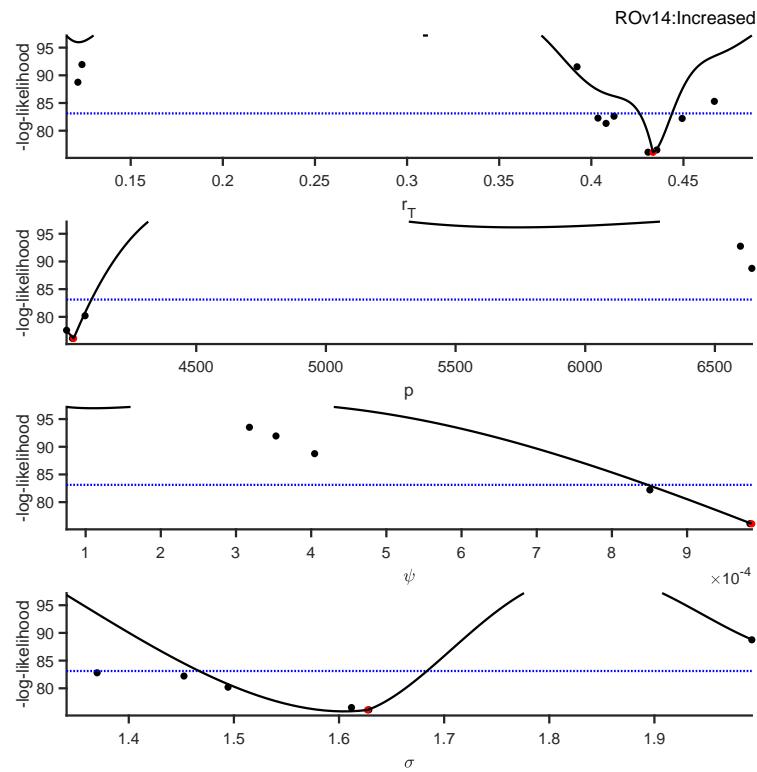
### 3.3 Antigen presenting cell effector cell source model





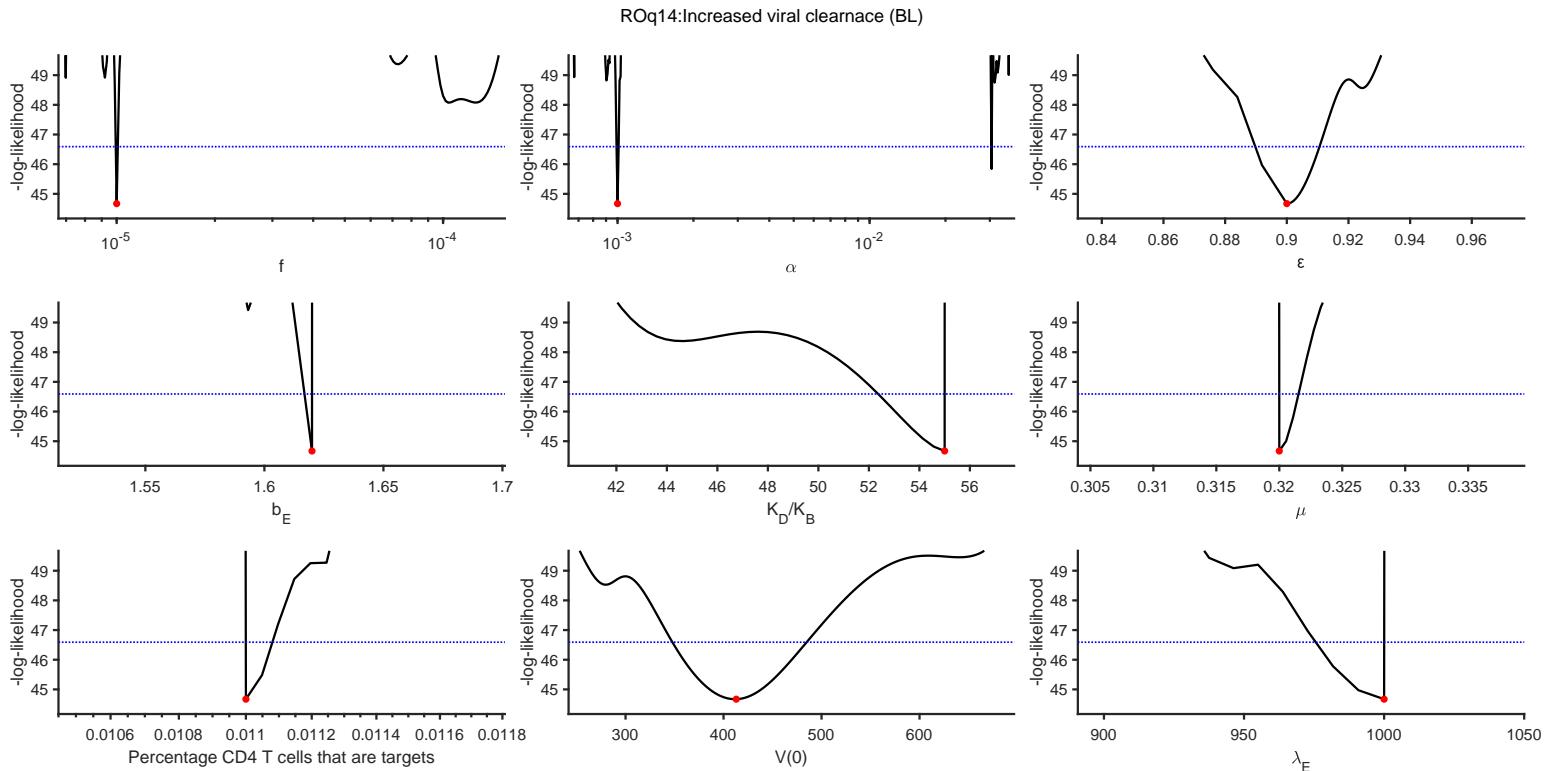


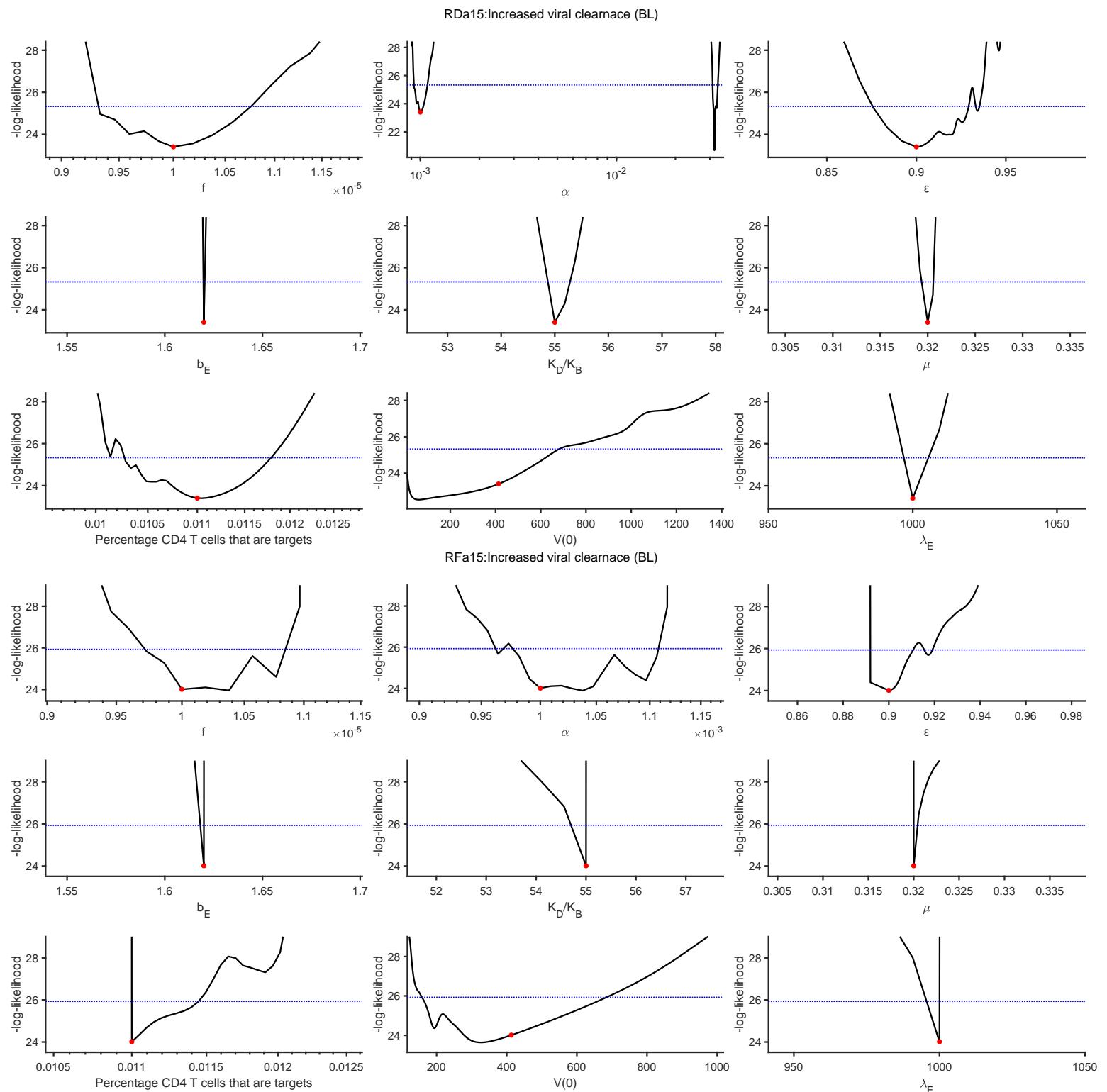


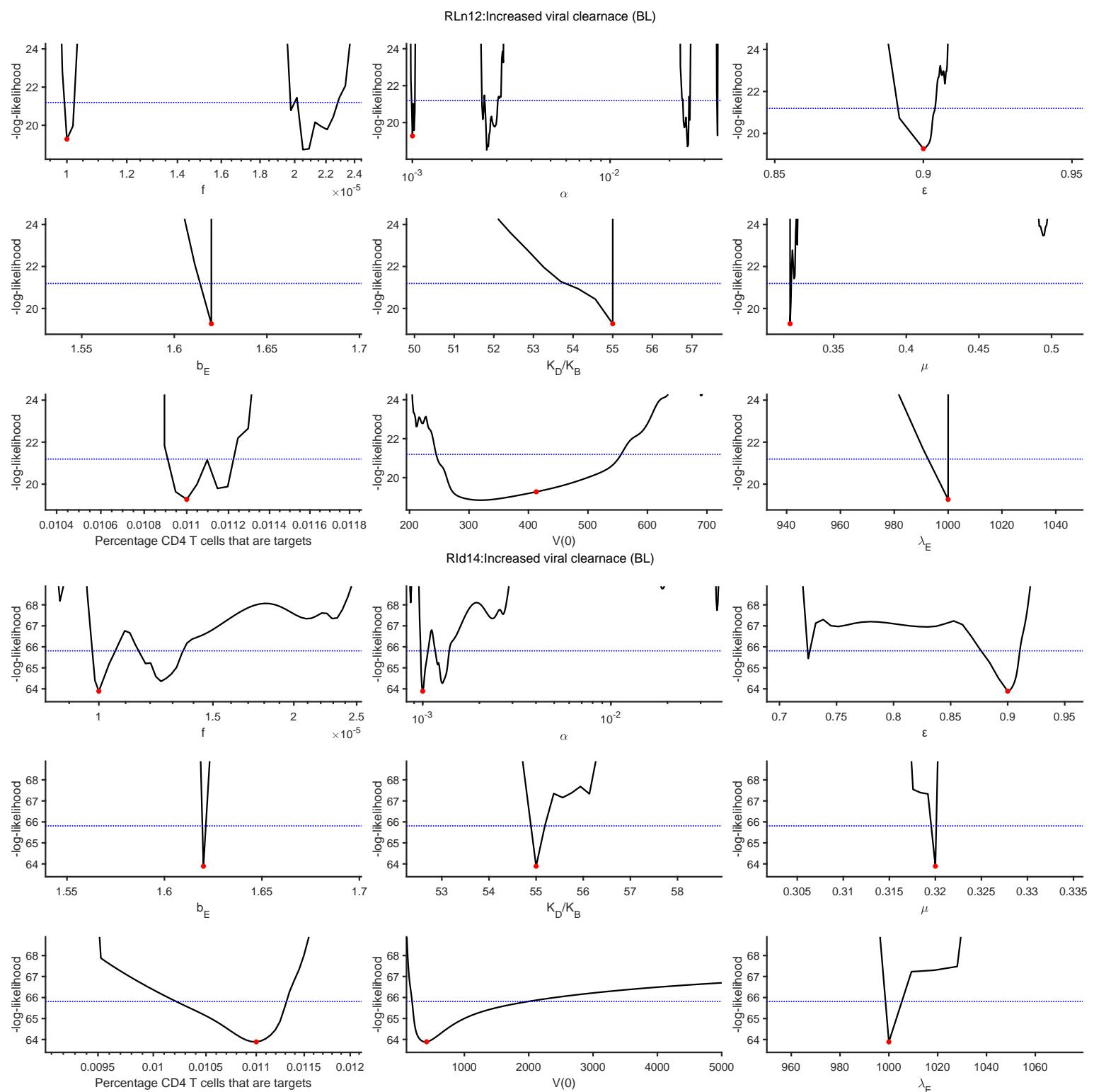


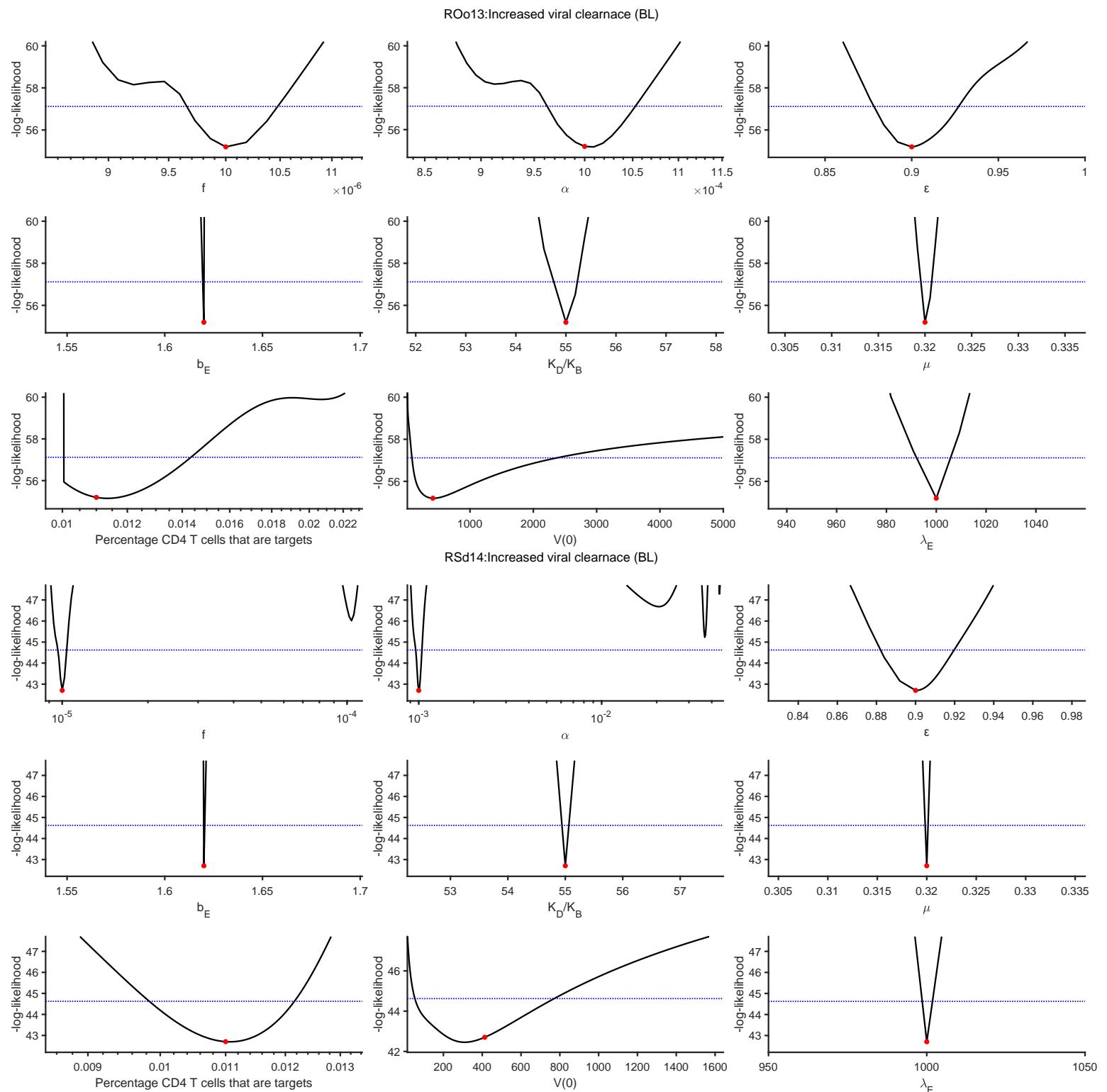
## 4 Sensitivity analysis: Increased viral clearance

### 4.1 Baseline effector cell source model

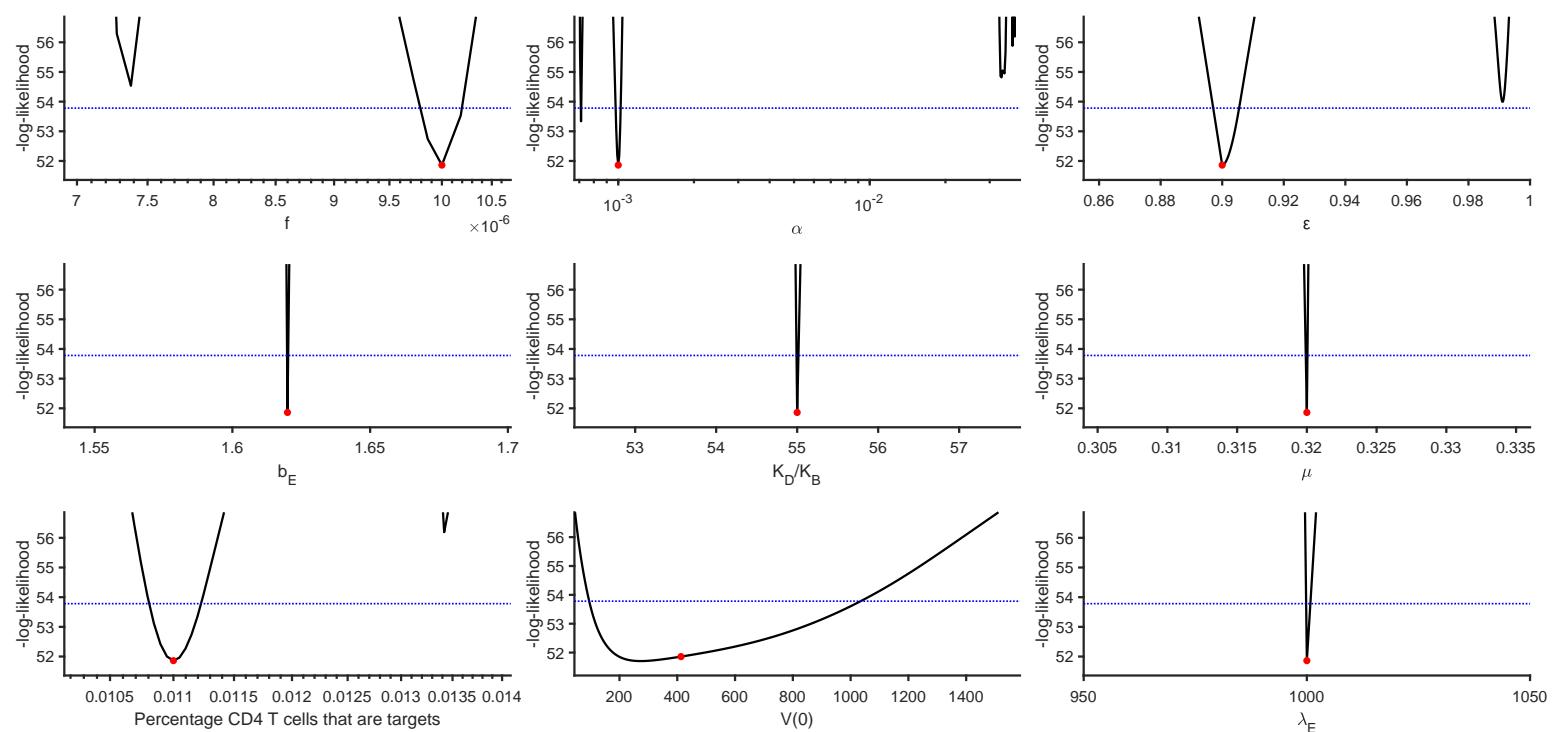






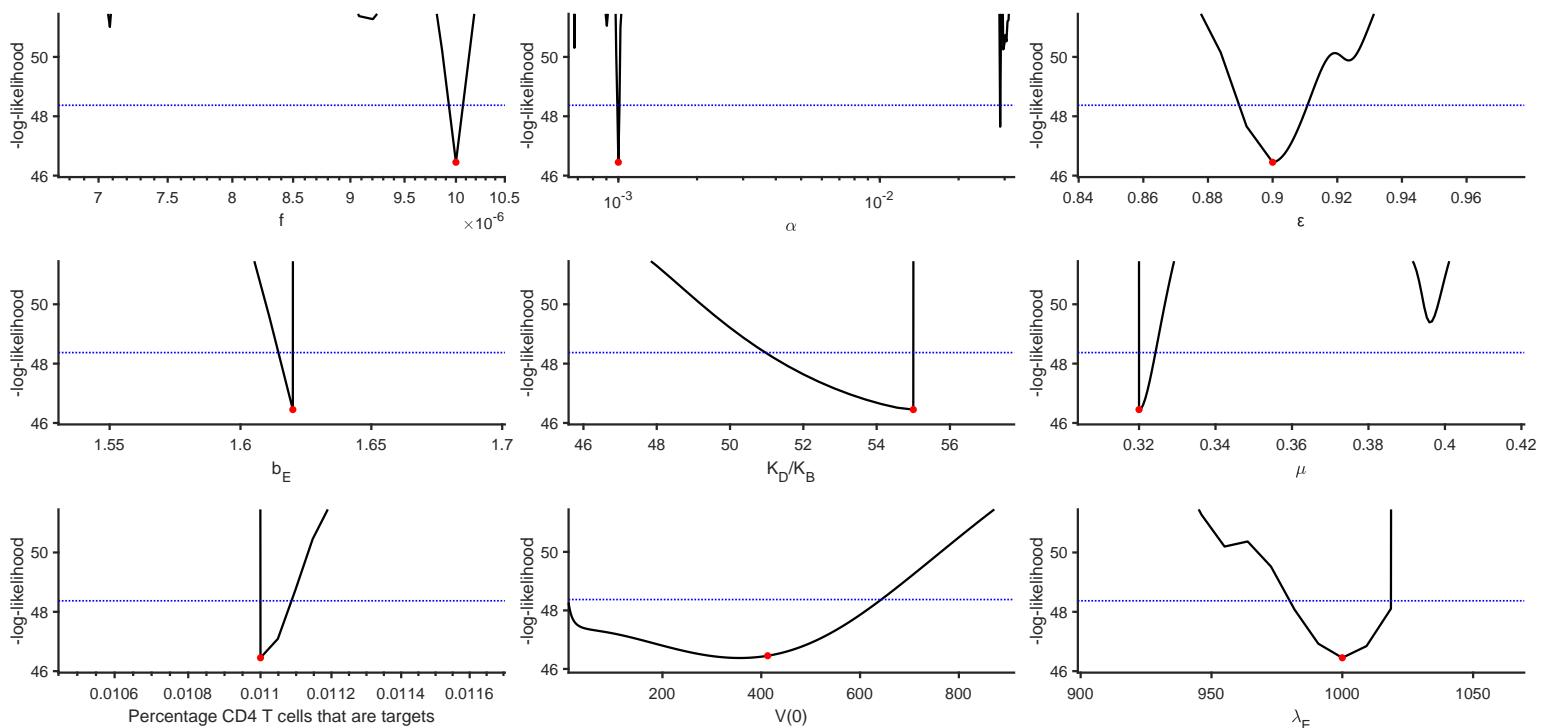


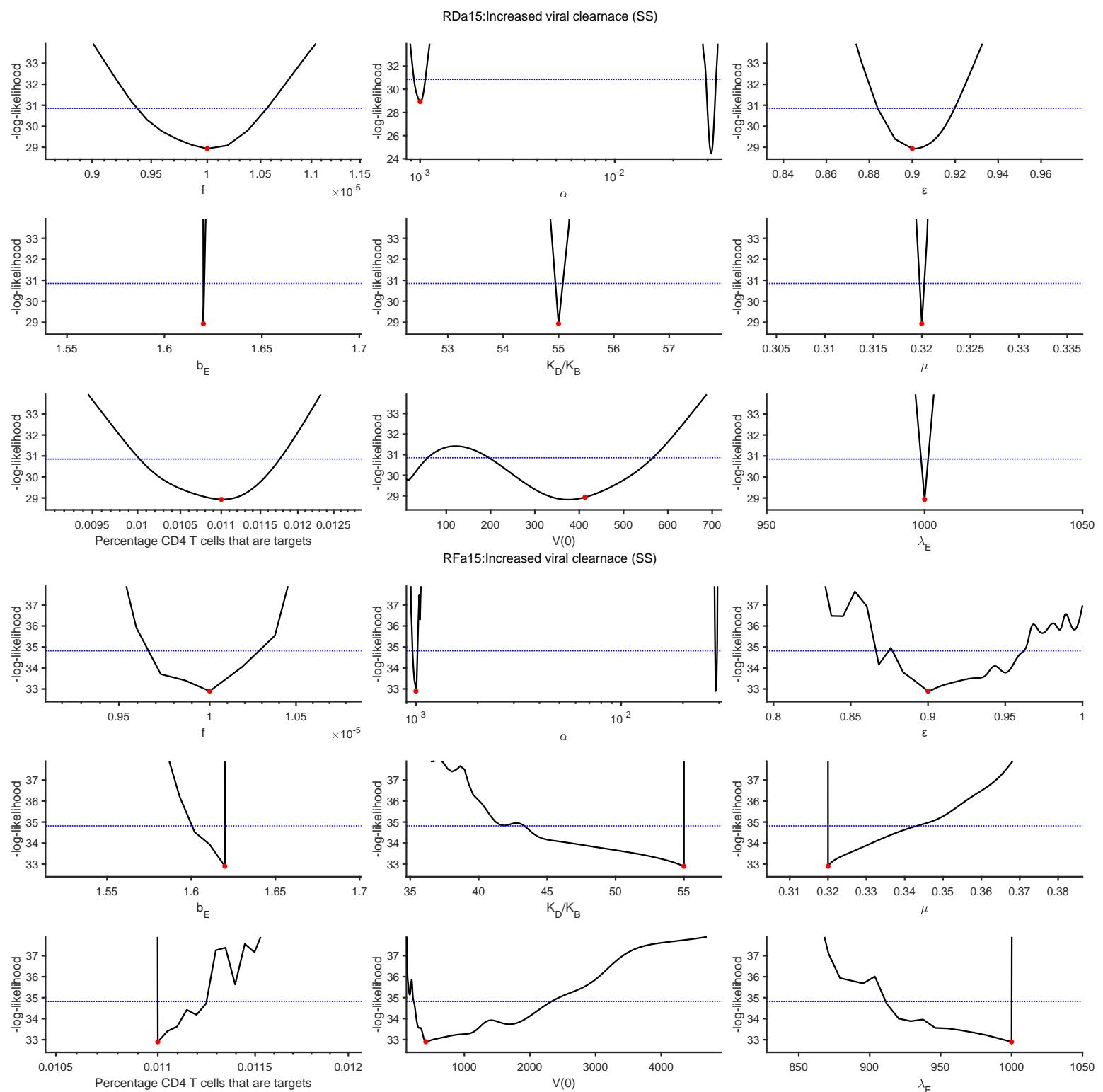
ROv14:Increased viral clearance (BL)

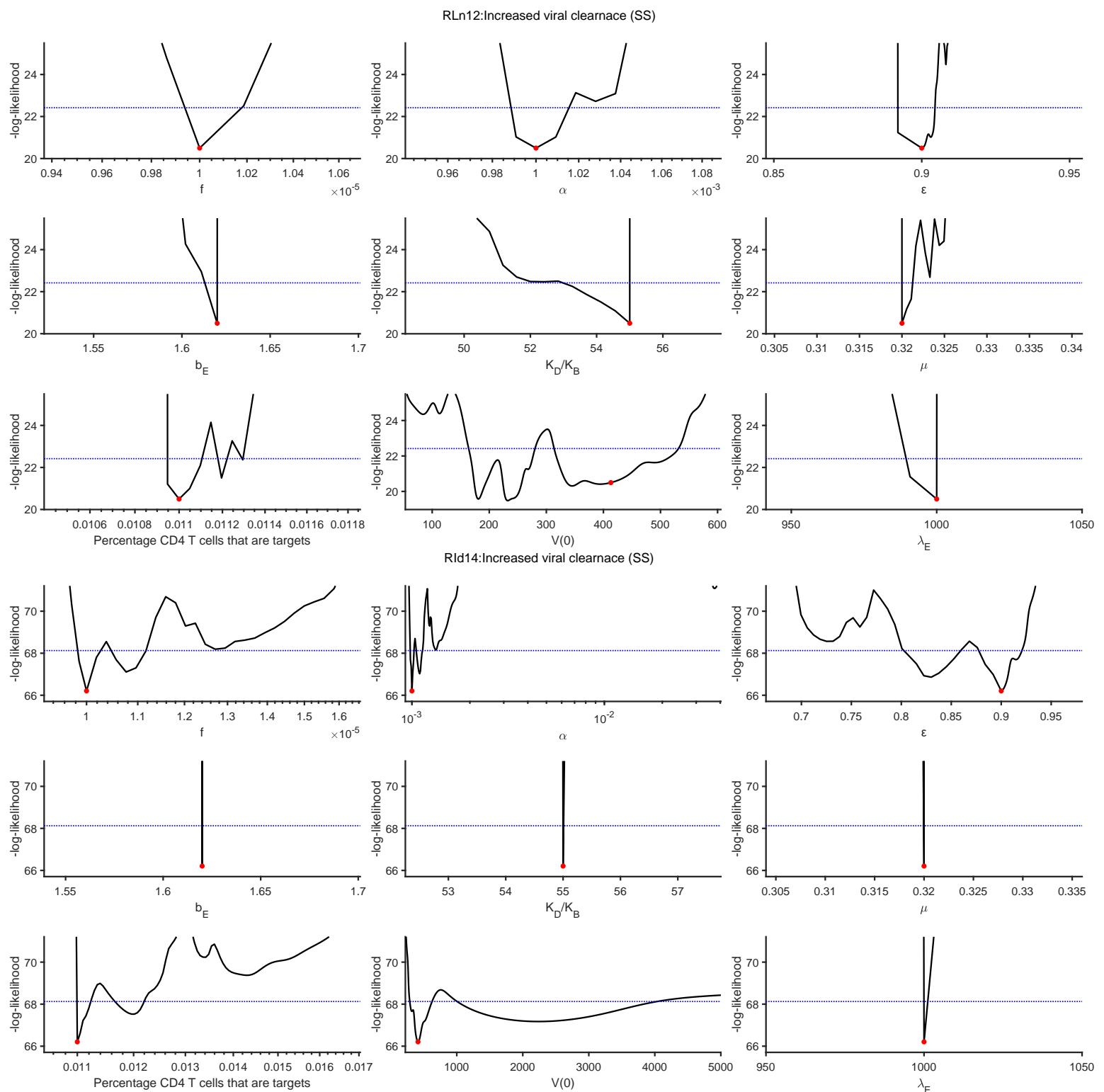


## 4.2 Saturated effector cell source model

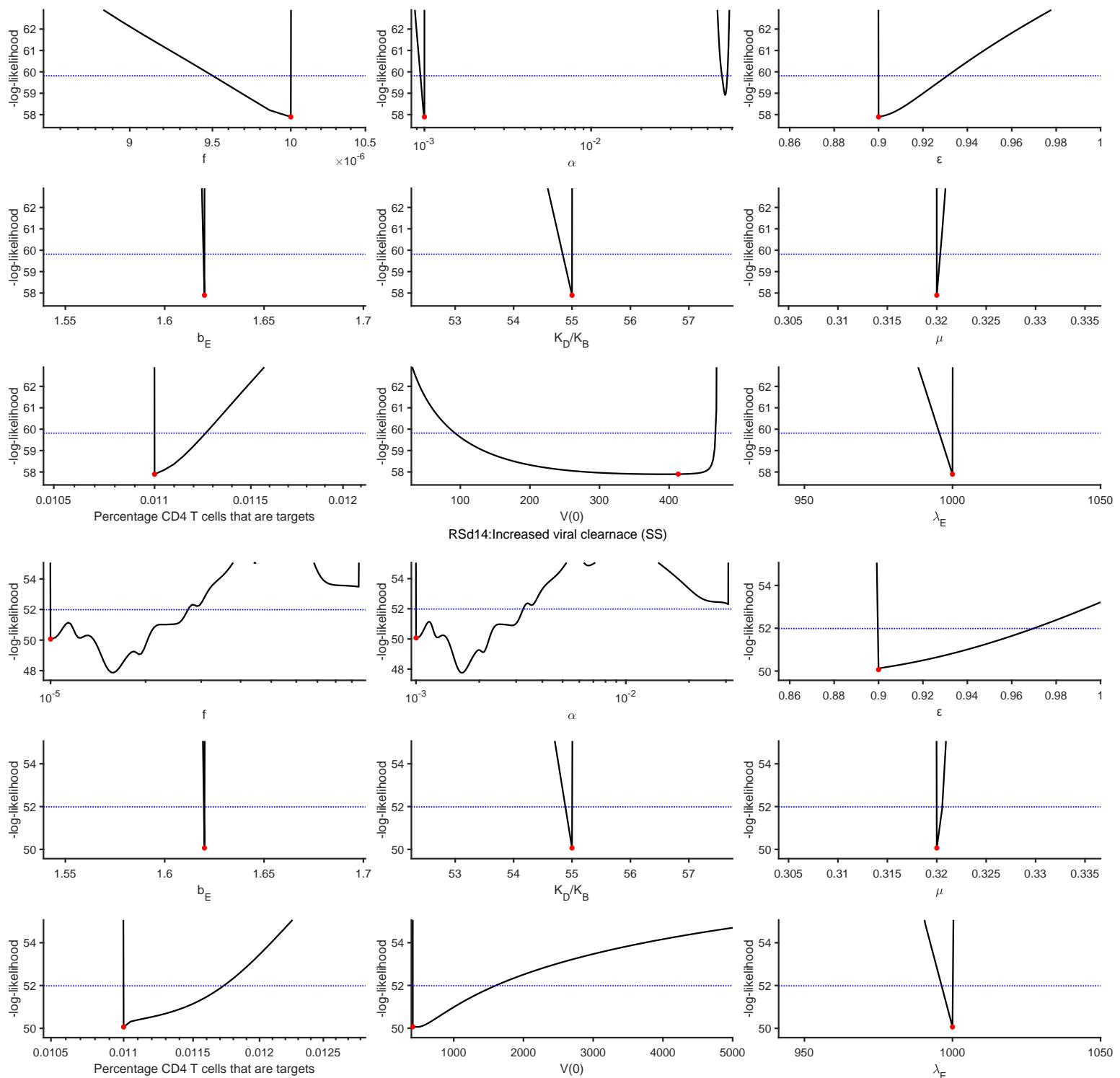
ROq14:Increased viral clearance (SS)



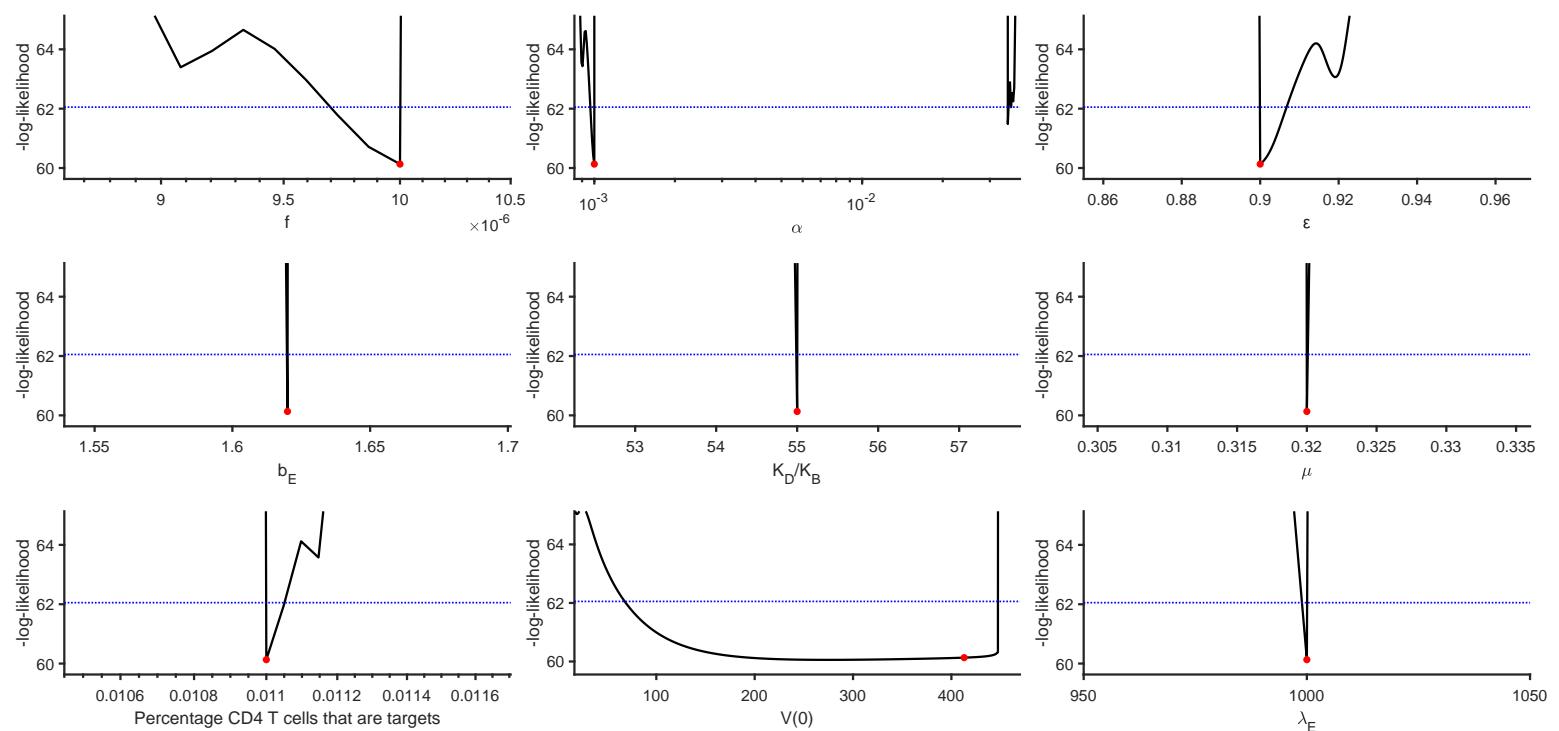




ROo13:Increased viral clearance (SS)

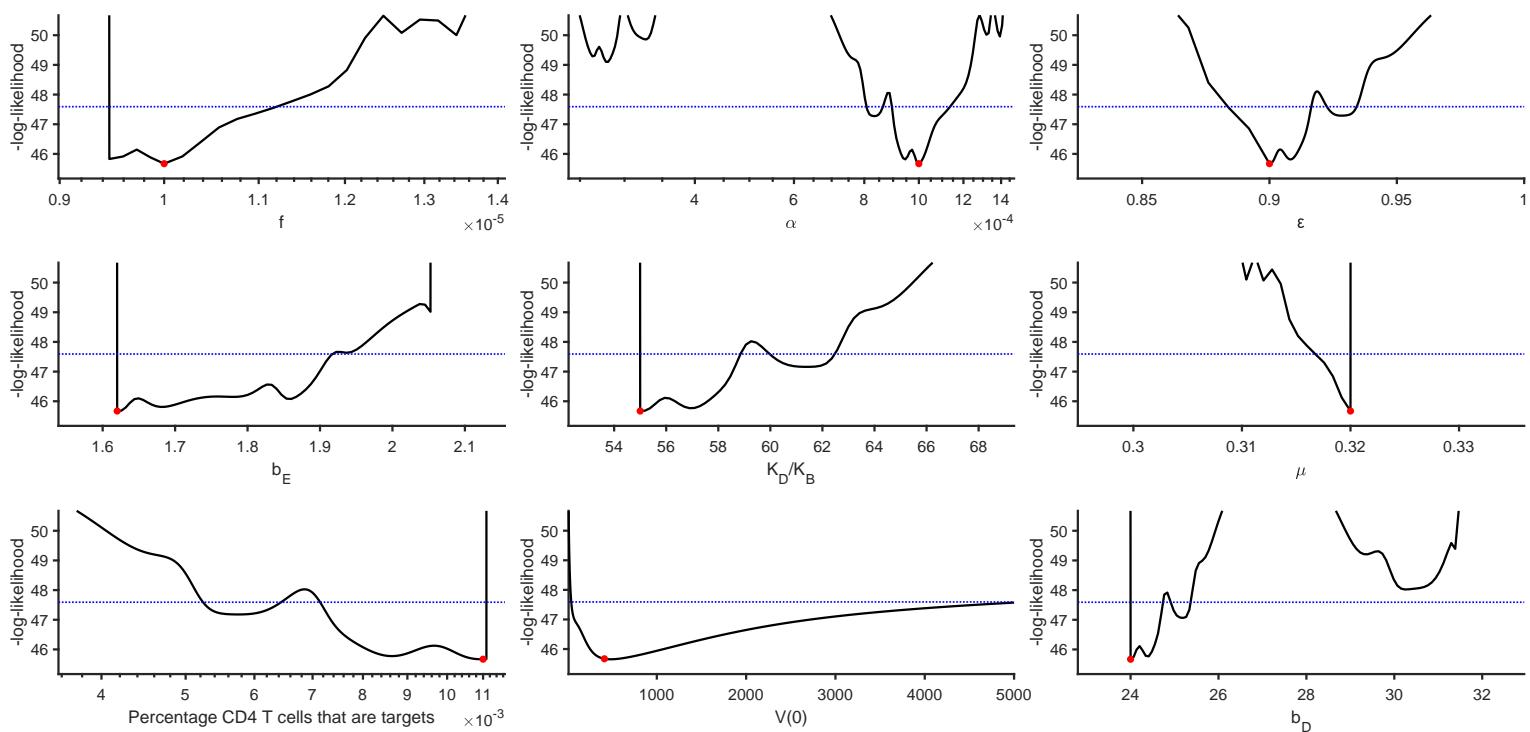


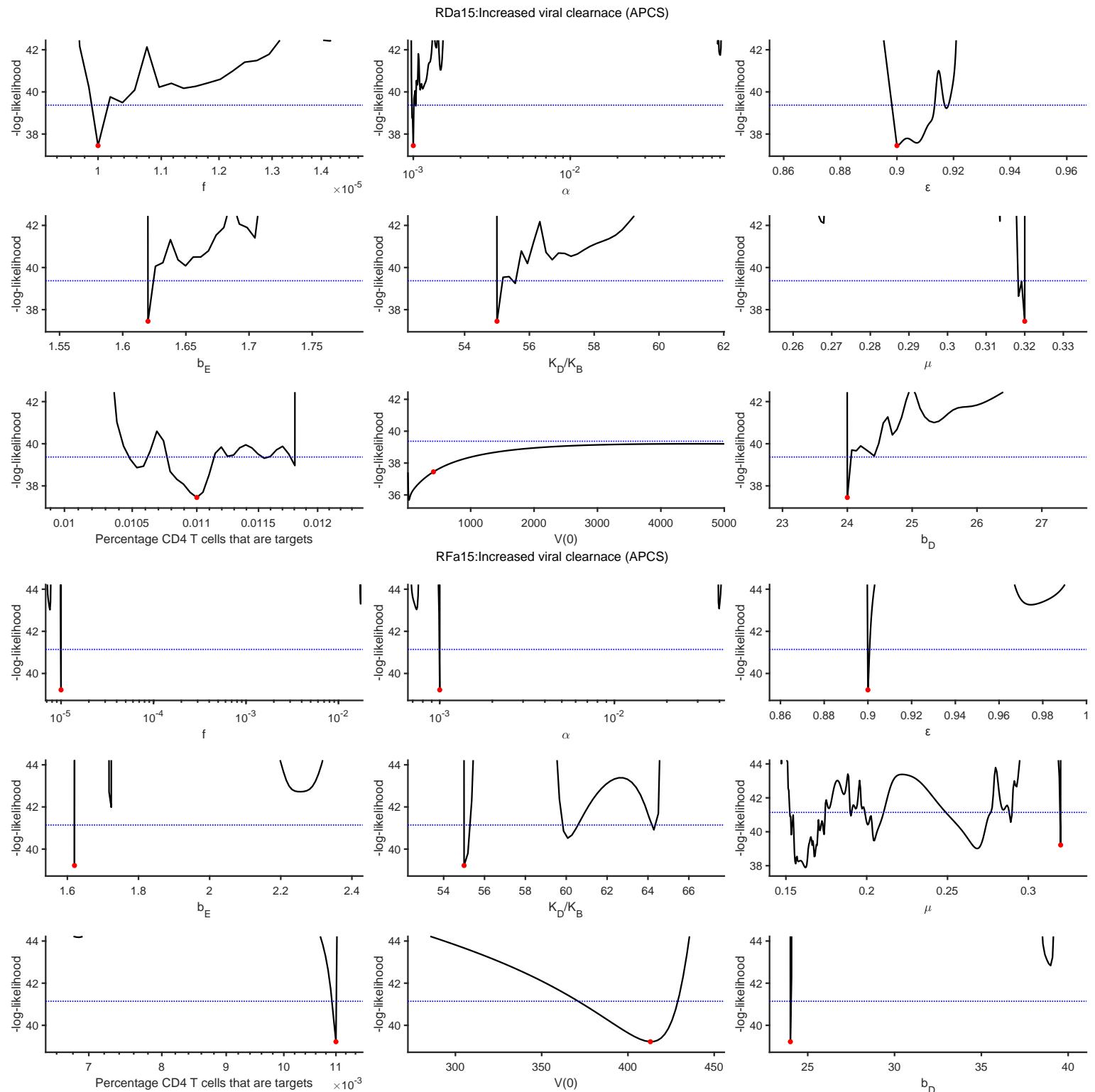
ROv14:Increased viral clearance (SS)

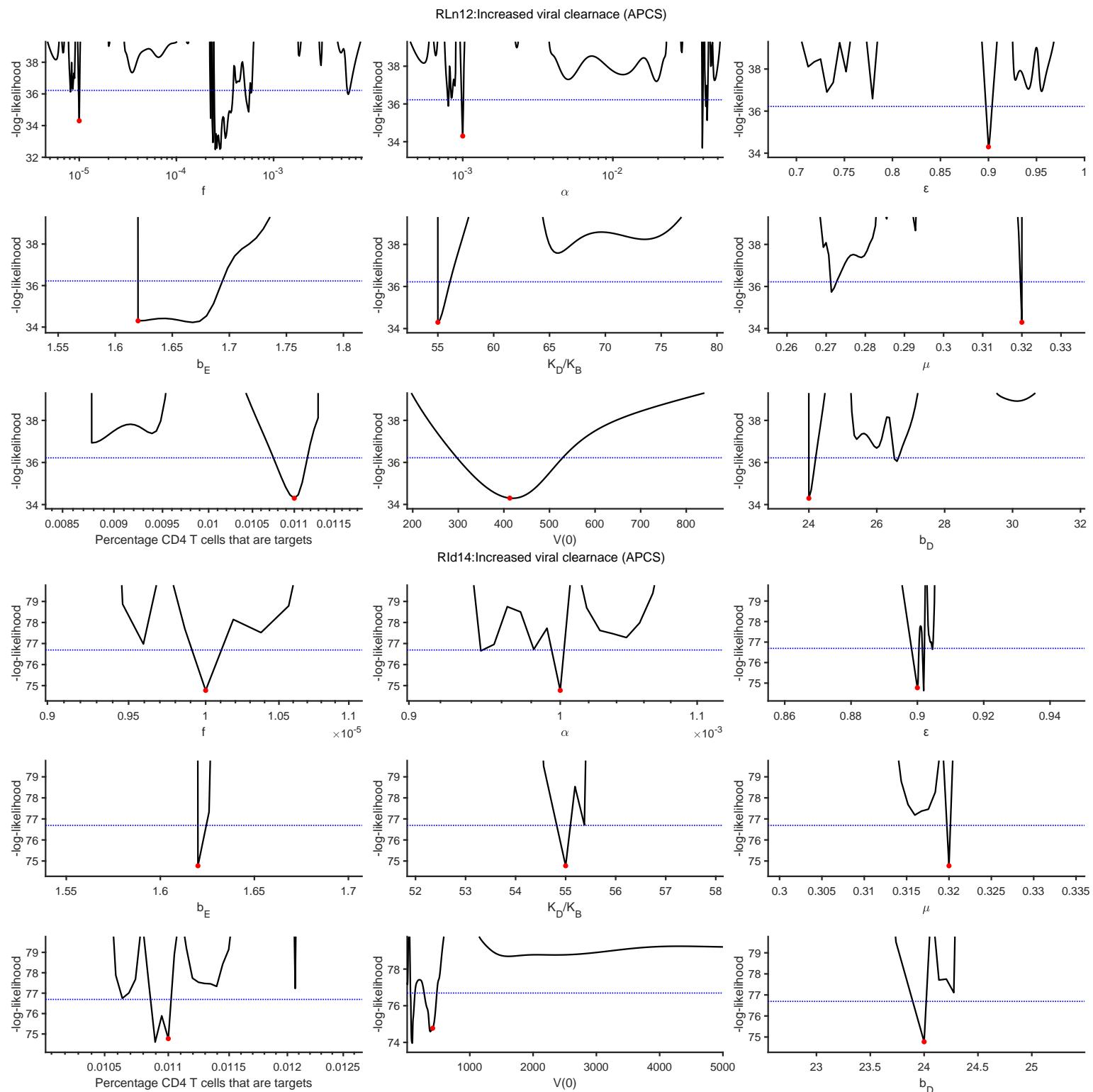


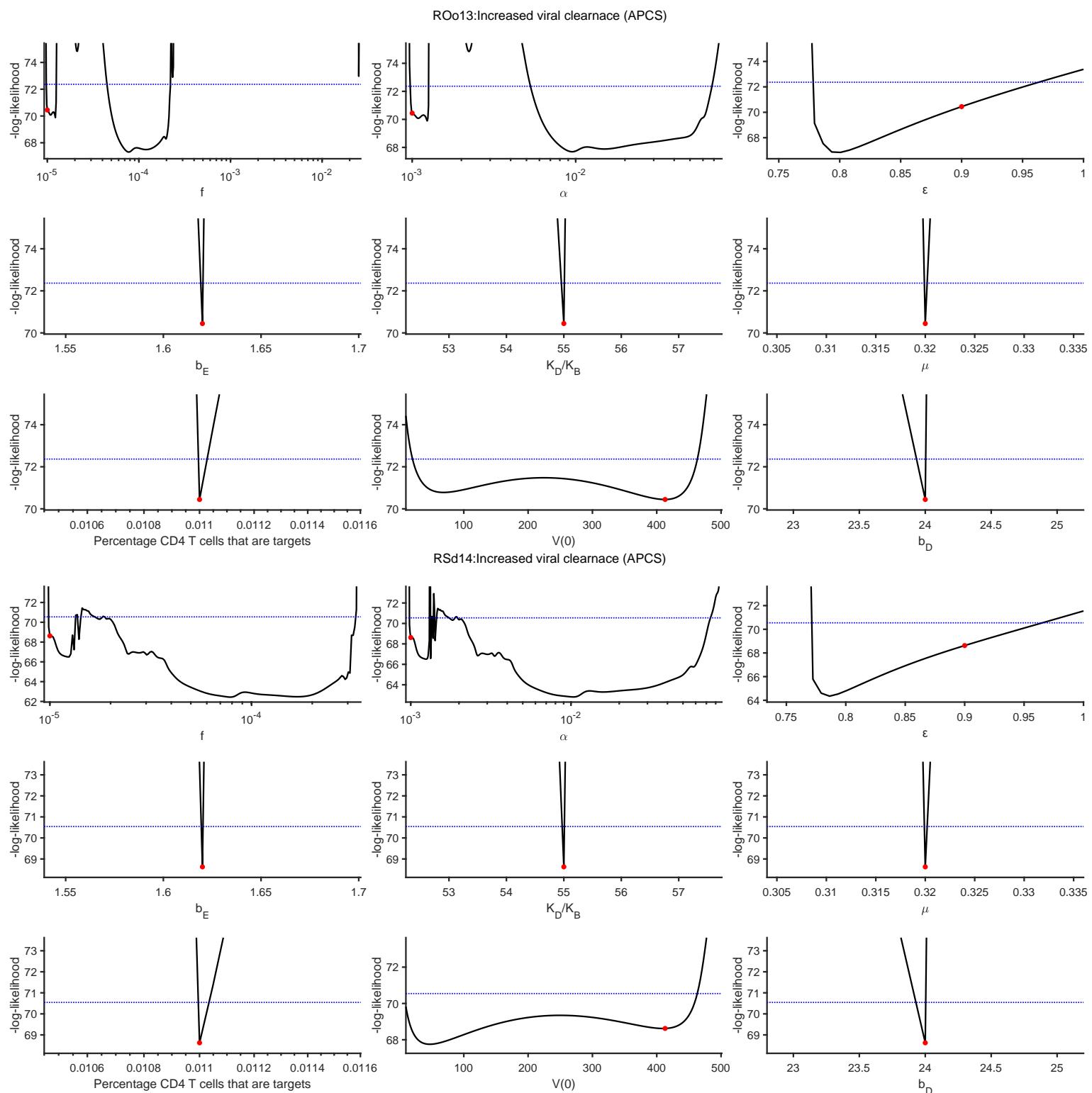
### 4.3 Antigen presenting cell effector cell source model

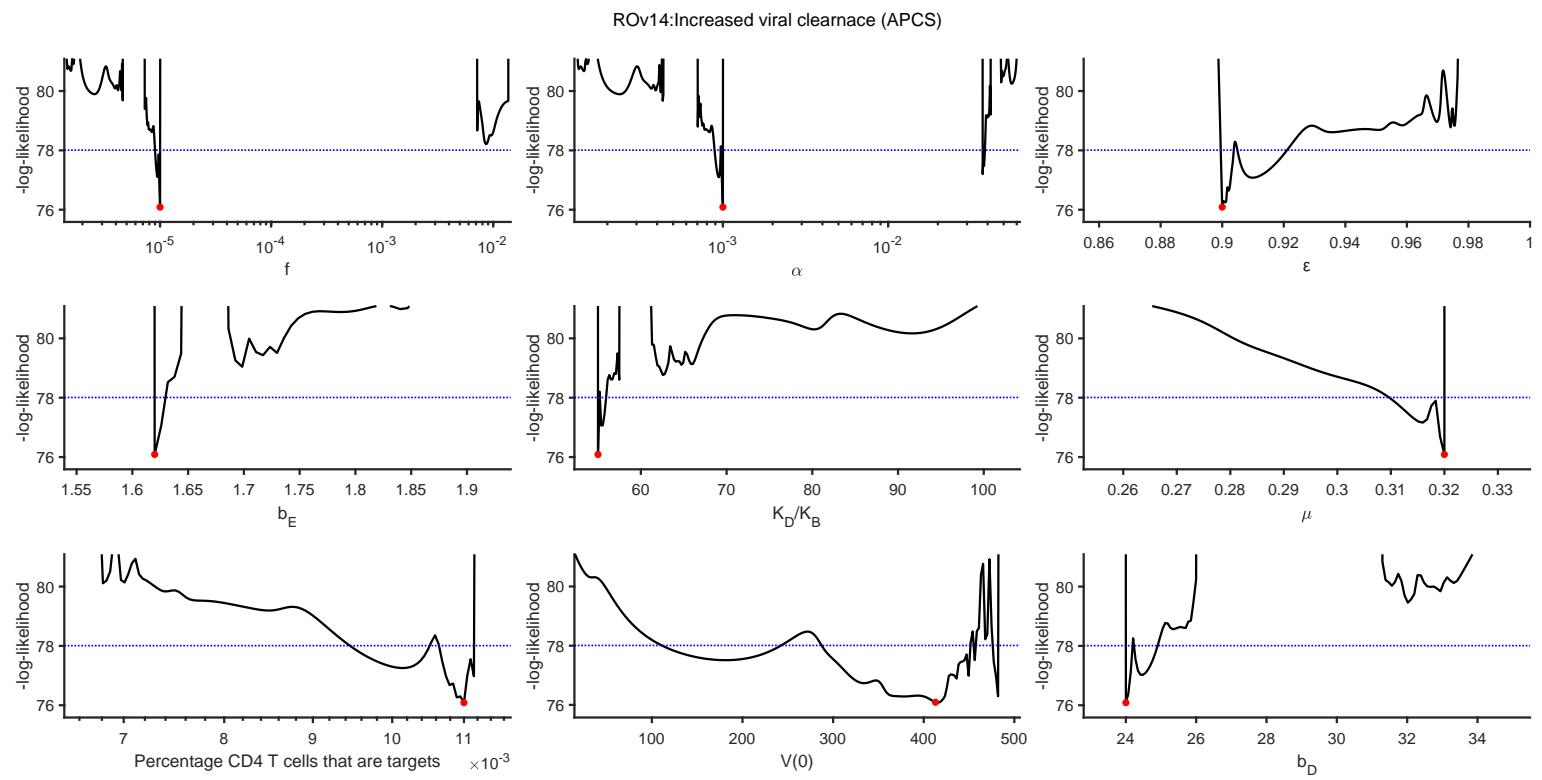
ROq14:Increased viral clearance (APCS)





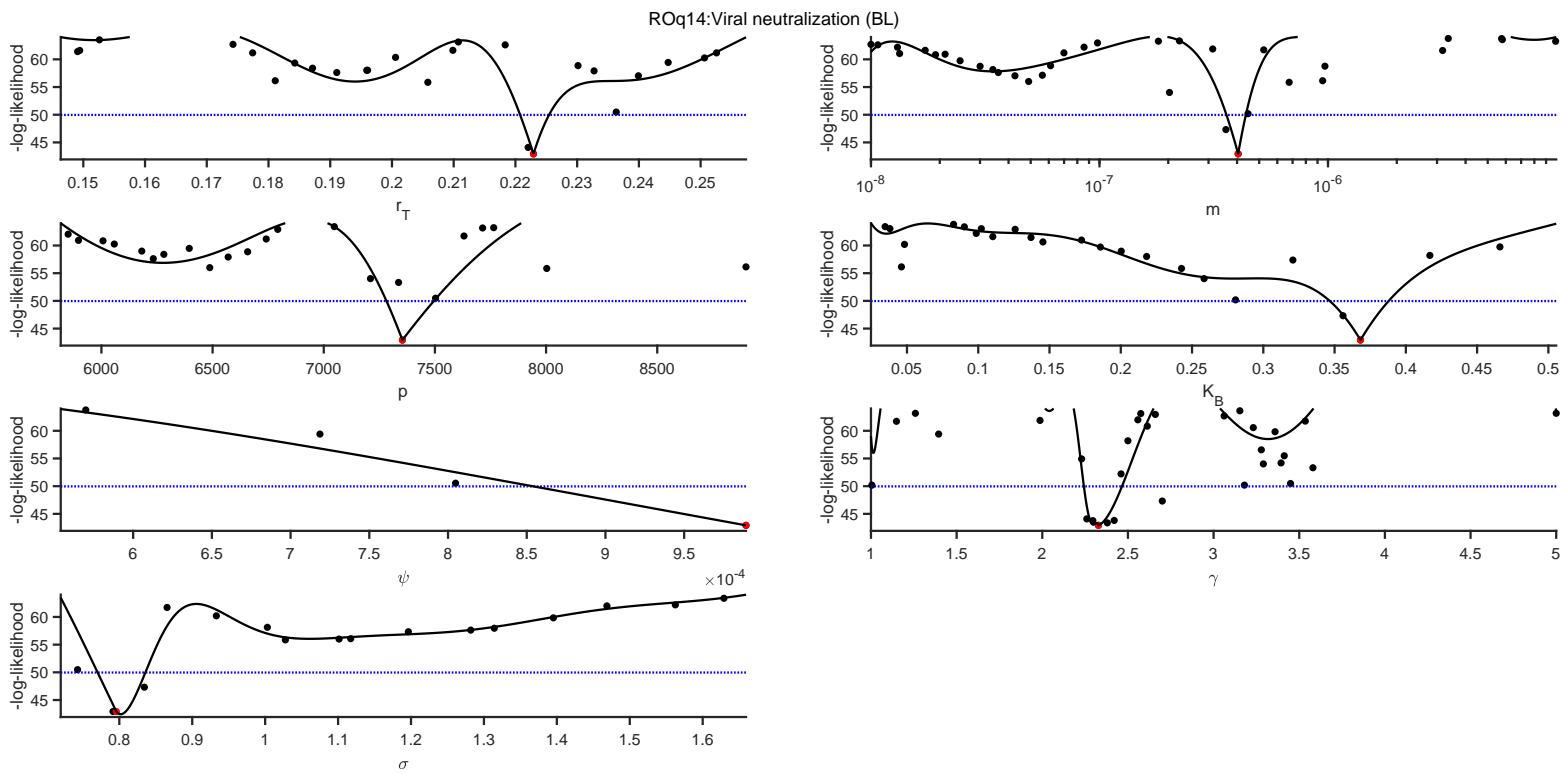


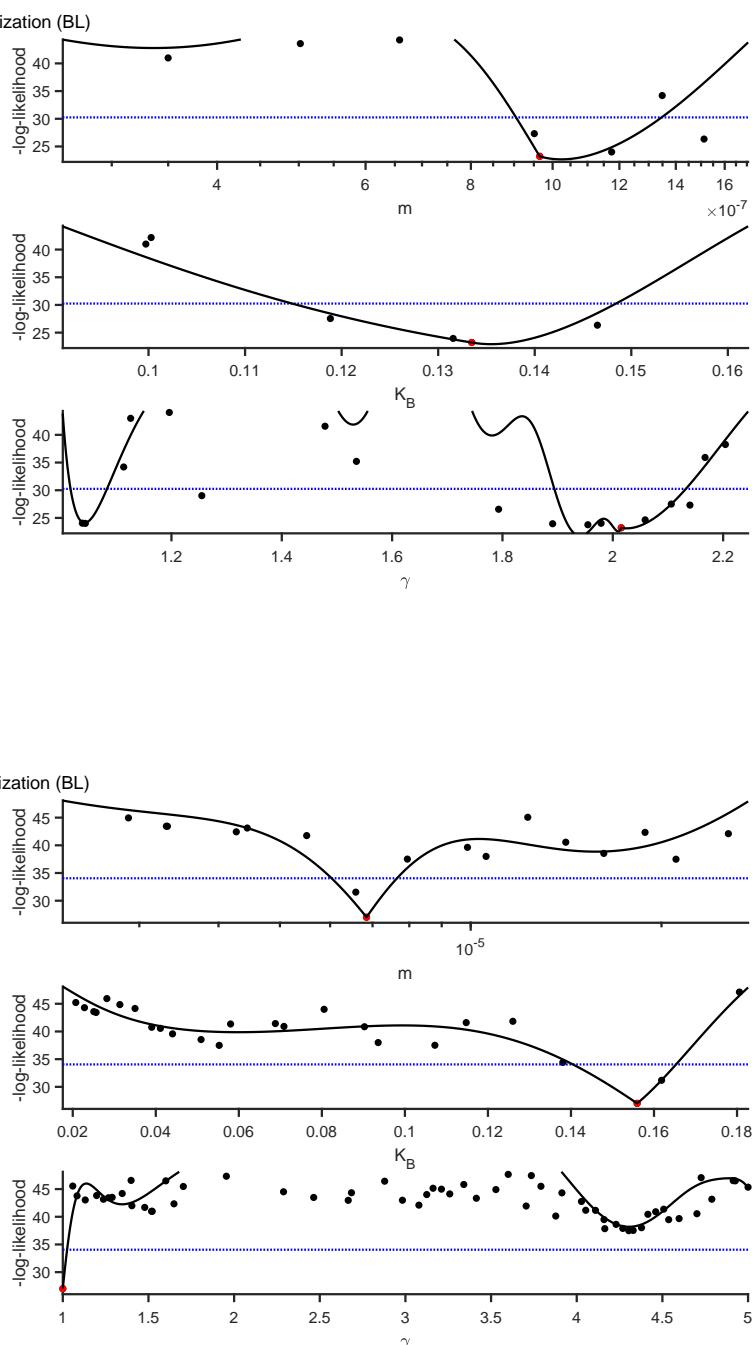
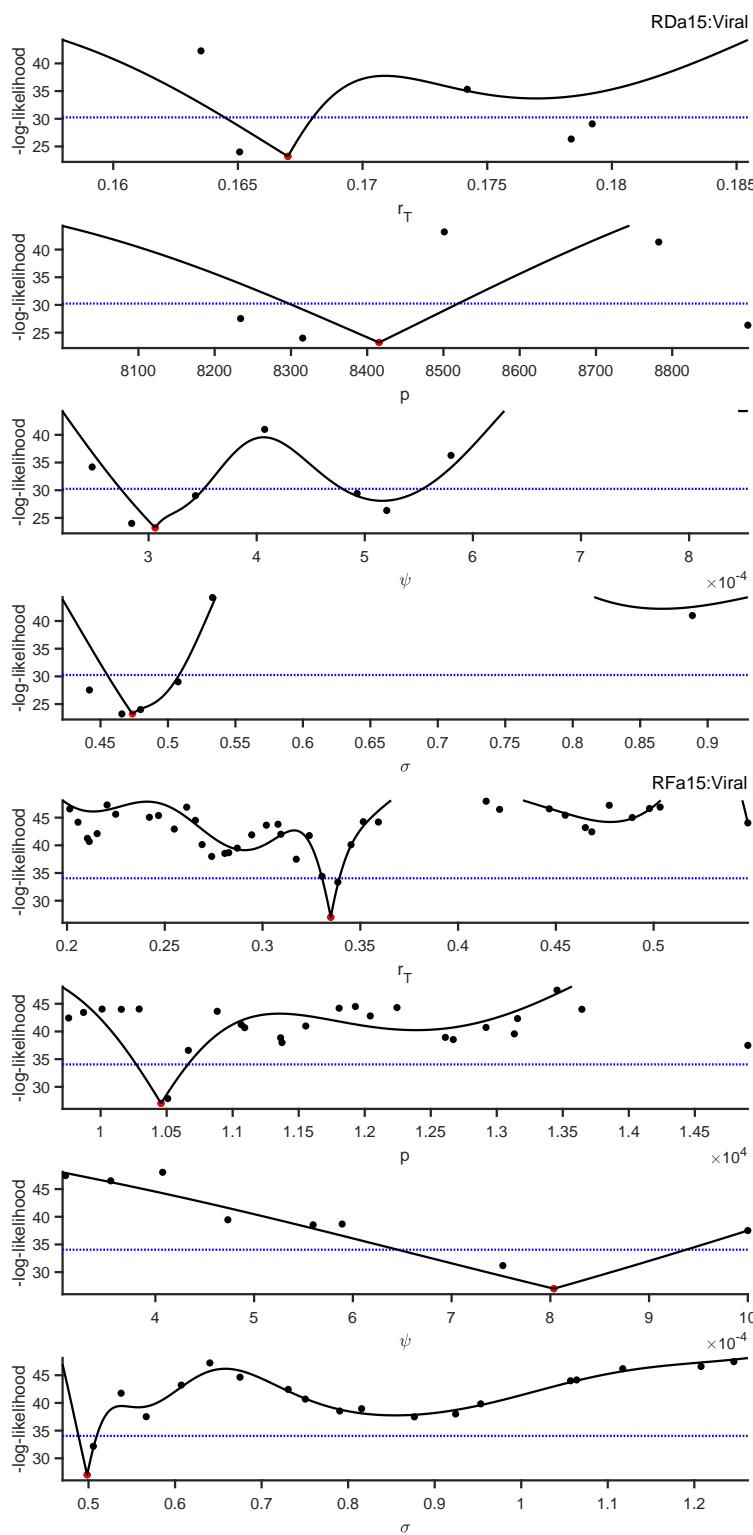


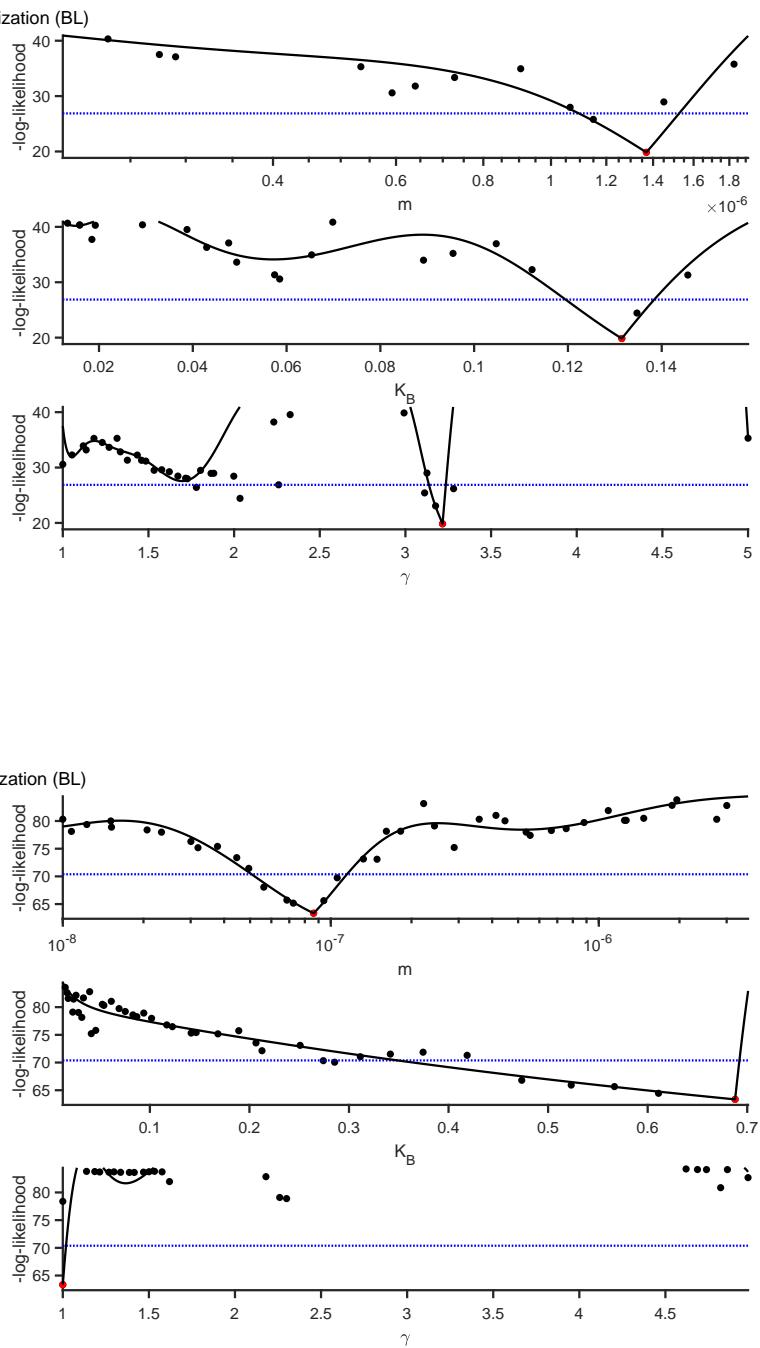
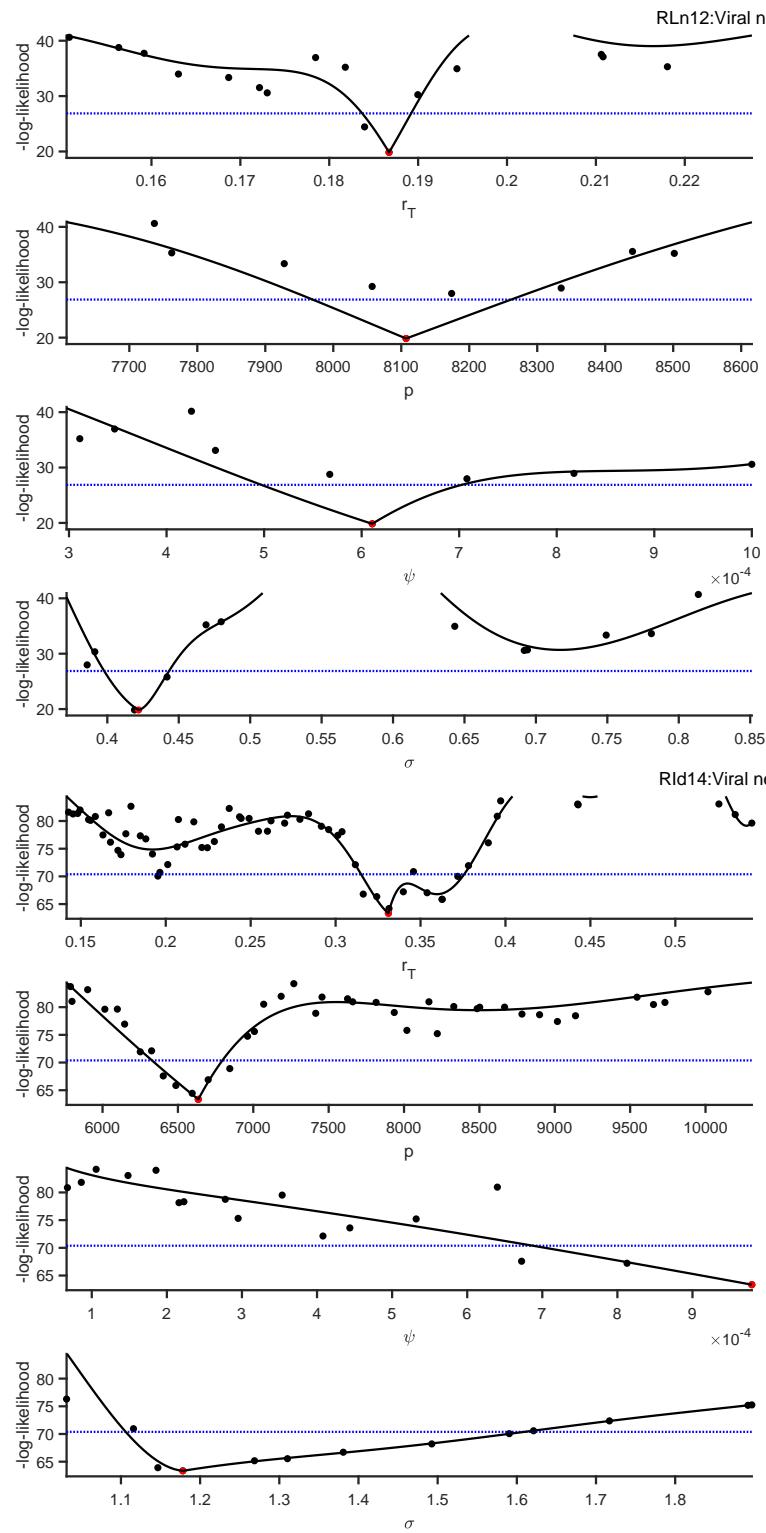


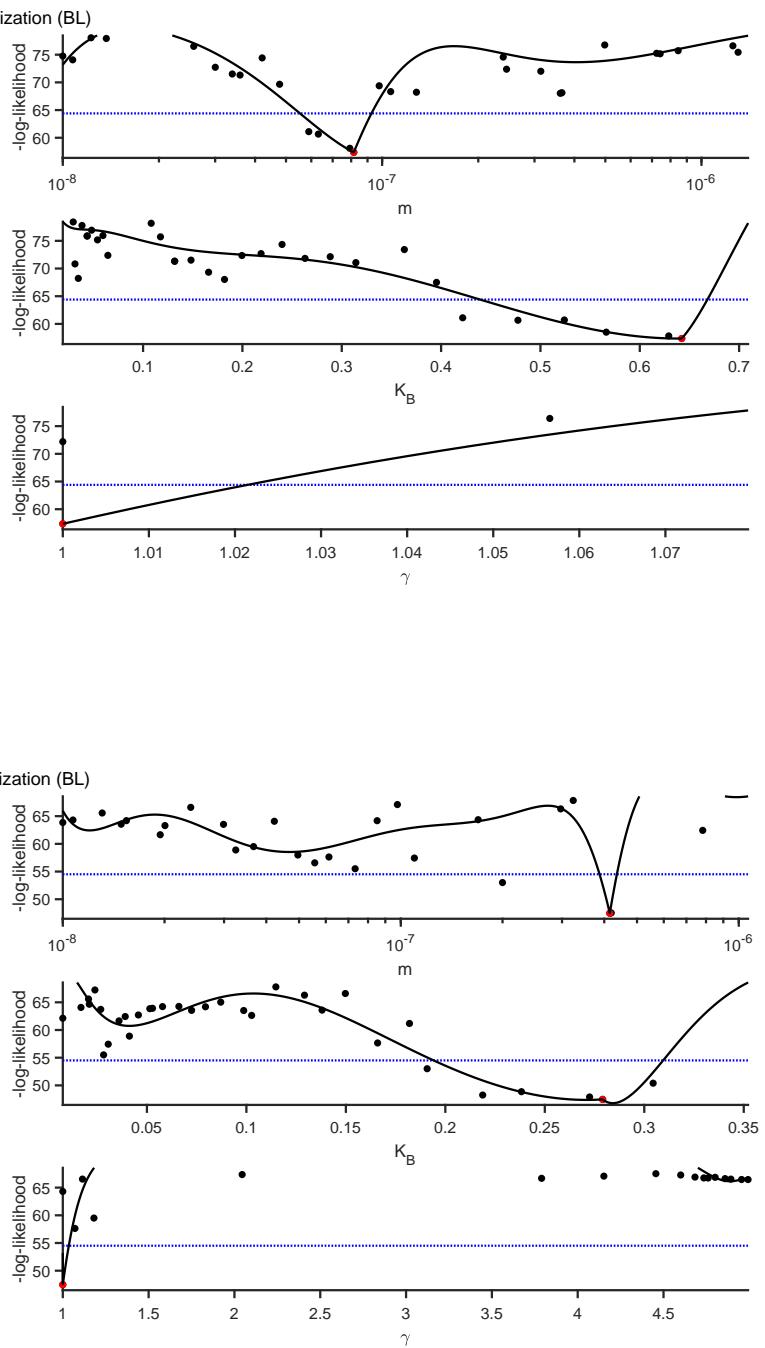
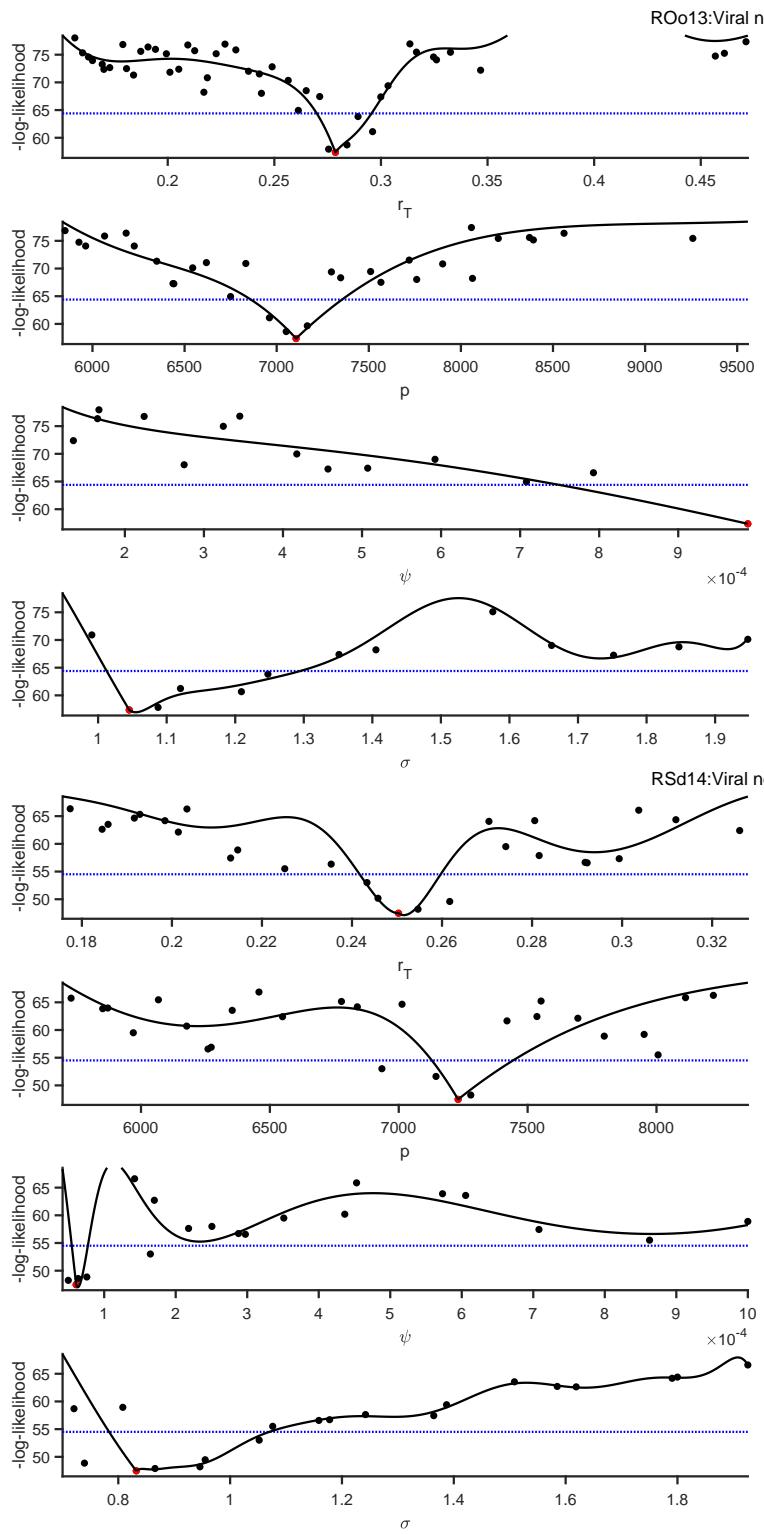
## 5 Likelihood profiles: Viral neutralization

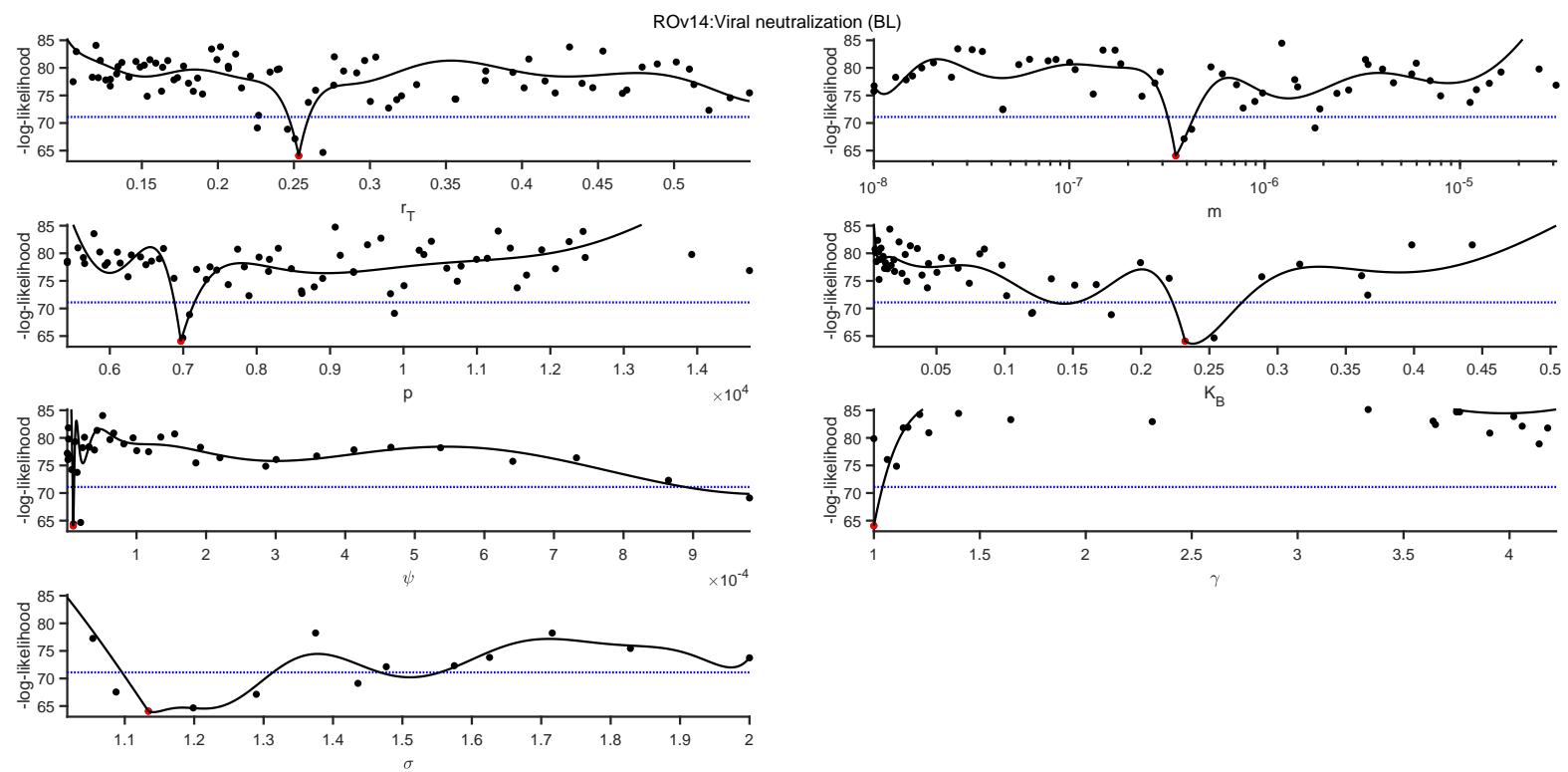
### 5.1 Baseline effector cell source model



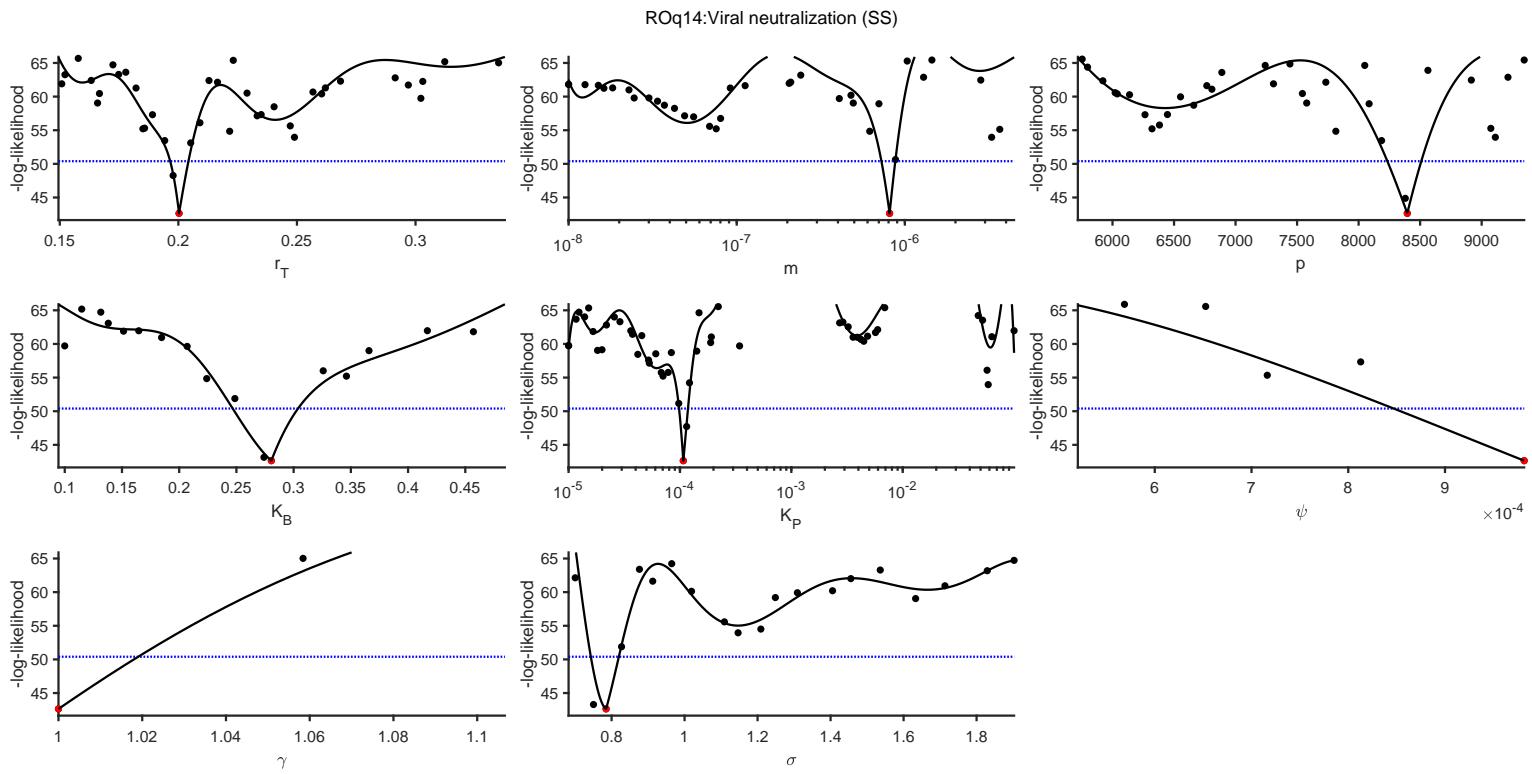


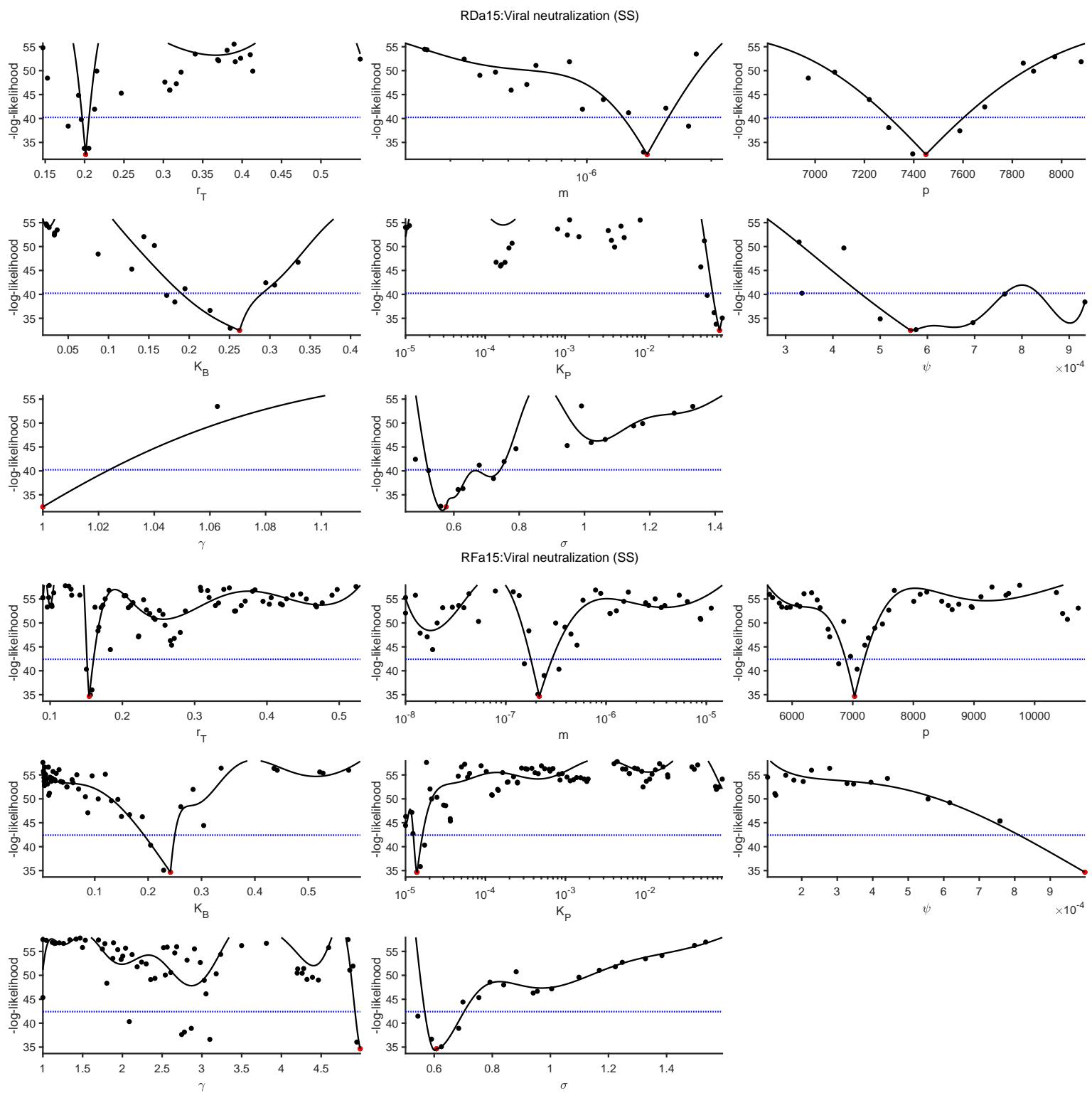


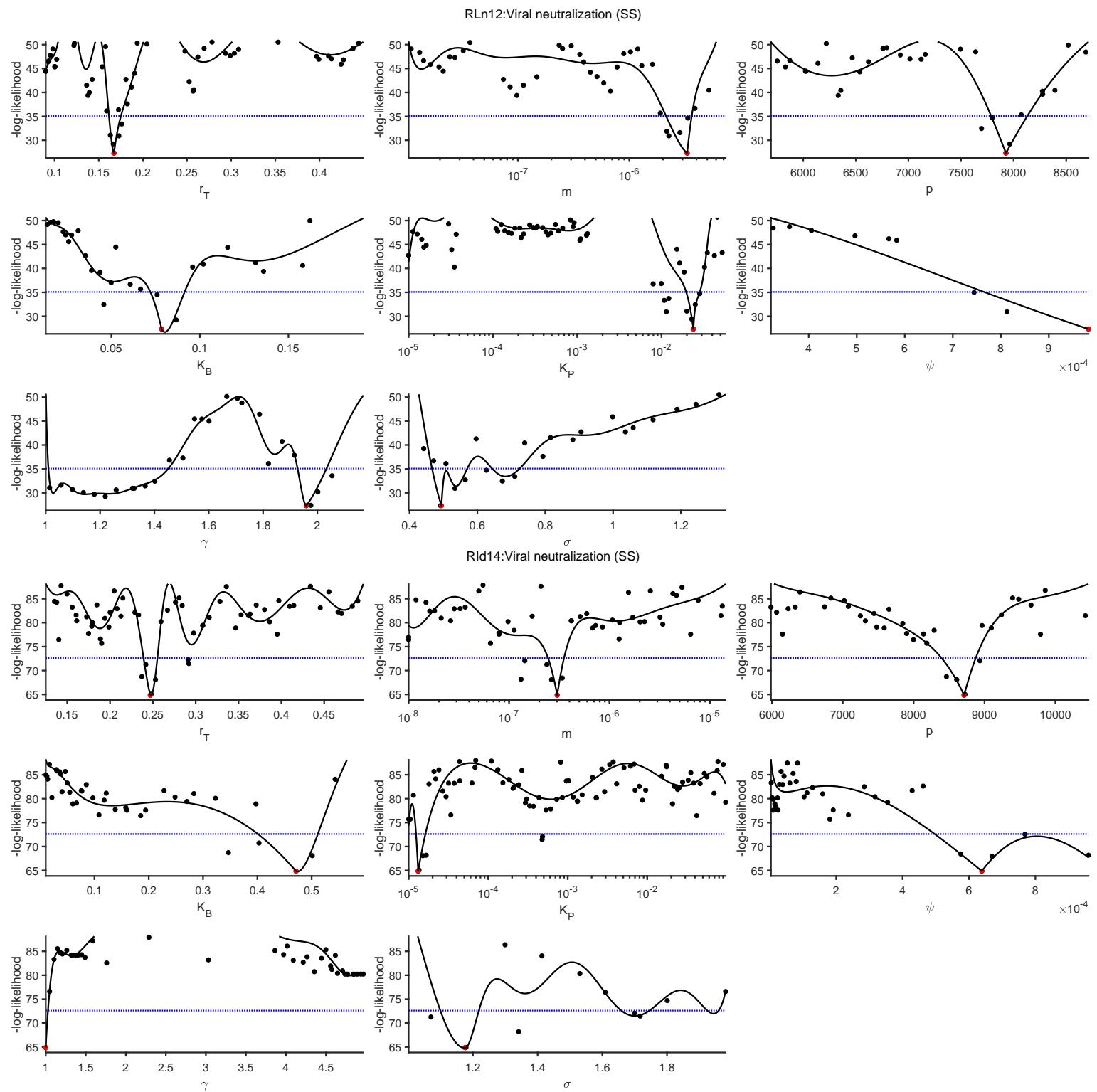


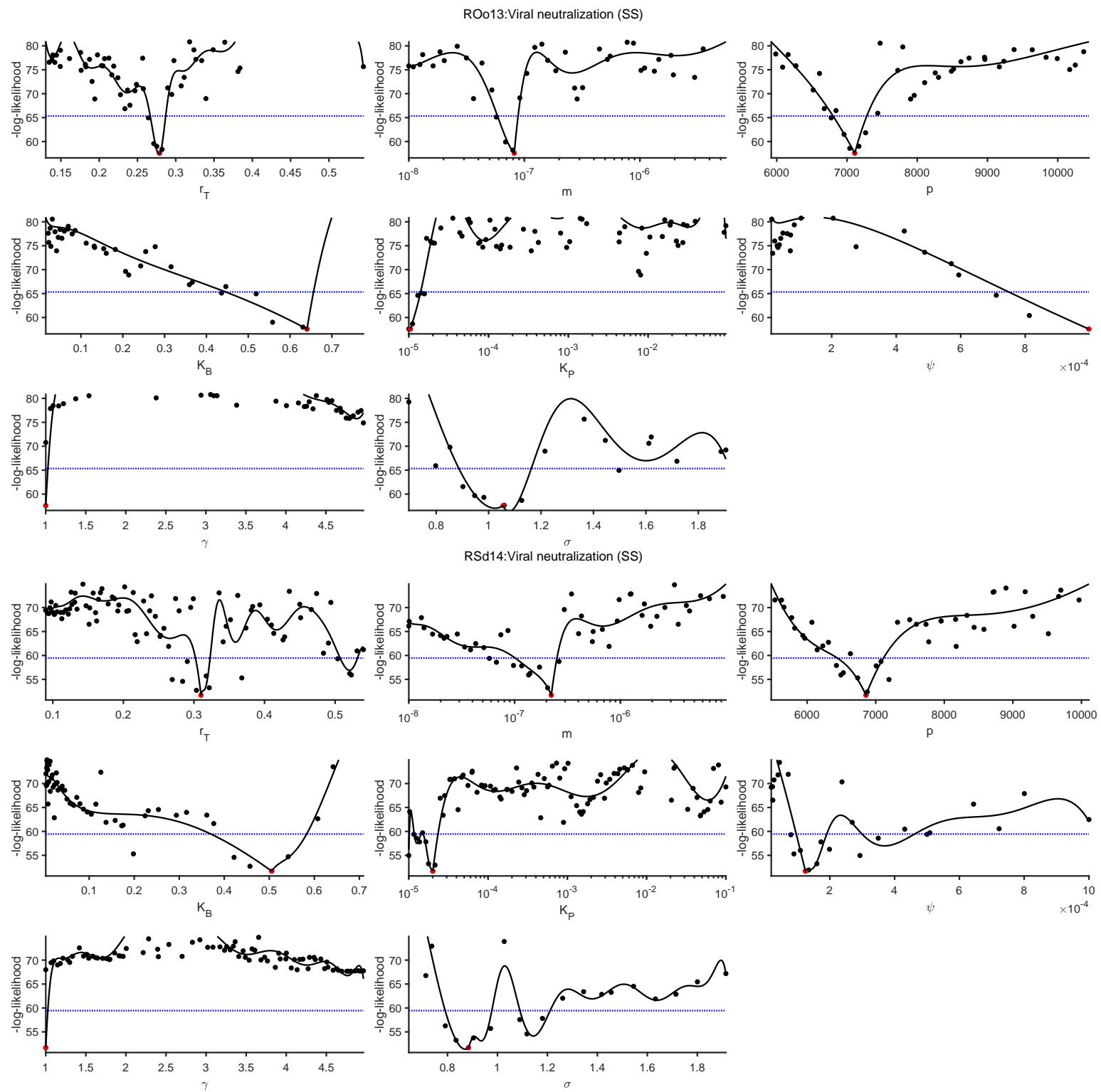


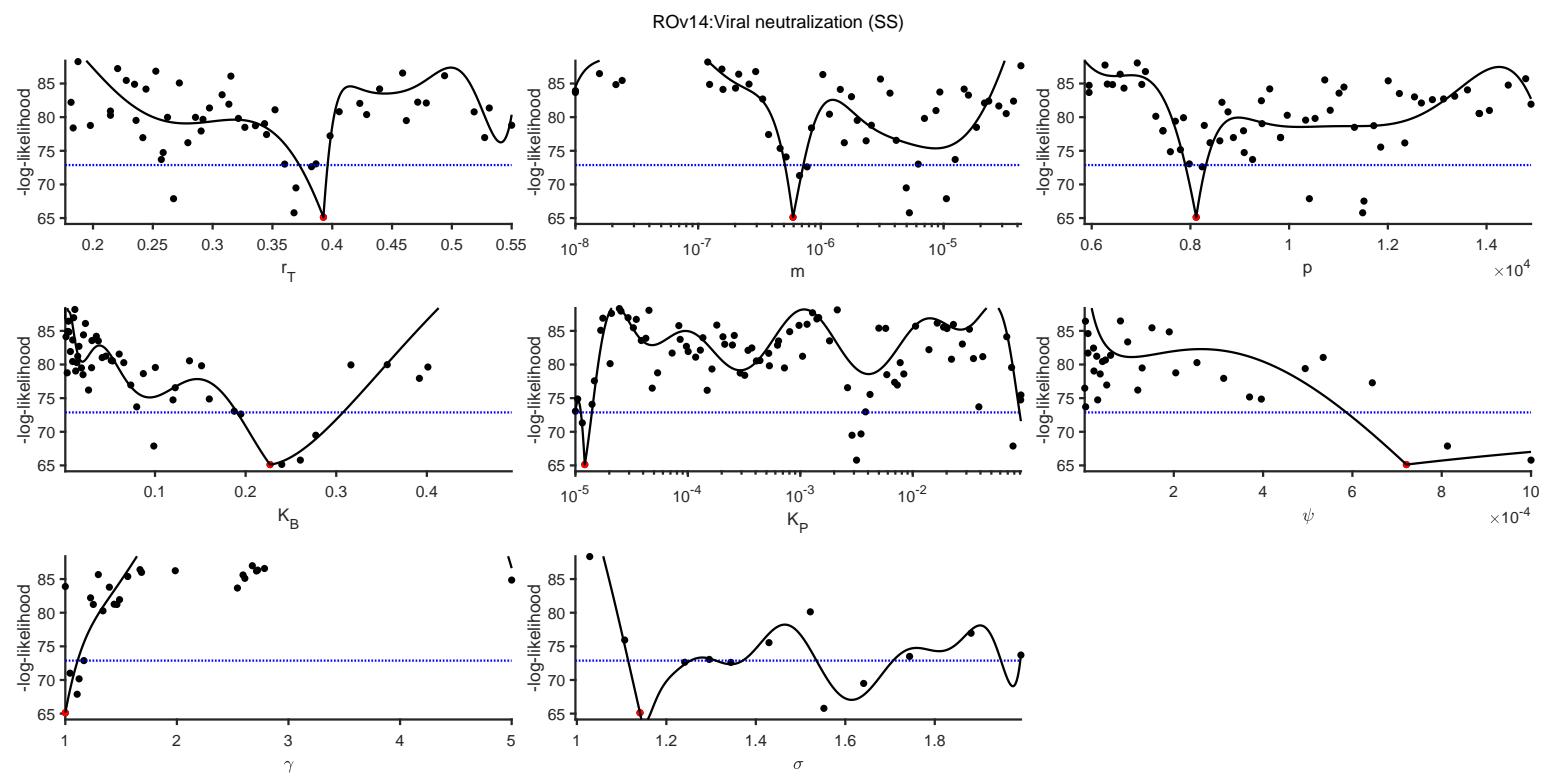
## 5.2 Saturated effector cell source model



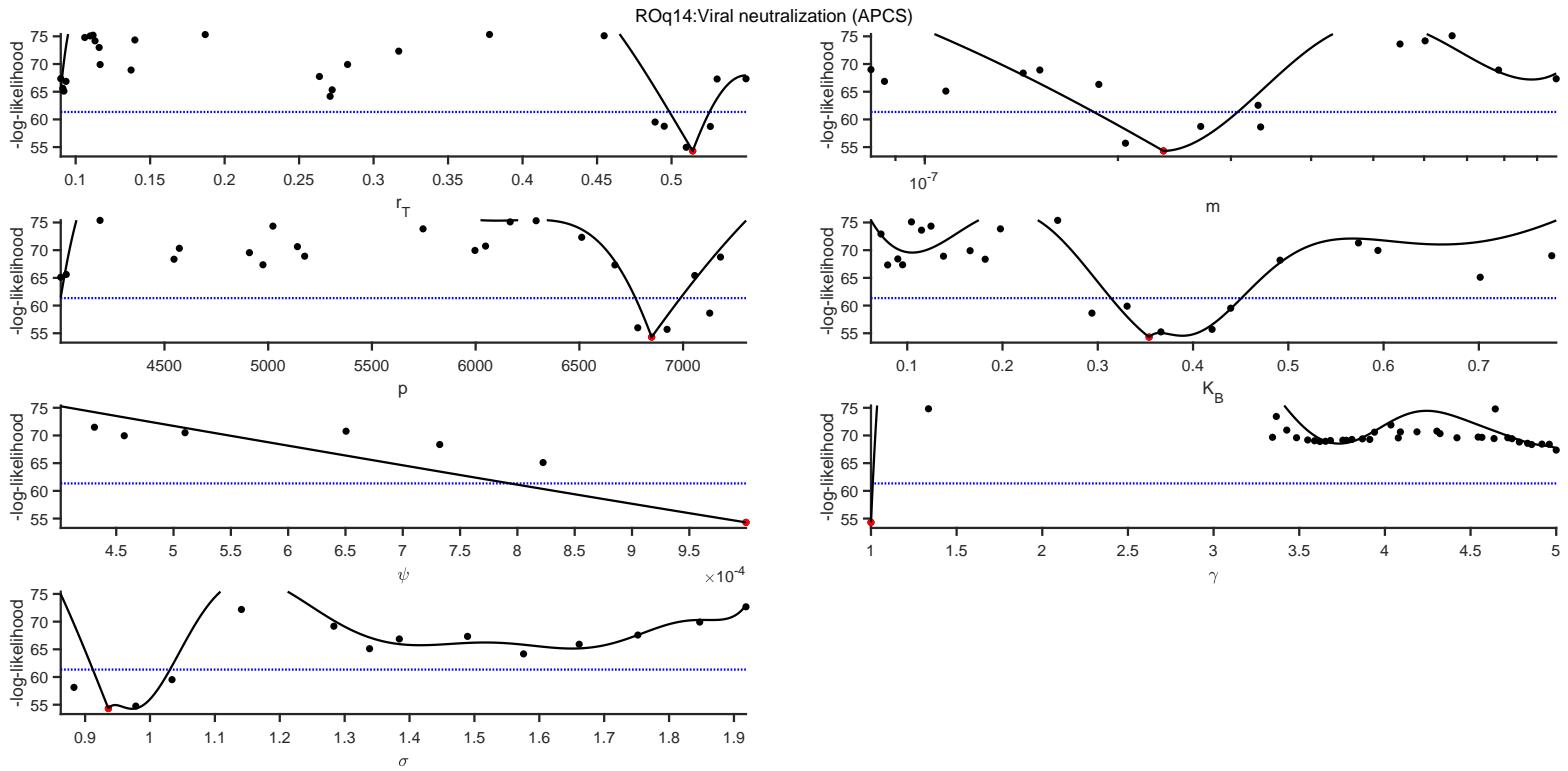


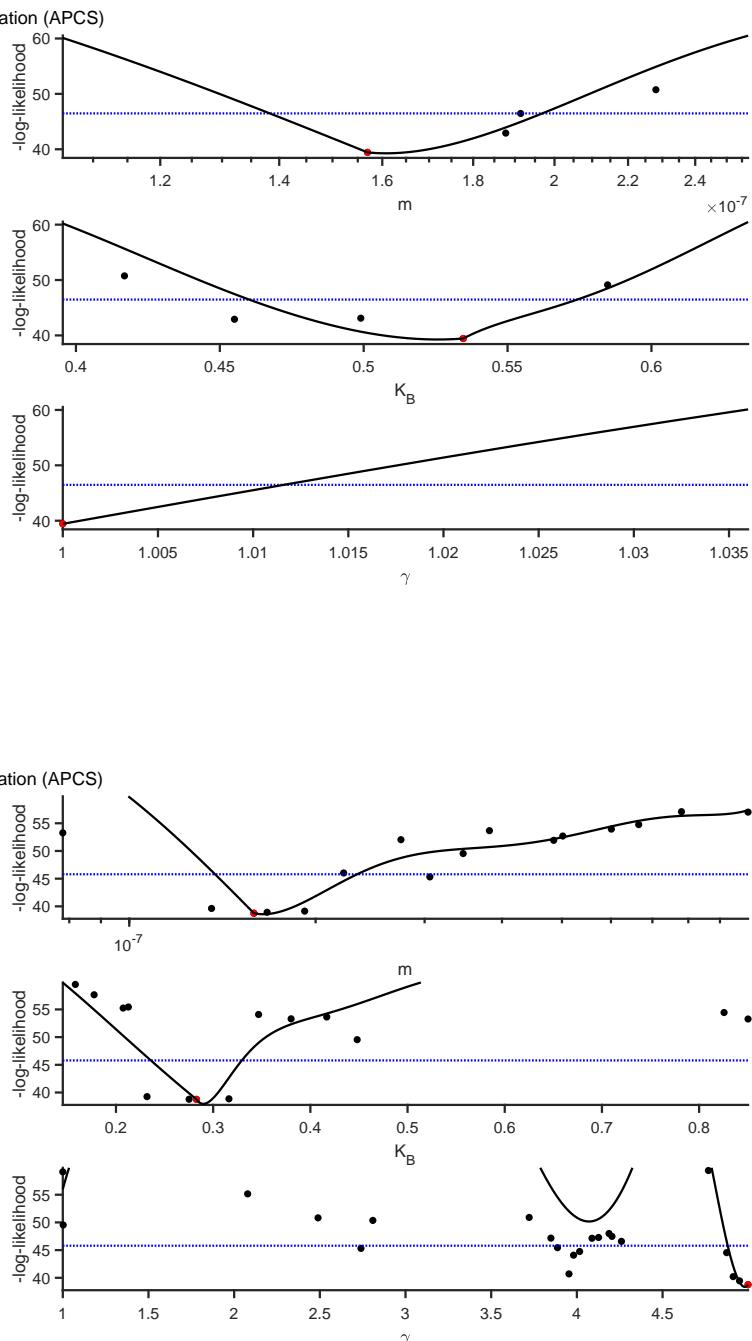
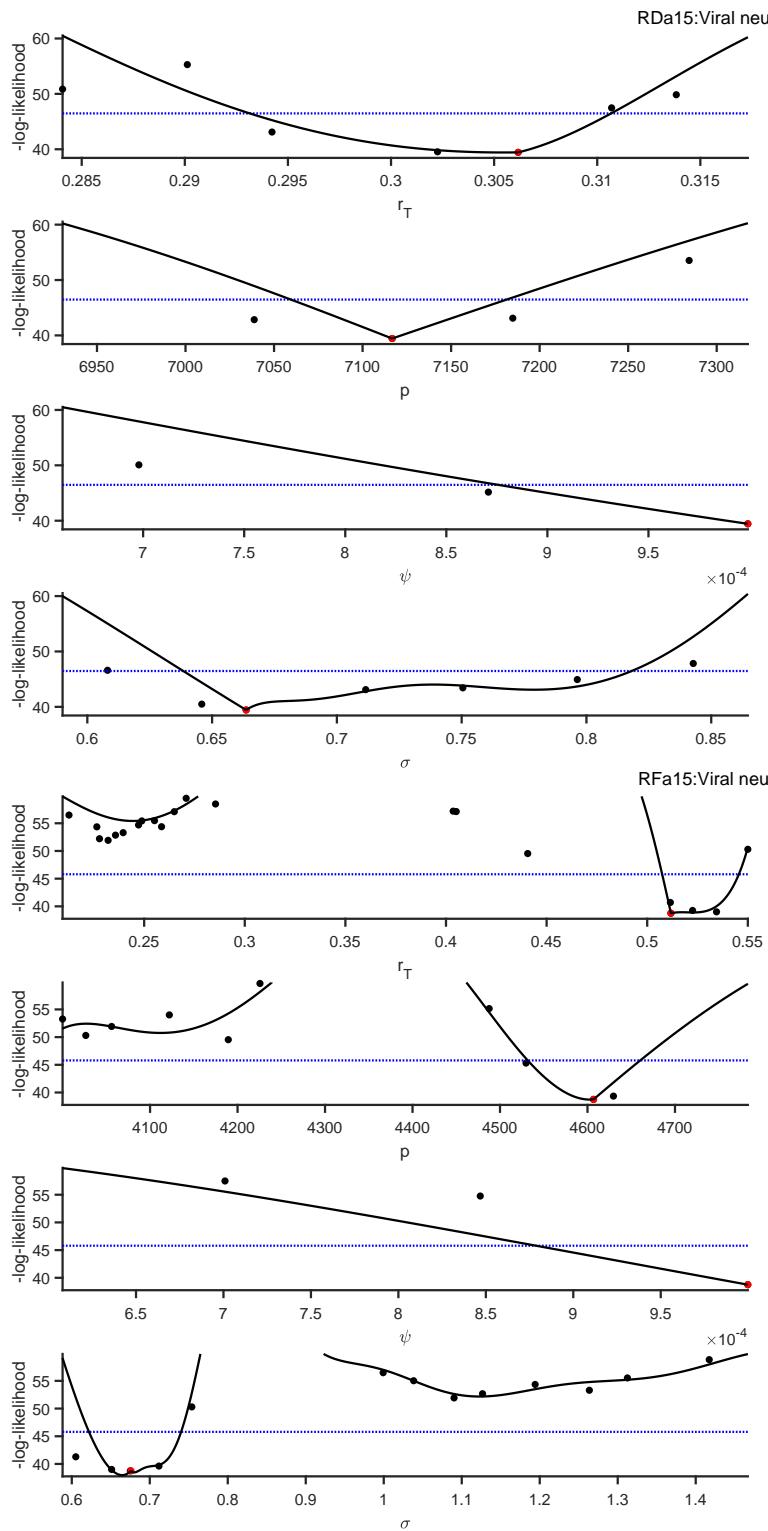


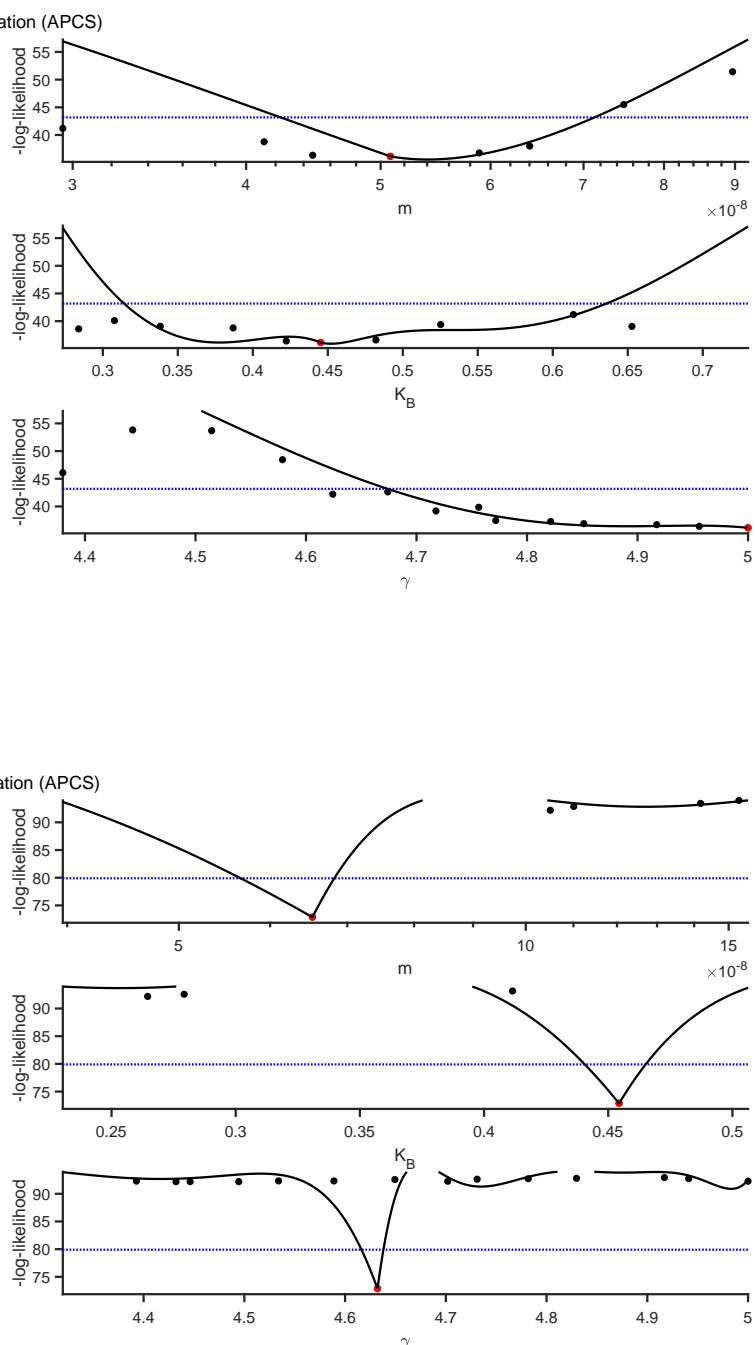
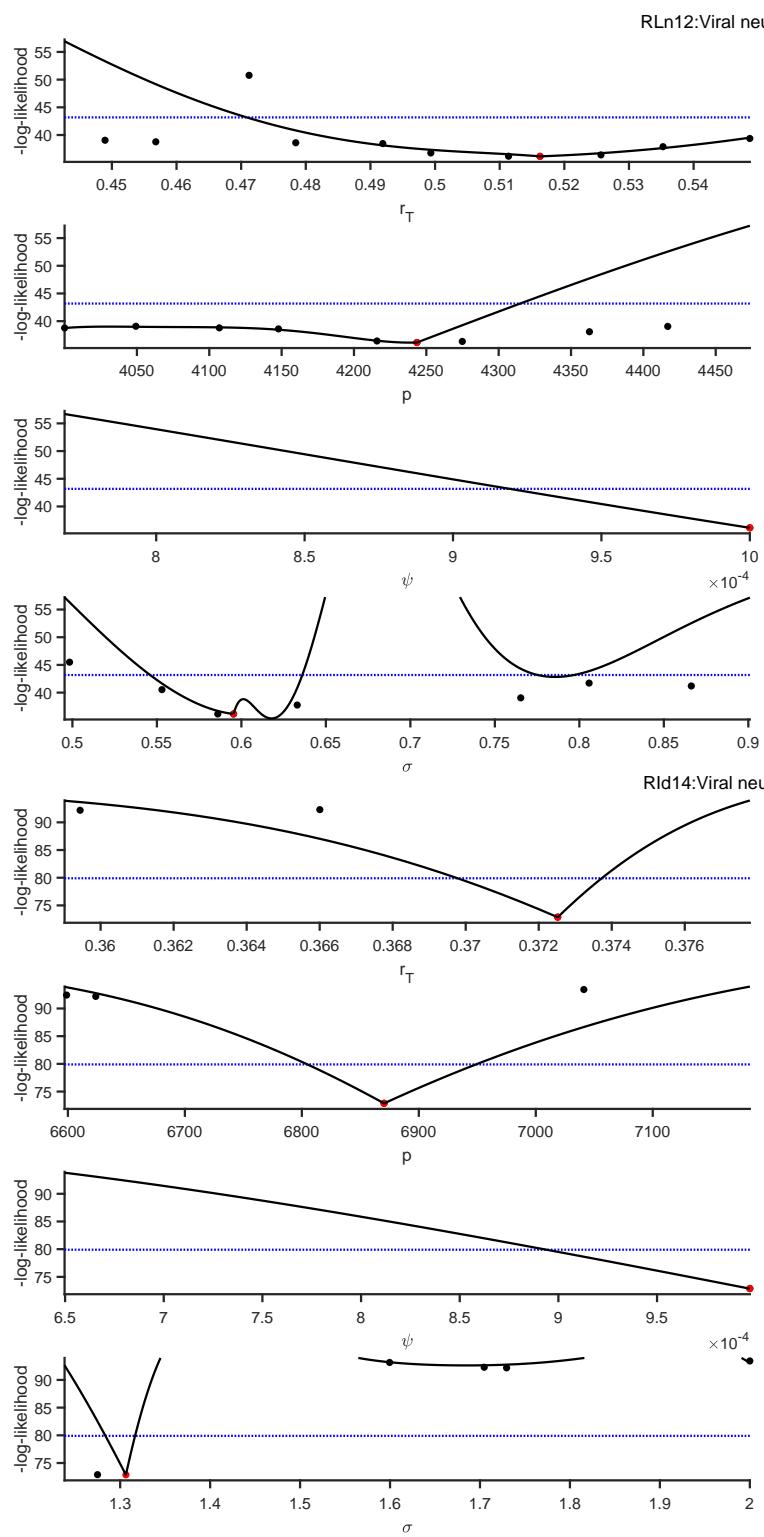


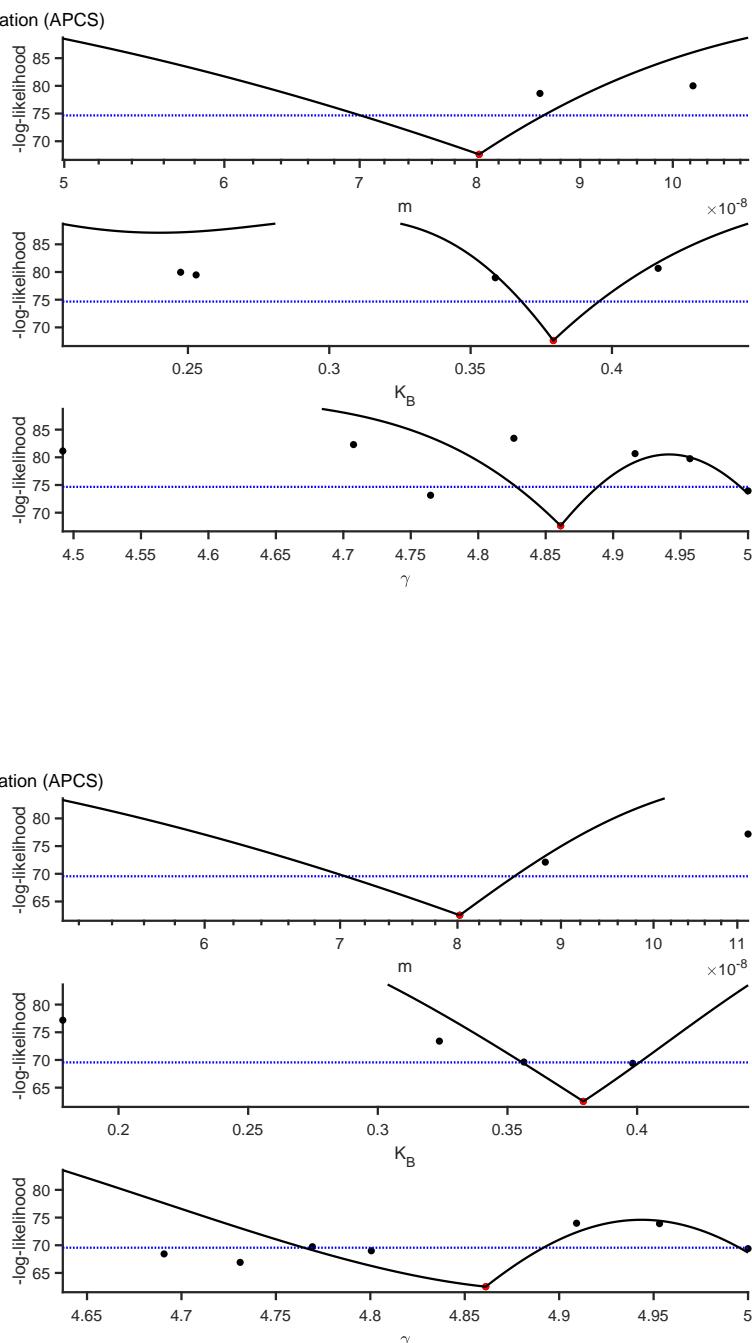
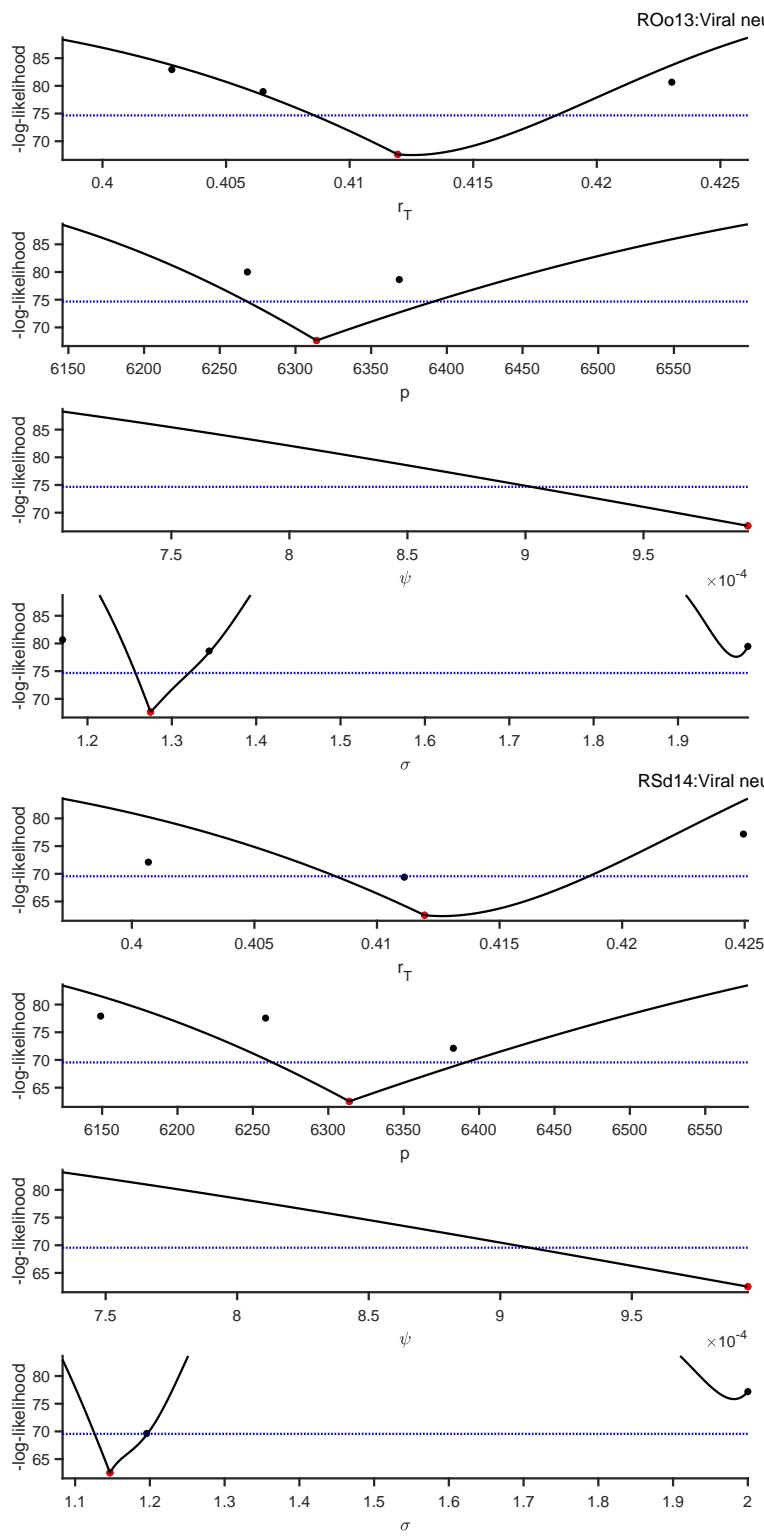


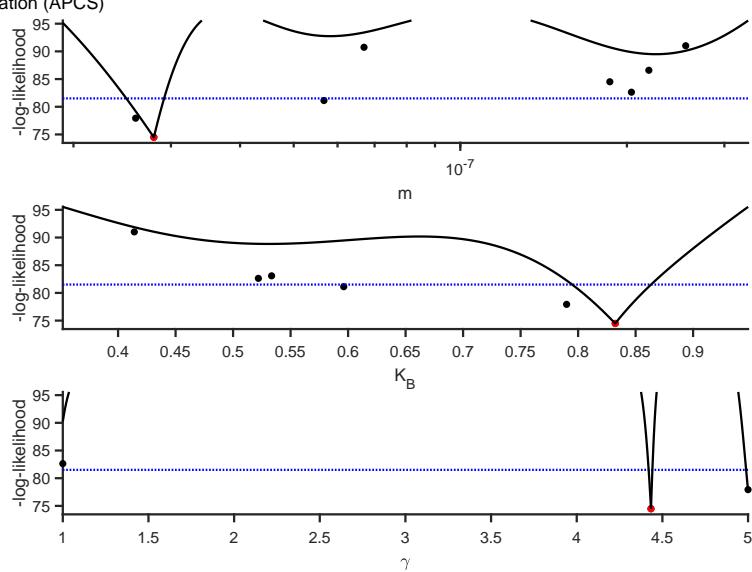
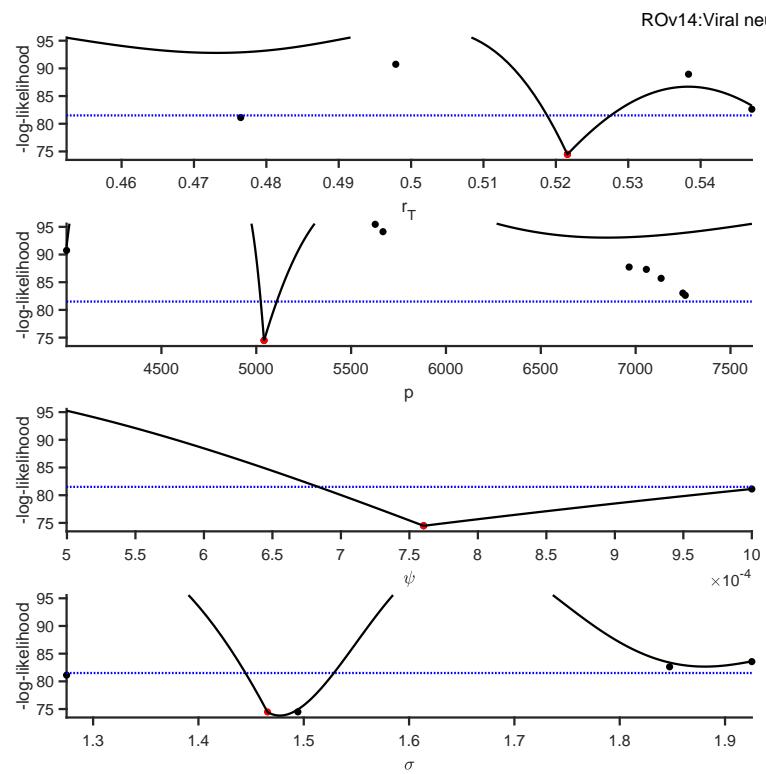
### 5.3 Antigen presenting cell effector cell source model





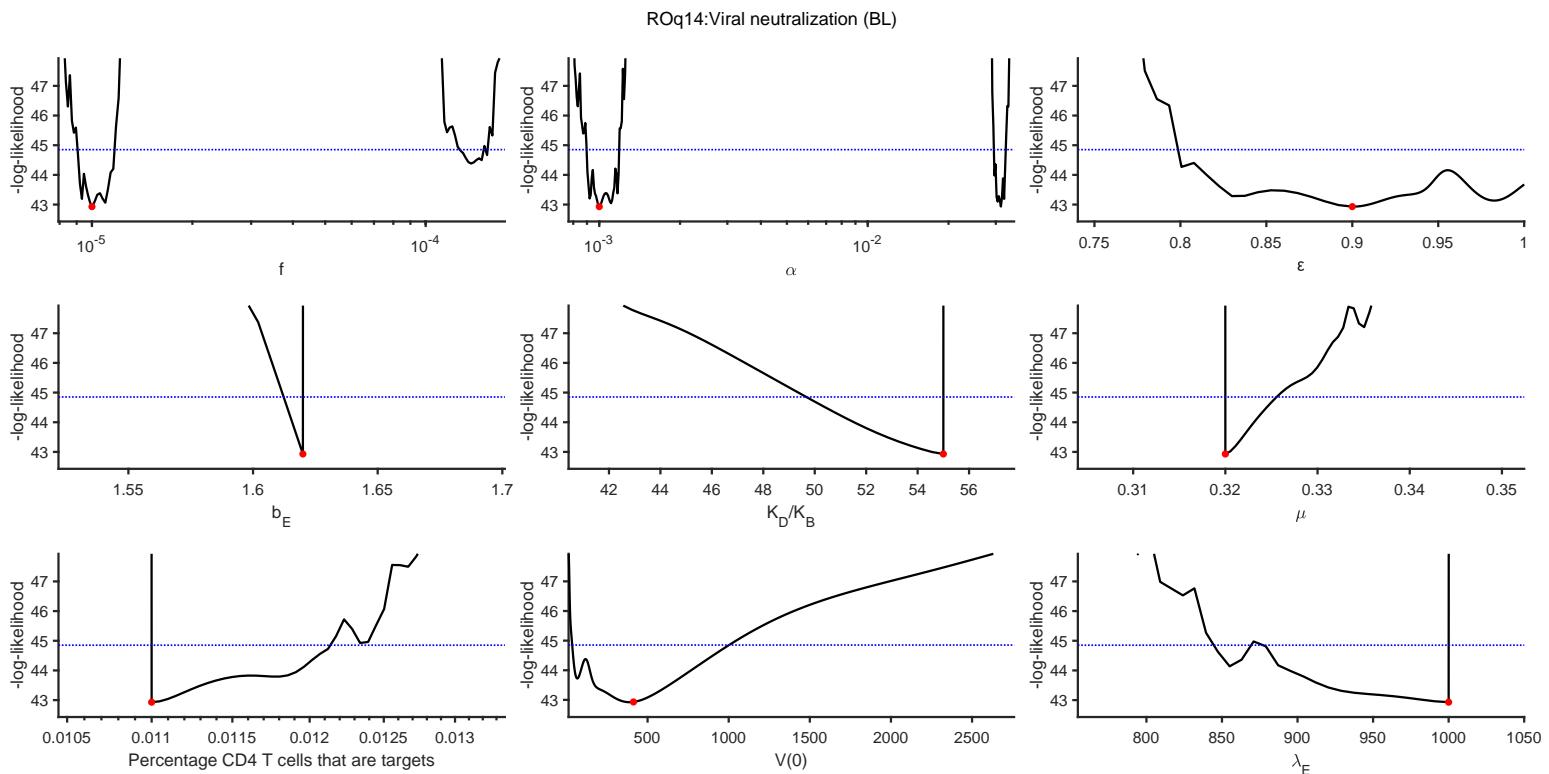


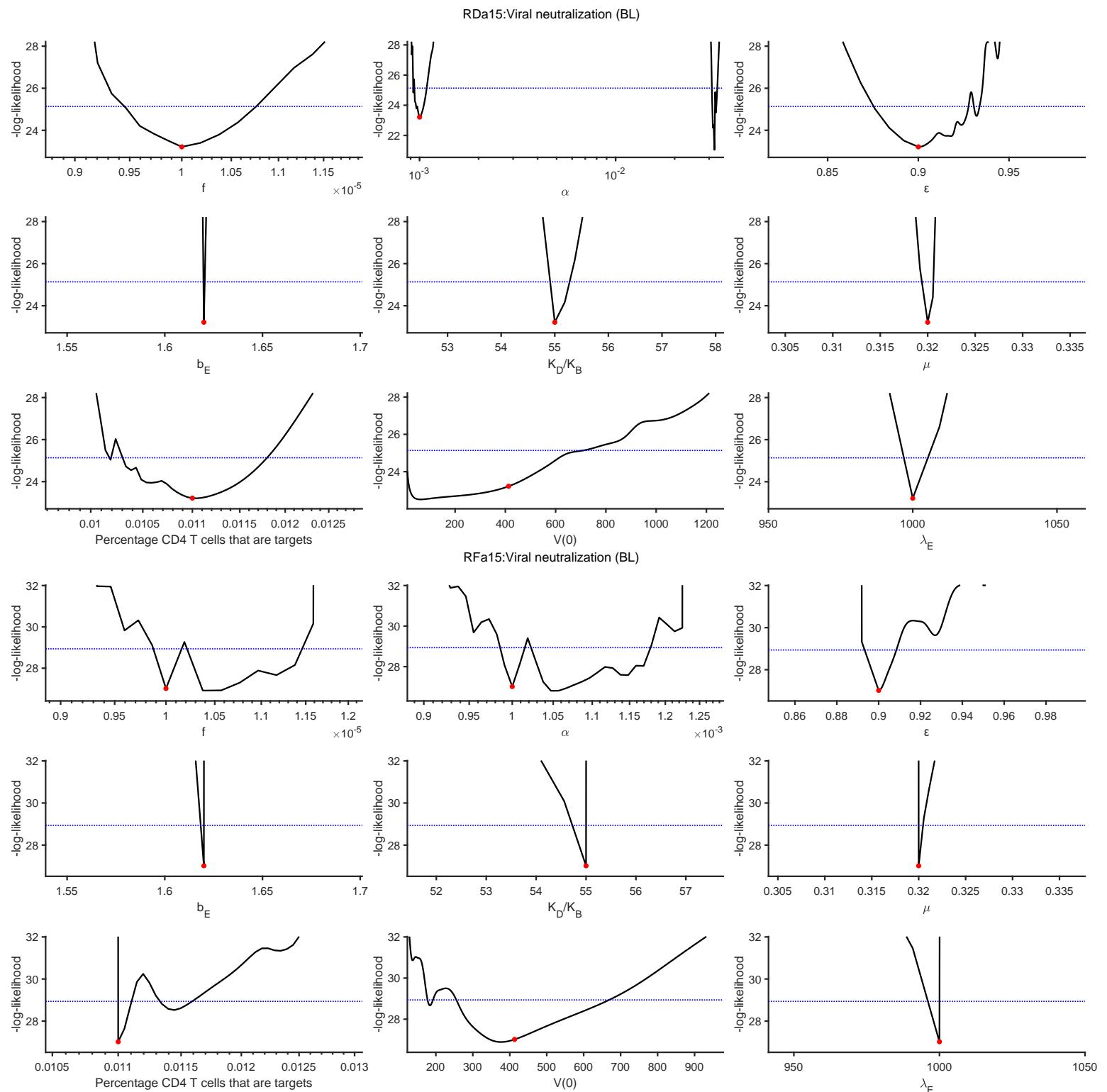


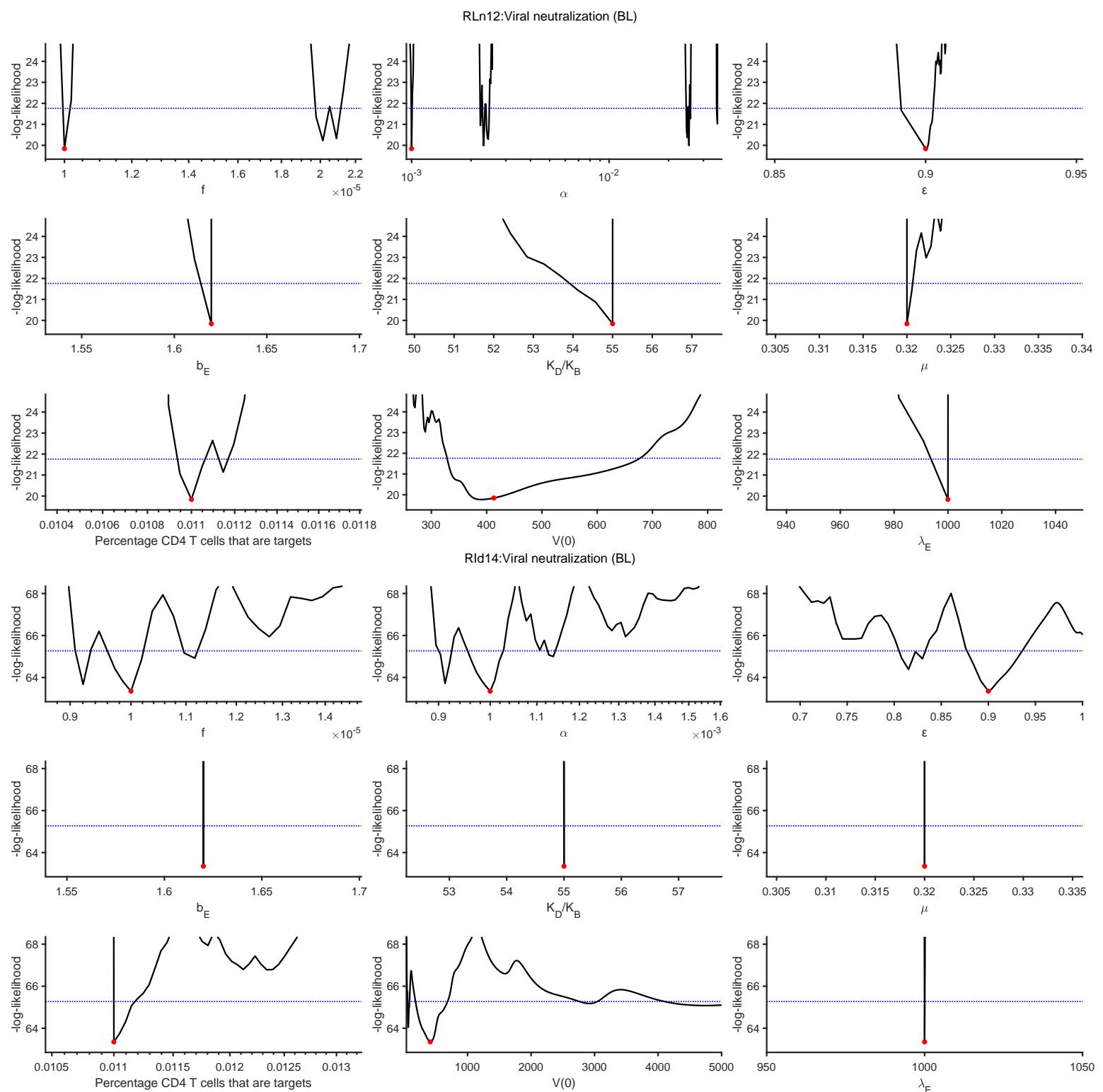


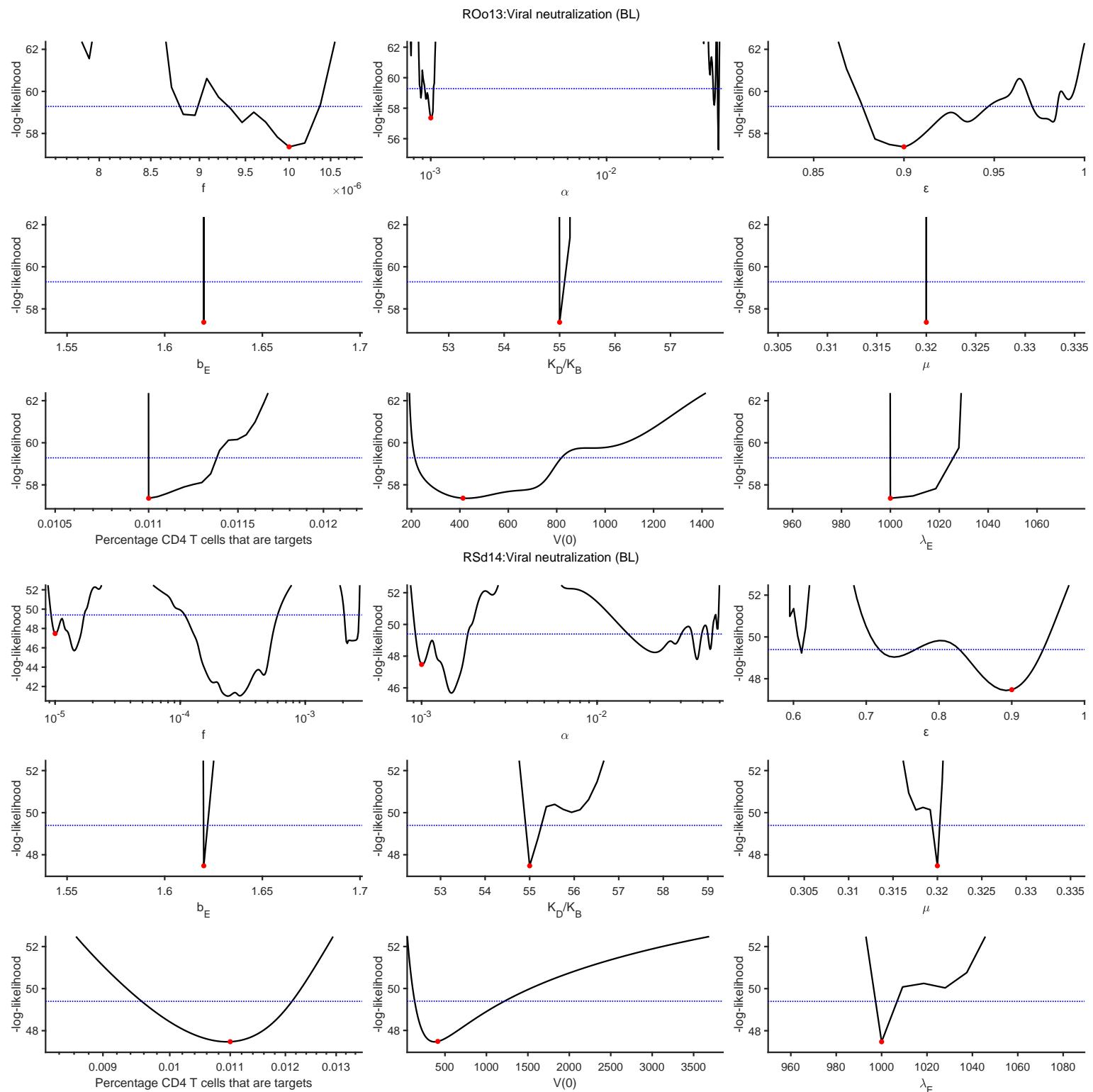
## 6 Sensitivity analysis: Viral neutralization

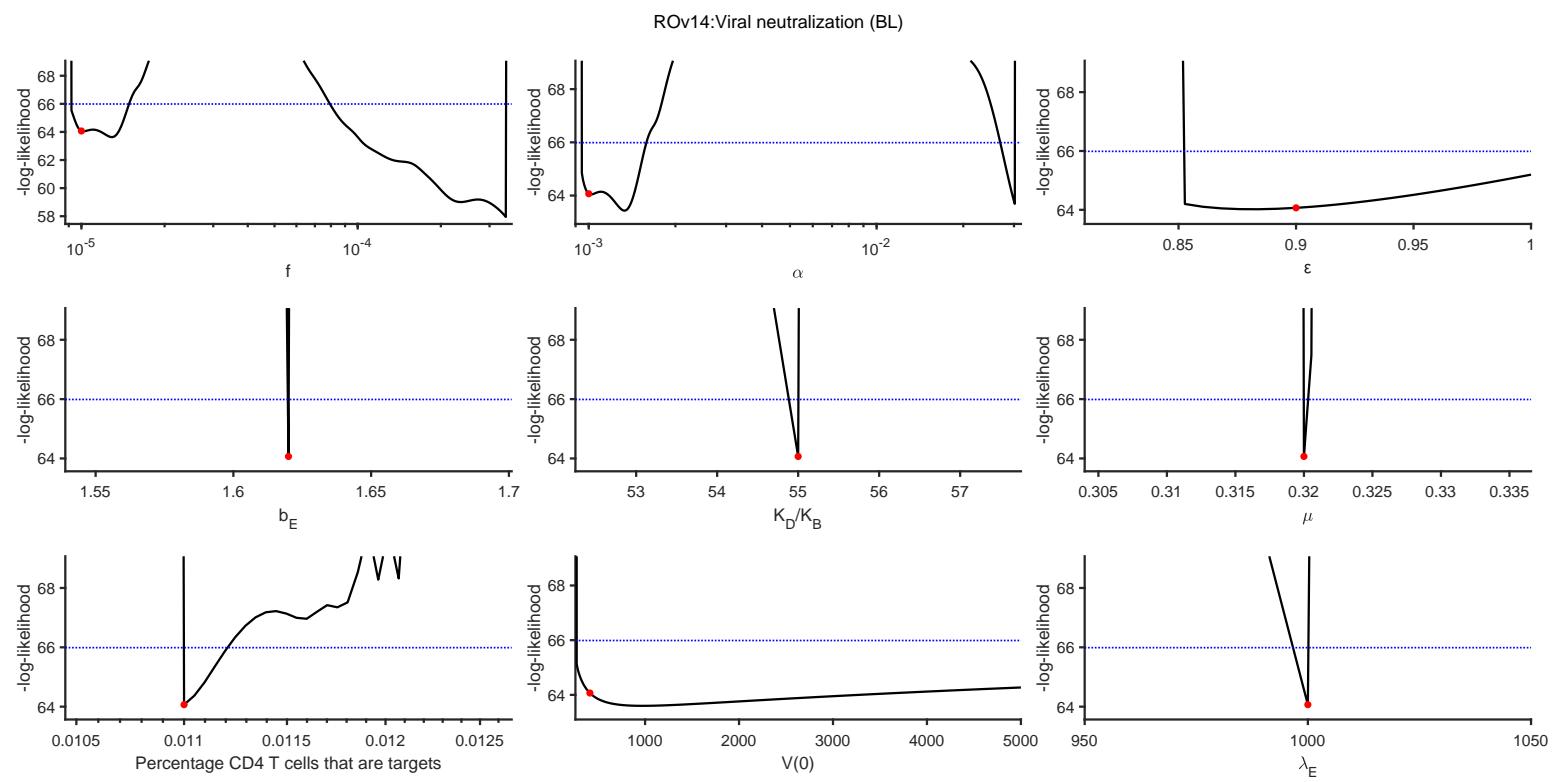
### 6.1 Baseline effector cell source model





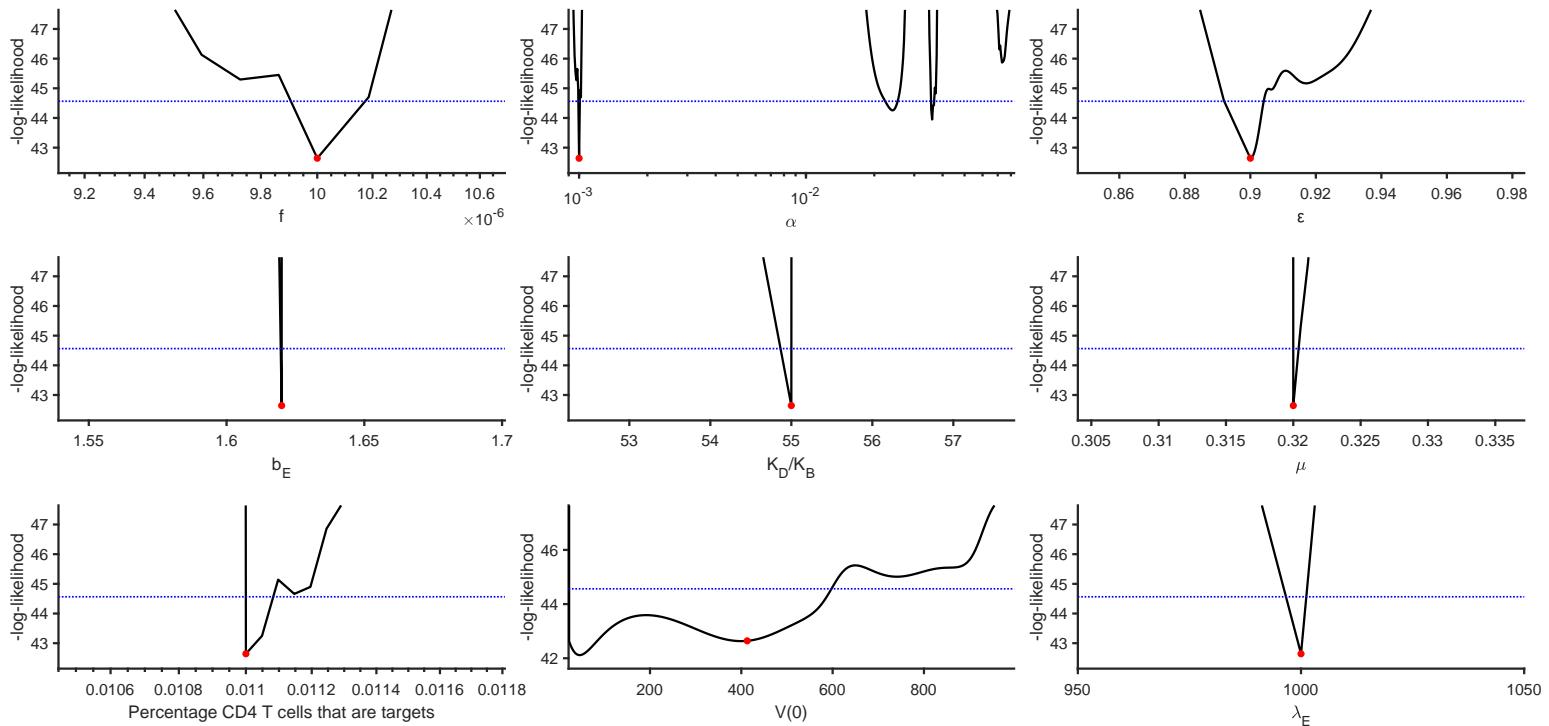


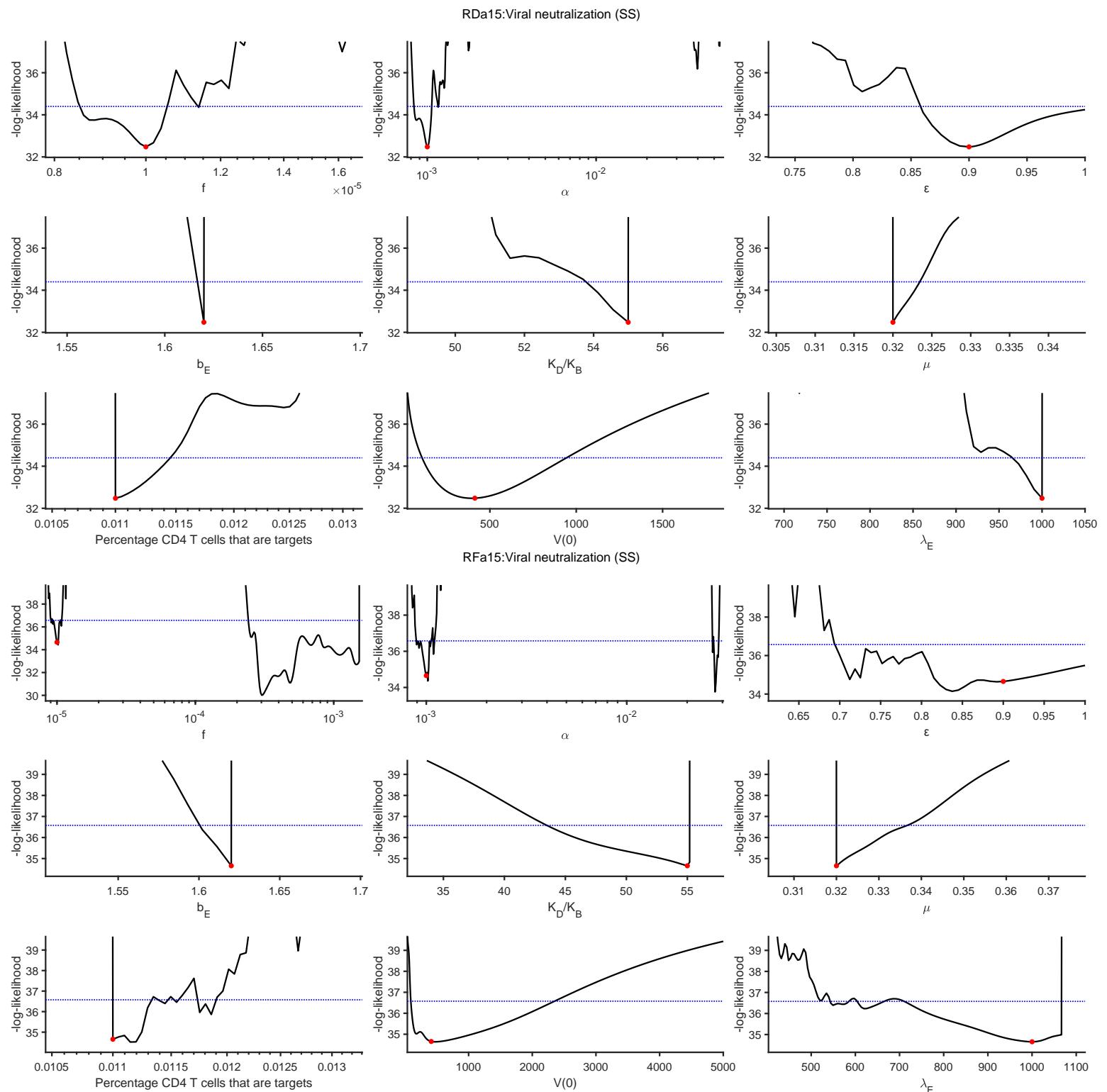


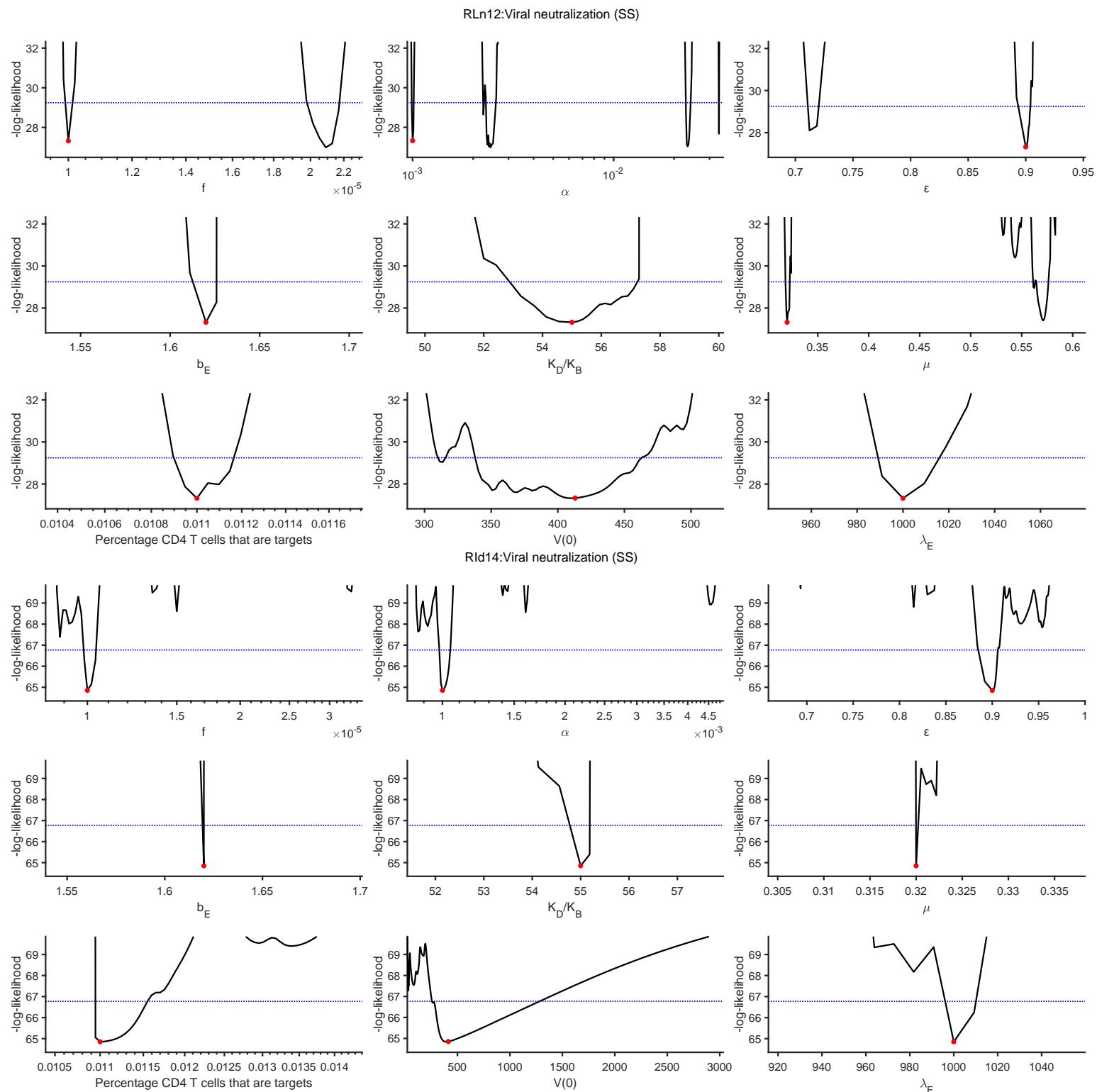


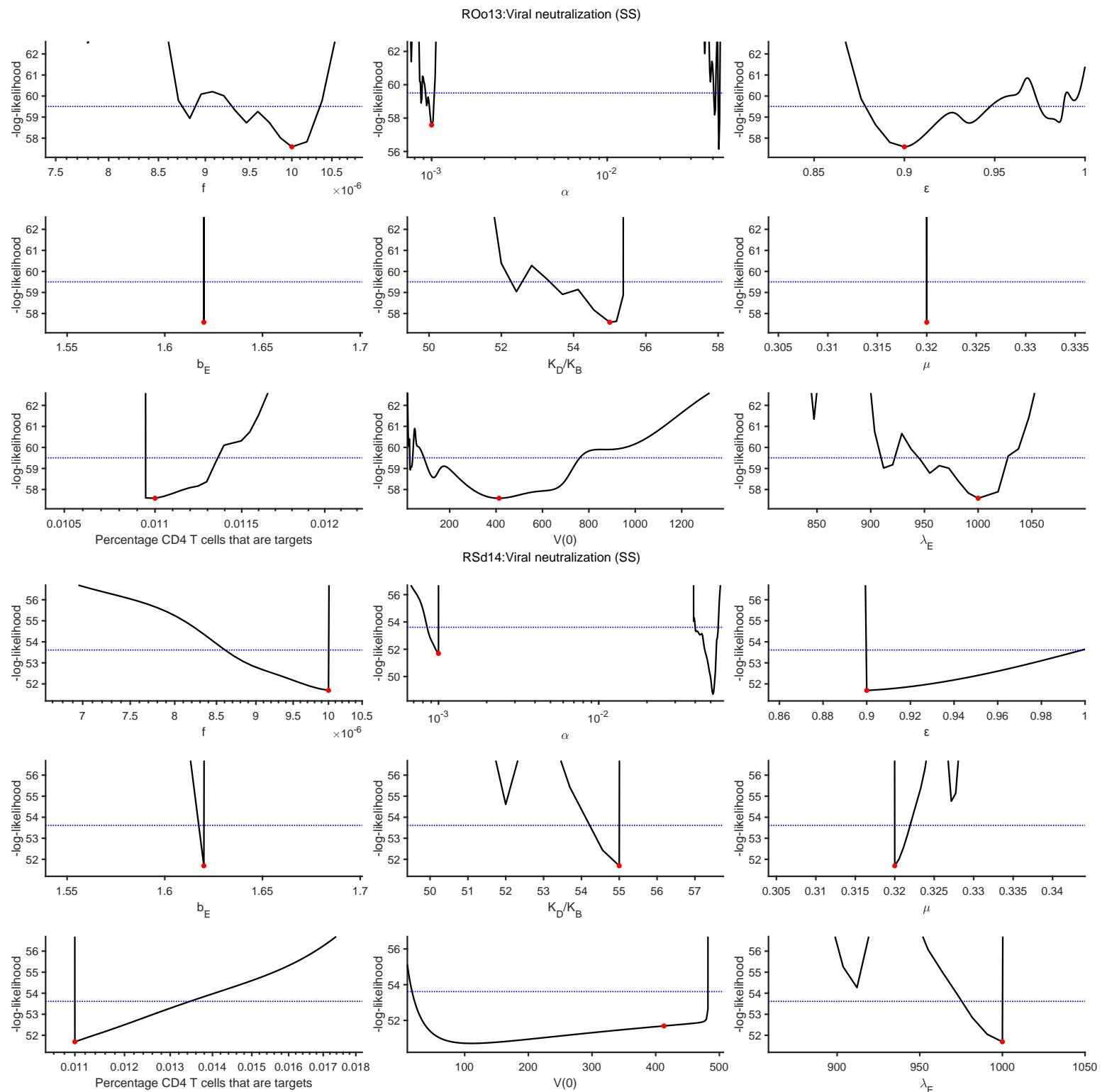
## 6.2 Saturated effector cell source model

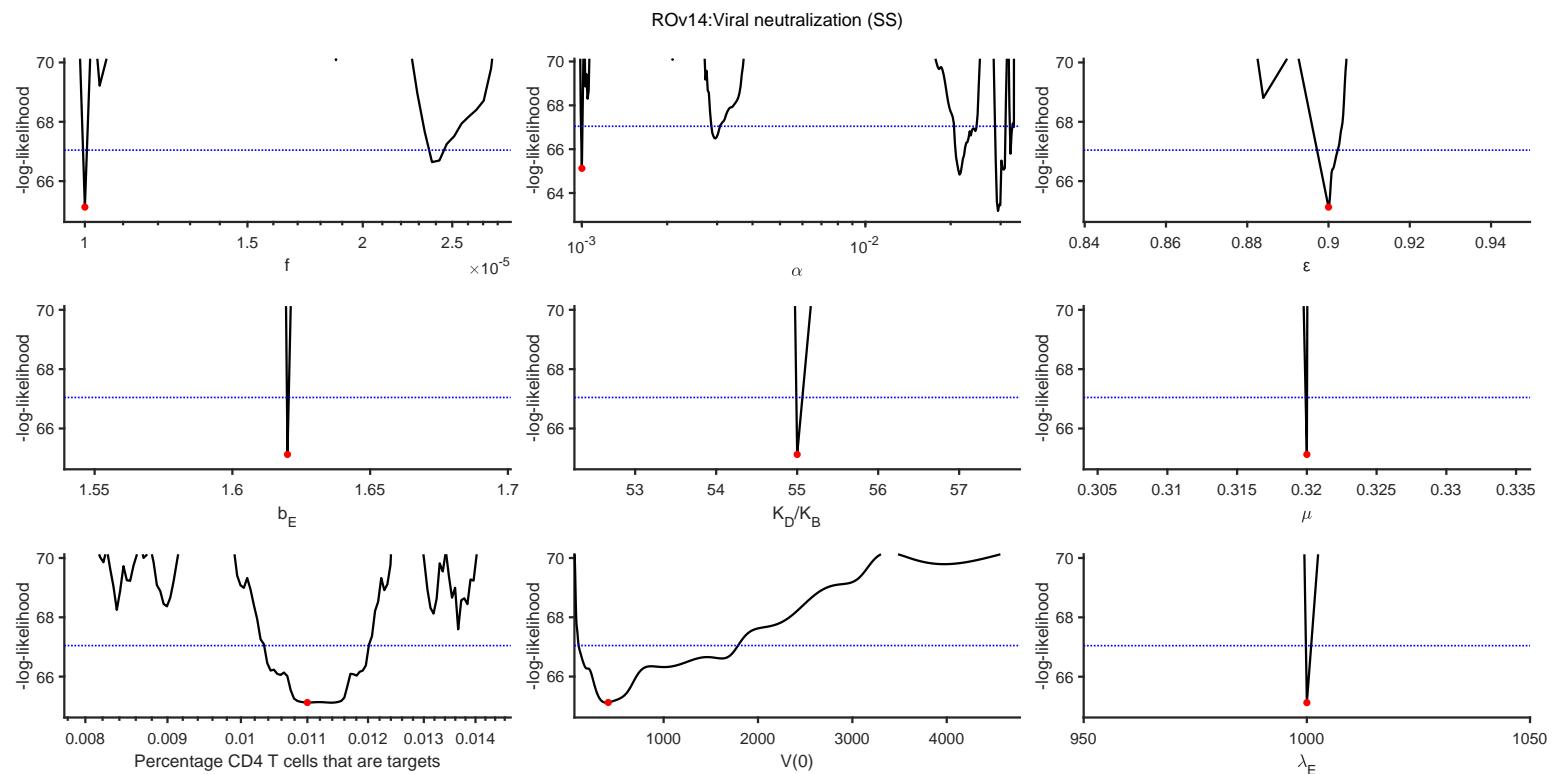
ROq14:Viral neutralization (SS)





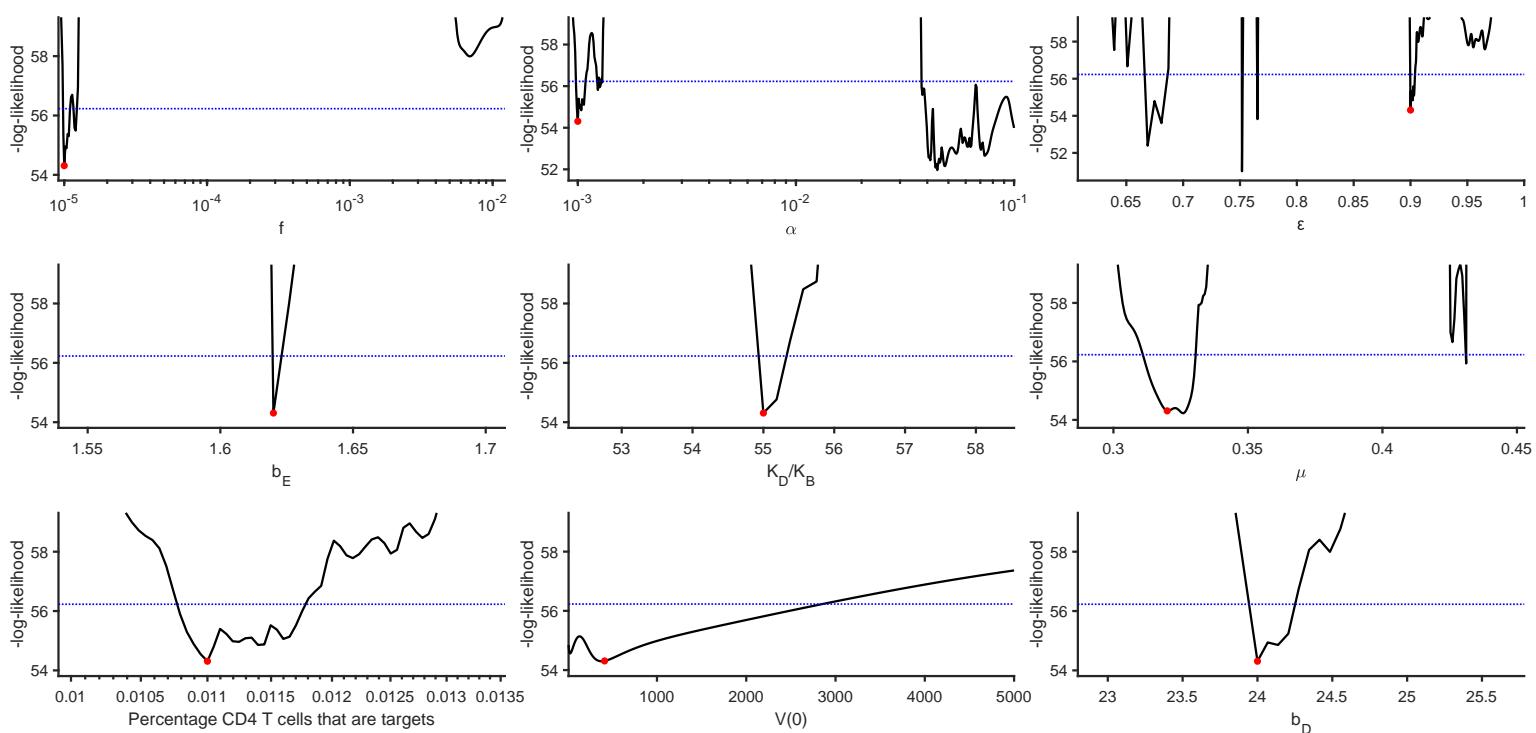


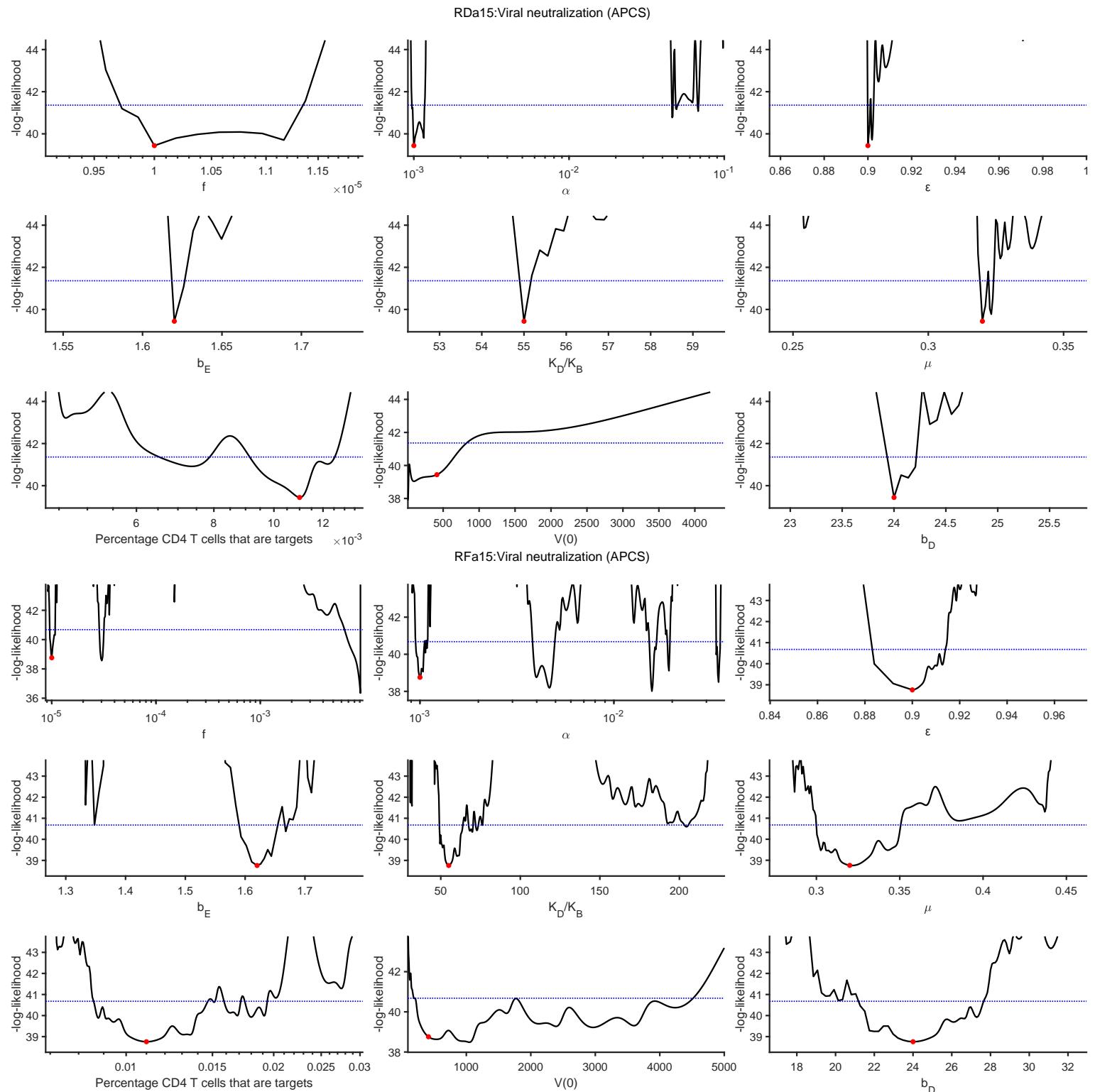


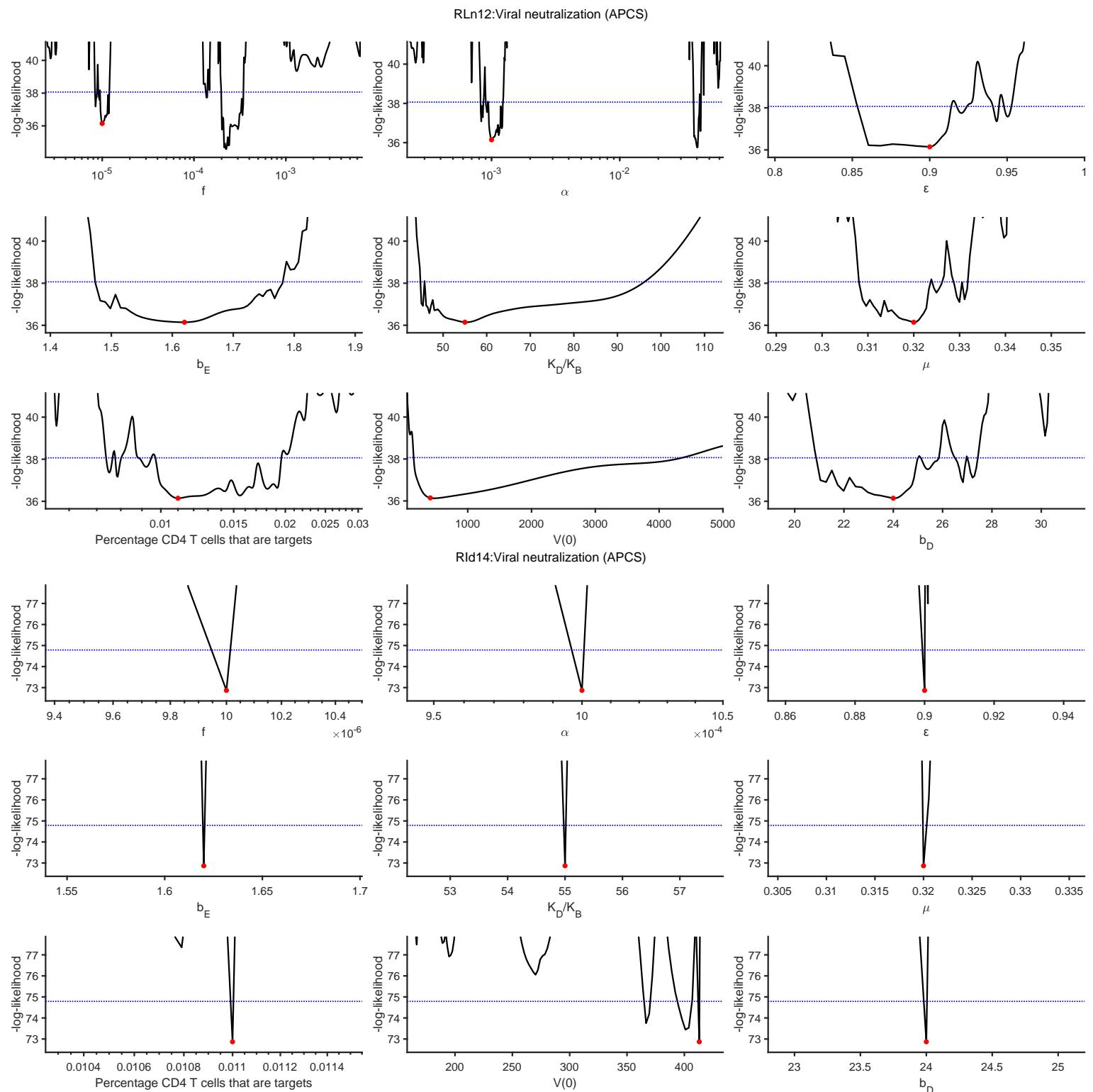


### 6.3 Antigen presenting cell effector cell source model

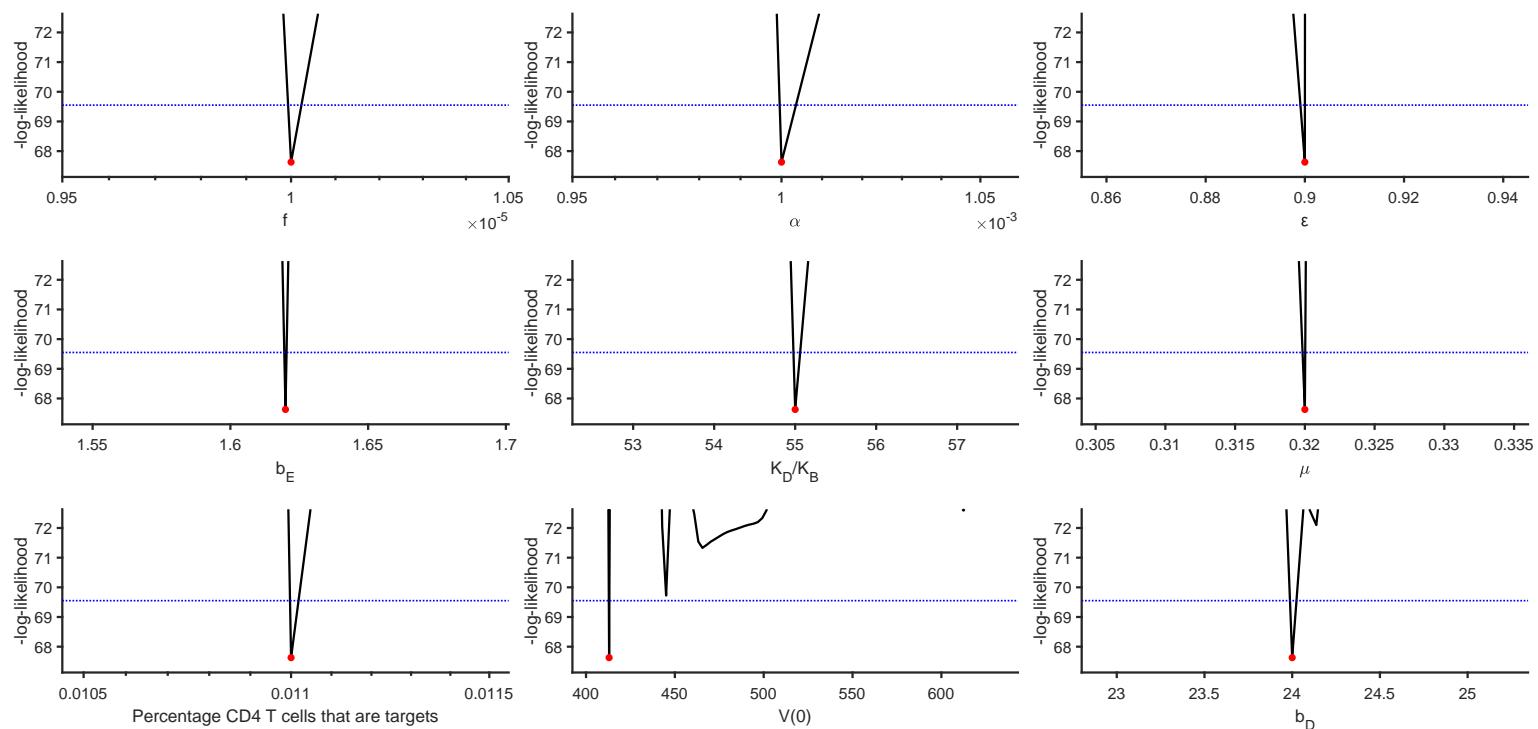
ROq14:Viral neutralization (APCS)



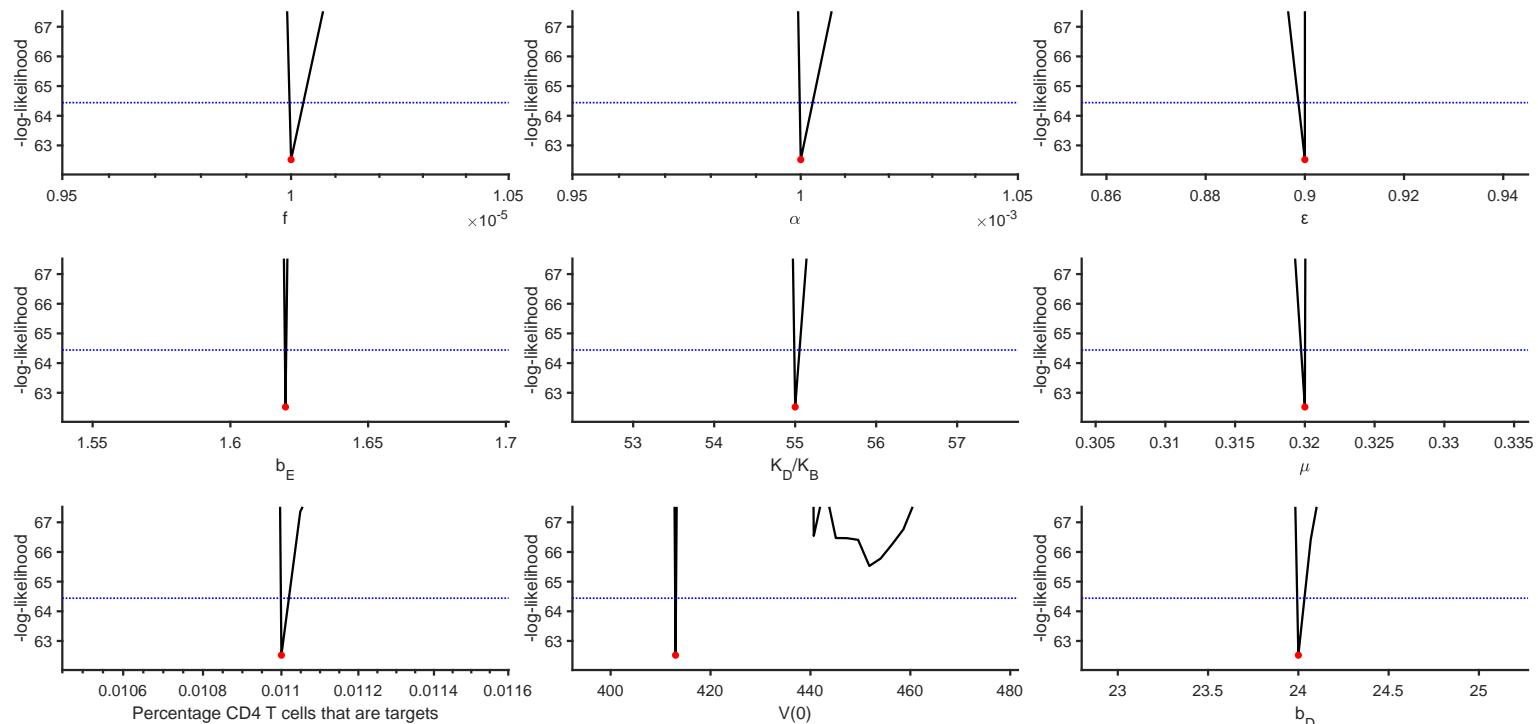




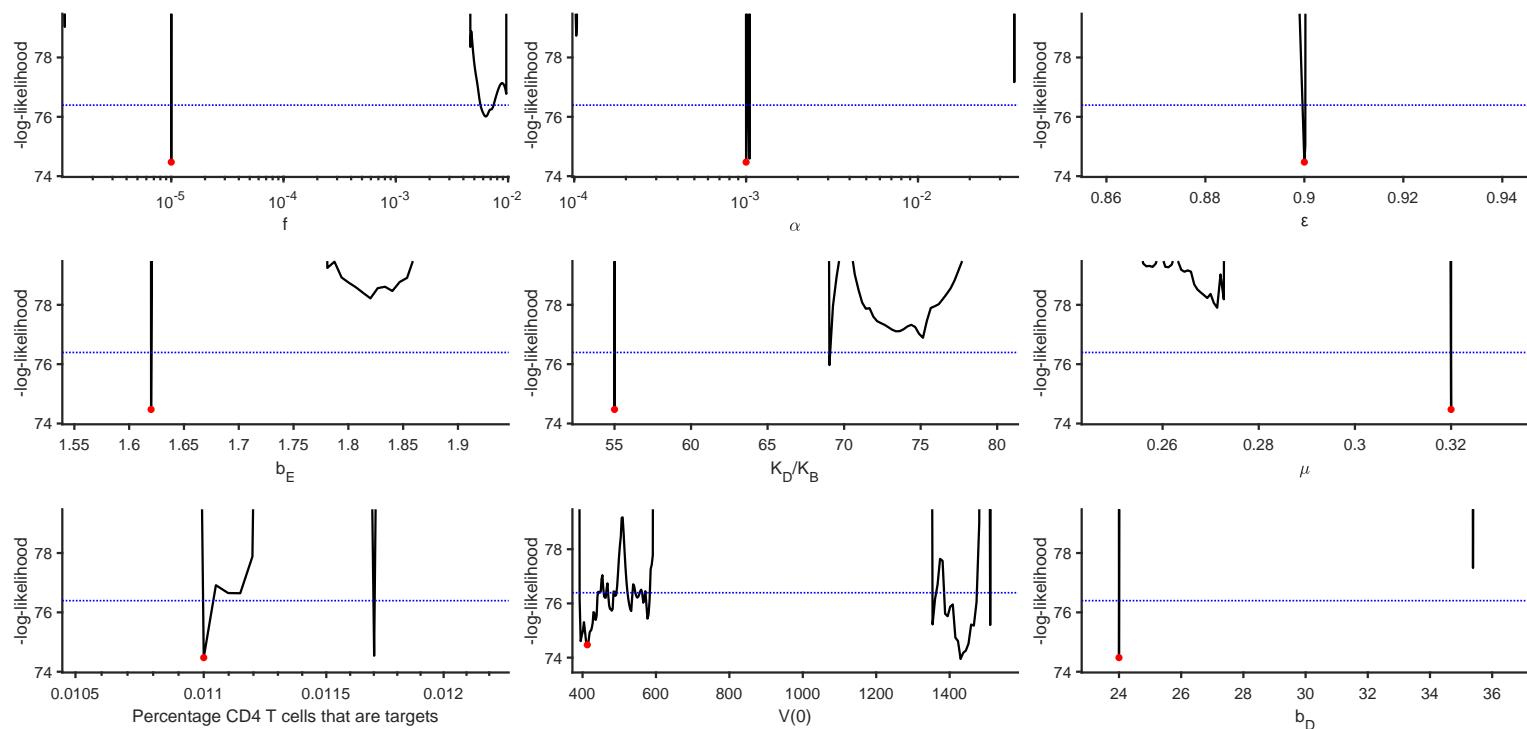
ROo13:Viral neutralization (APCS)



RSd14:Viral neutralization (APCS)

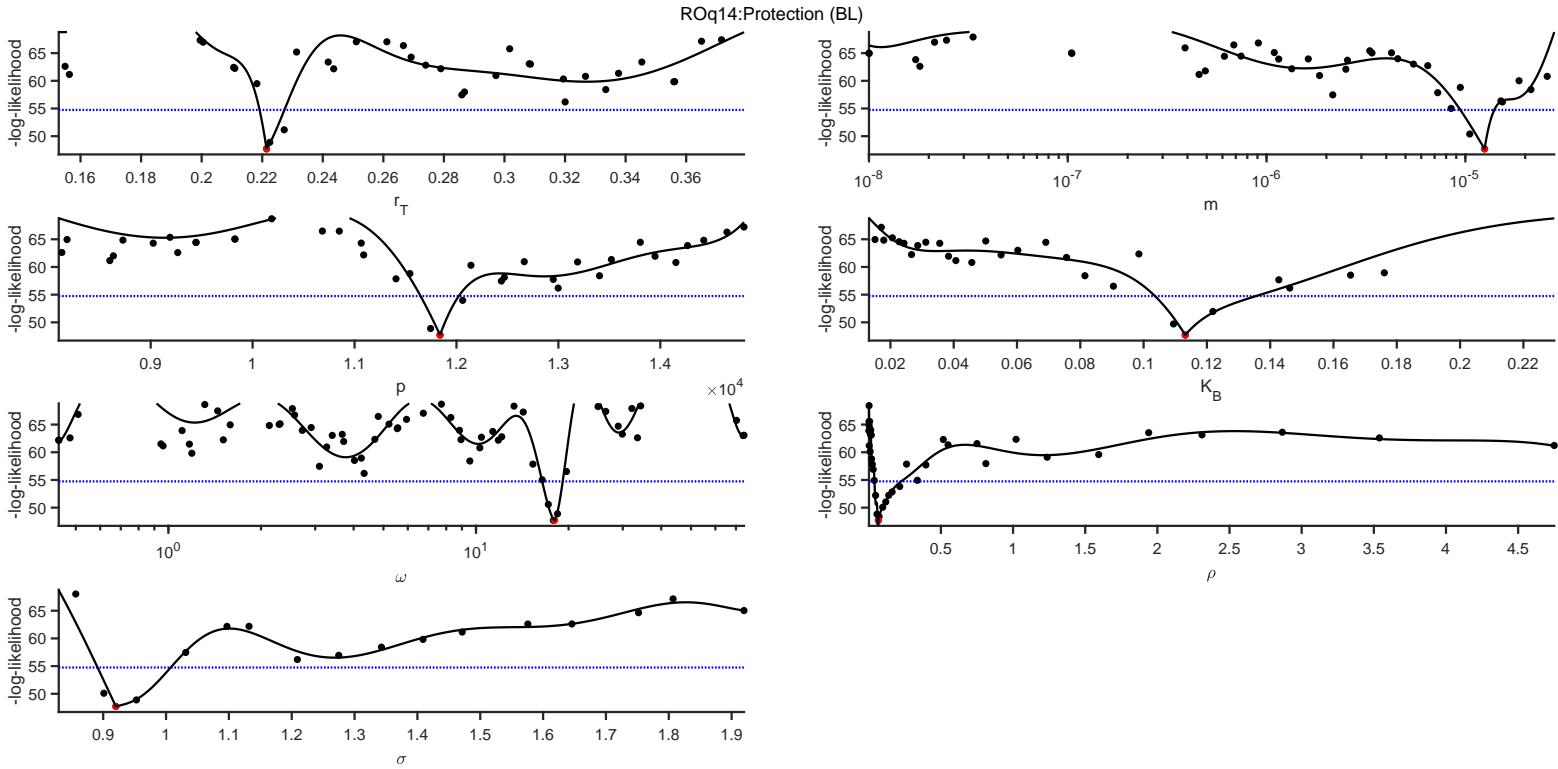


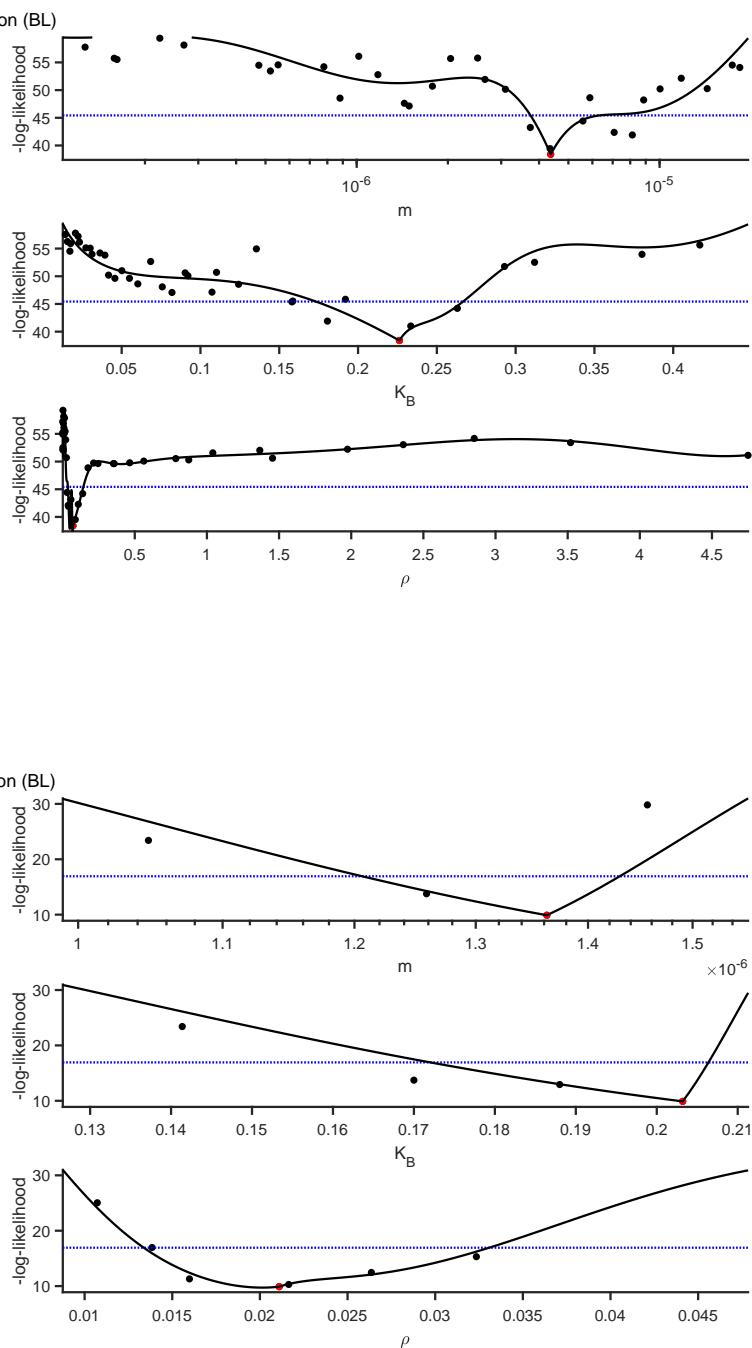
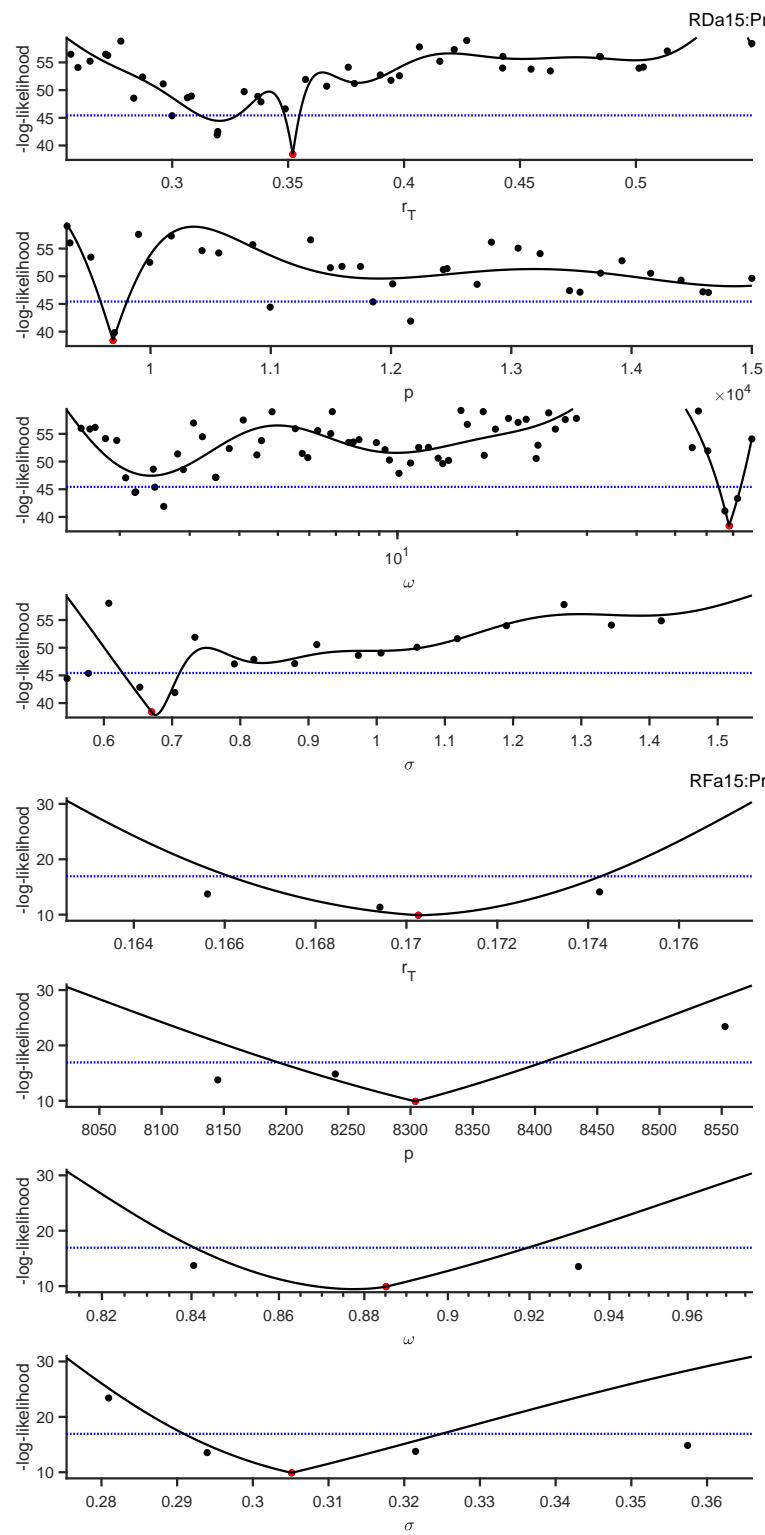
ROv14:Viral neutralization (APCS)

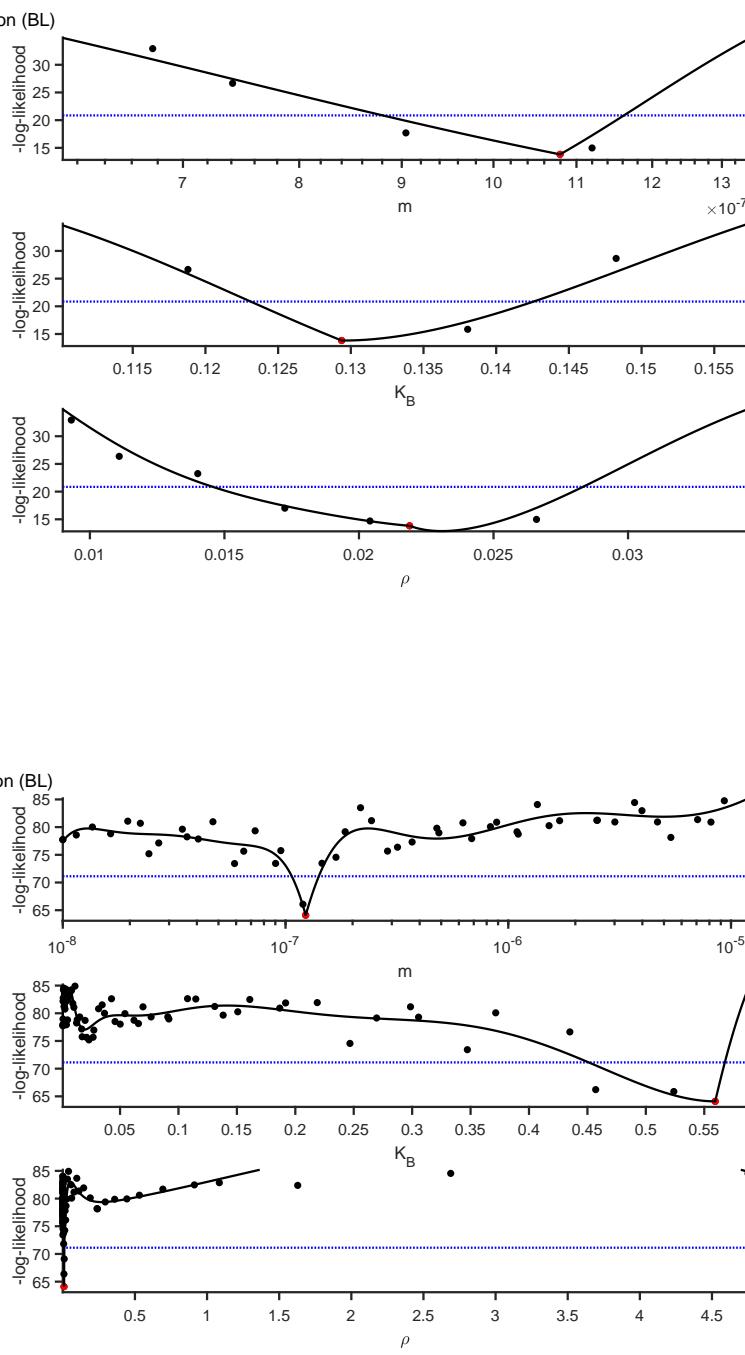
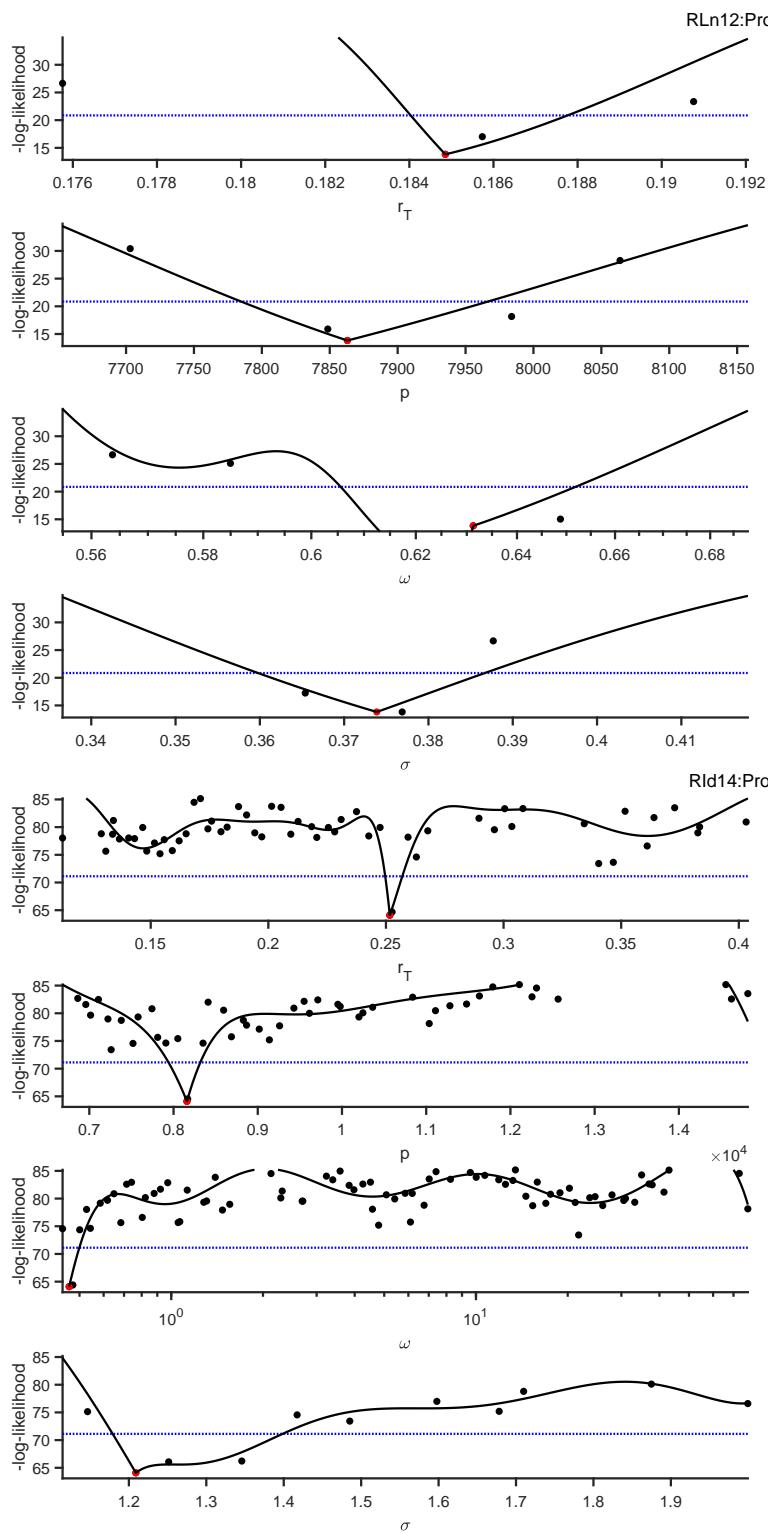


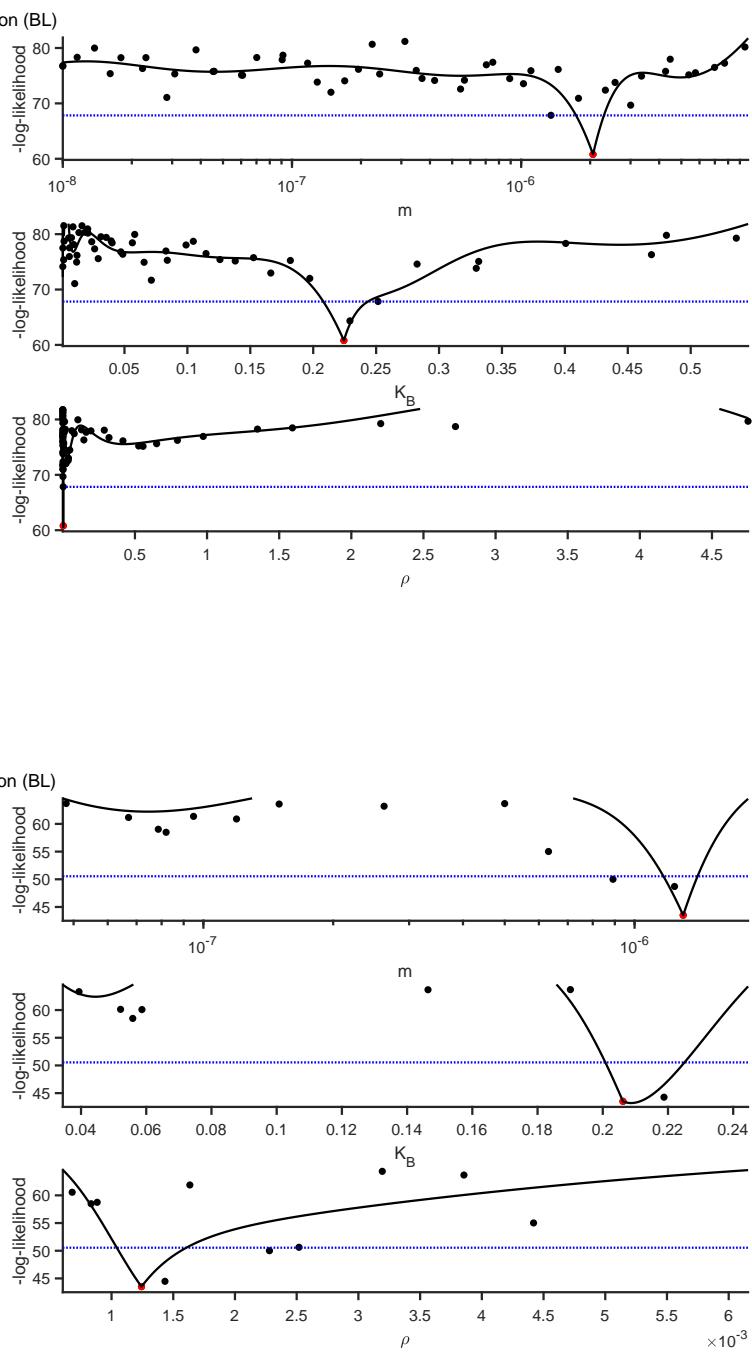
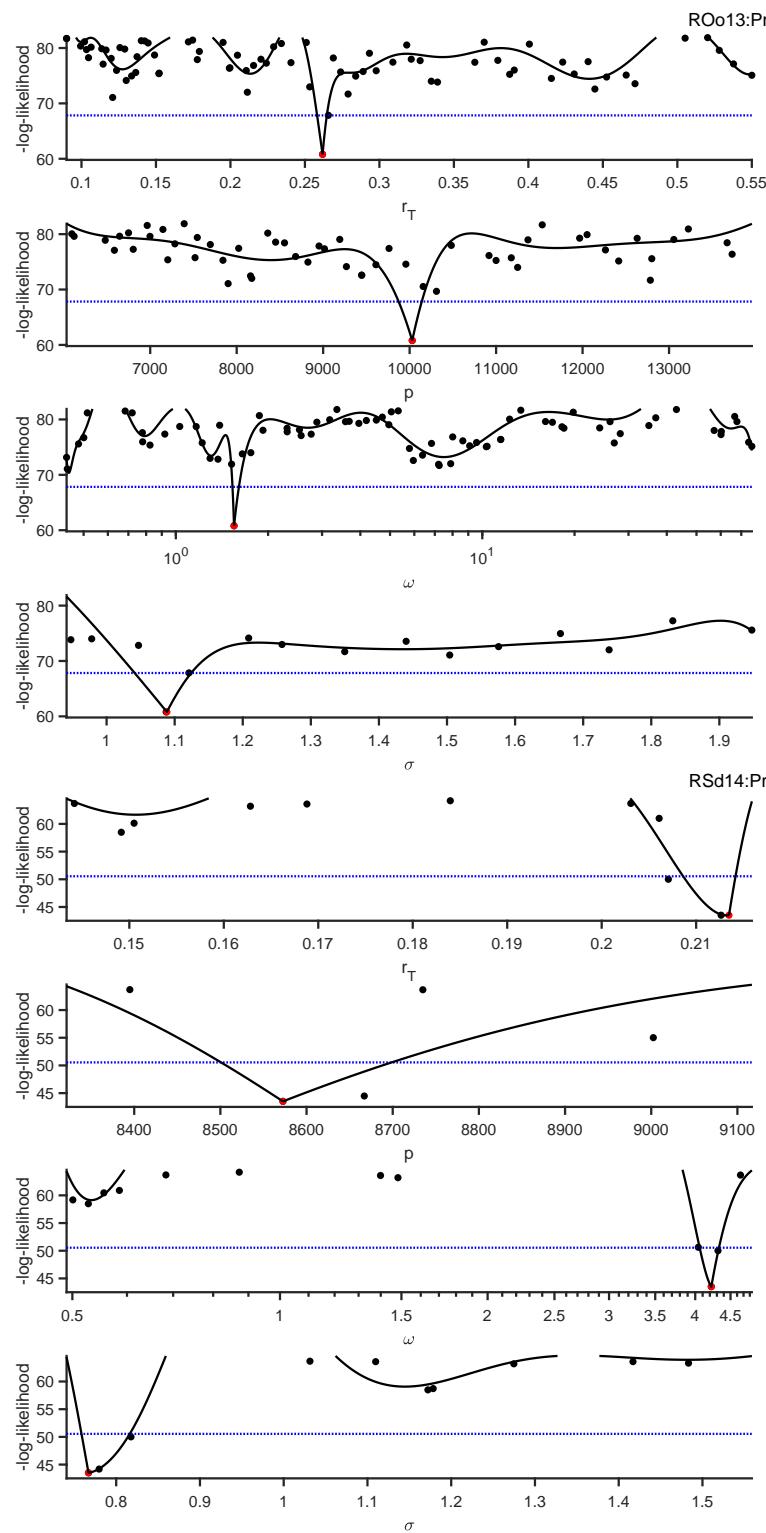
## 7 Likelihood profiles: Protection

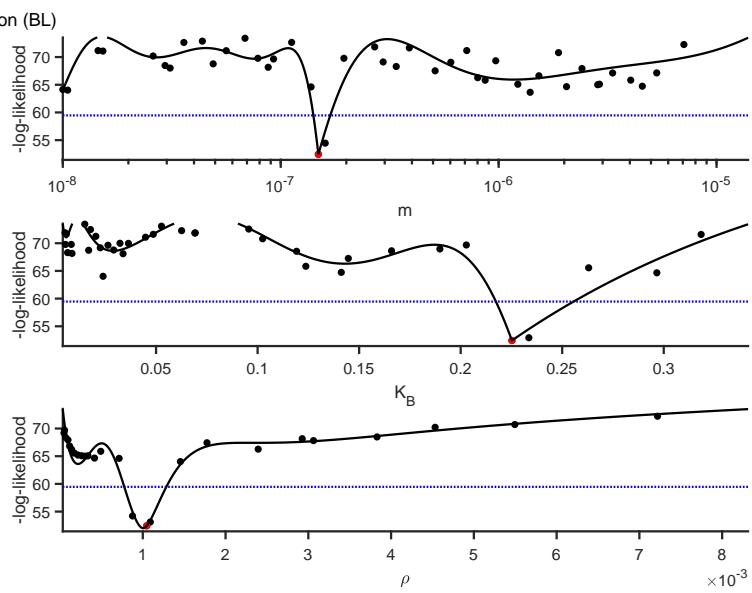
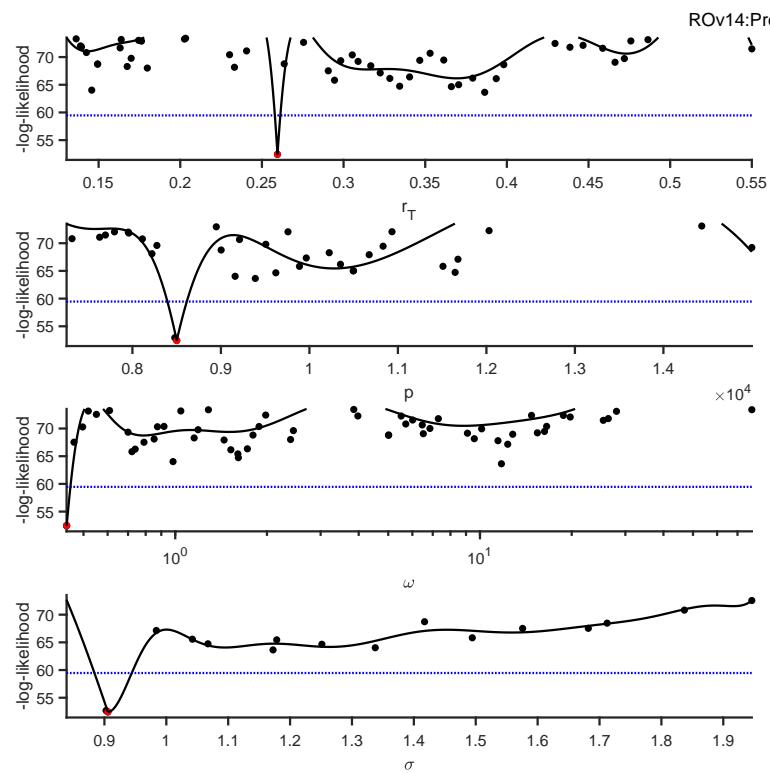
### 7.1 Baseline effector cell source model



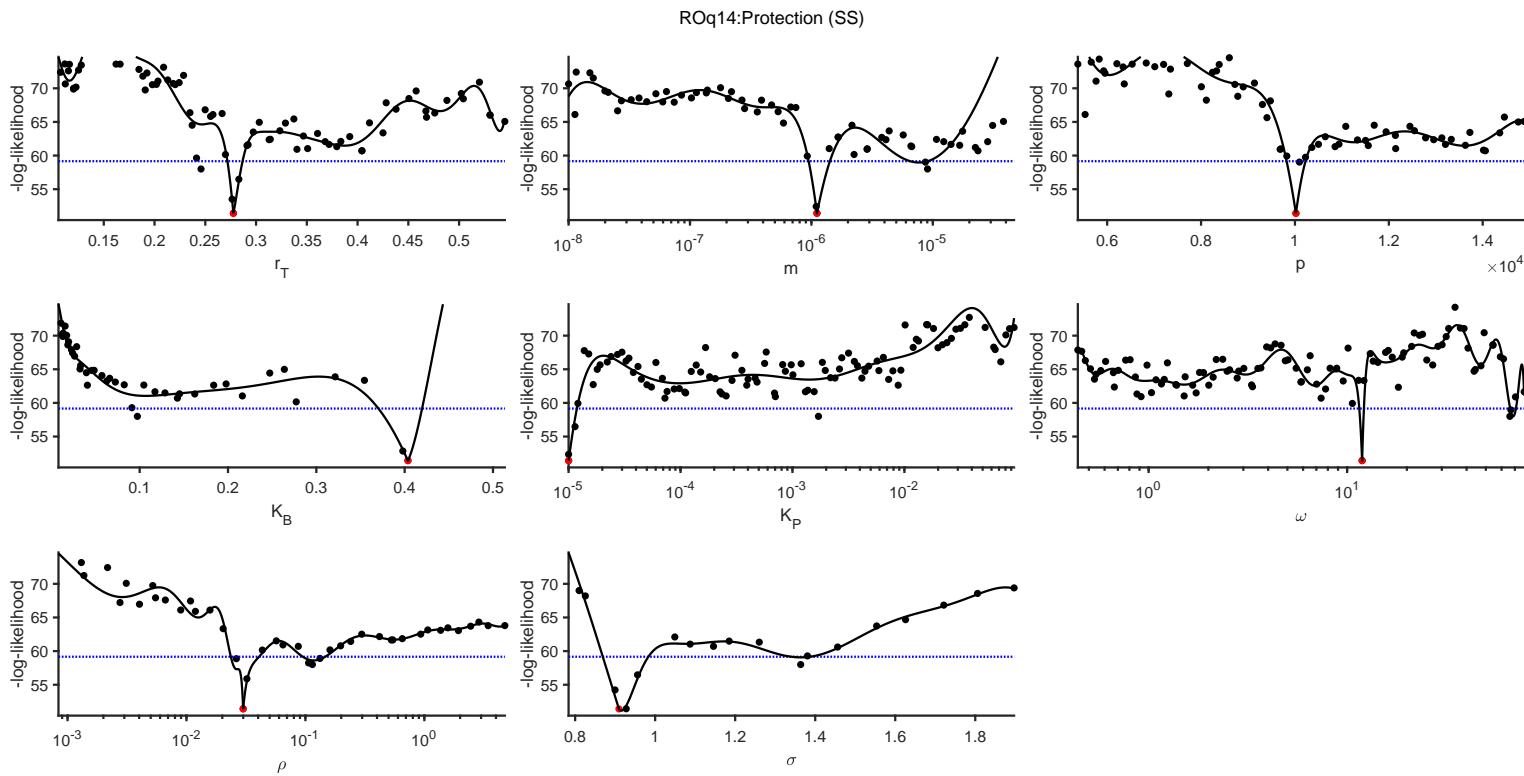


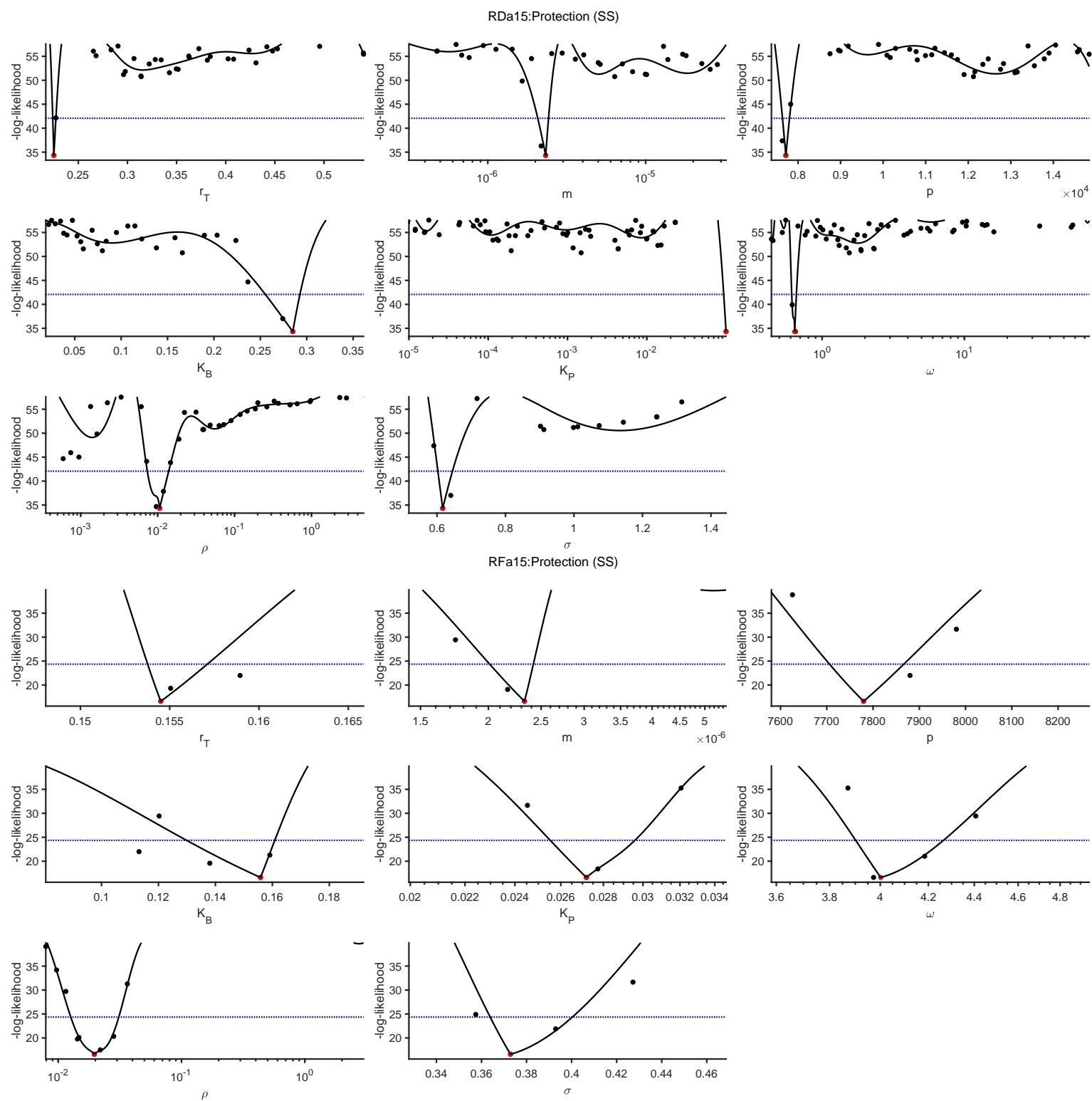


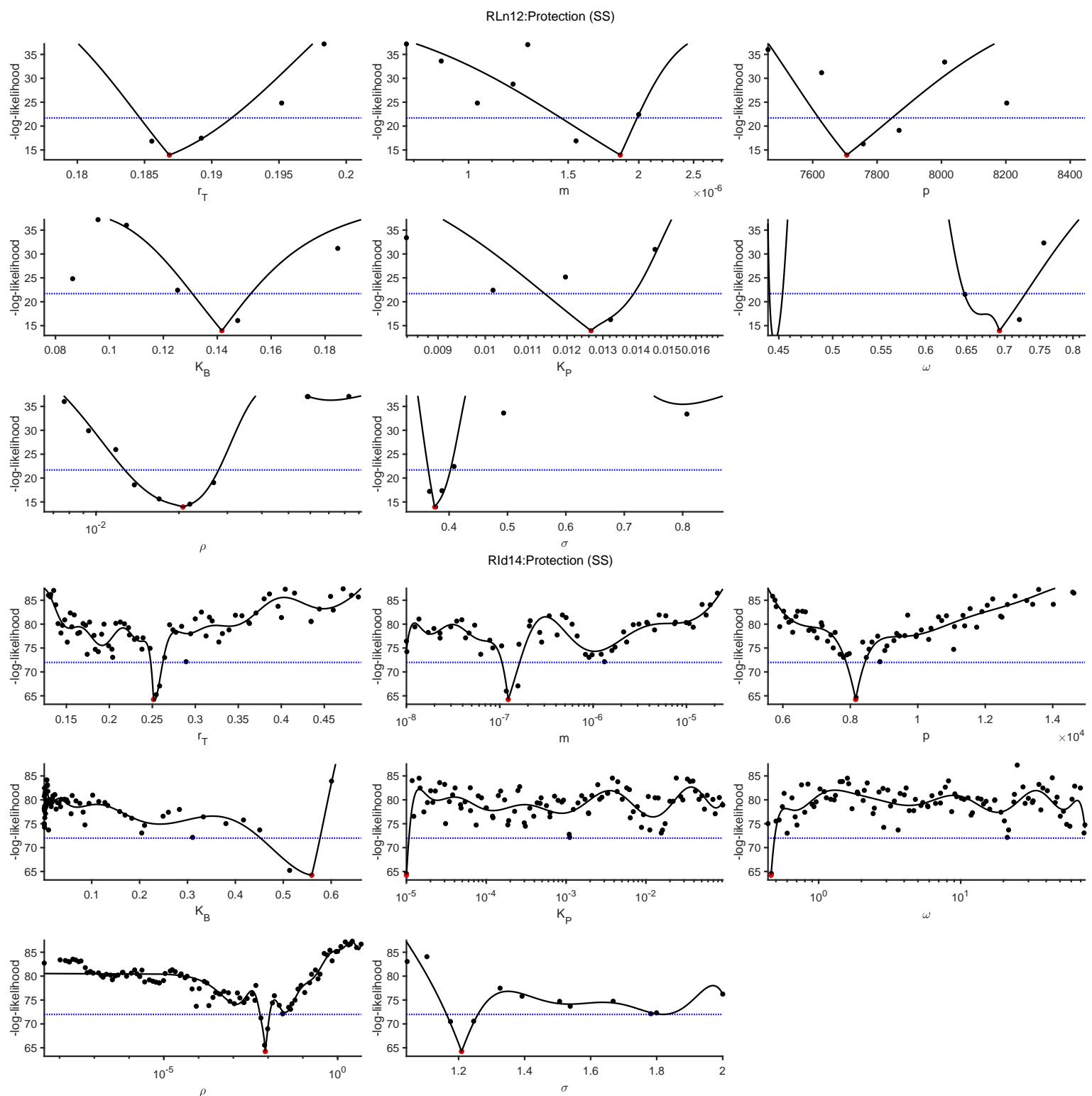


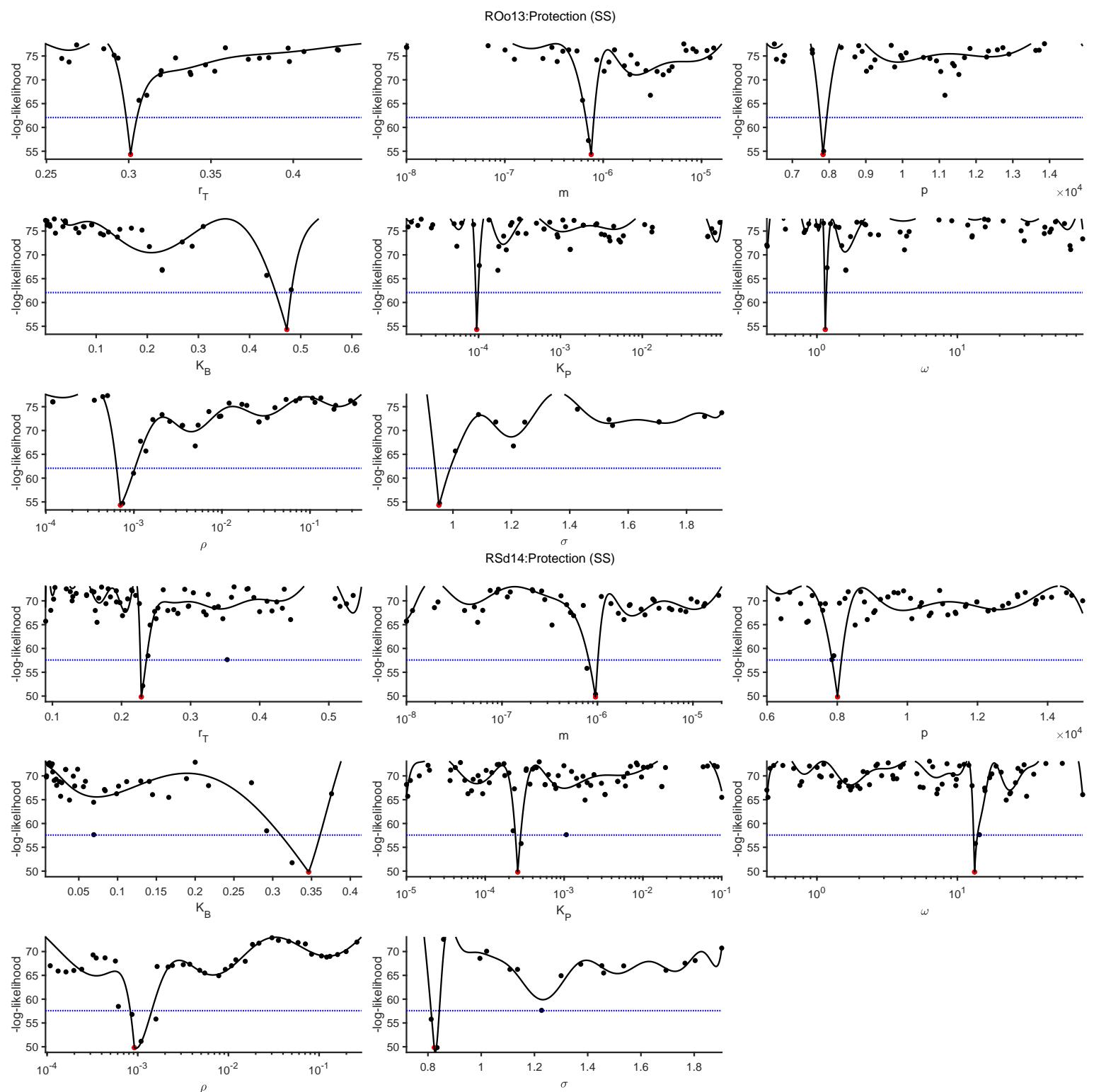


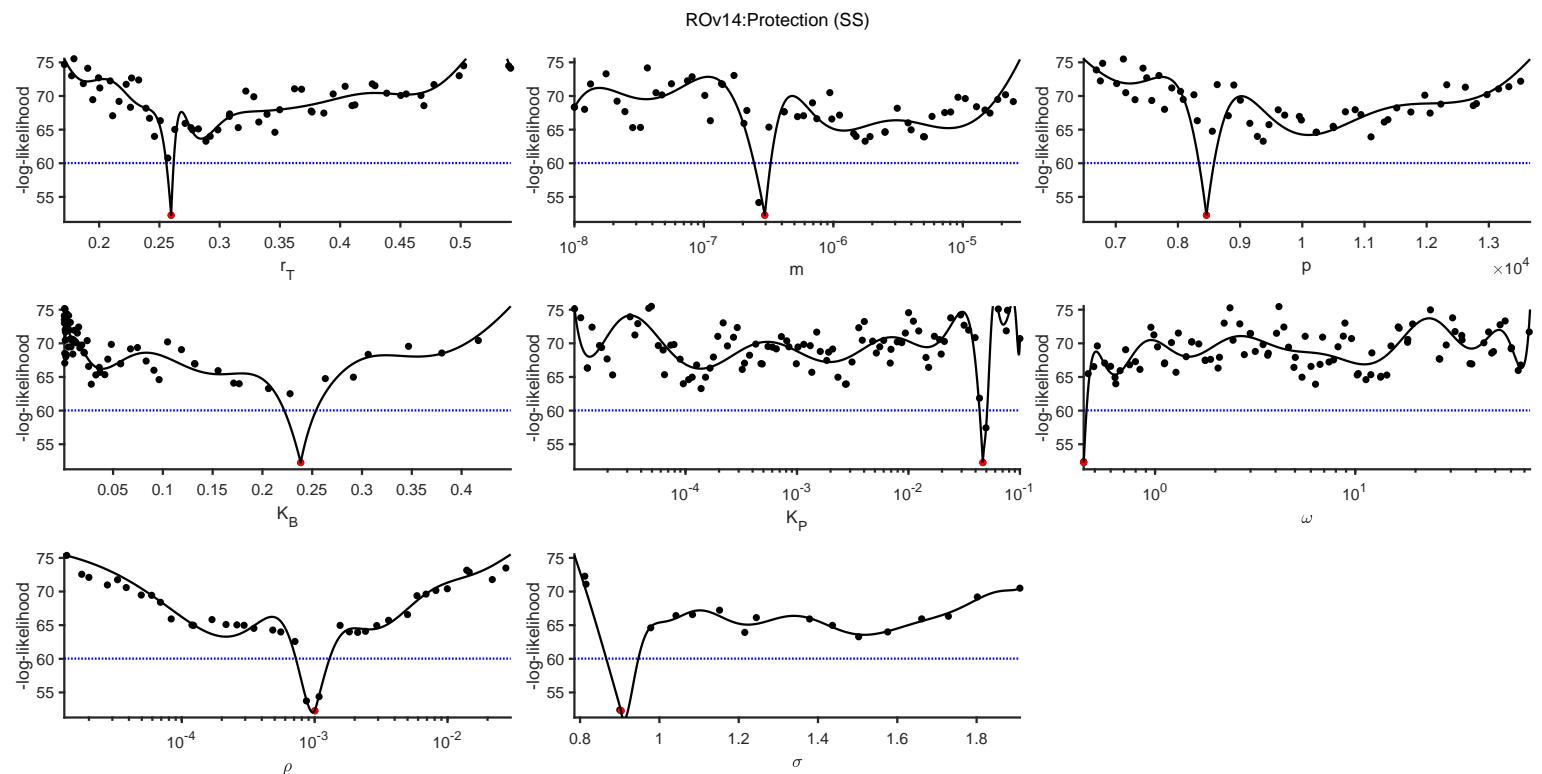
## 7.2 Saturated effector cell source model



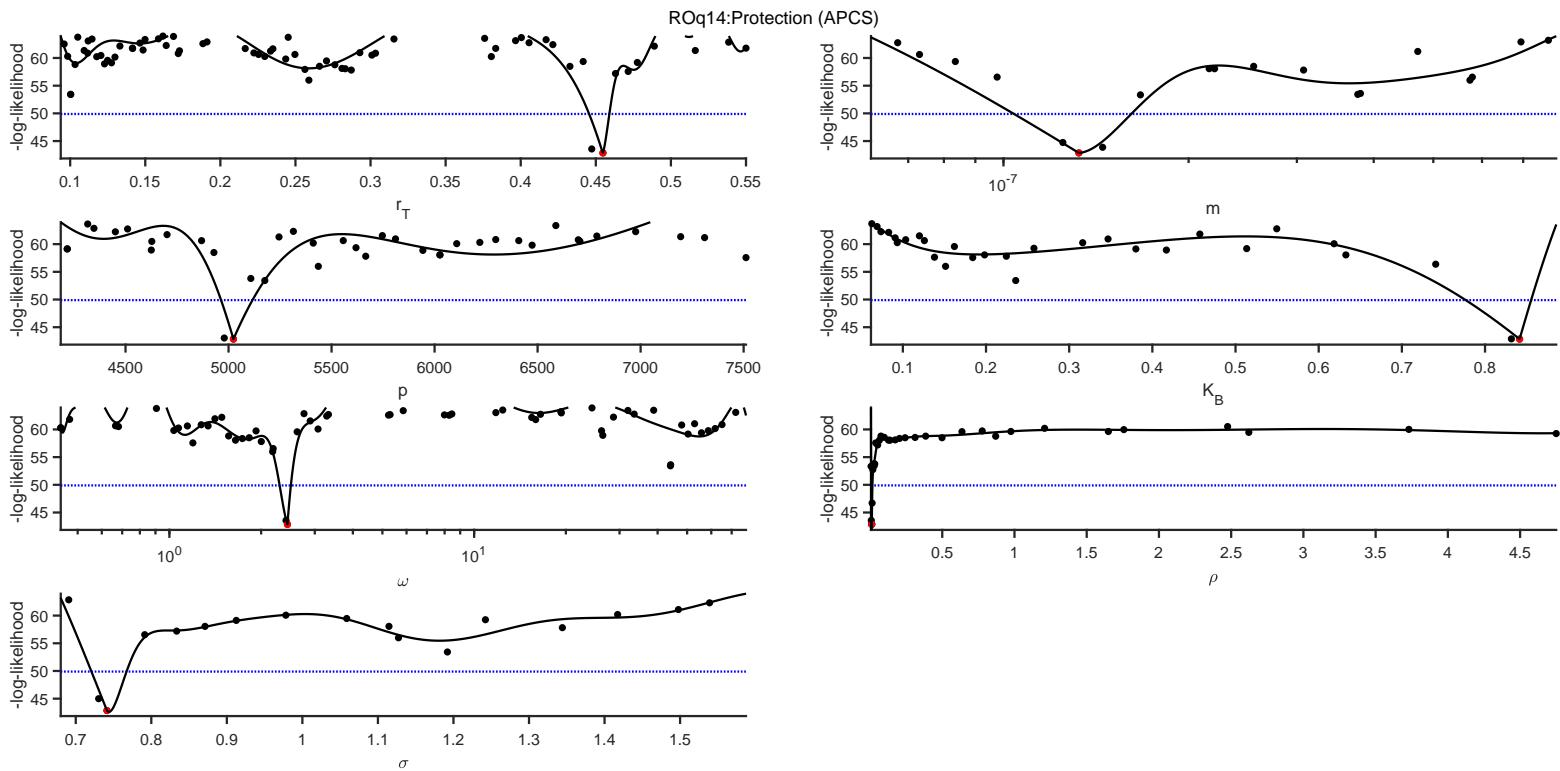


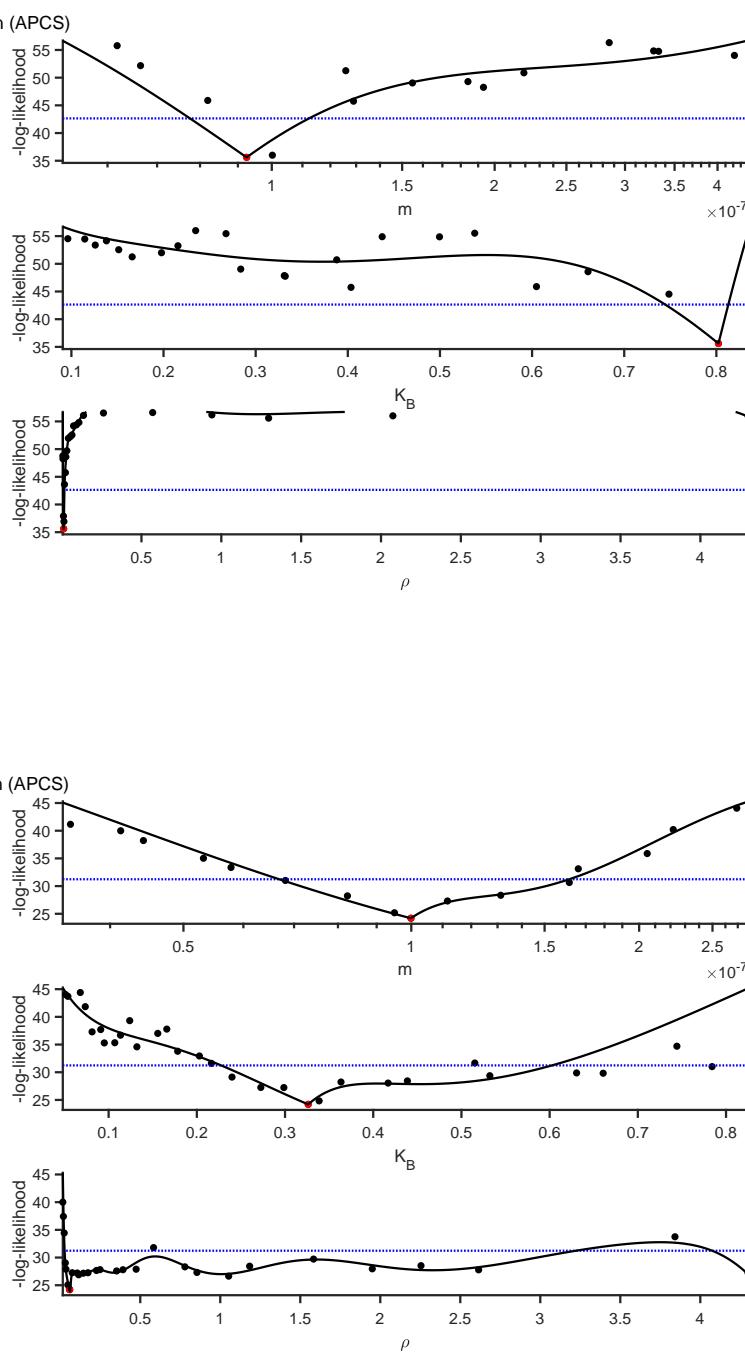
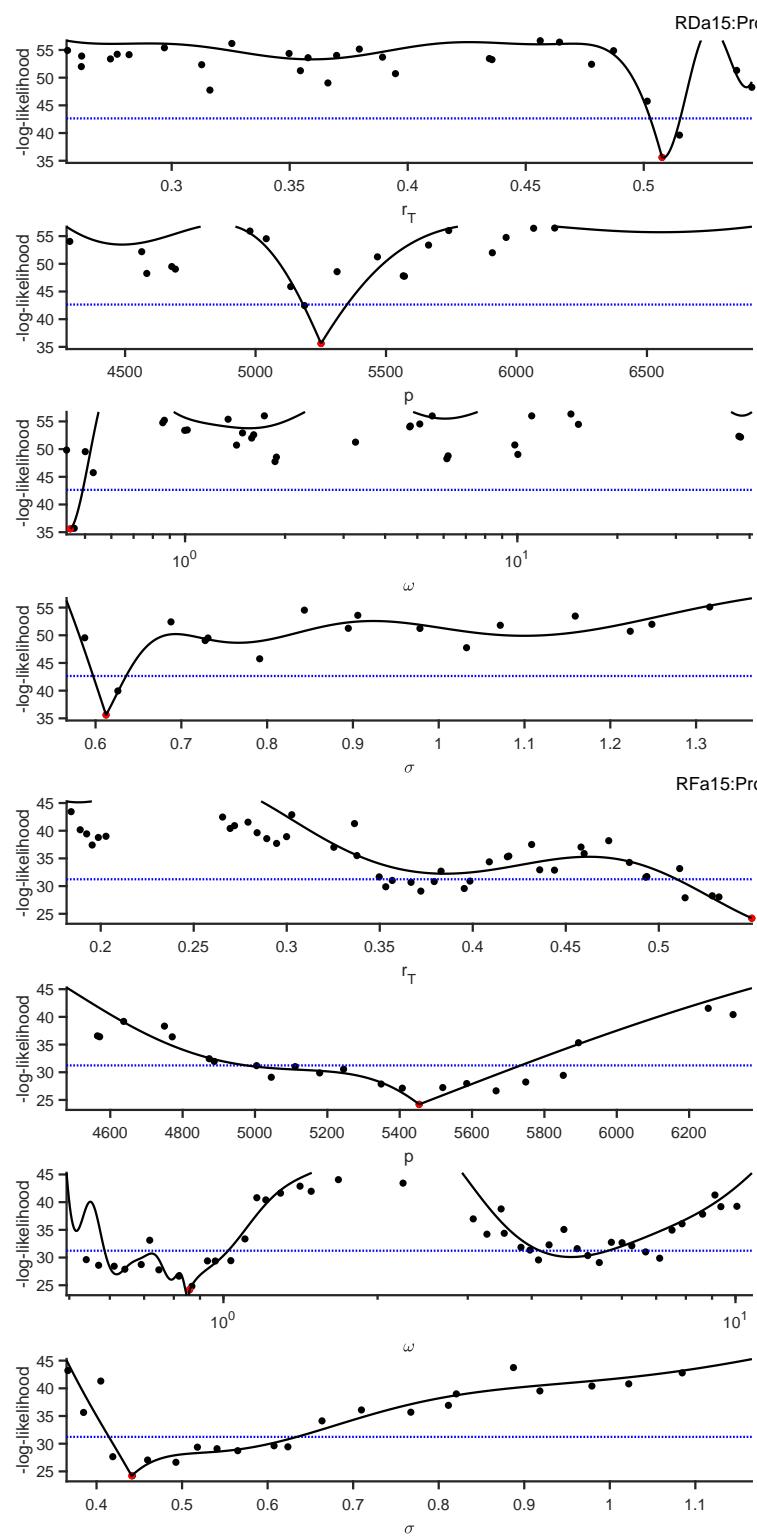


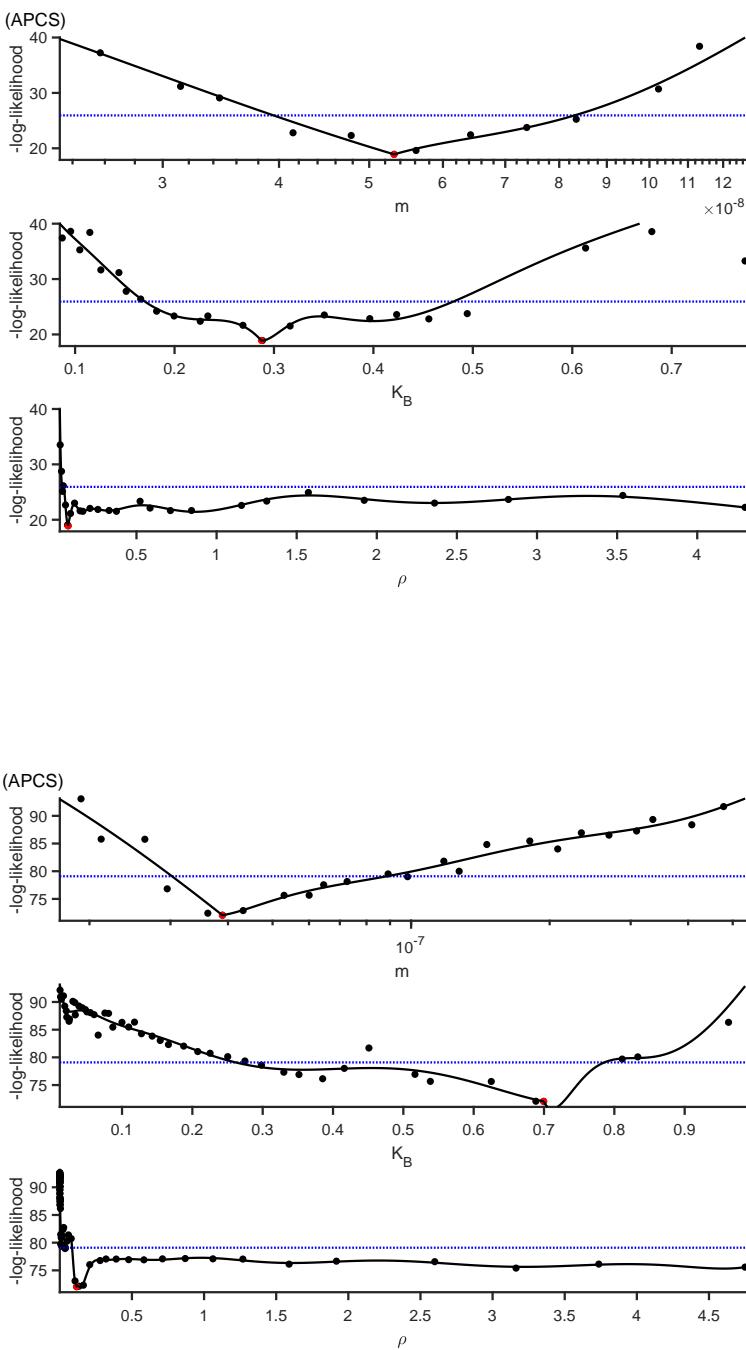
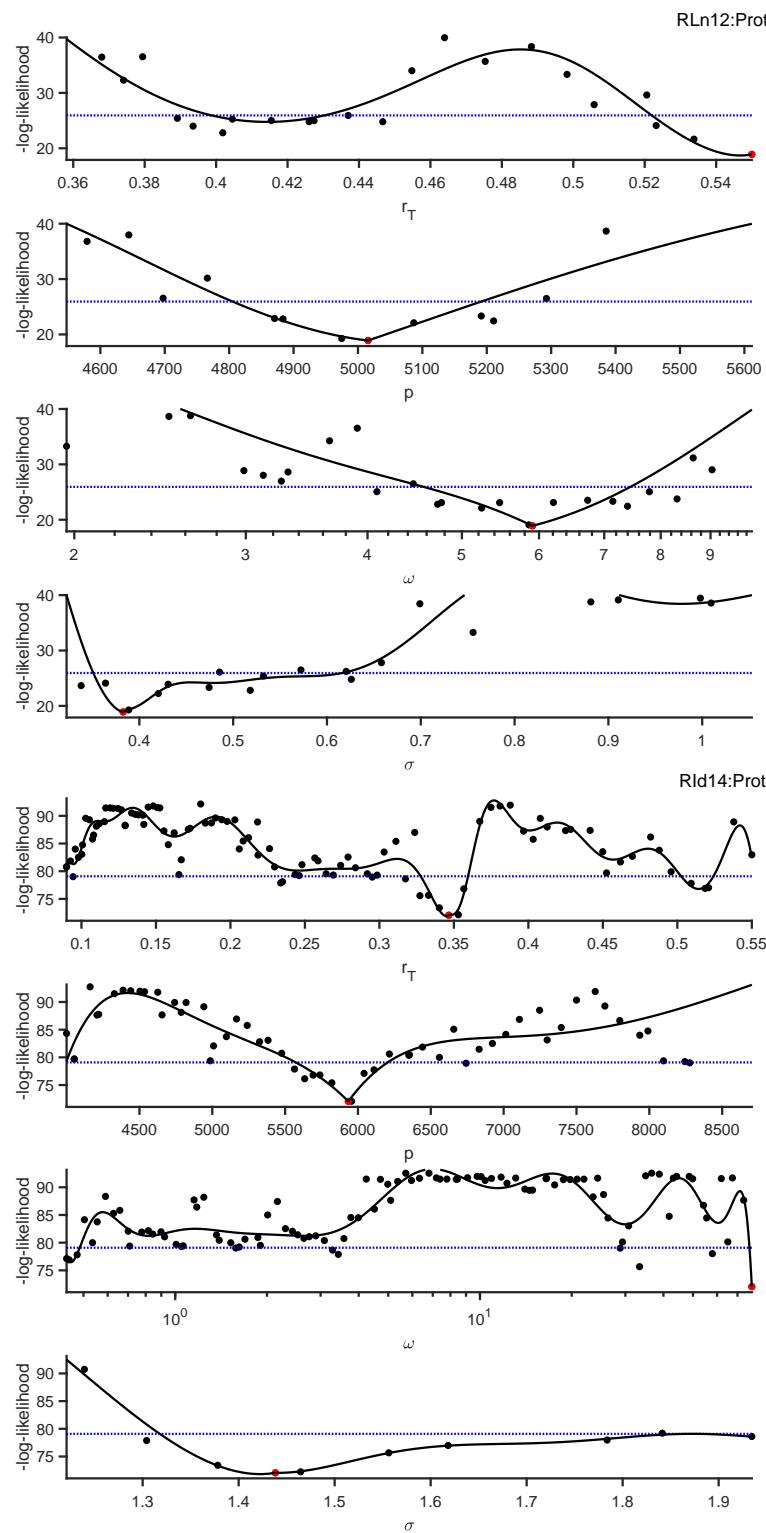


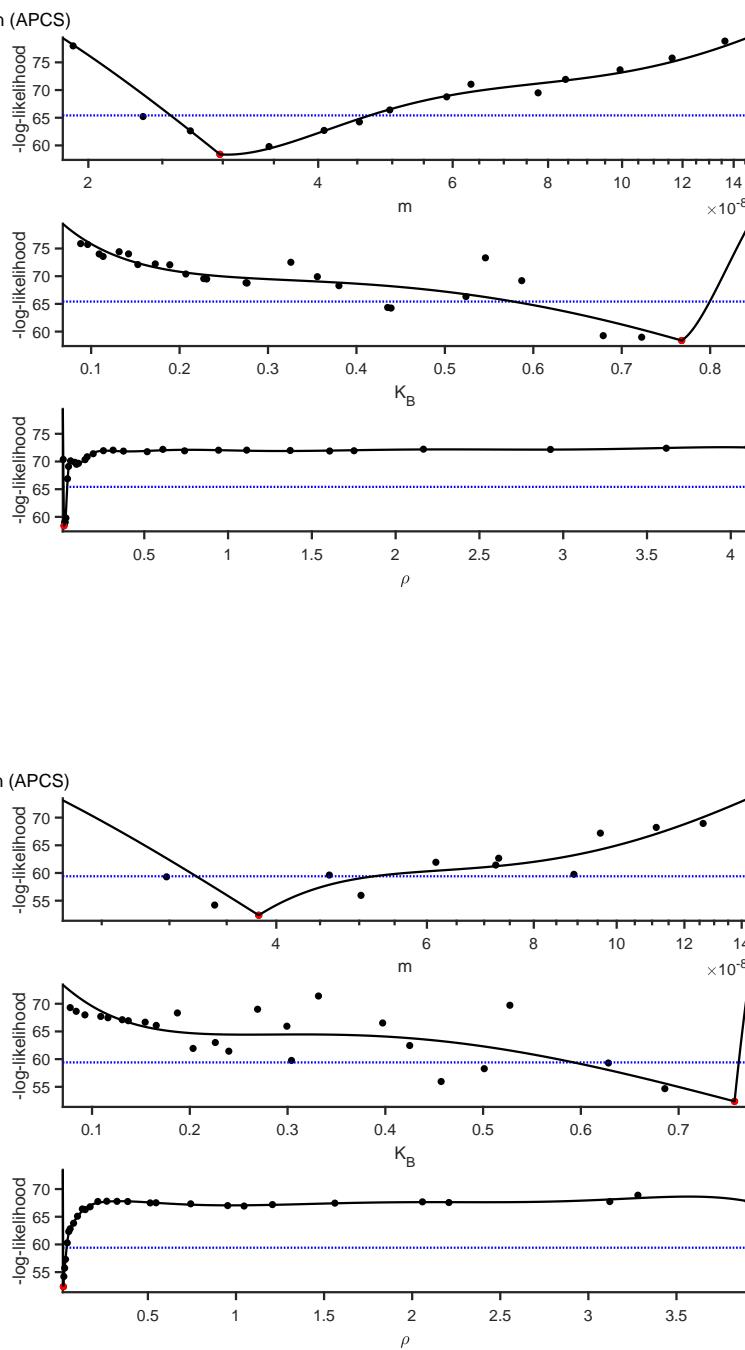
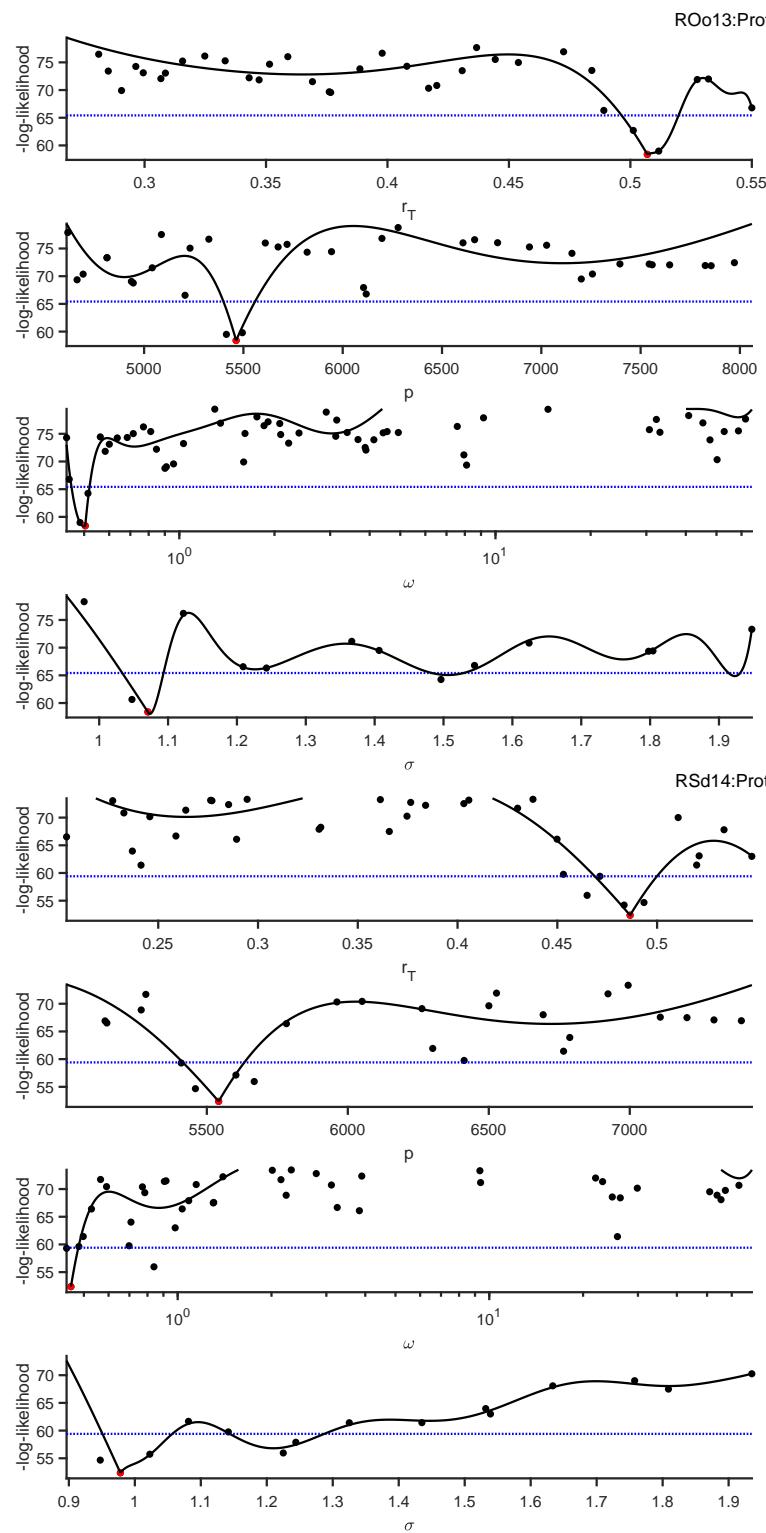


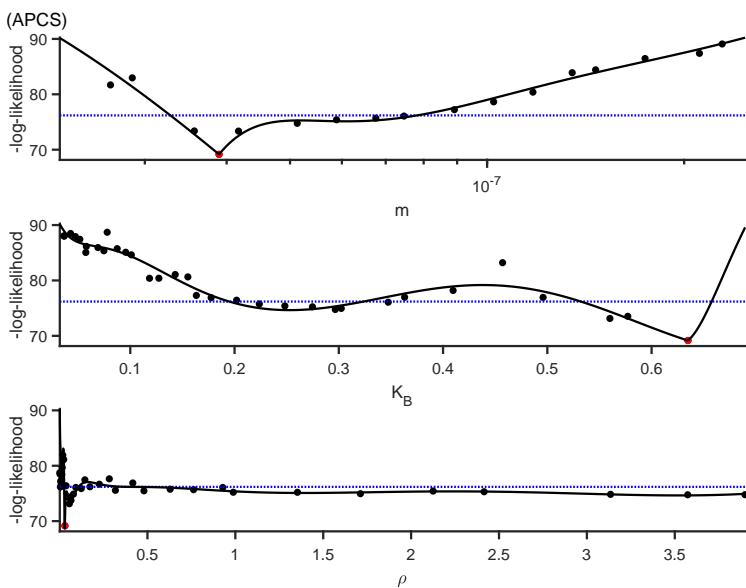
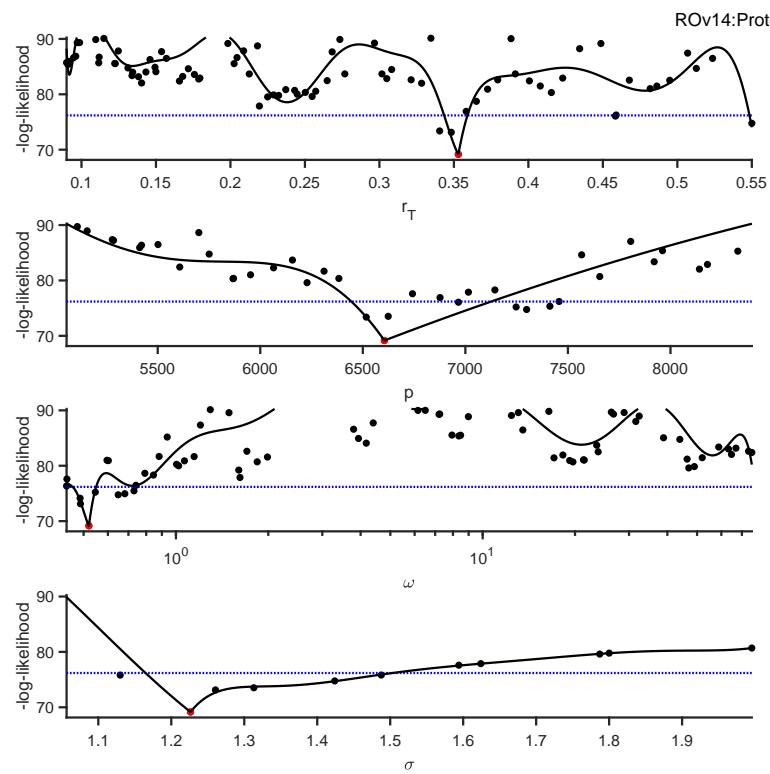
## 7.3 Antigen presenting cell effector cell source model





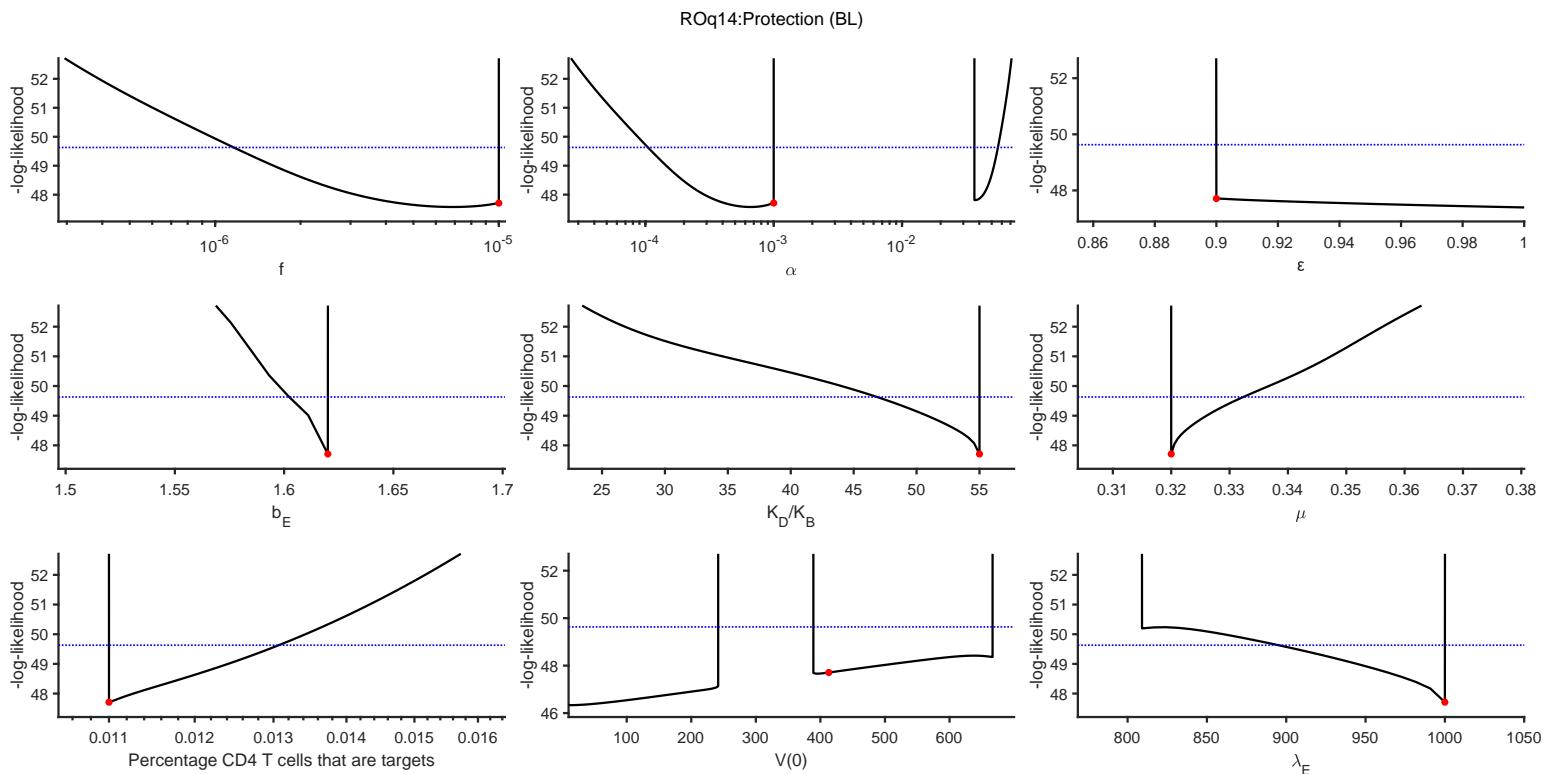


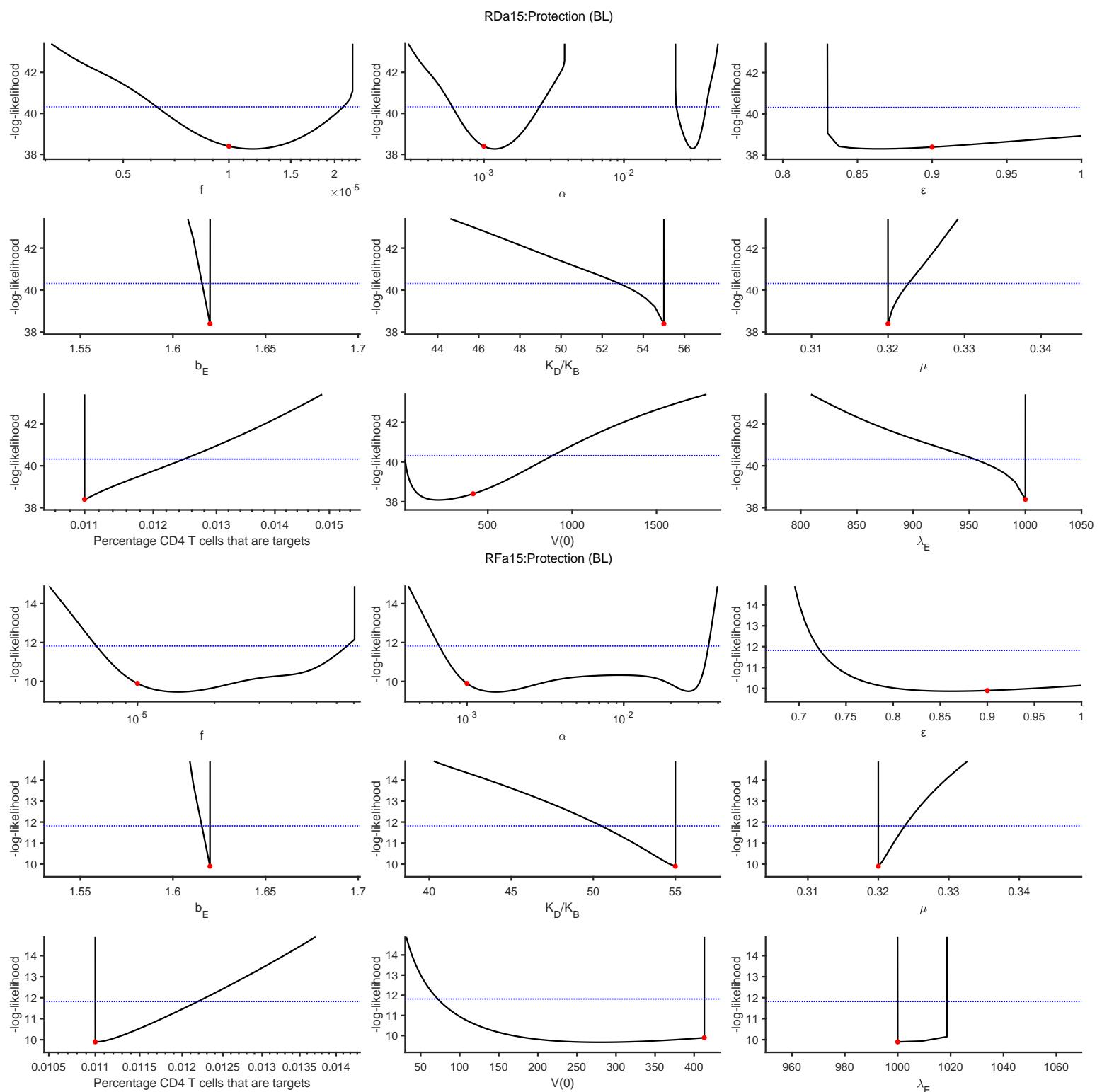




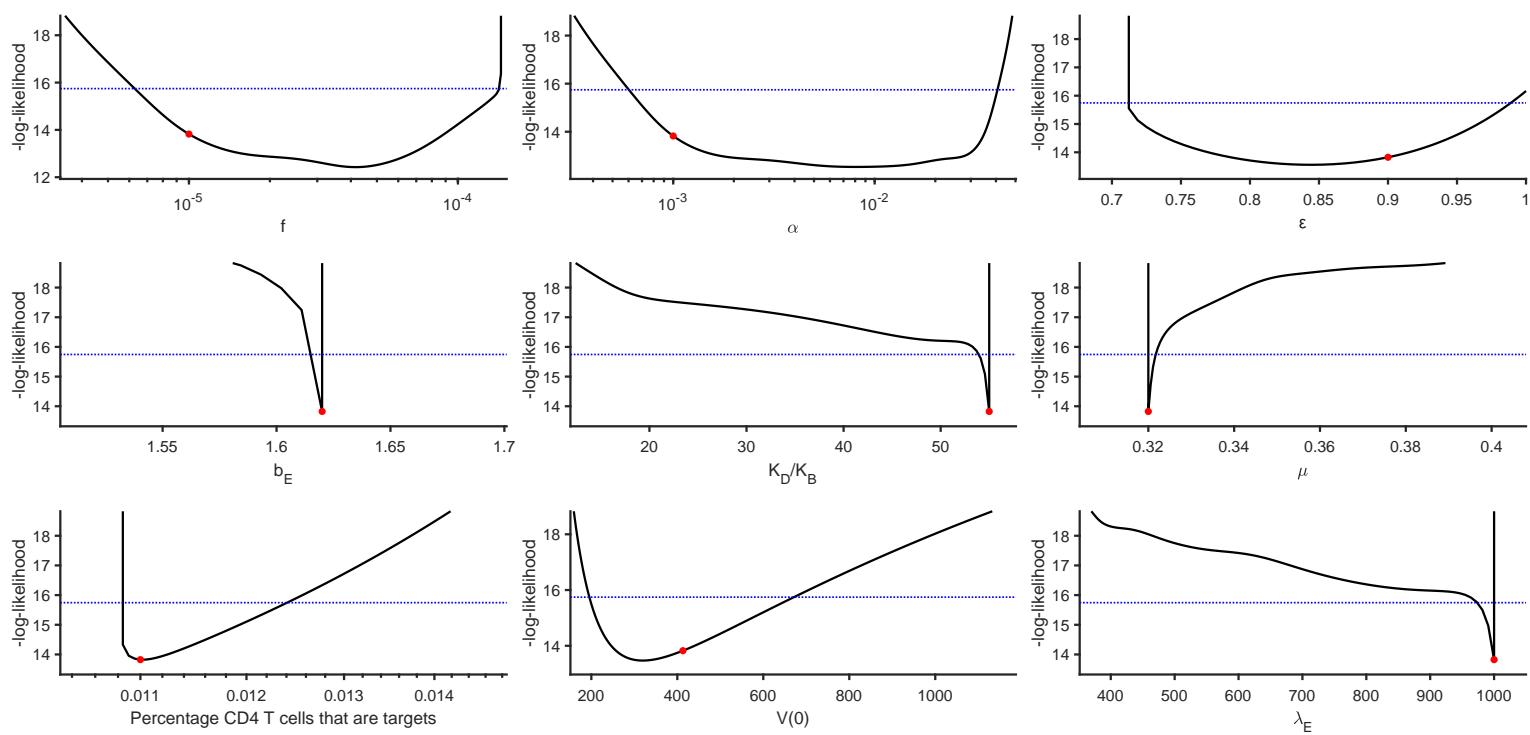
## 8 Sensitivity analysis: Protection

### 8.1 Baseline effector cell source model

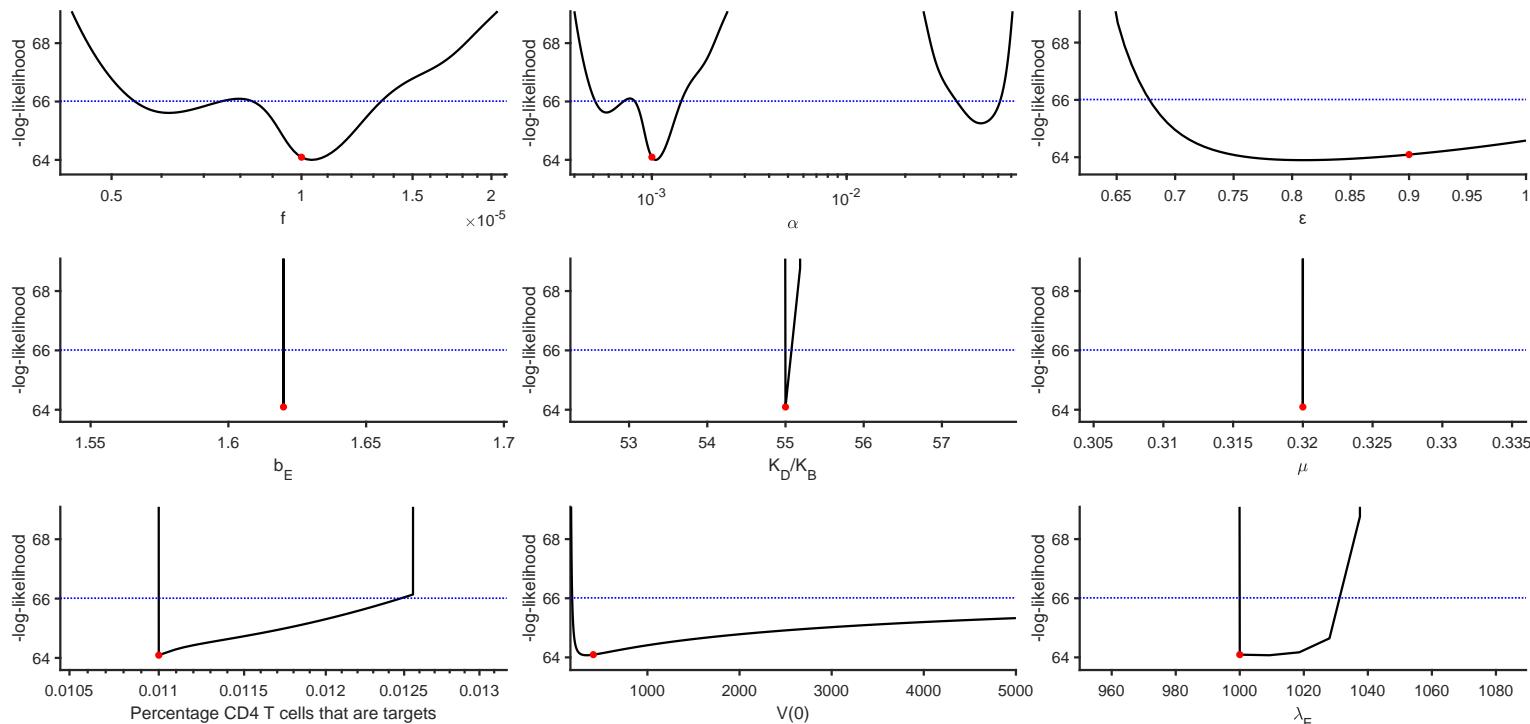


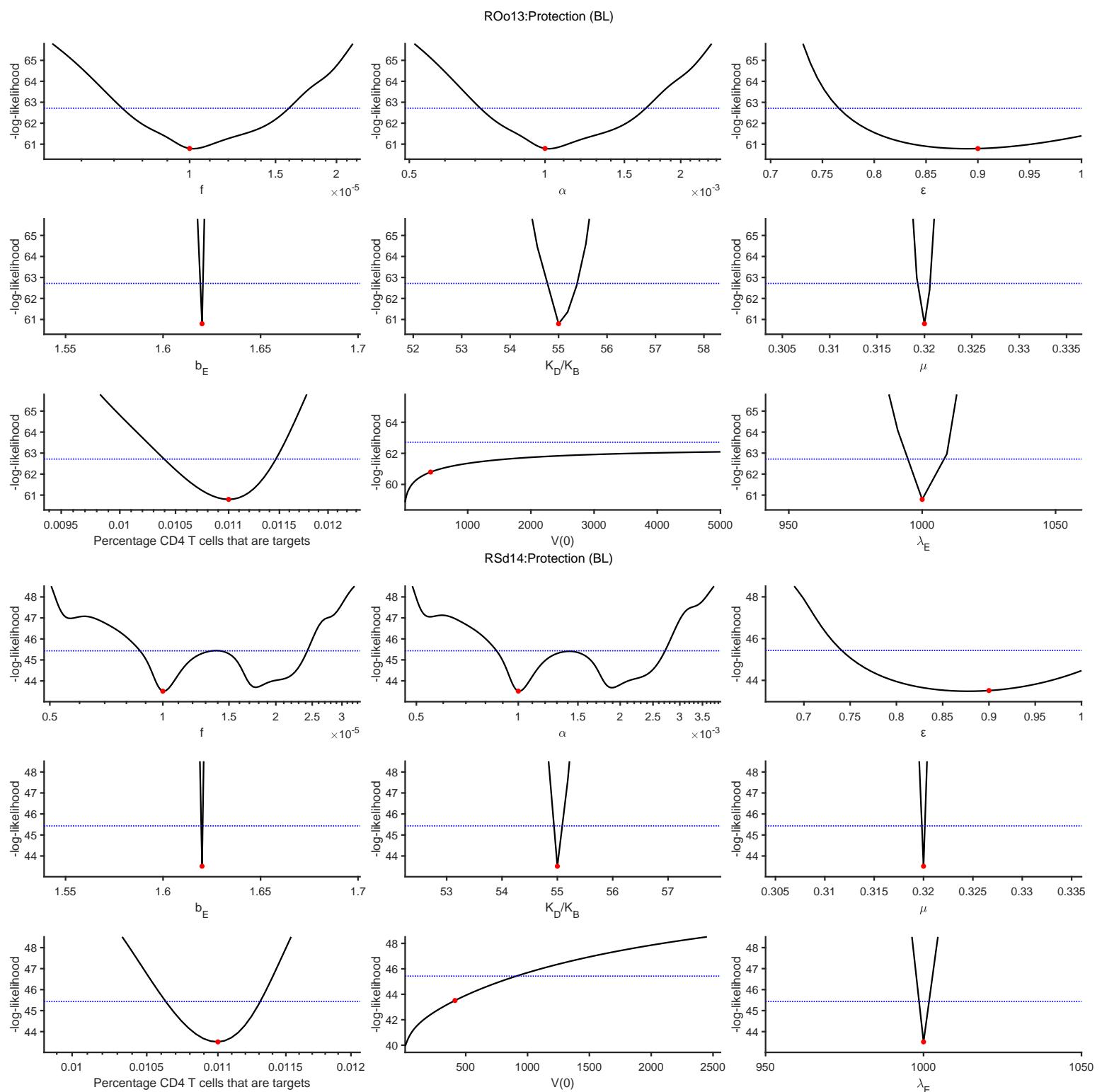


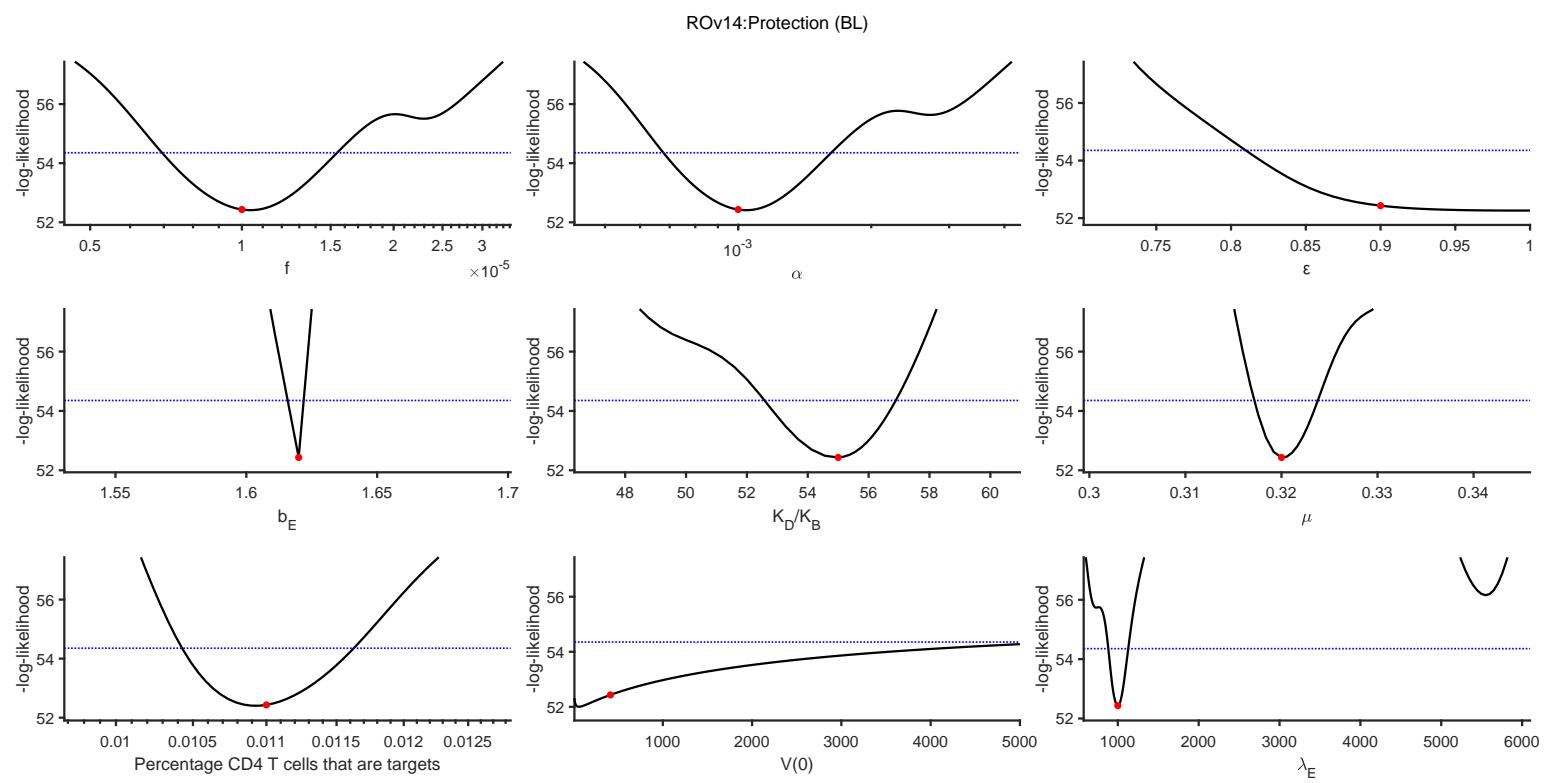
### RLn12:Protection (BL)



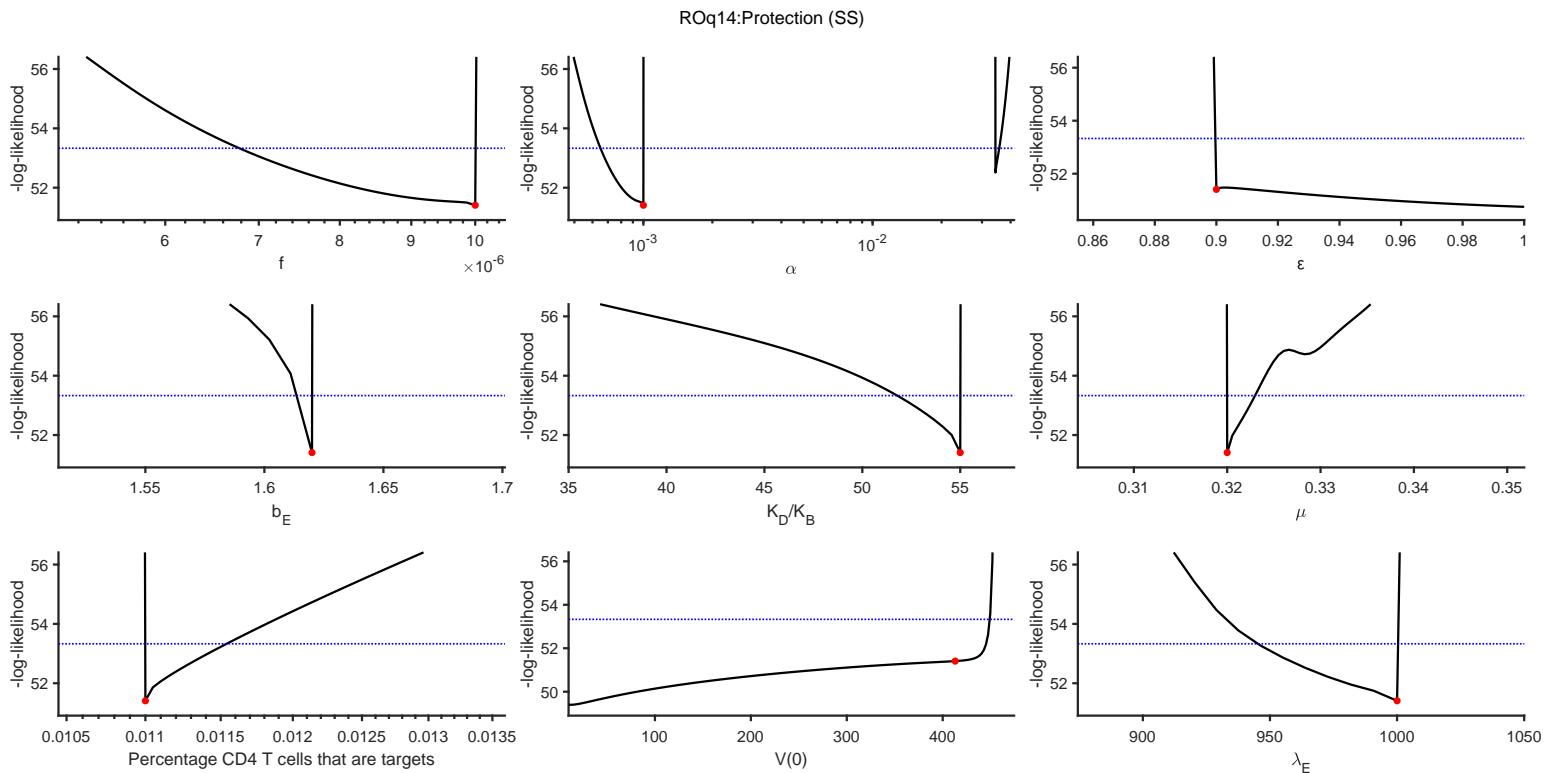
### RId14:Protection (BL)

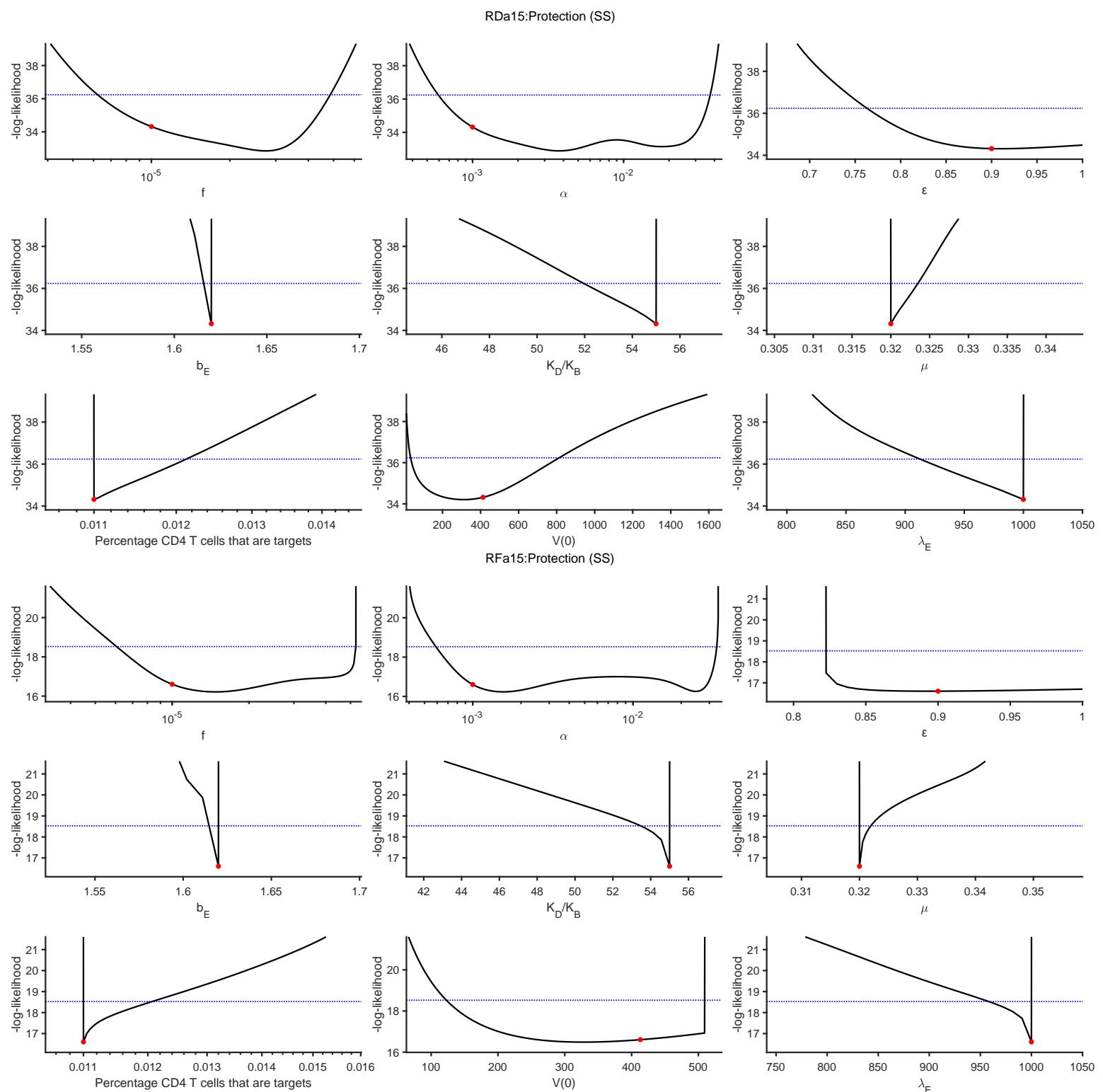


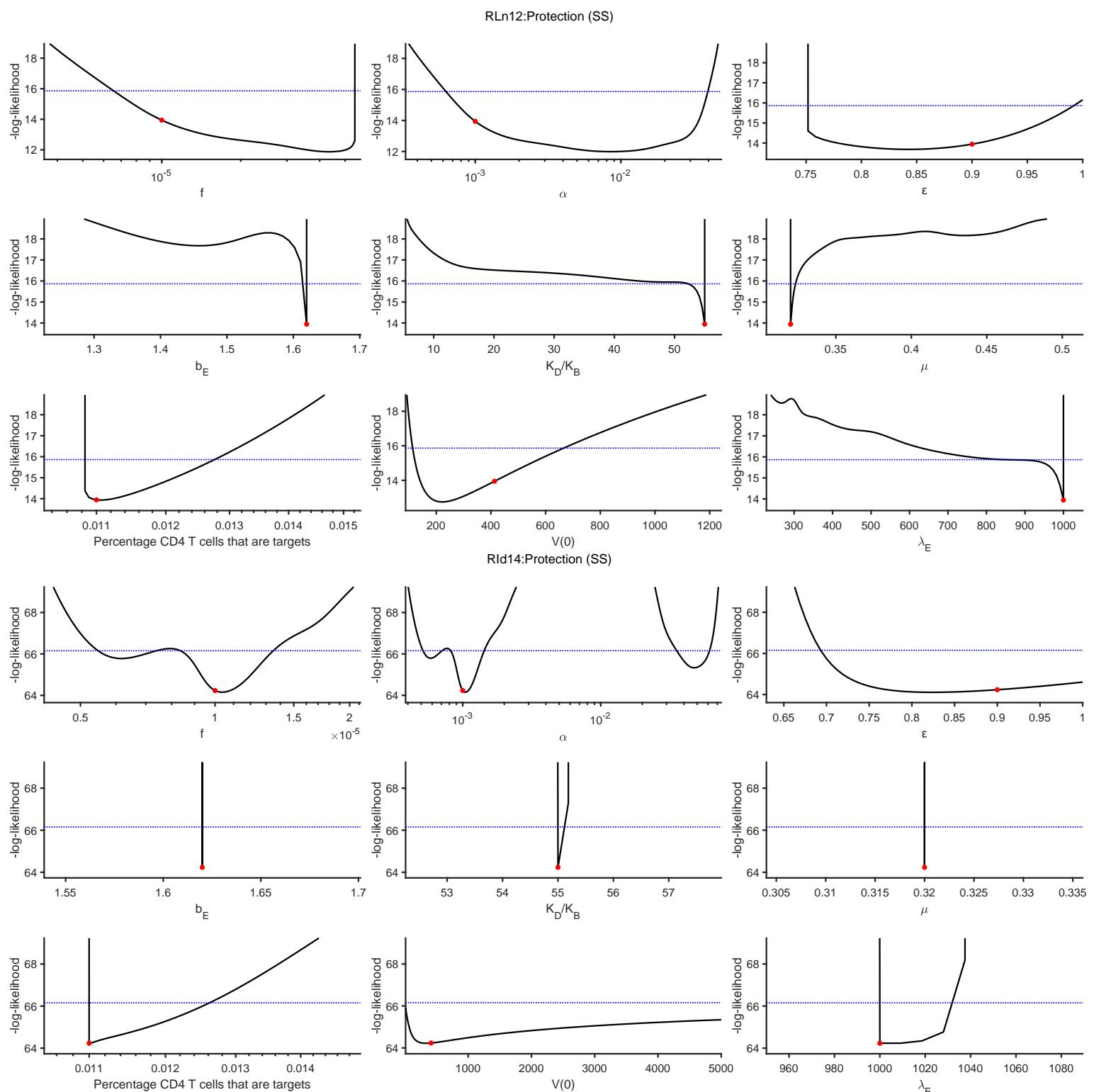


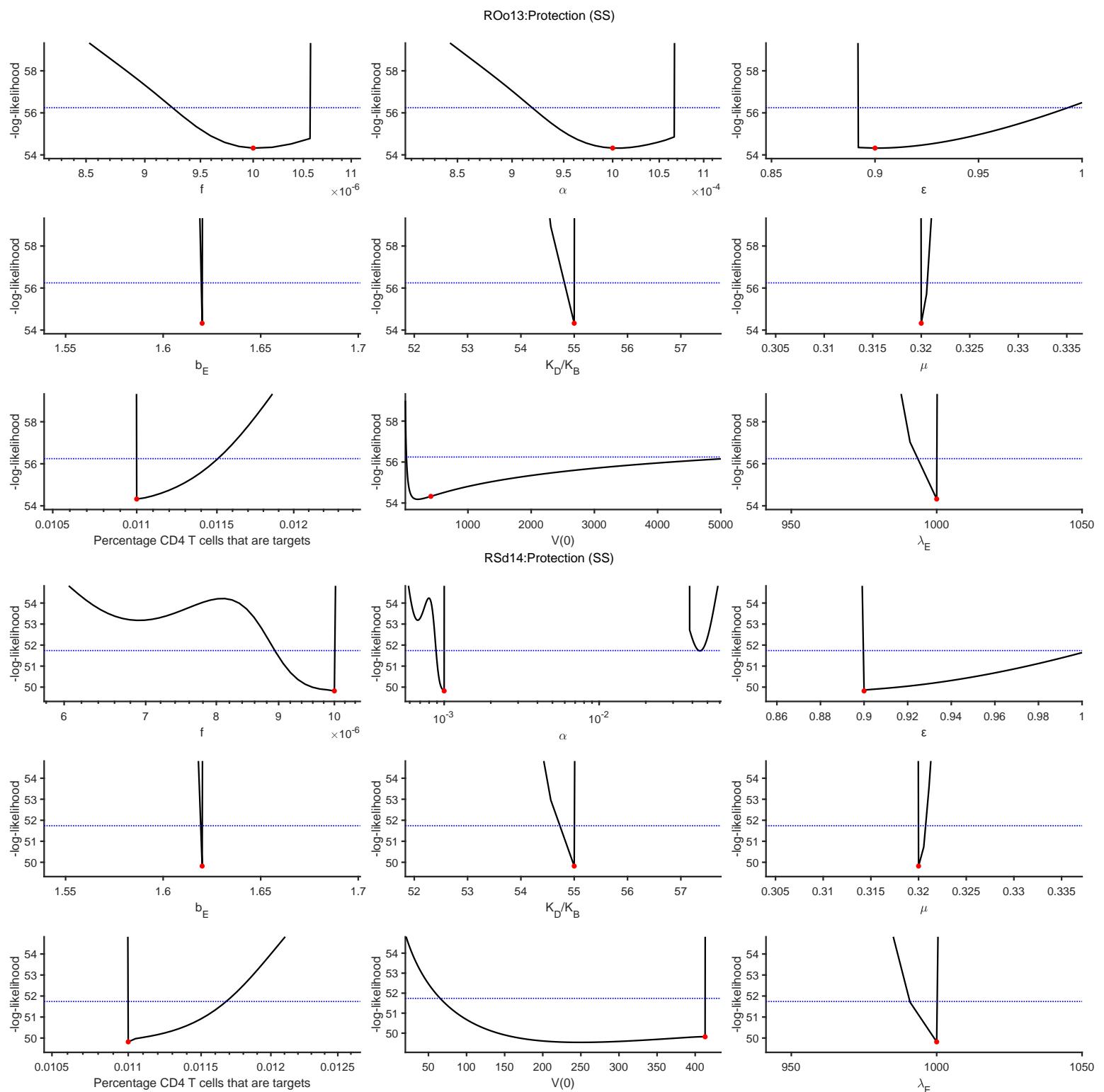


## 8.2 Saturated effector cell source model

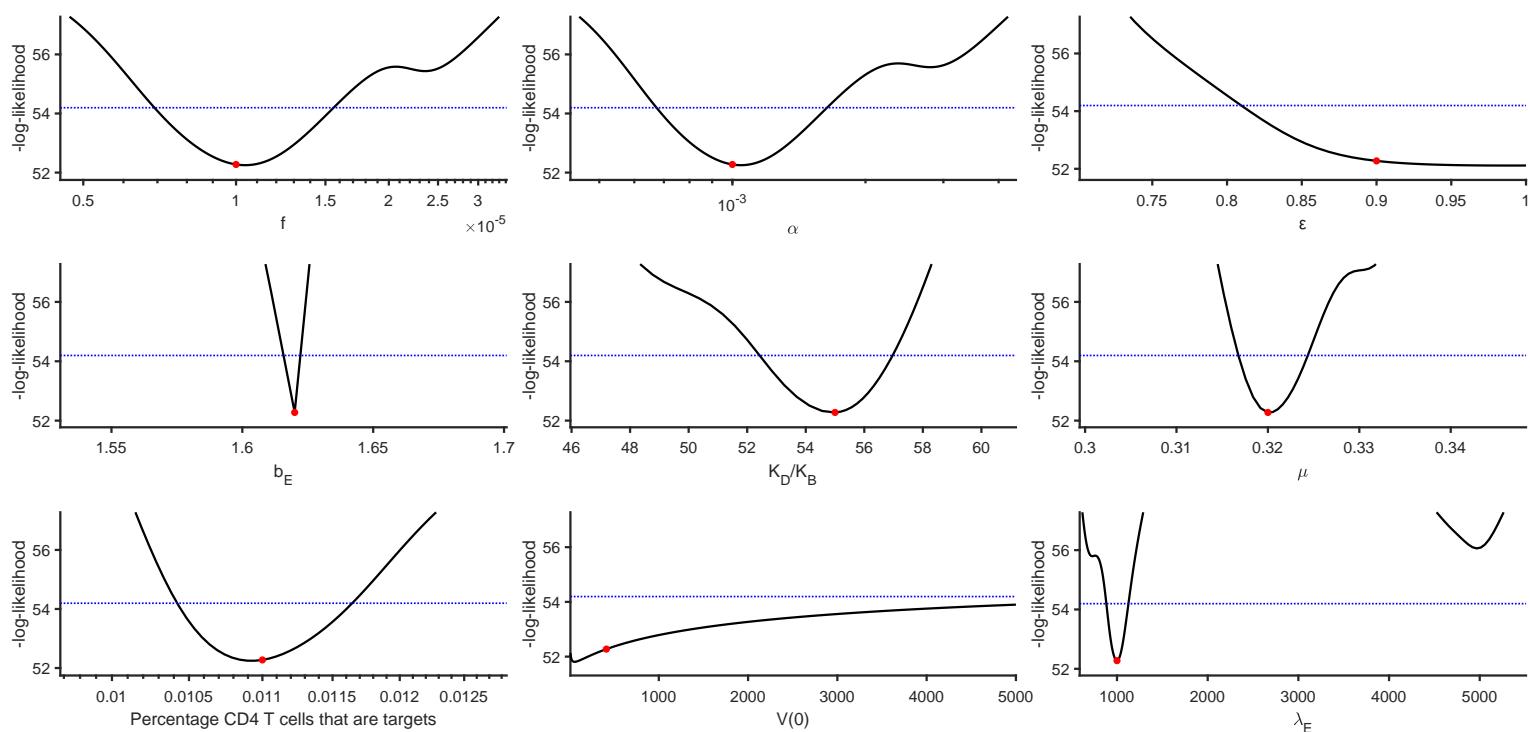




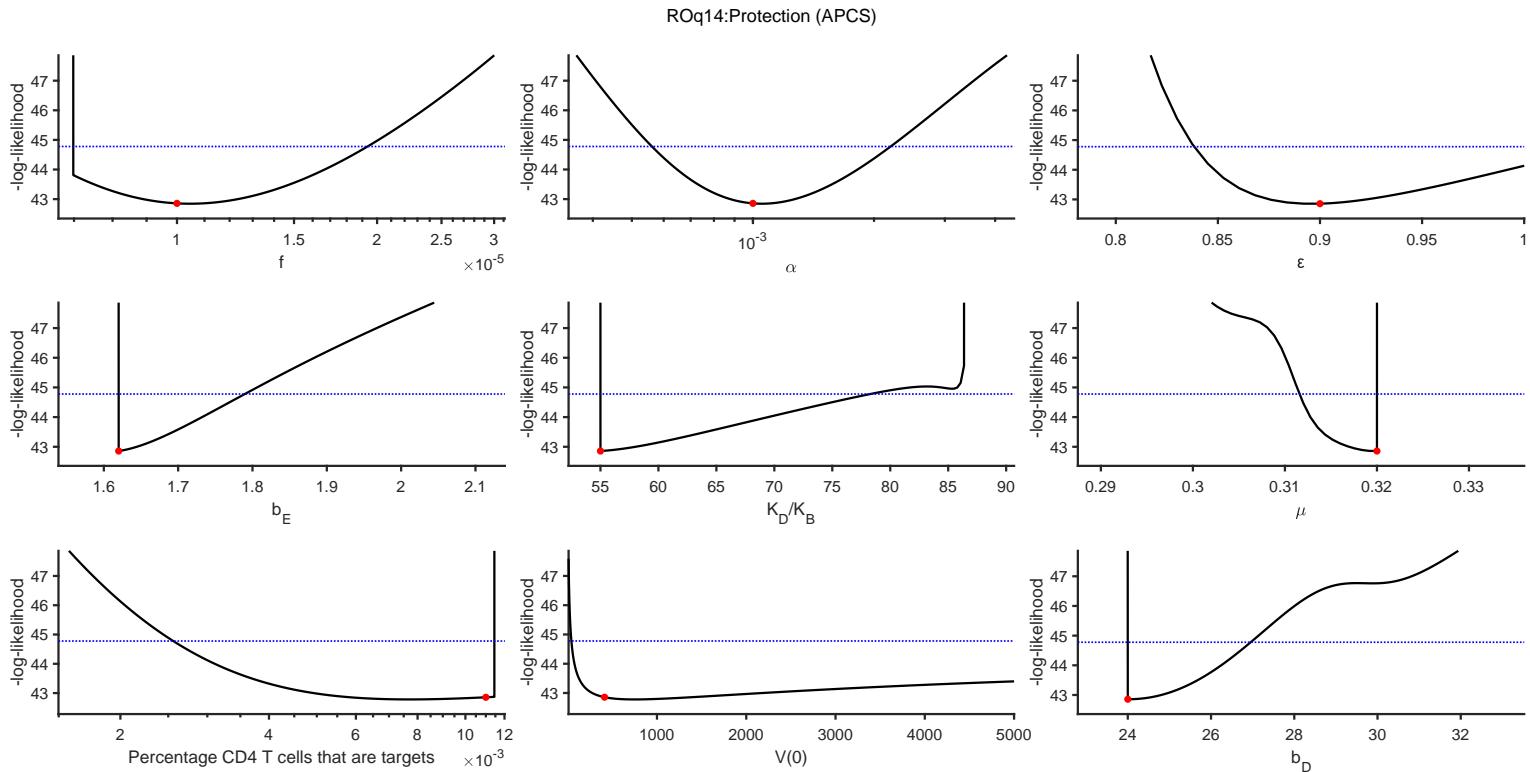


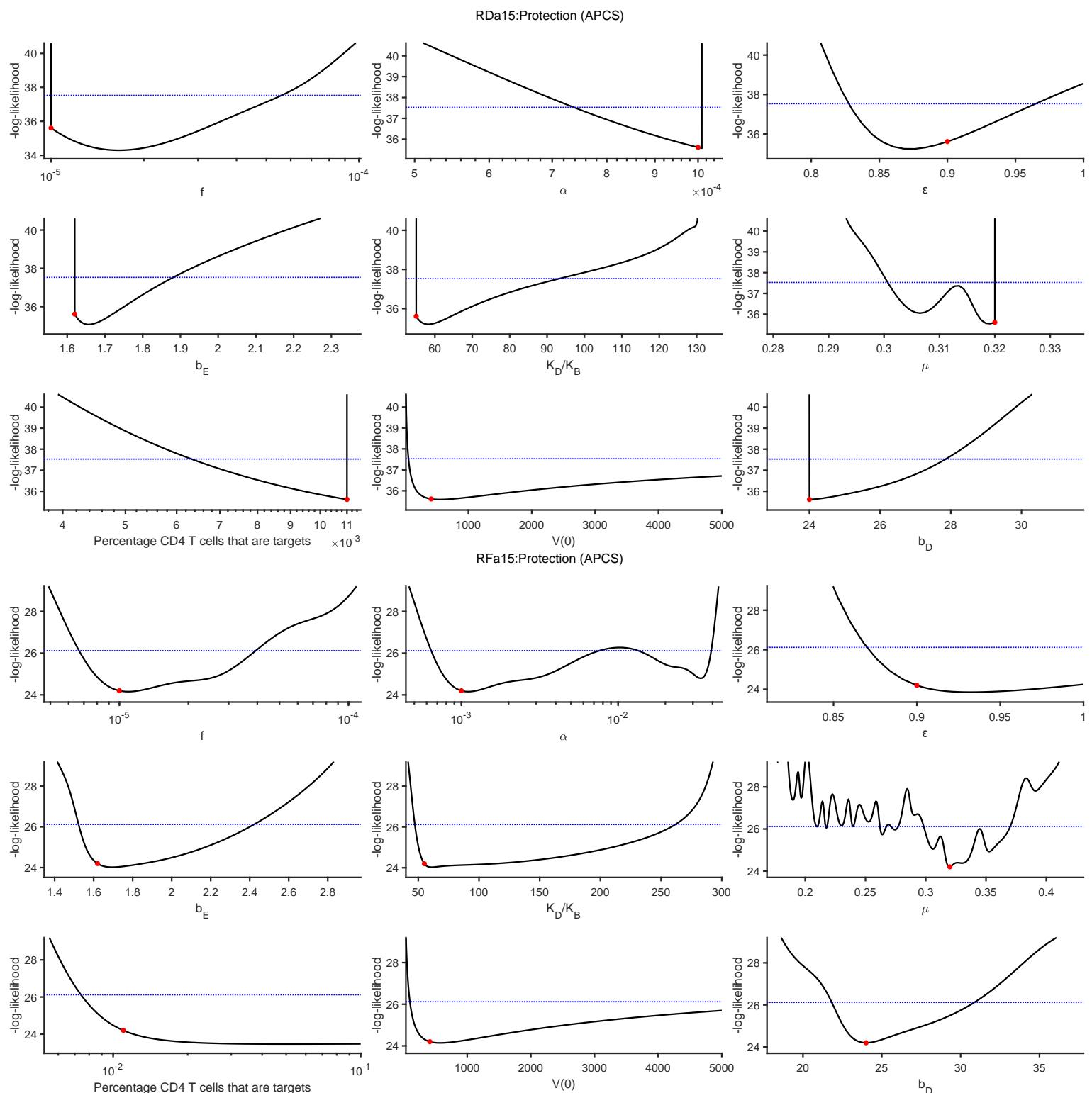


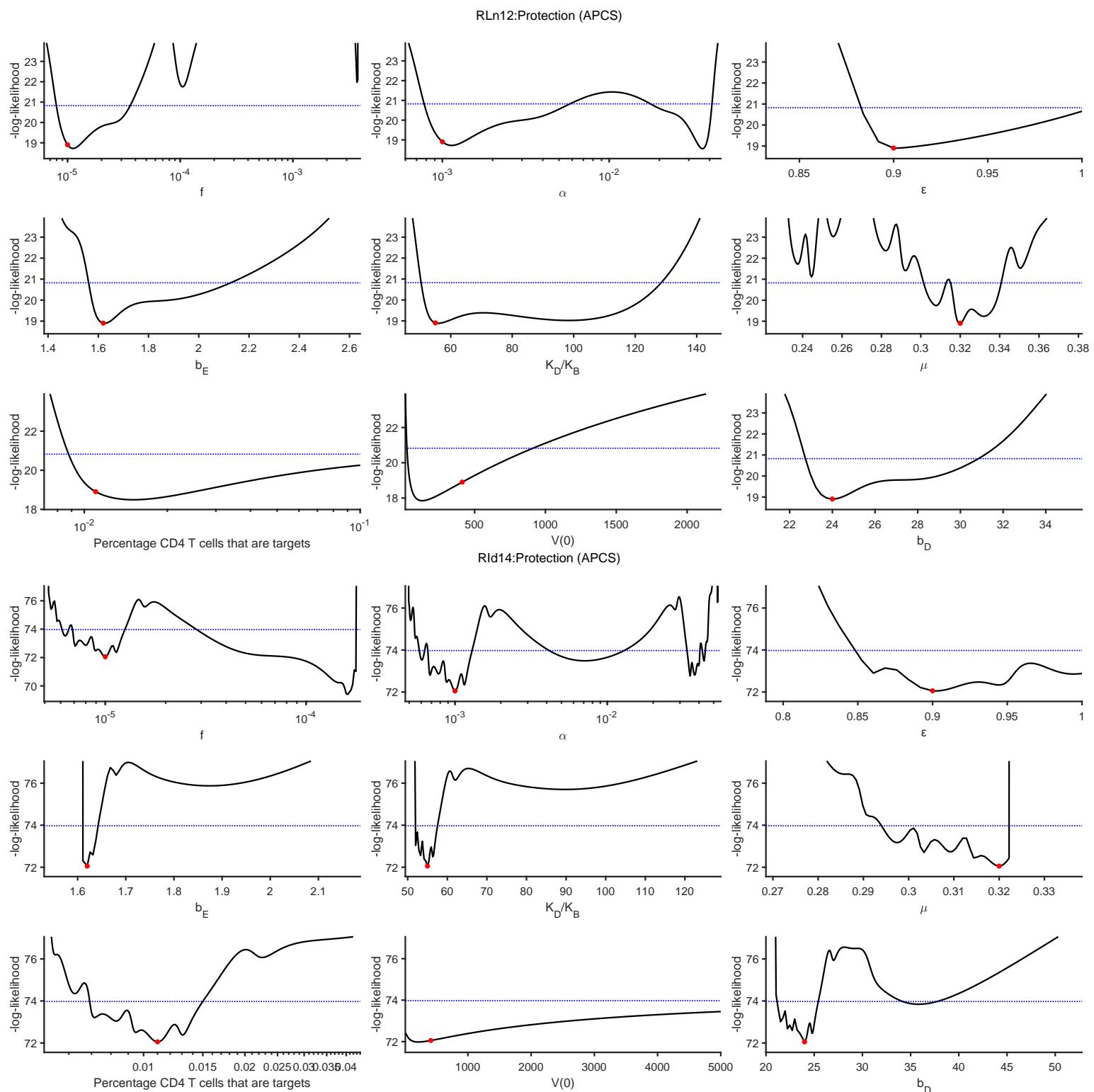
ROv14:Protection (SS)



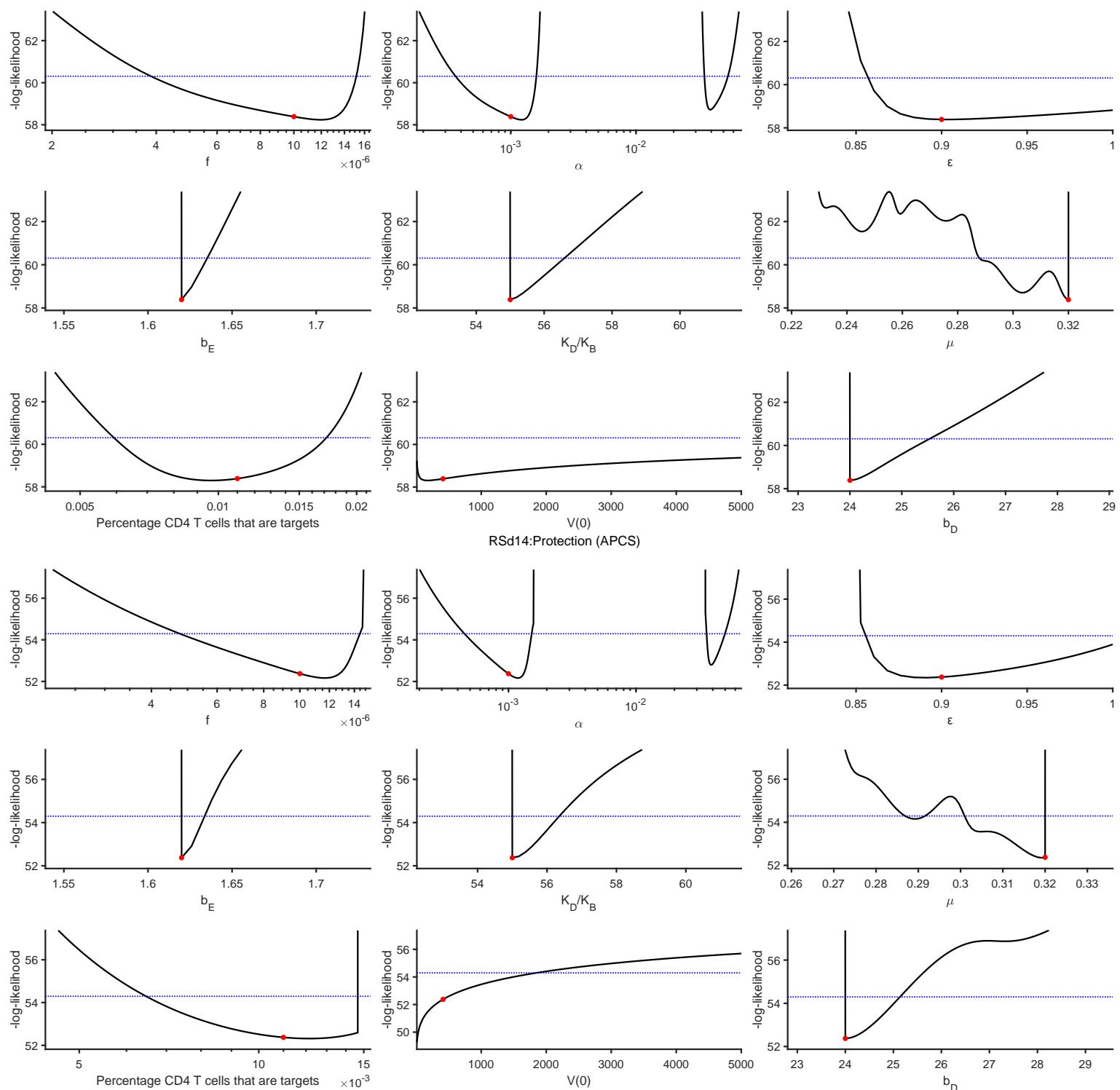
### 8.3 Antigen presenting cell effector cell source model

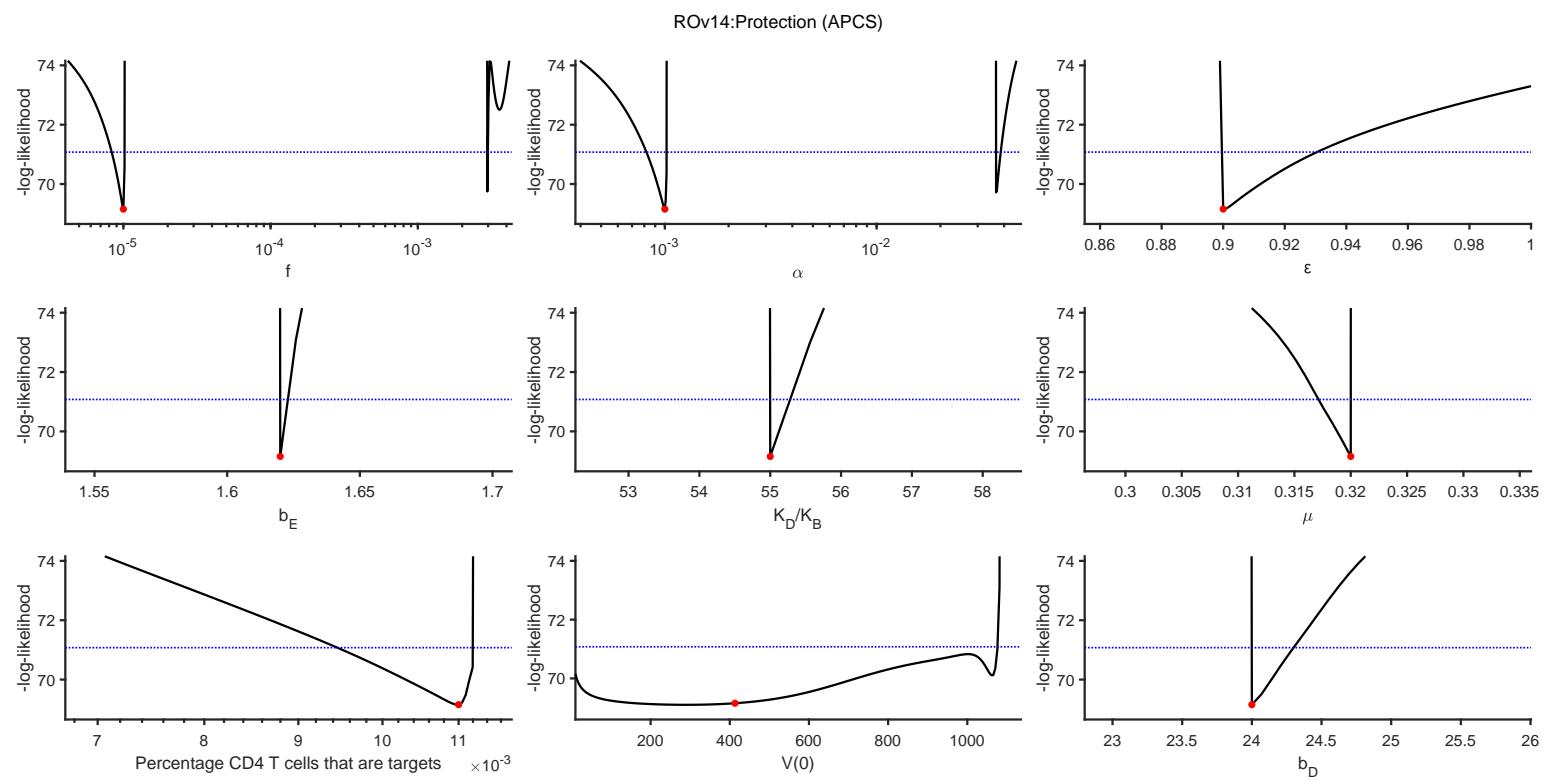






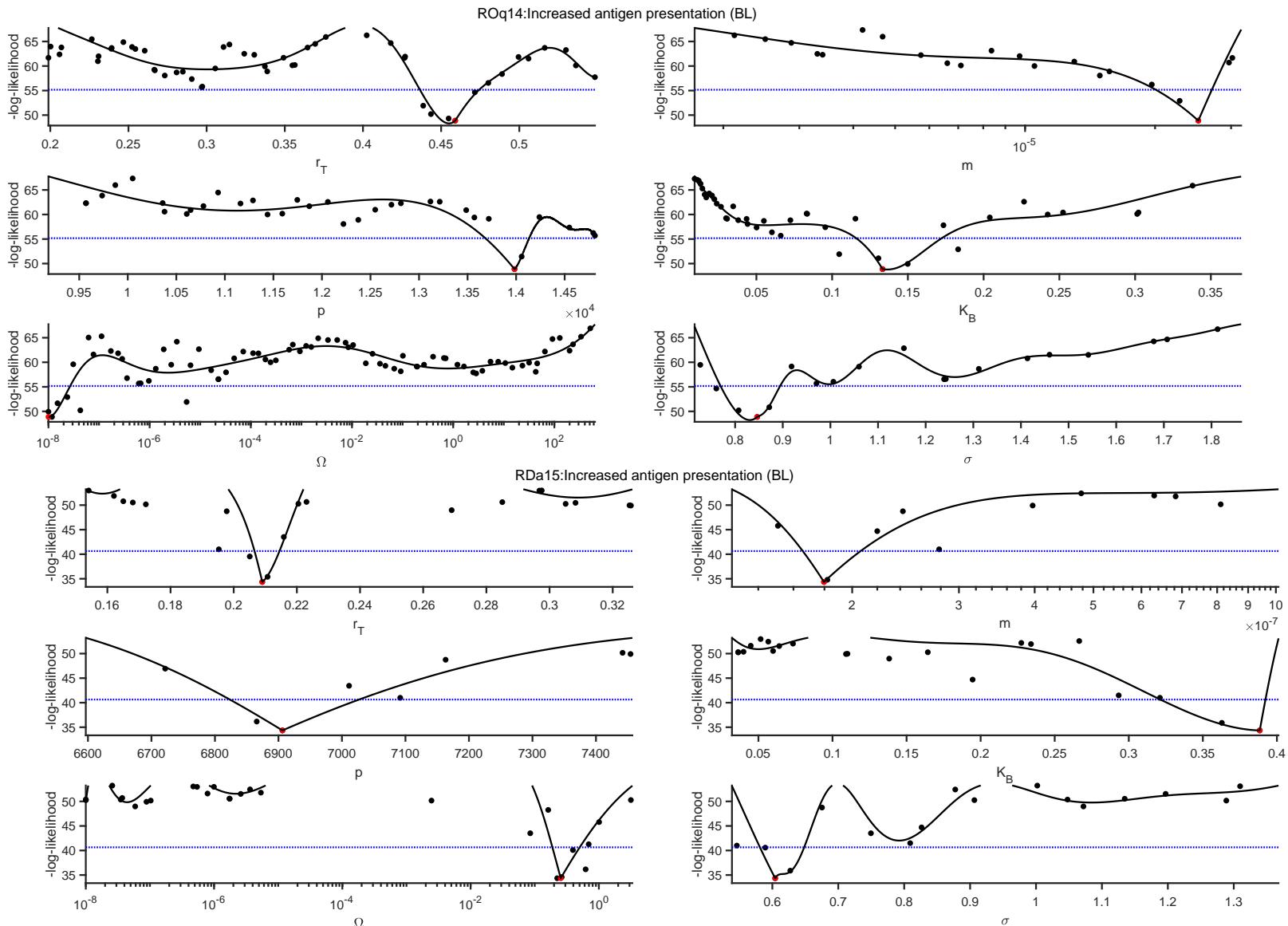
ROo13:Protection (APCS)

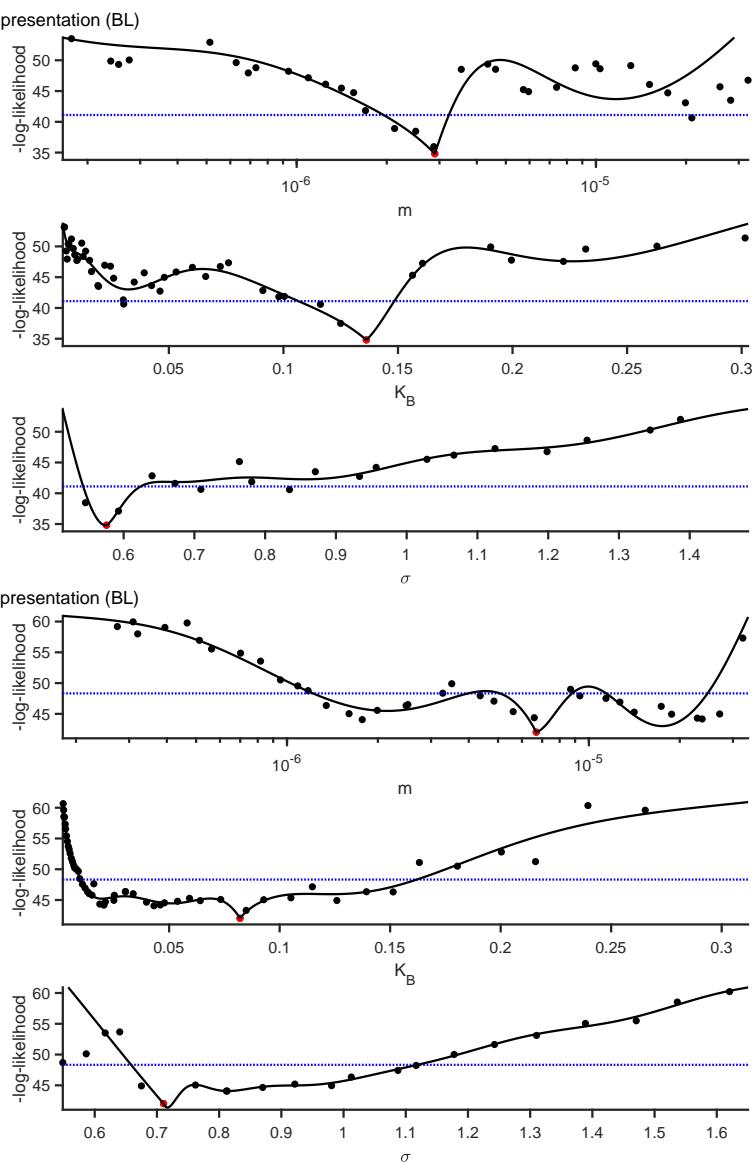
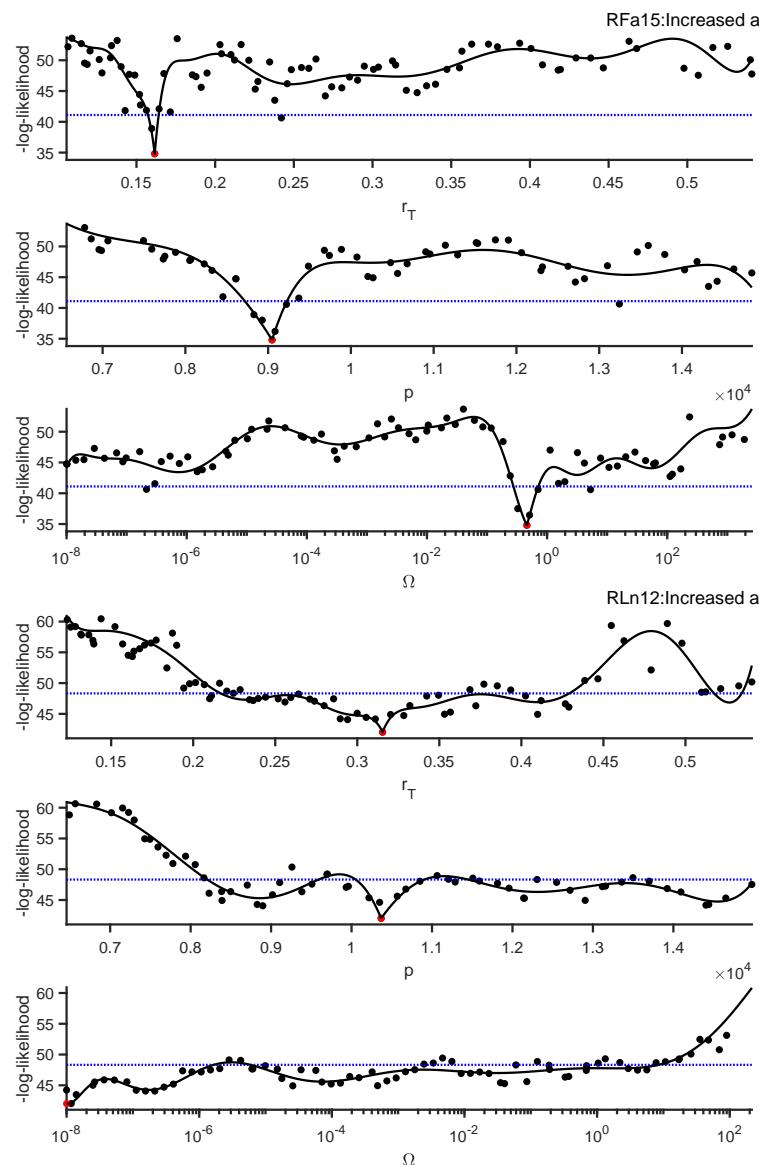


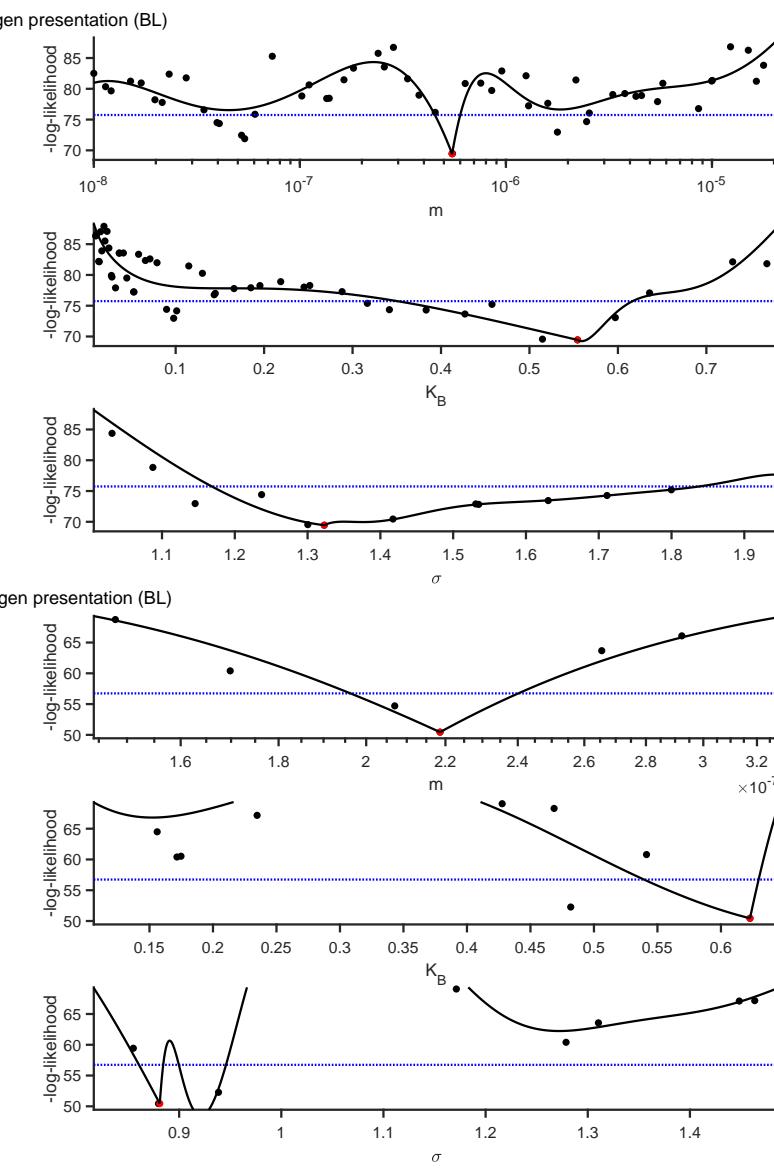
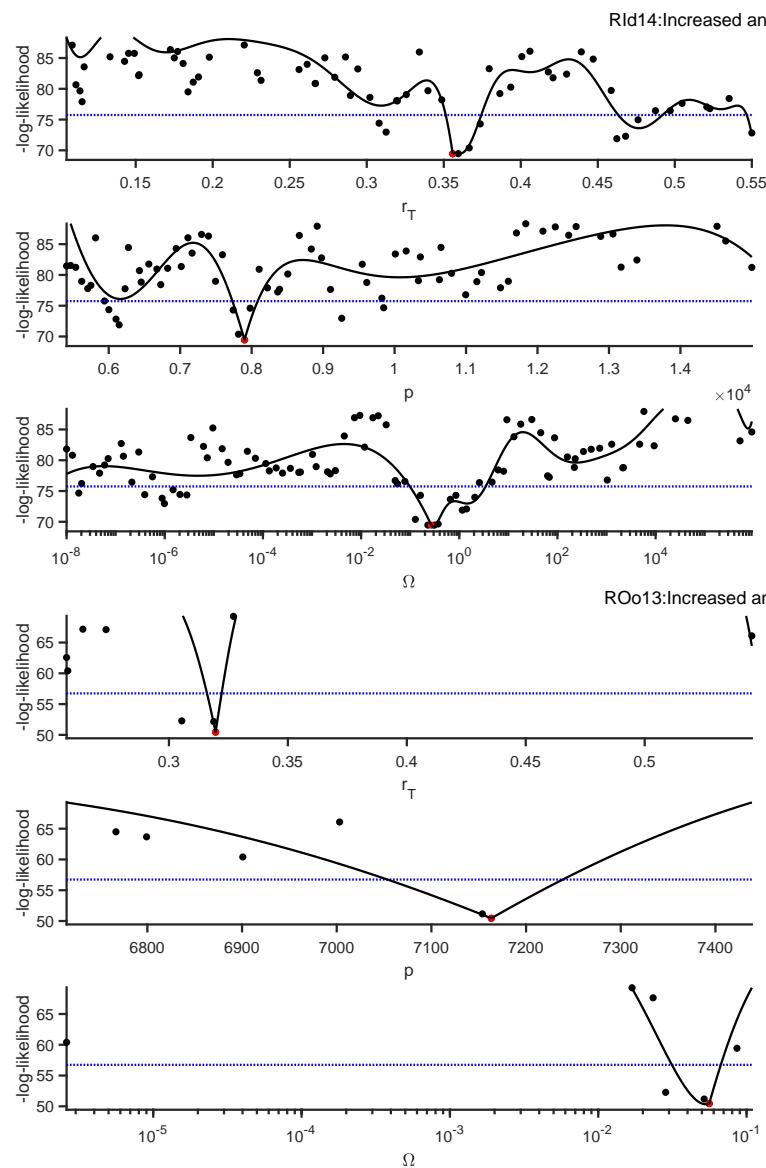


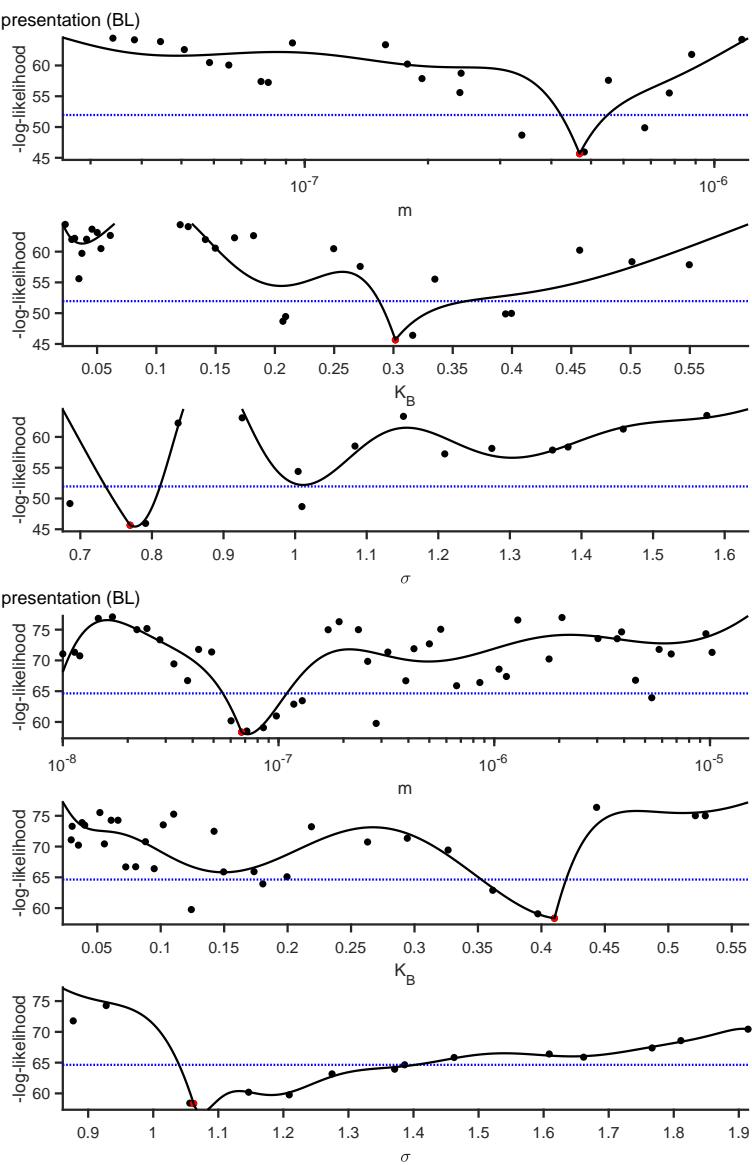
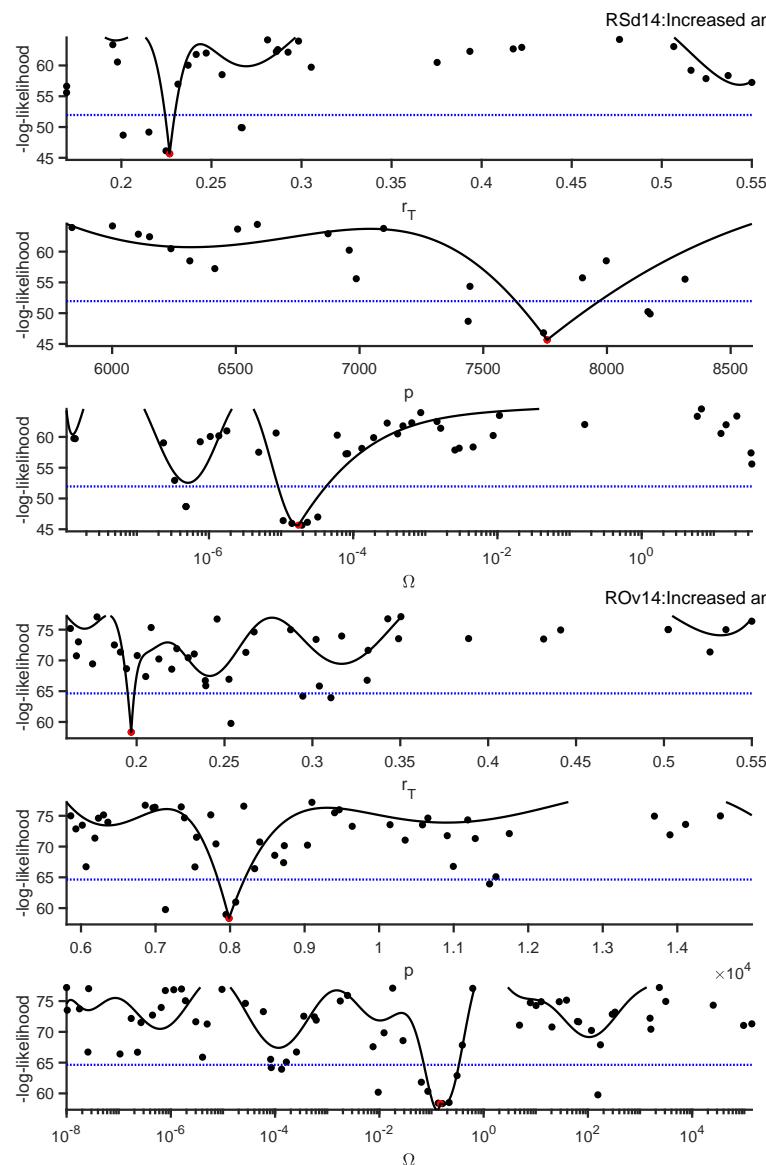
# 9 Likelihood profiles: Increased antigen presentation

## 9.1 Baseline effector cell source model

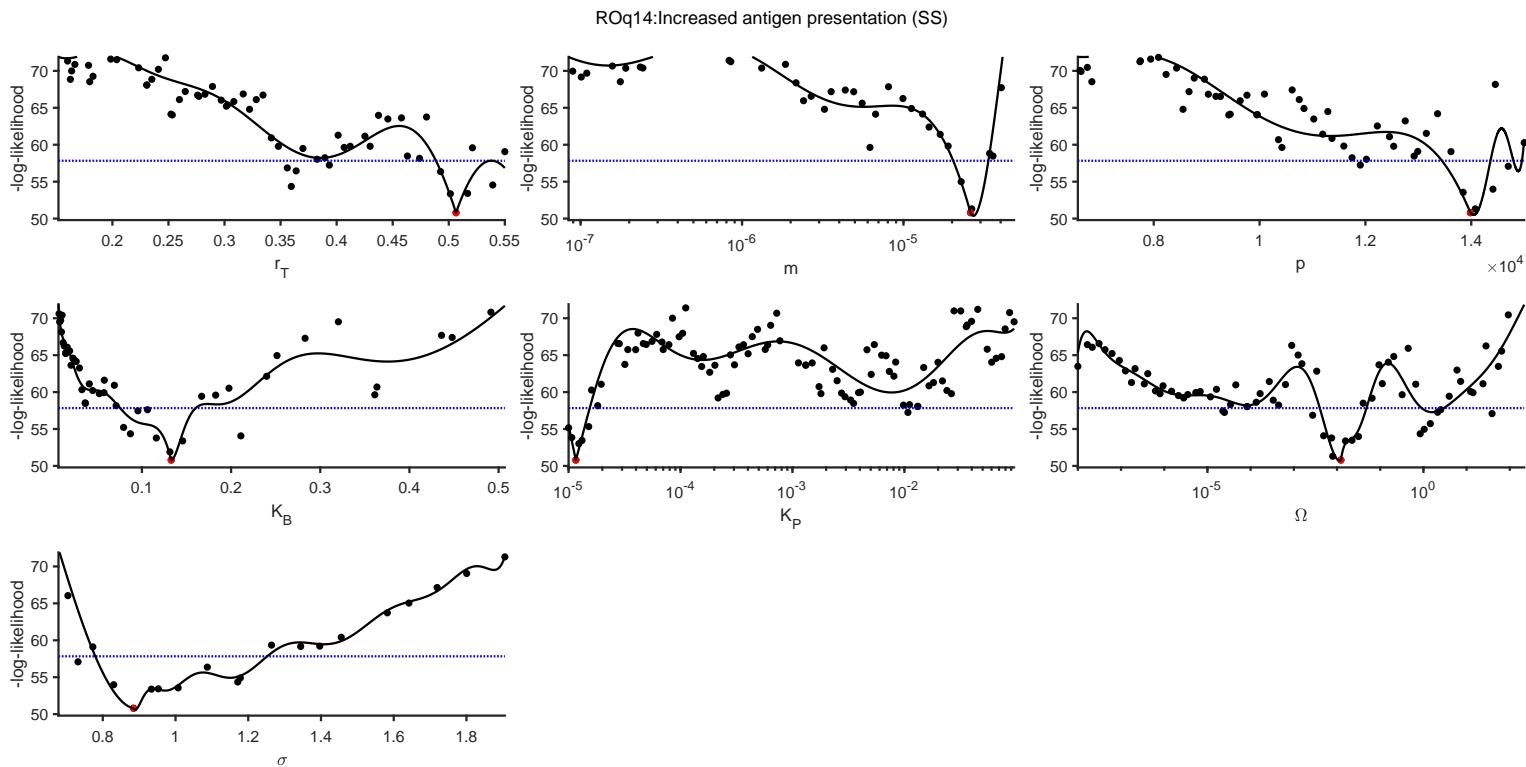


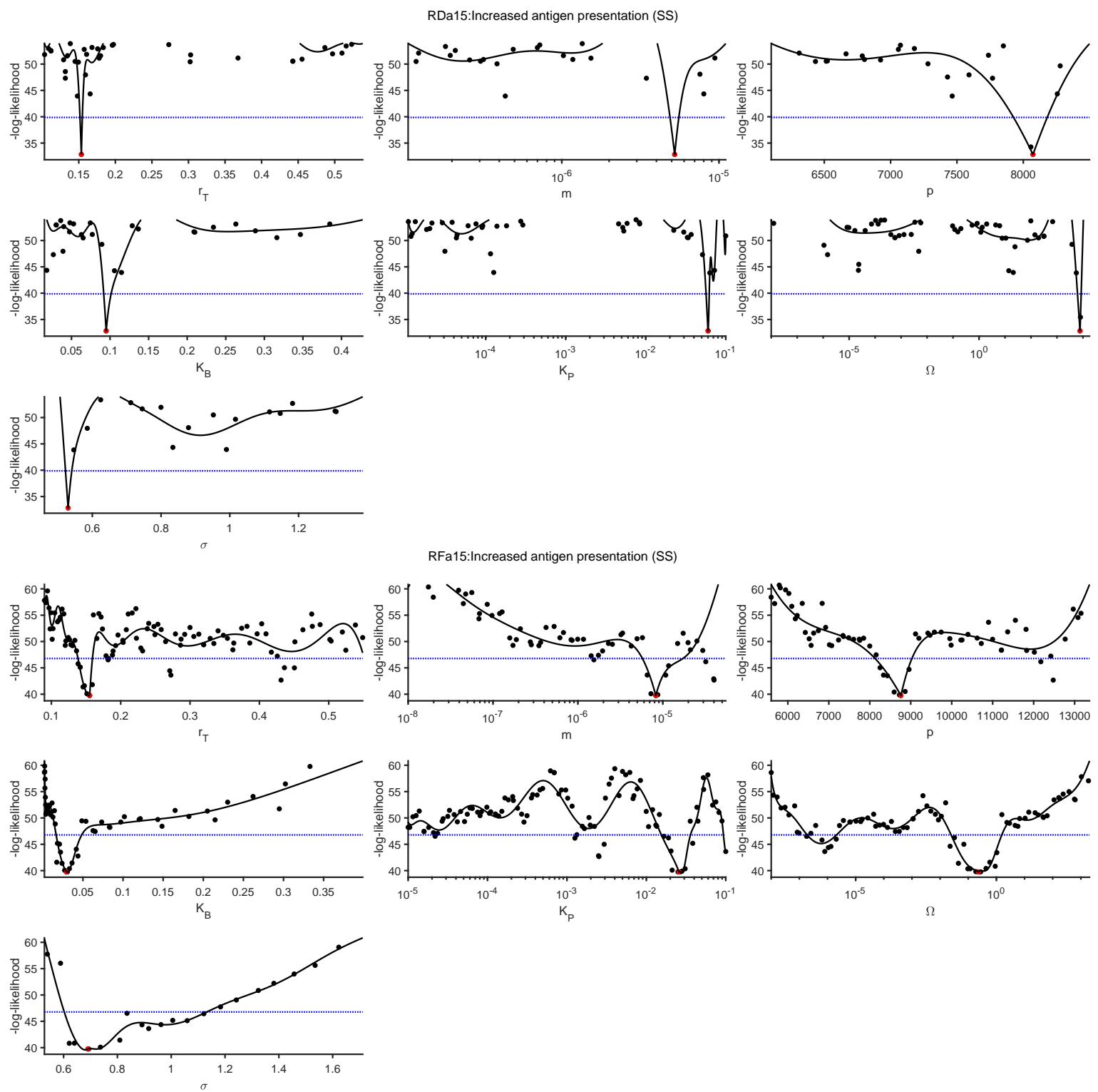




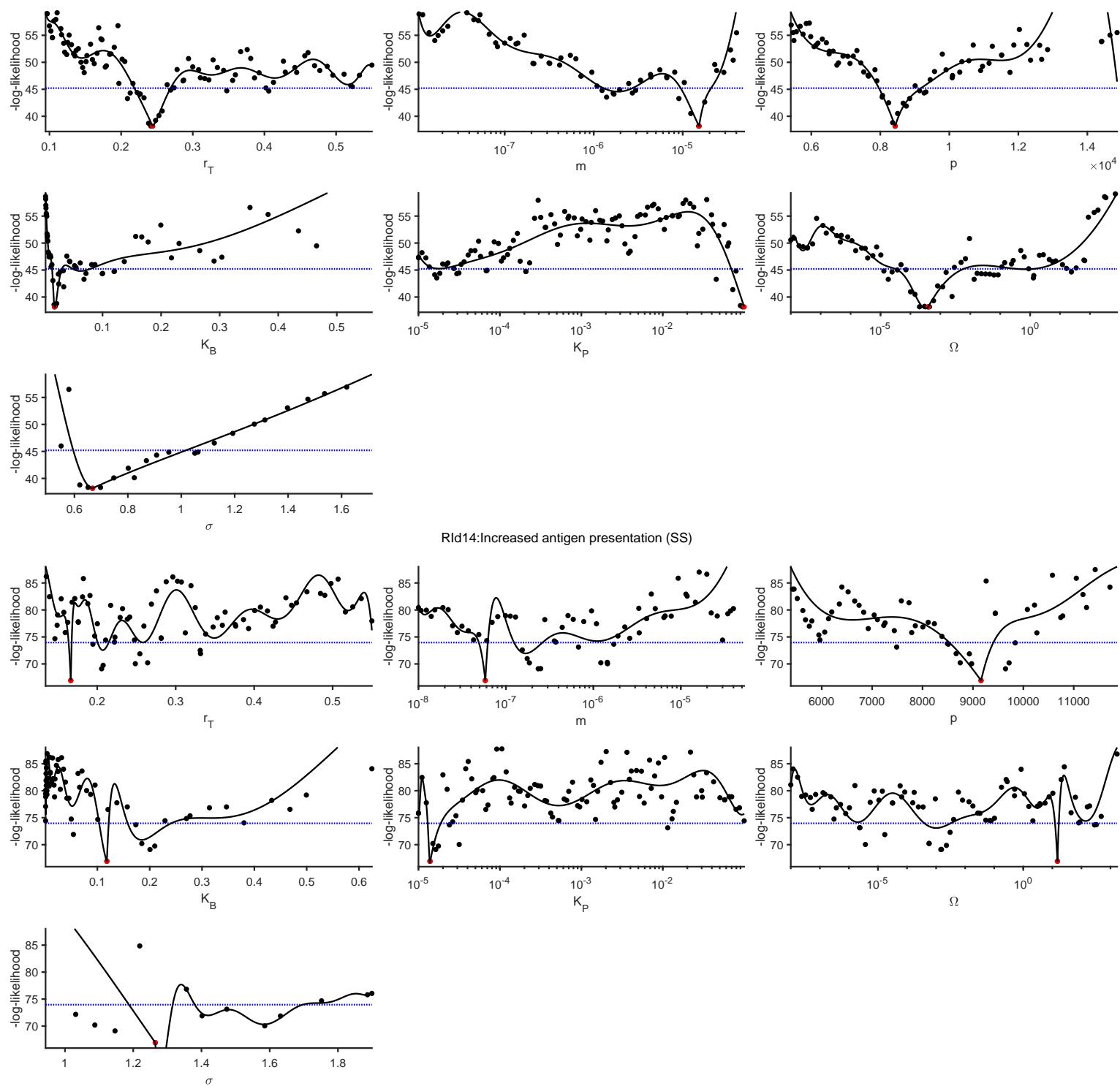


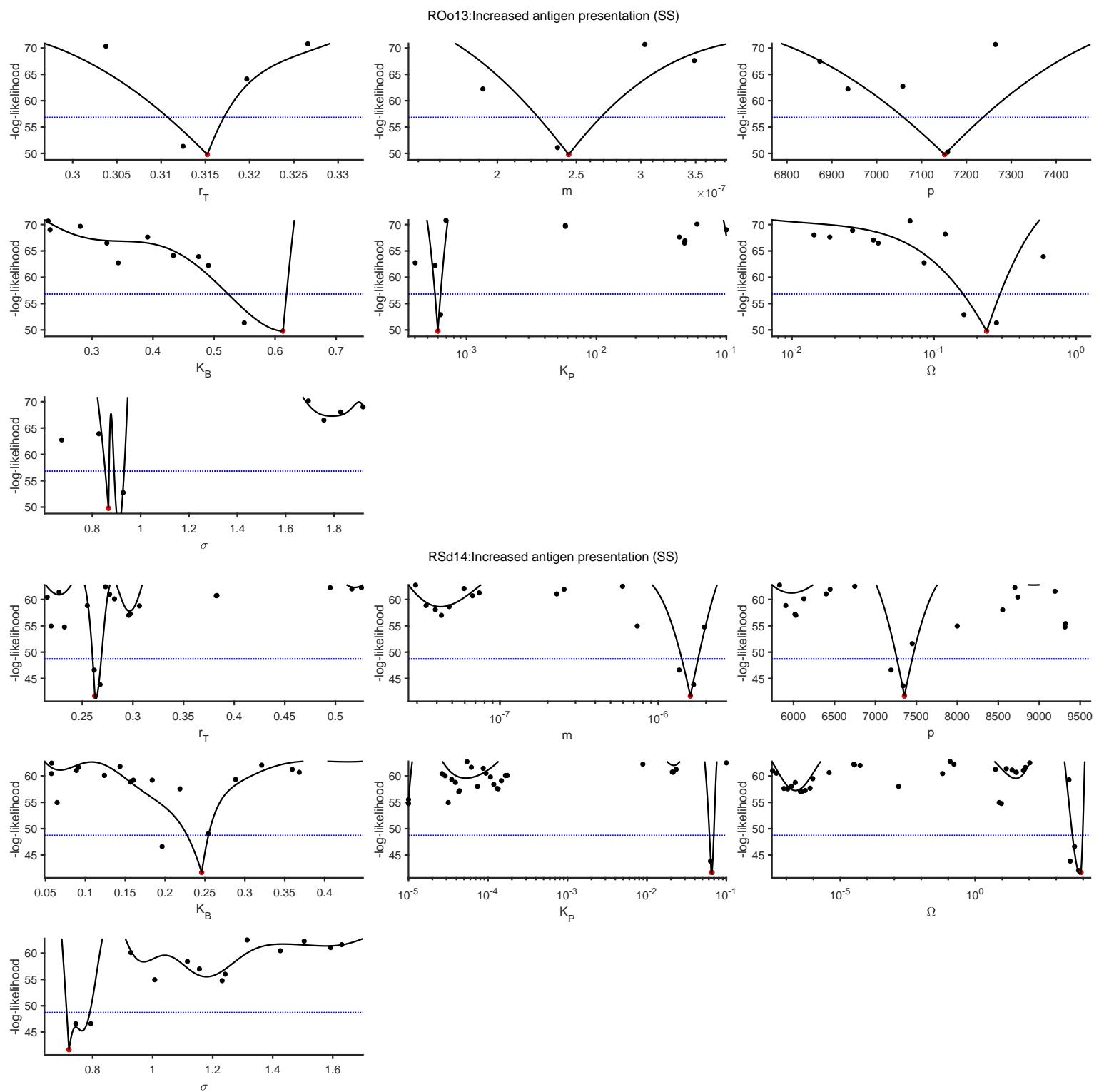
## 9.2 Saturated effector cell source model

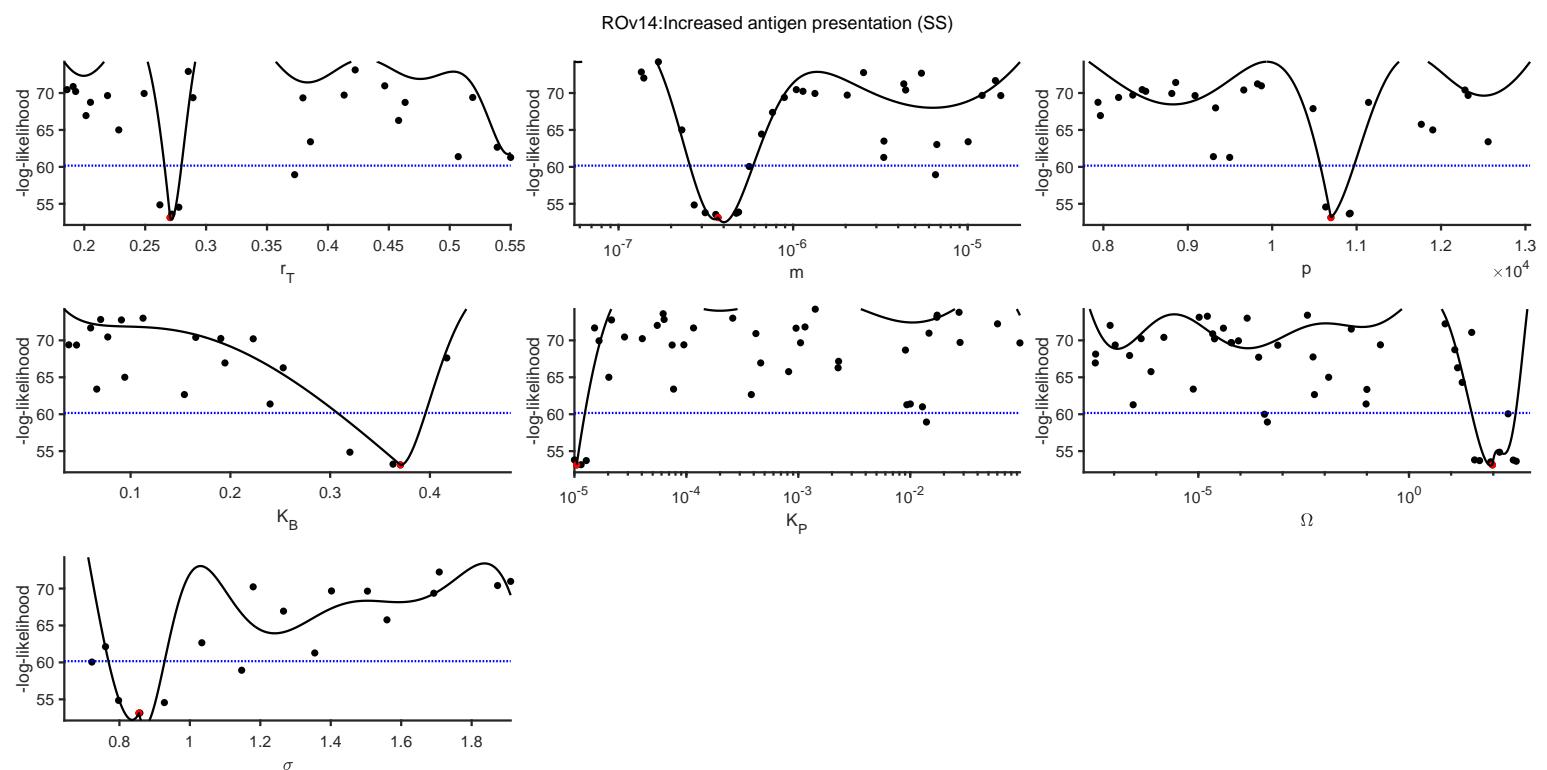




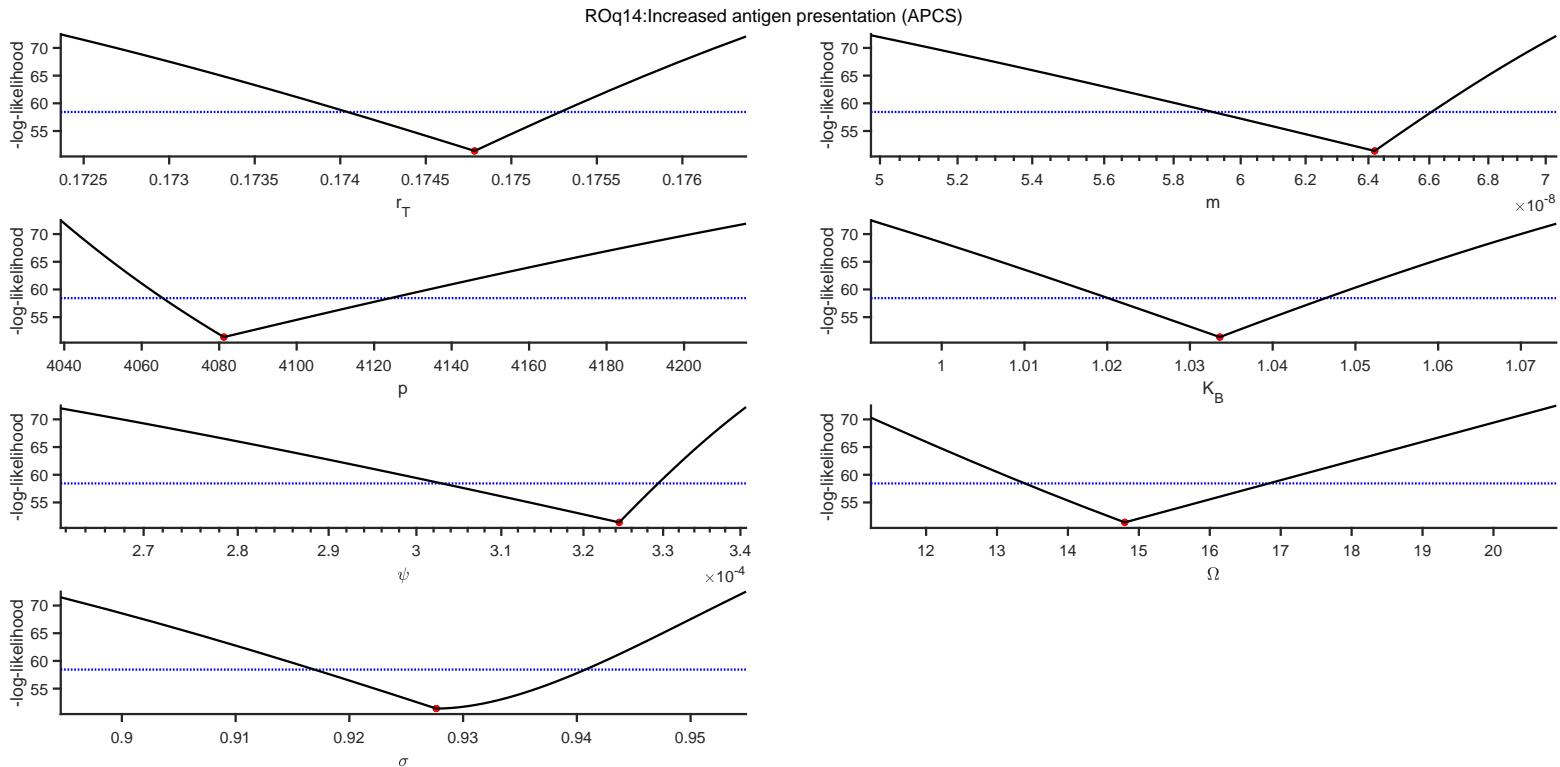
RLn12:Increased antigen presentation (SS)

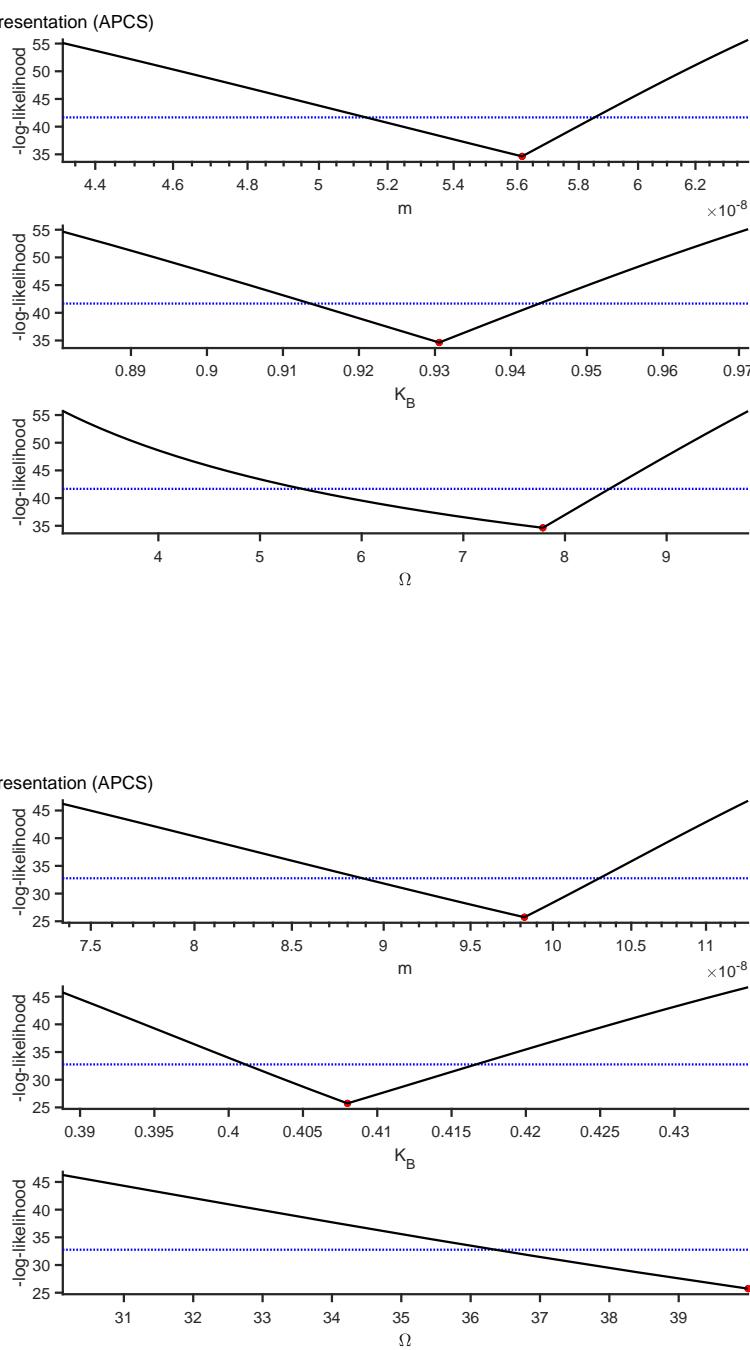
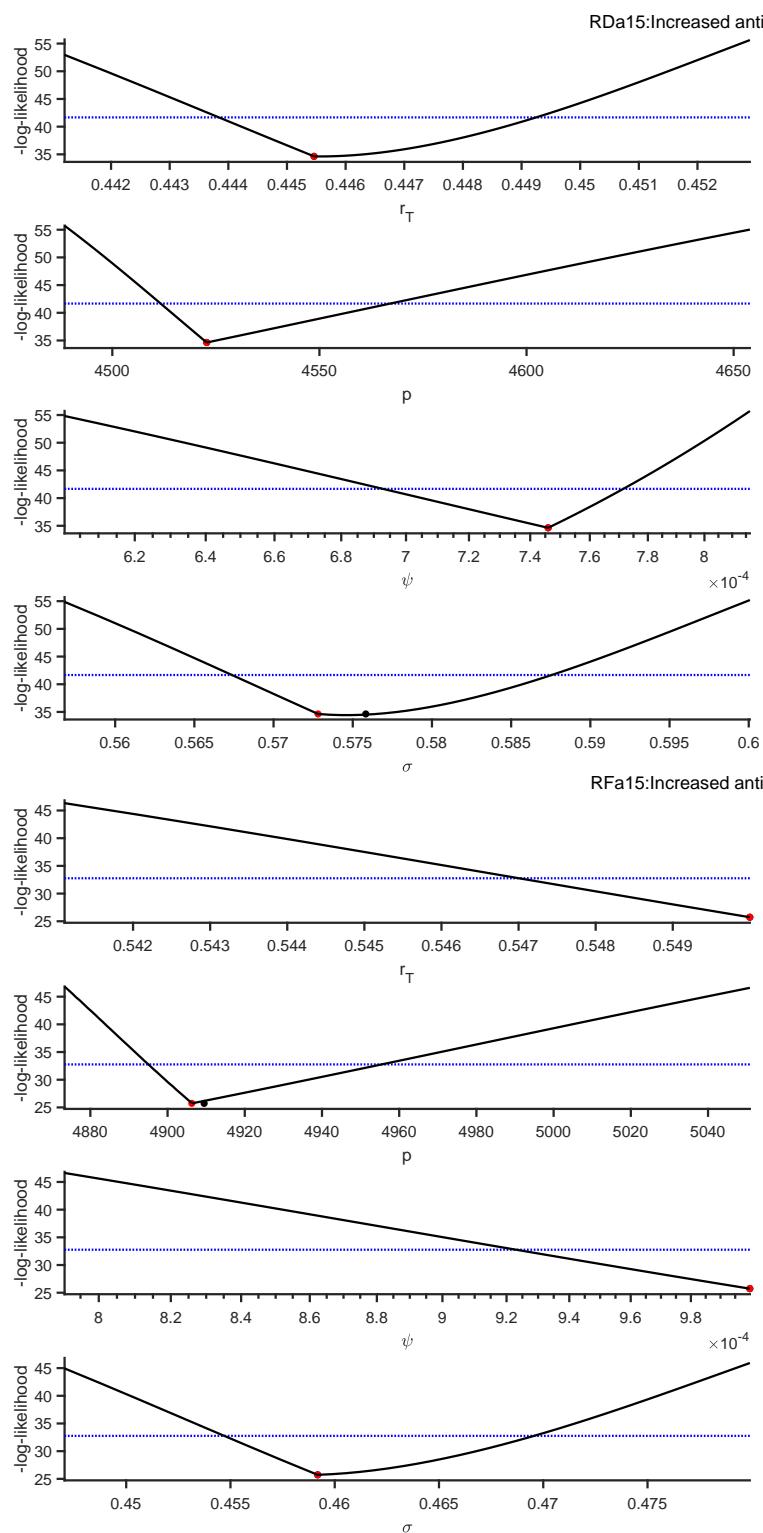


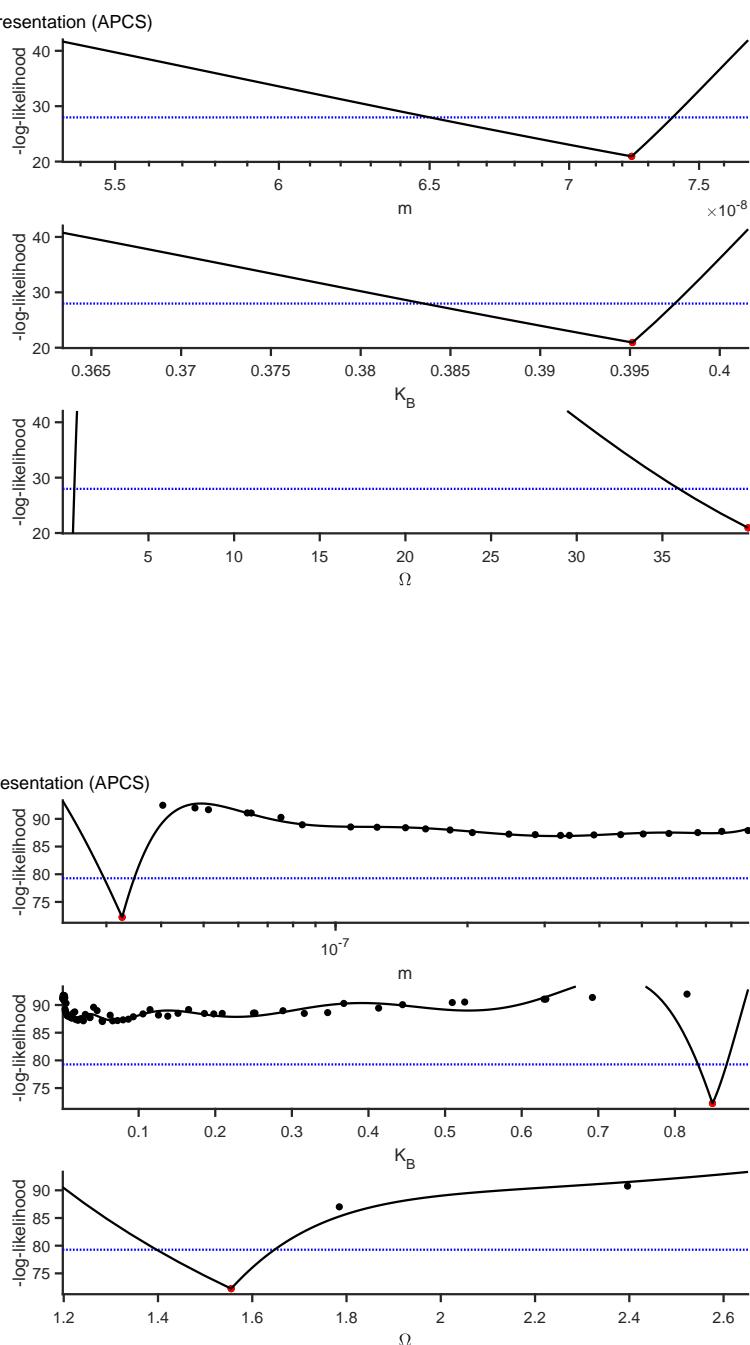
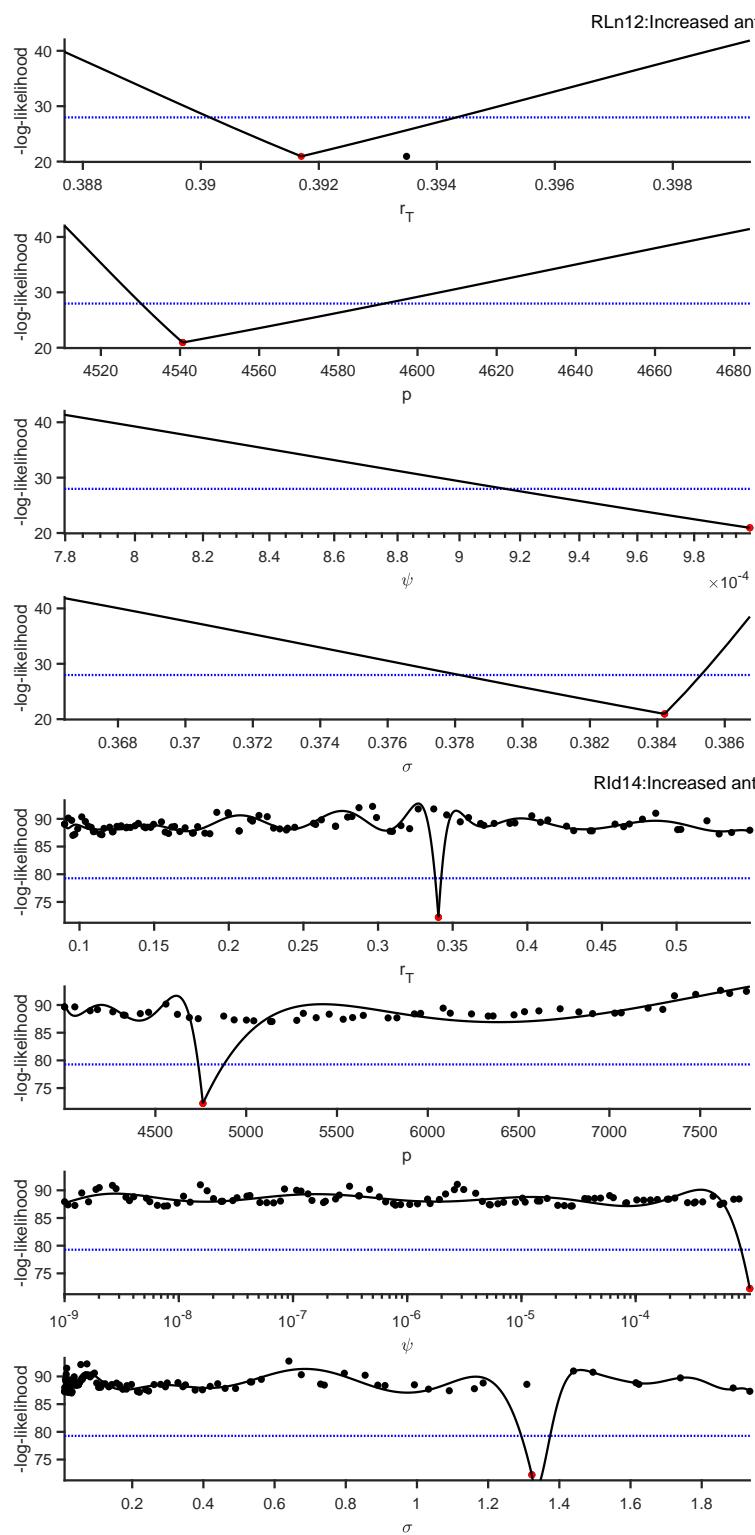


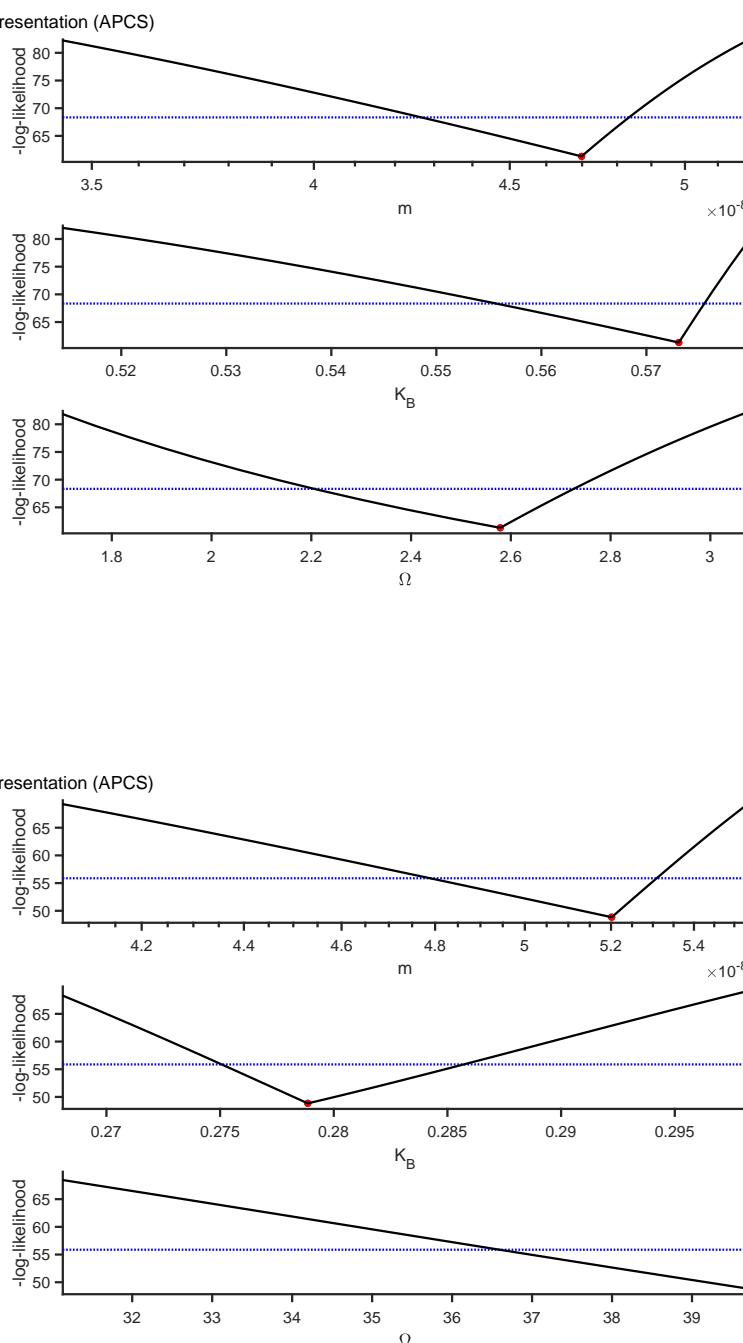
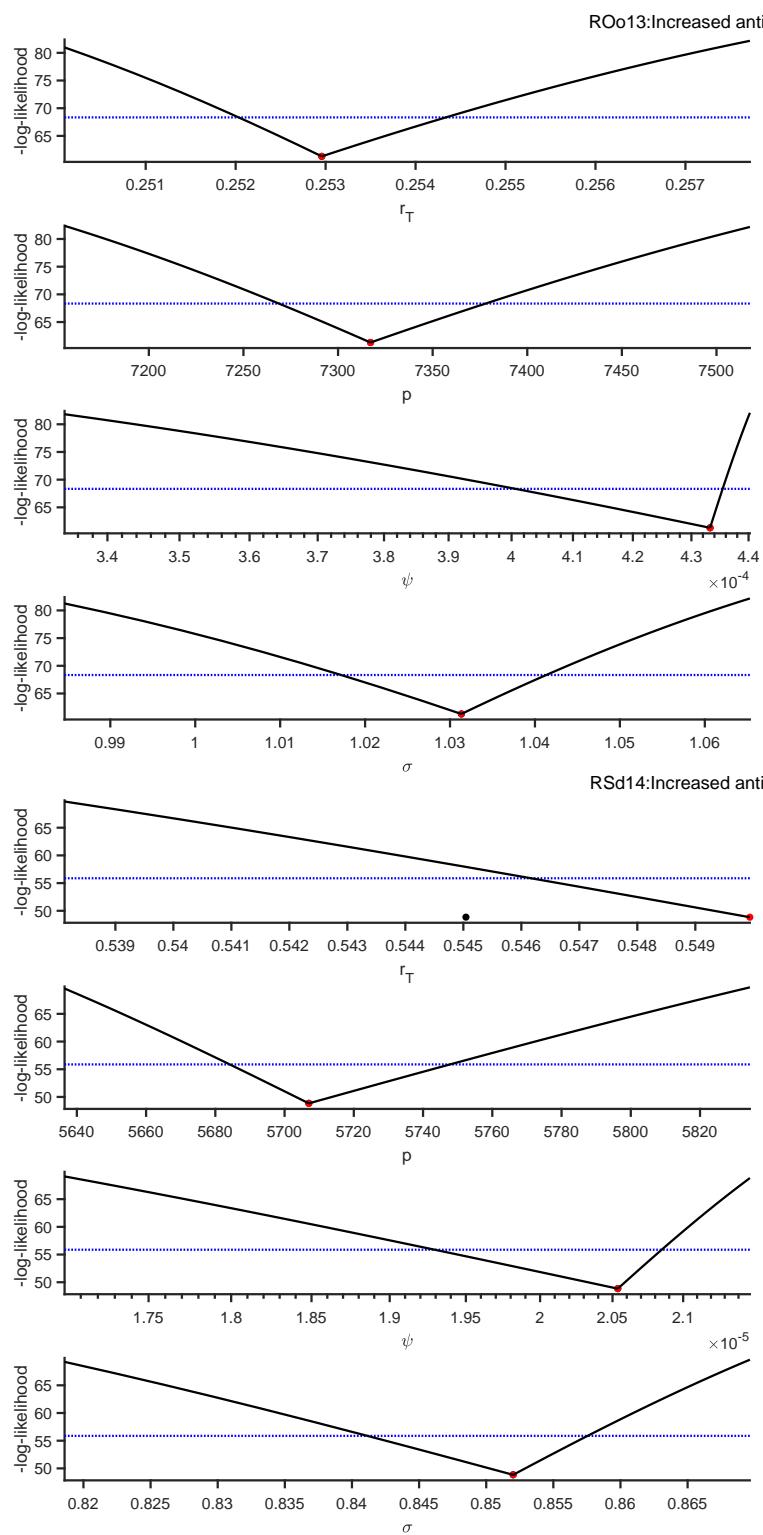


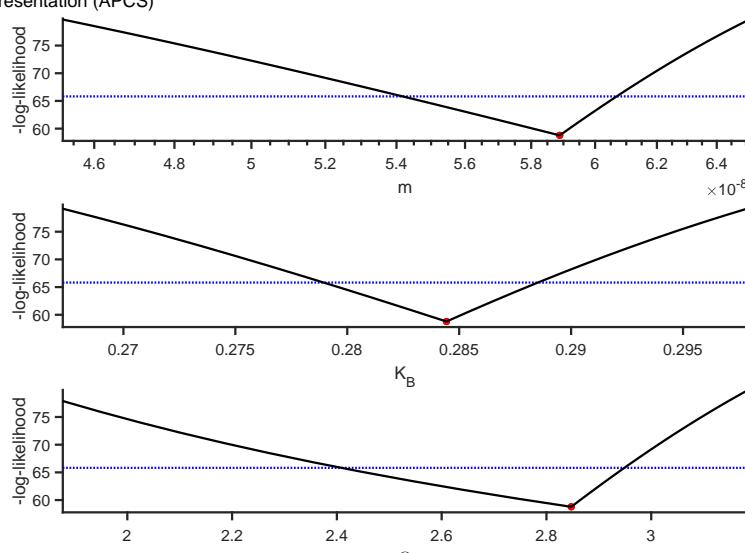
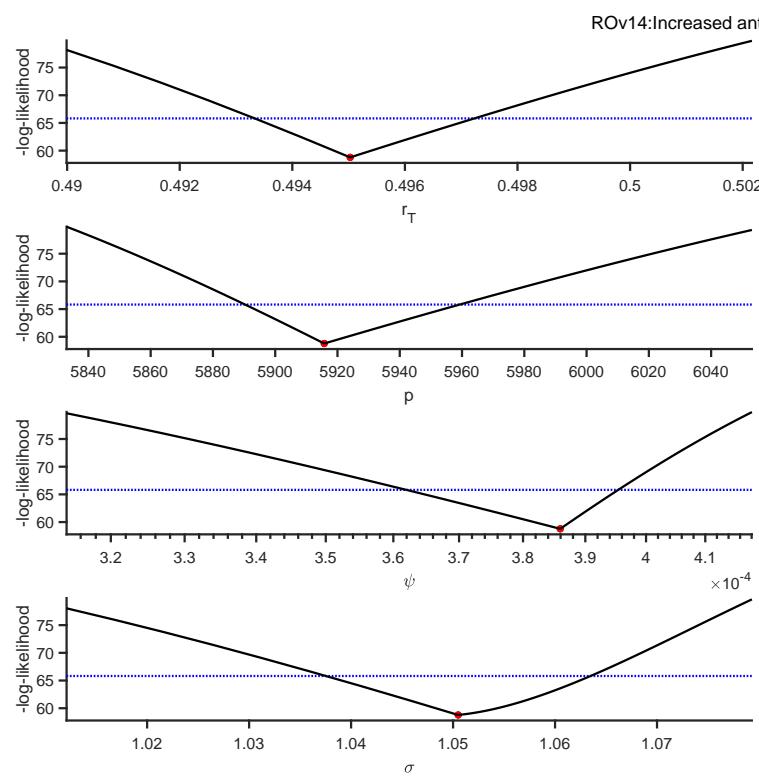
### 9.3 Antigen presenting cell effector cell source model





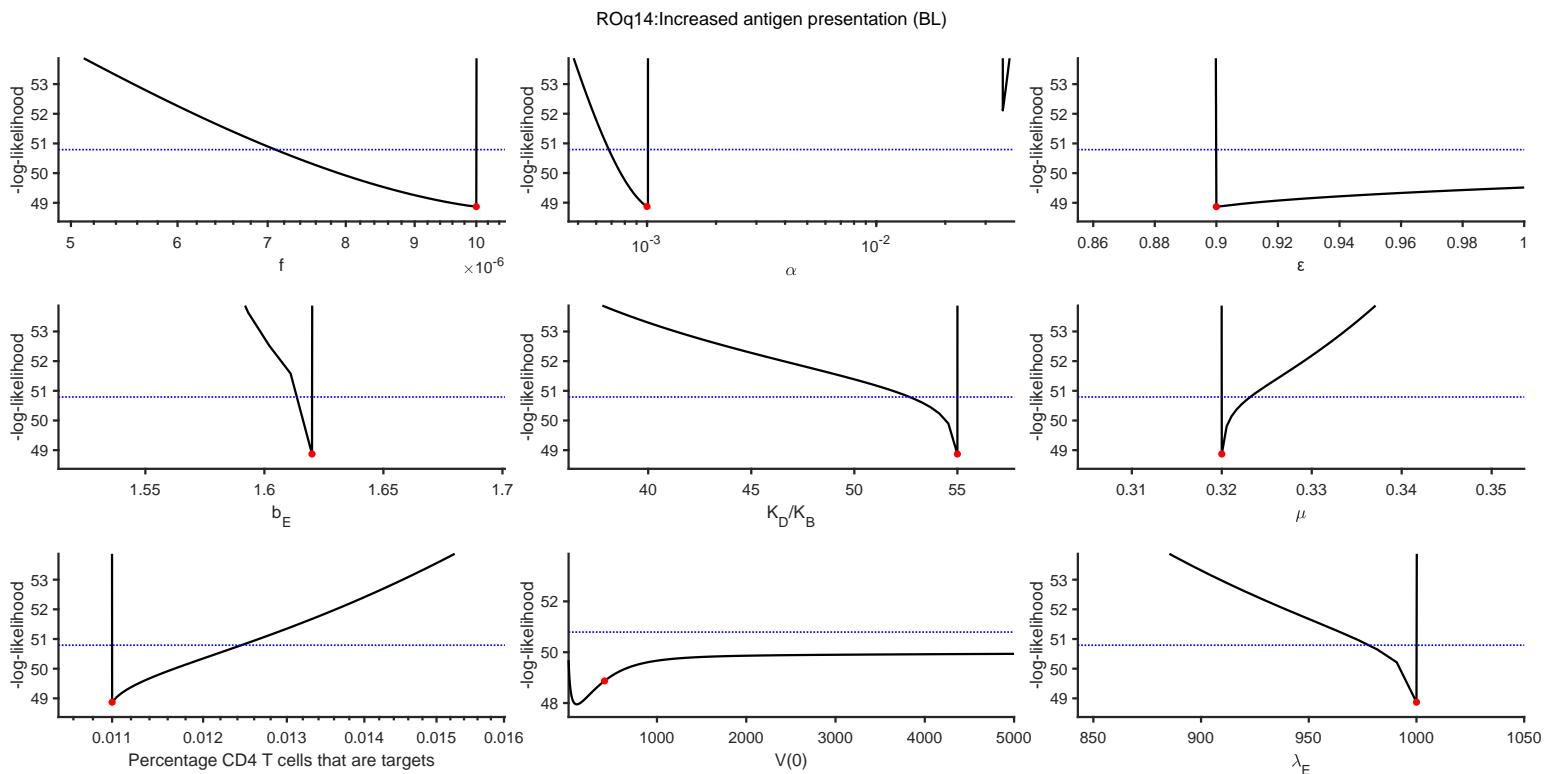




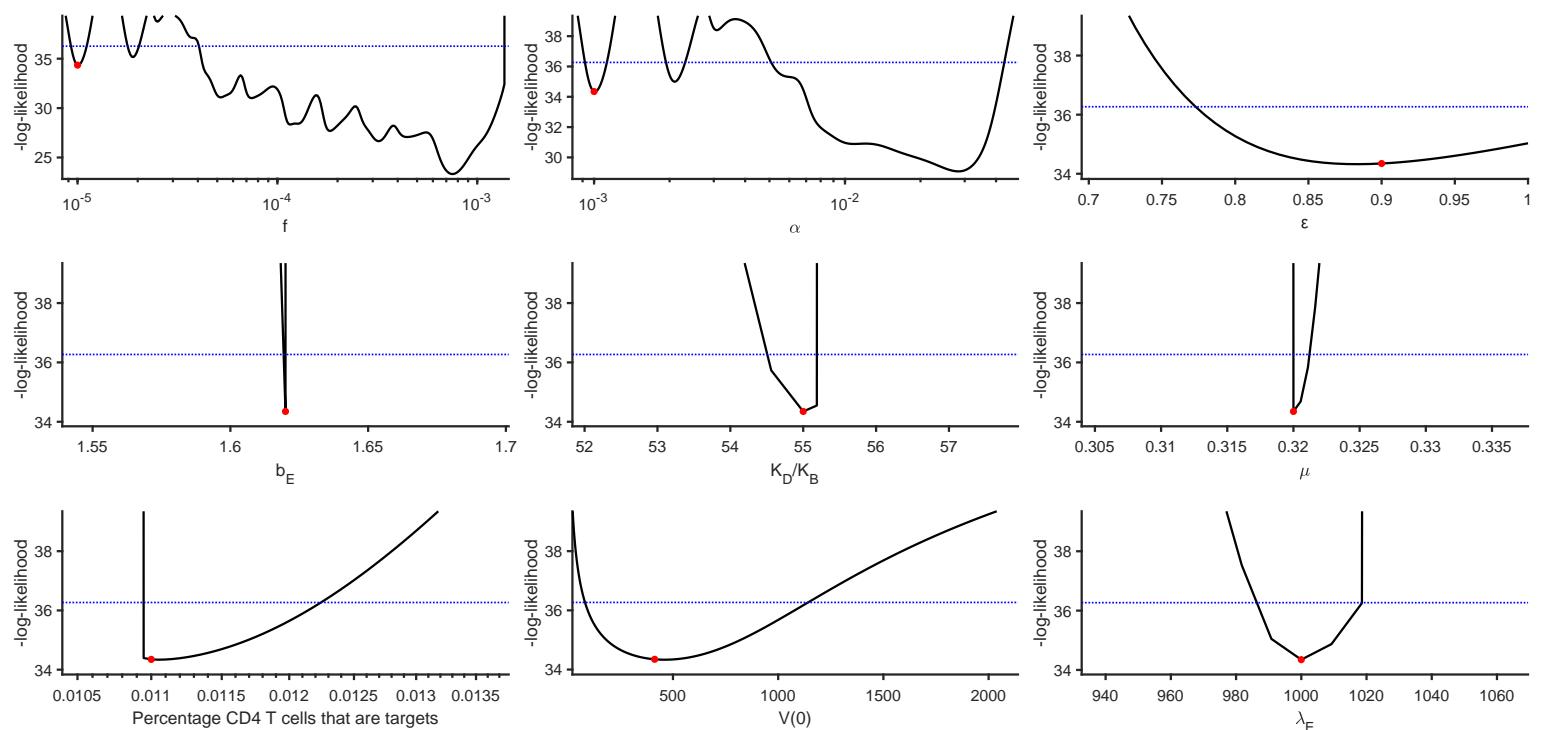


# 10 Sensitivity analysis: Increased antigen presentation

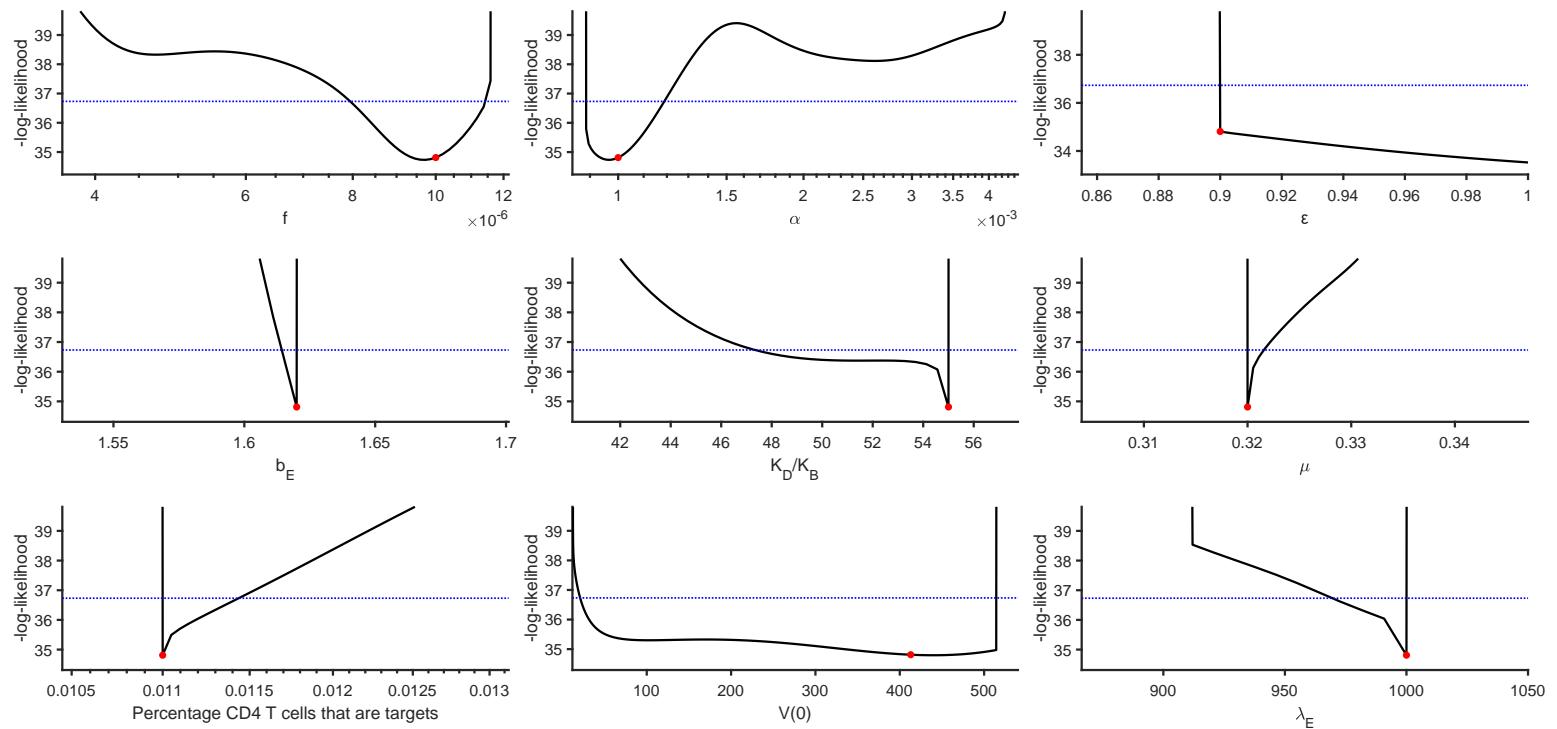
## 10.1 Baseline effector cell source model



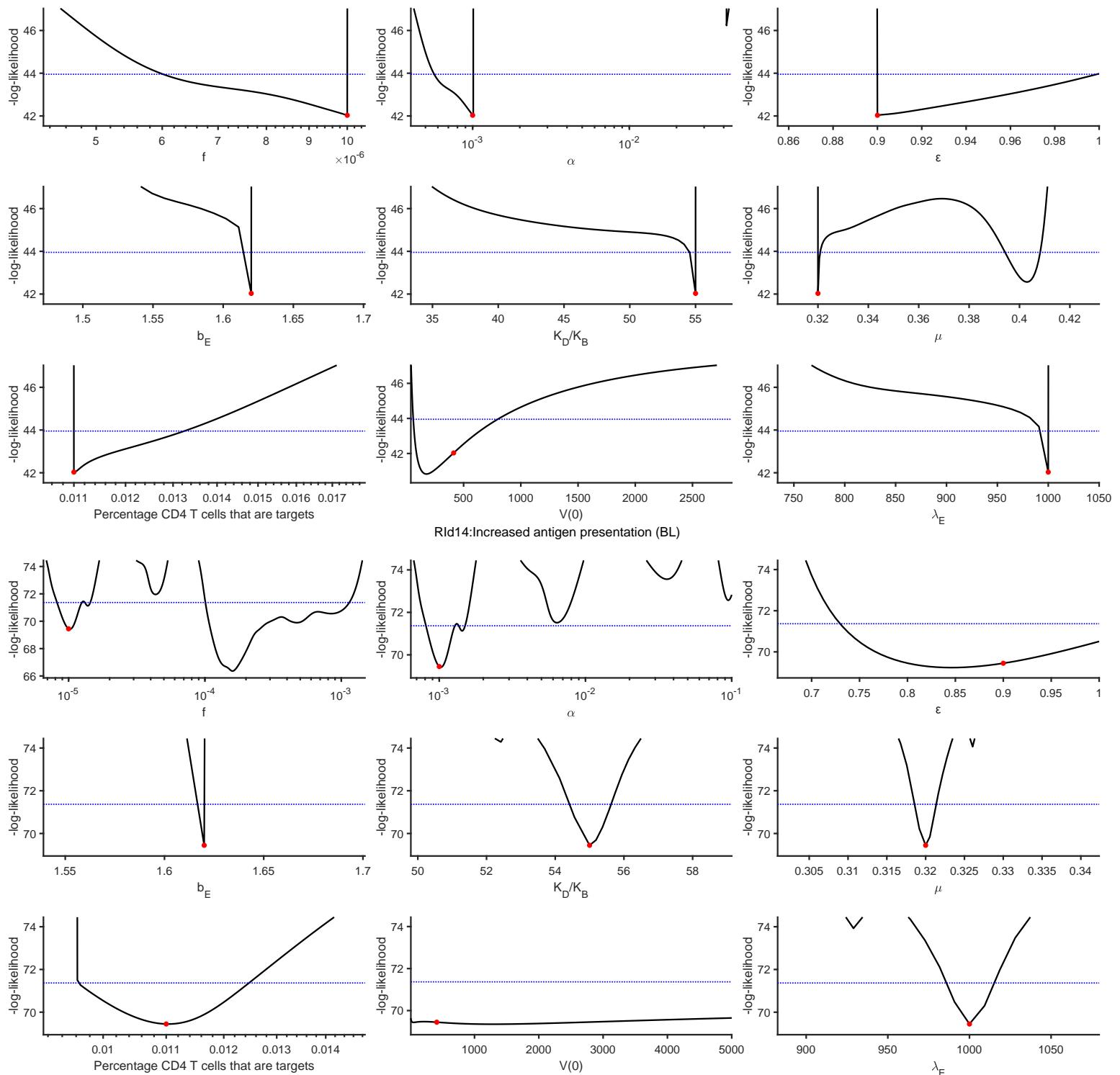
RDa15:Increased antigen presentation (BL)



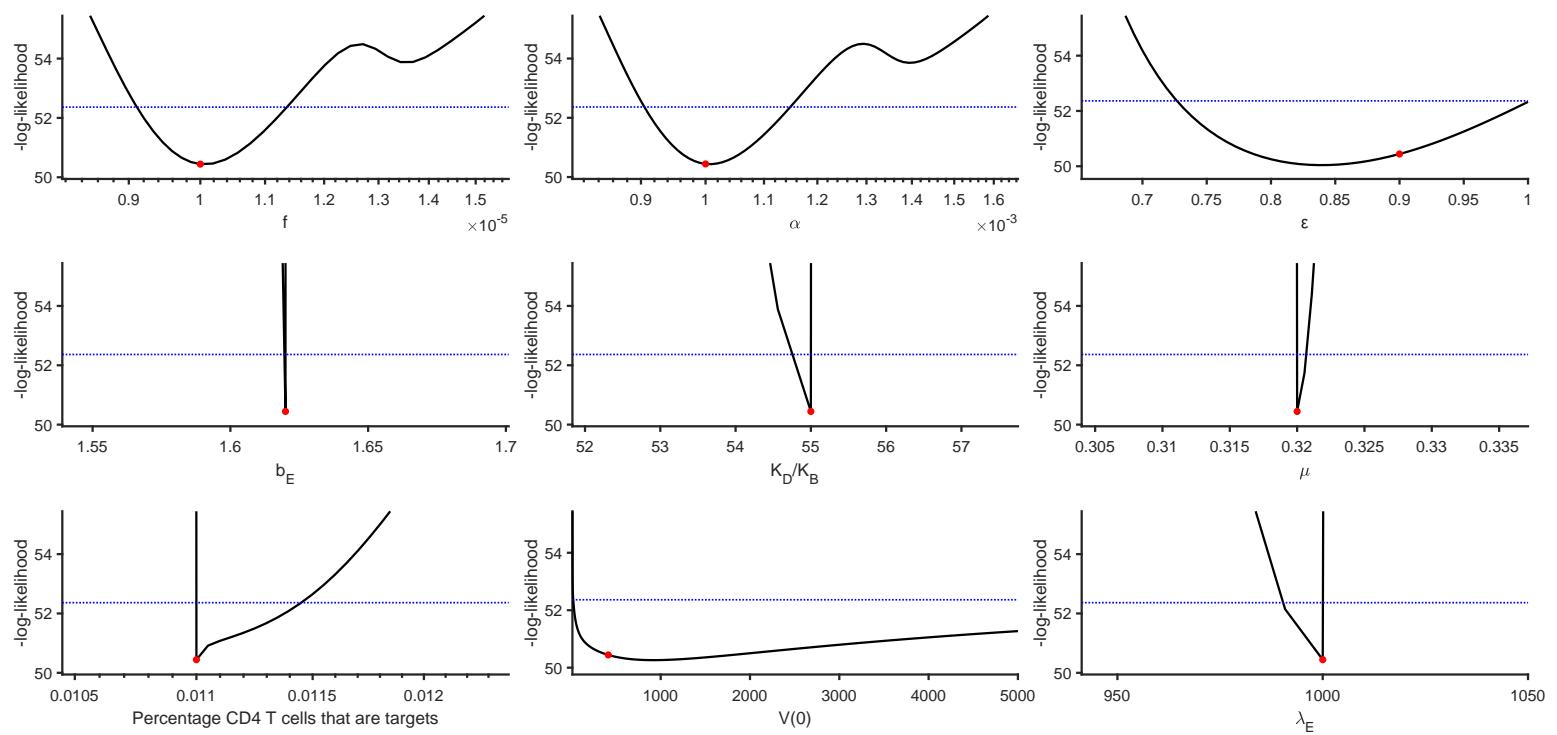
RFa15:Increased antigen presentation (BL)



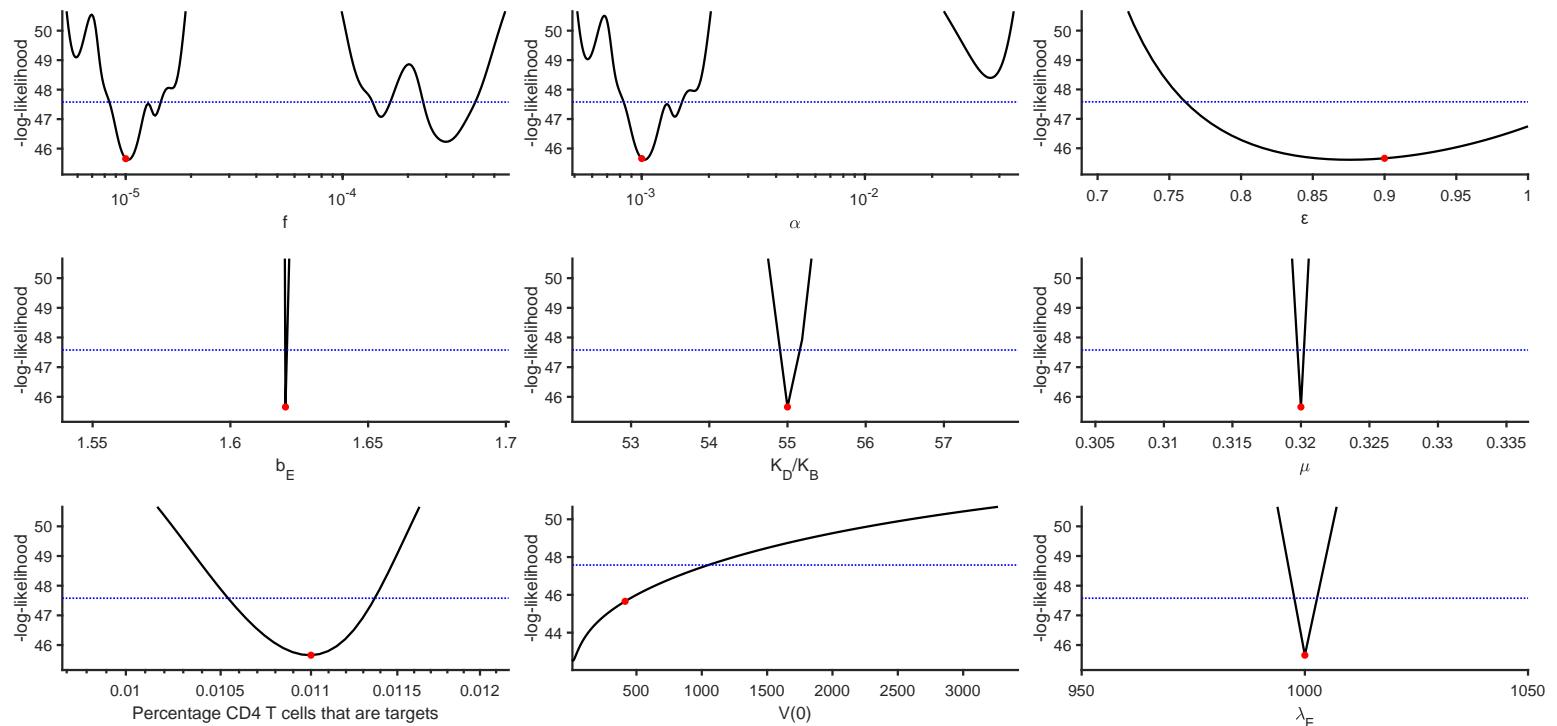
RLn12:Increased antigen presentation (BL)



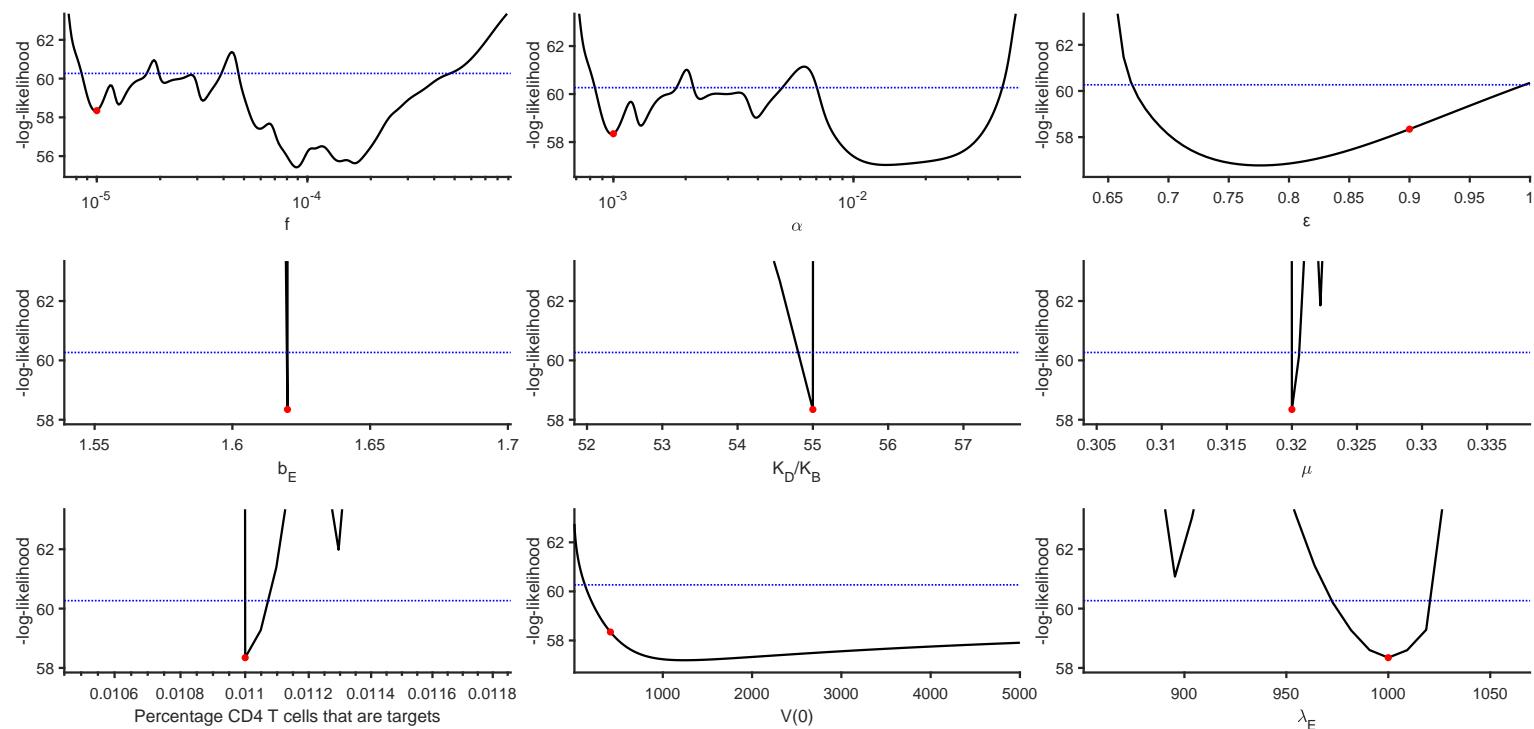
ROo13:Increased antigen presentation (BL)



RSd14:Increased antigen presentation (BL)

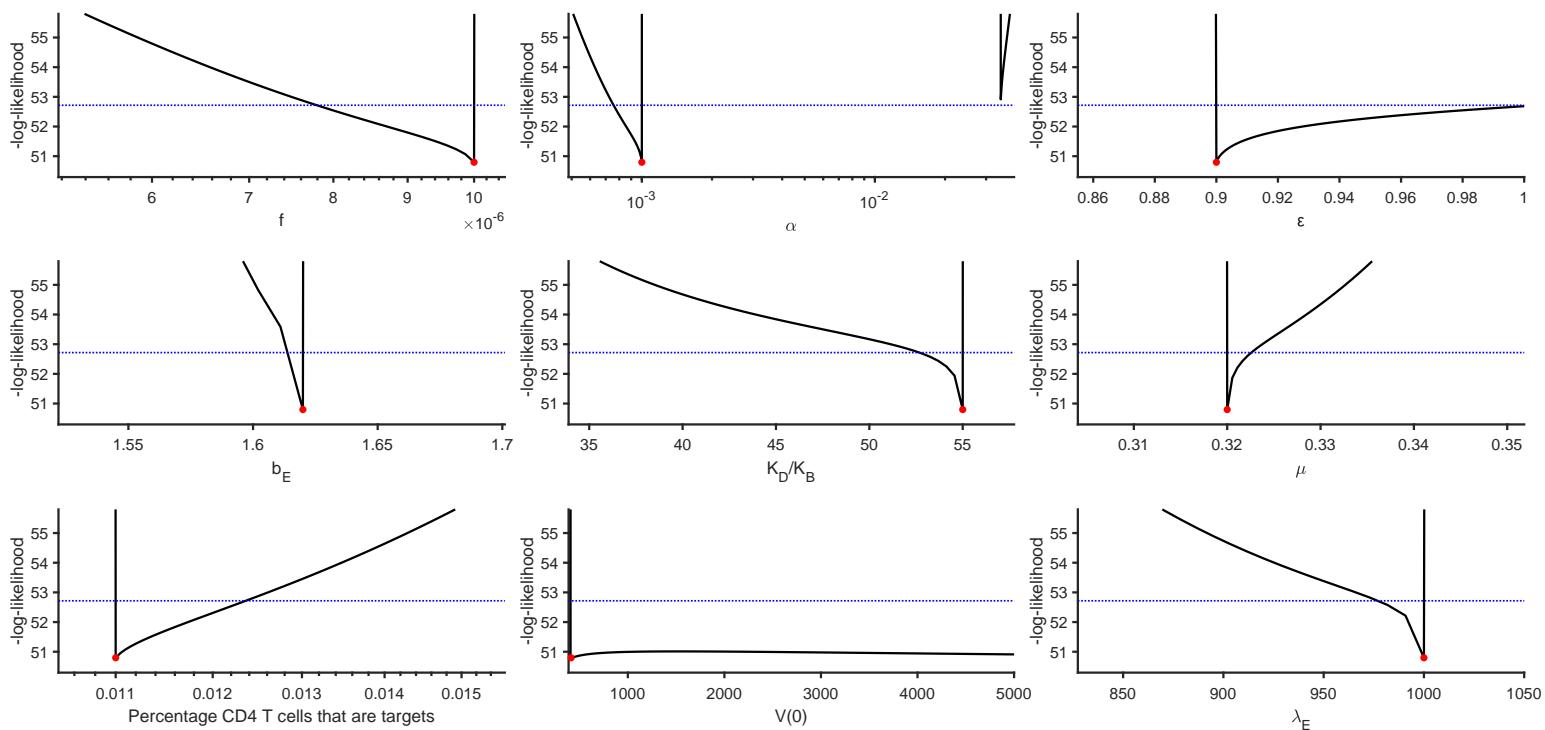


ROv14:Increased antigen presentation (BL)

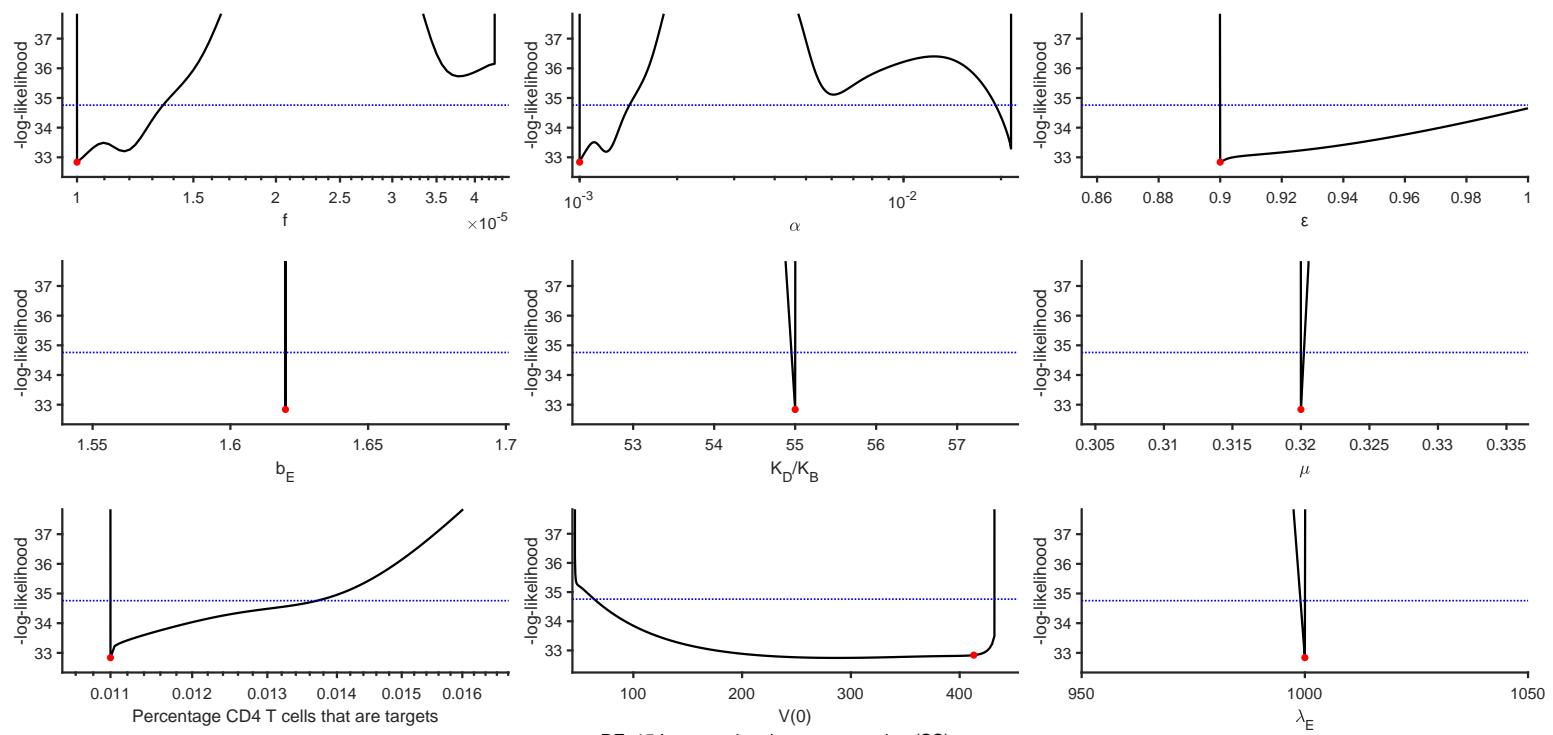


## 10.2 Saturated effector cell source model

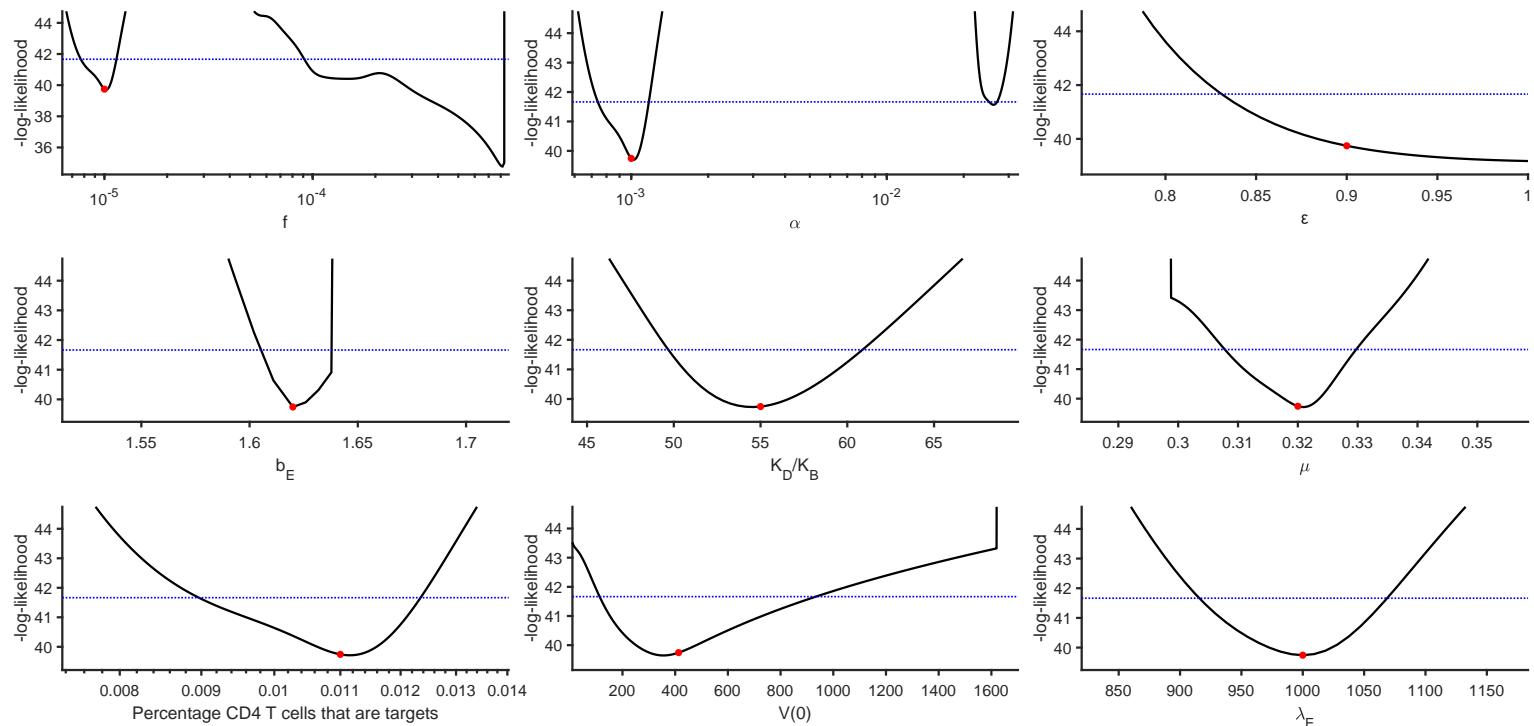
ROq14:Increased antigen presentation (SS)



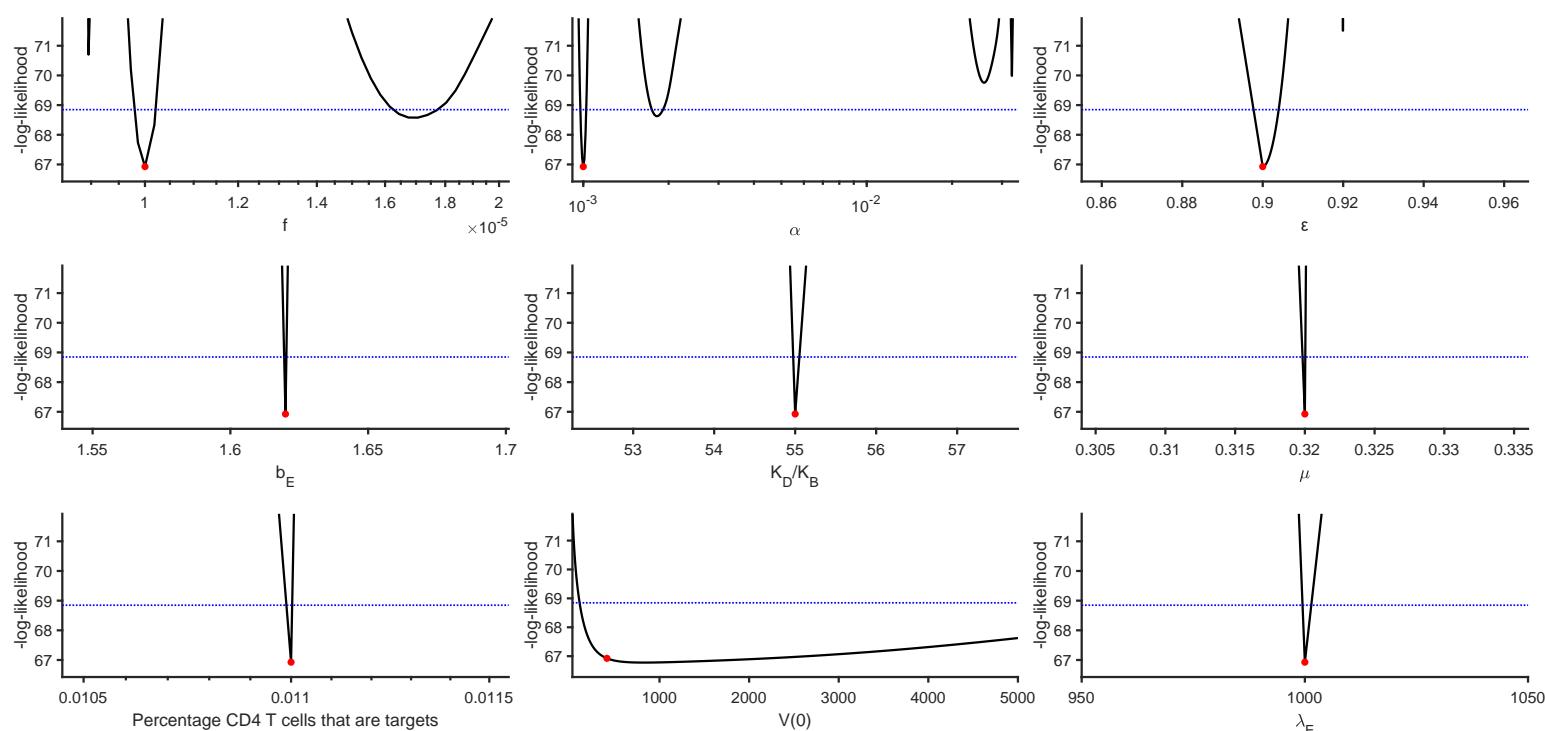
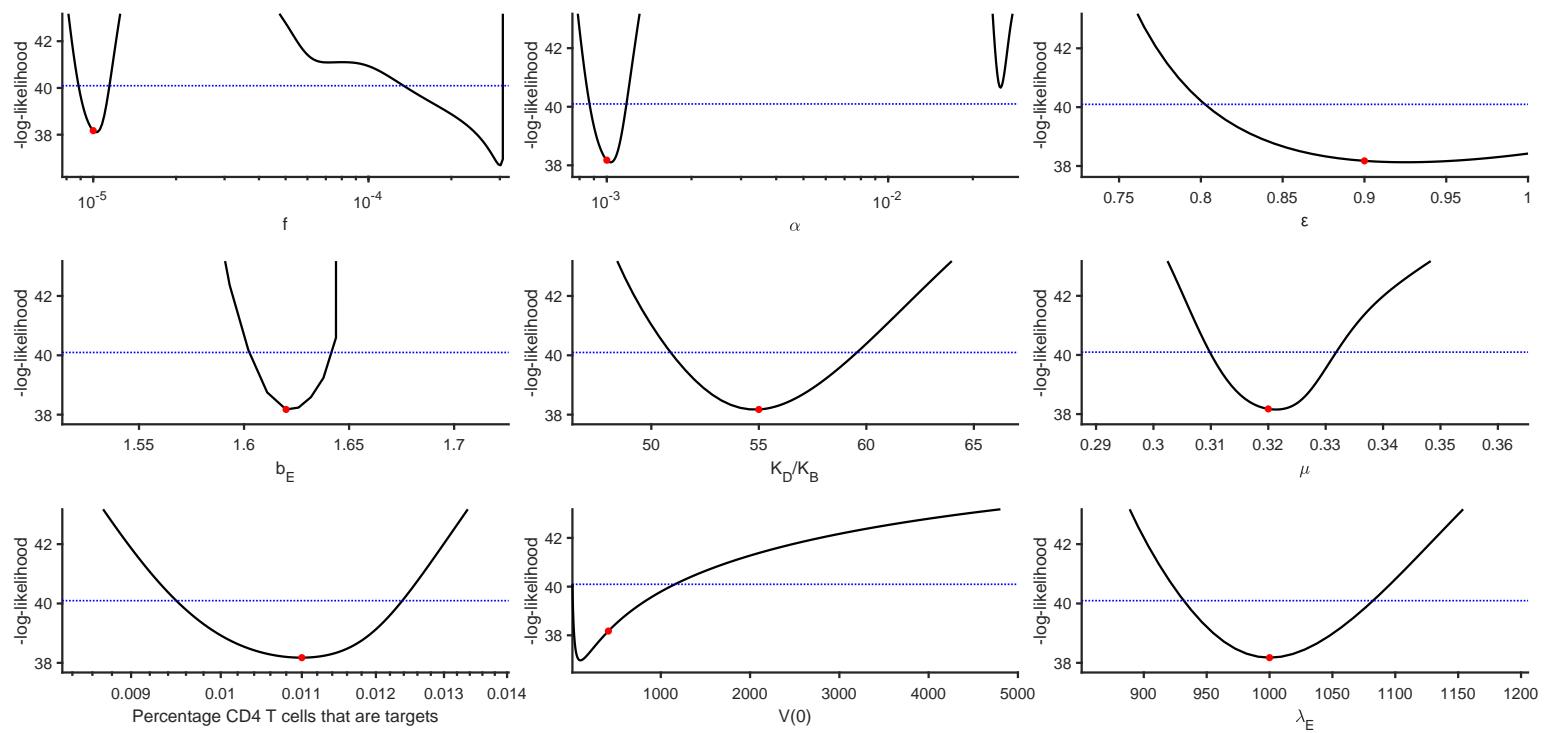
RDa15:Increased antigen presentation (SS)



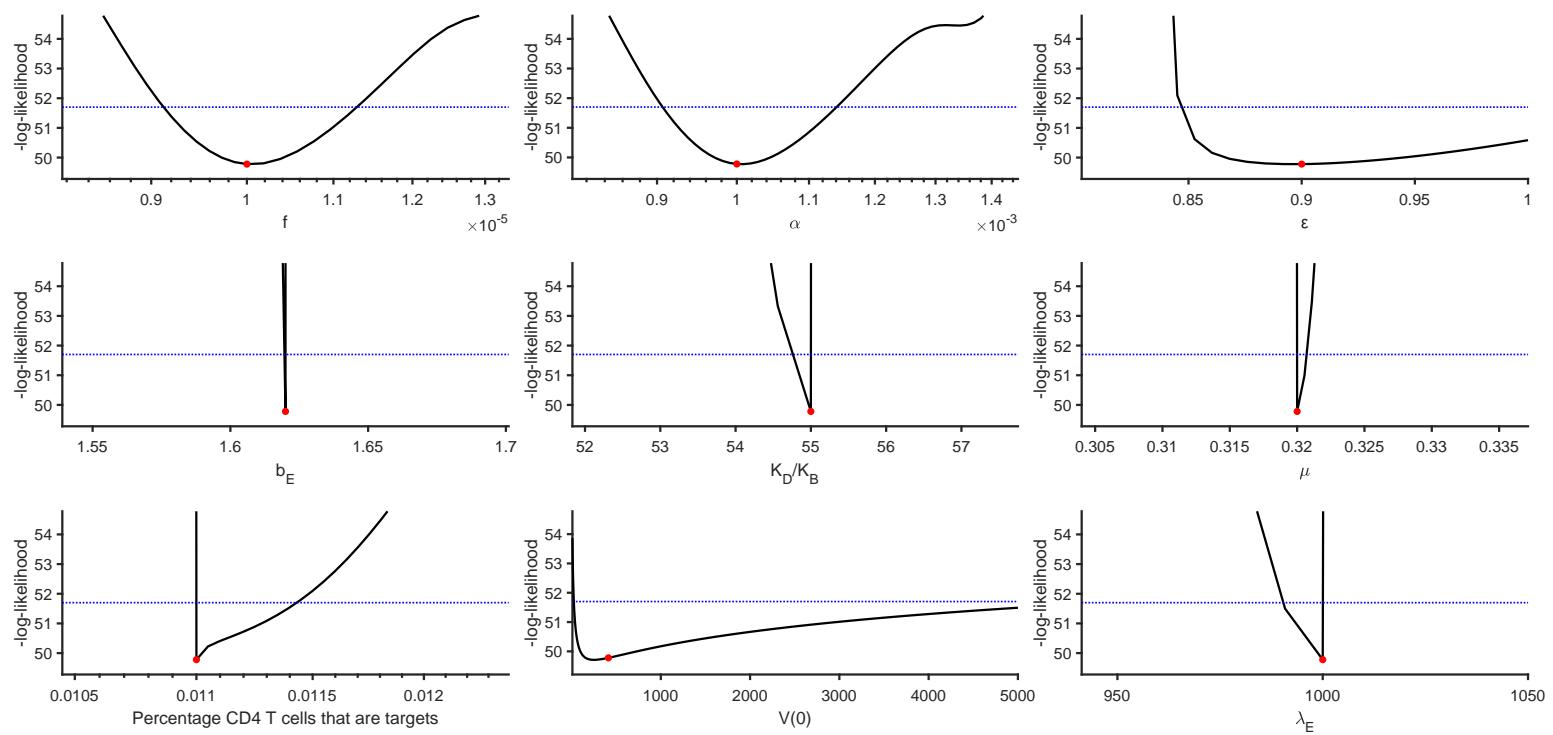
RFa15:Increased antigen presentation (SS)



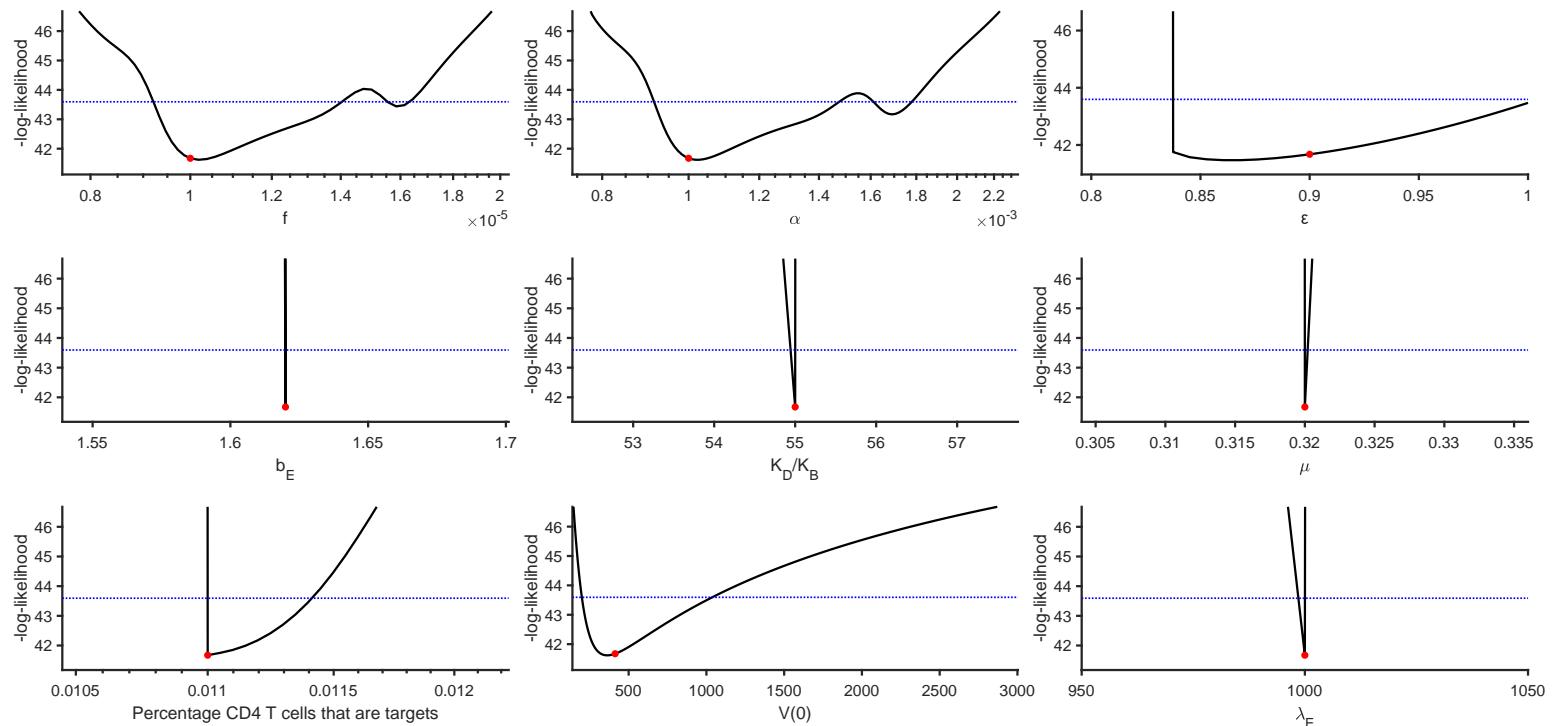
RLn12:Increased antigen presentation (SS)

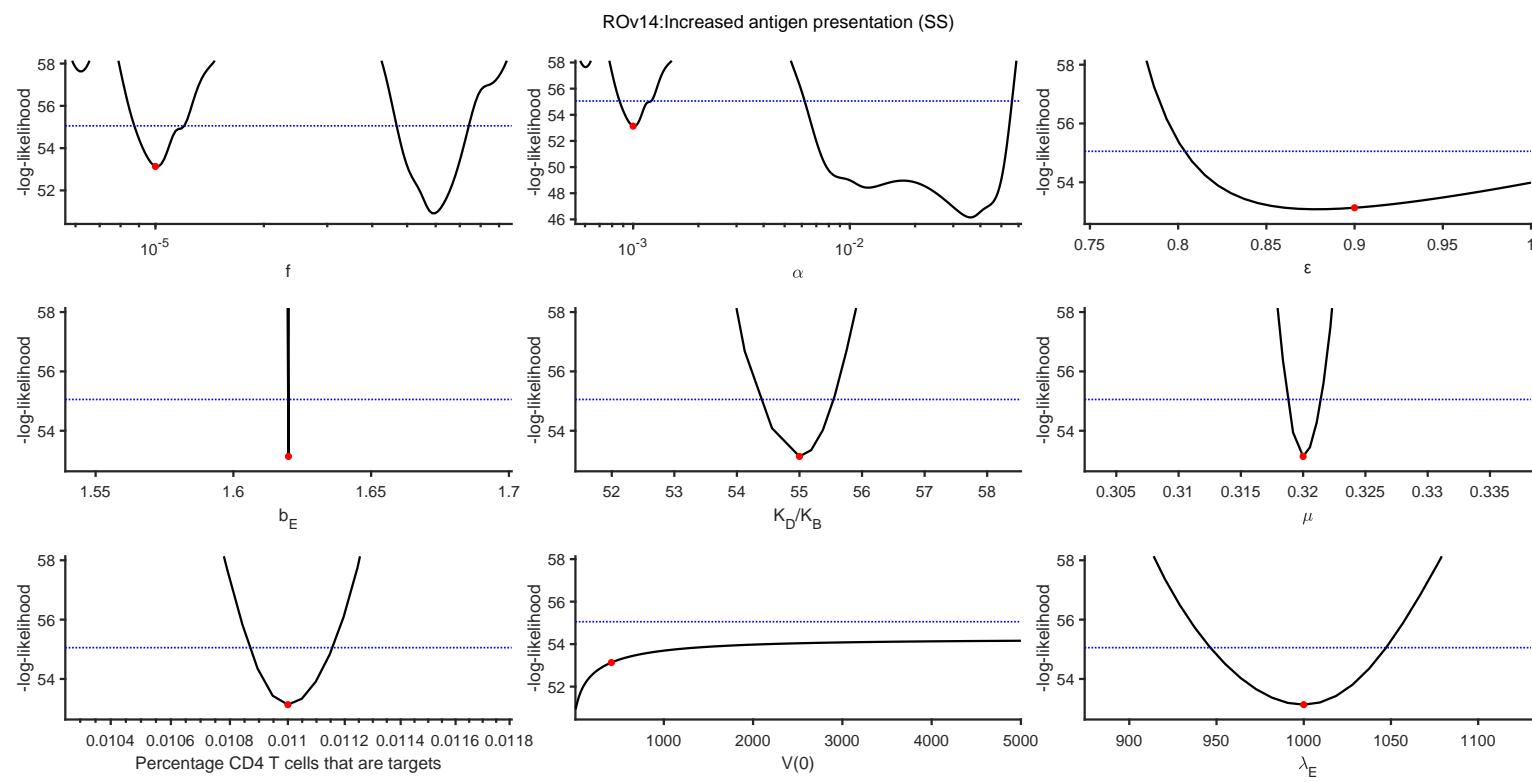


ROo13:Increased antigen presentation (SS)

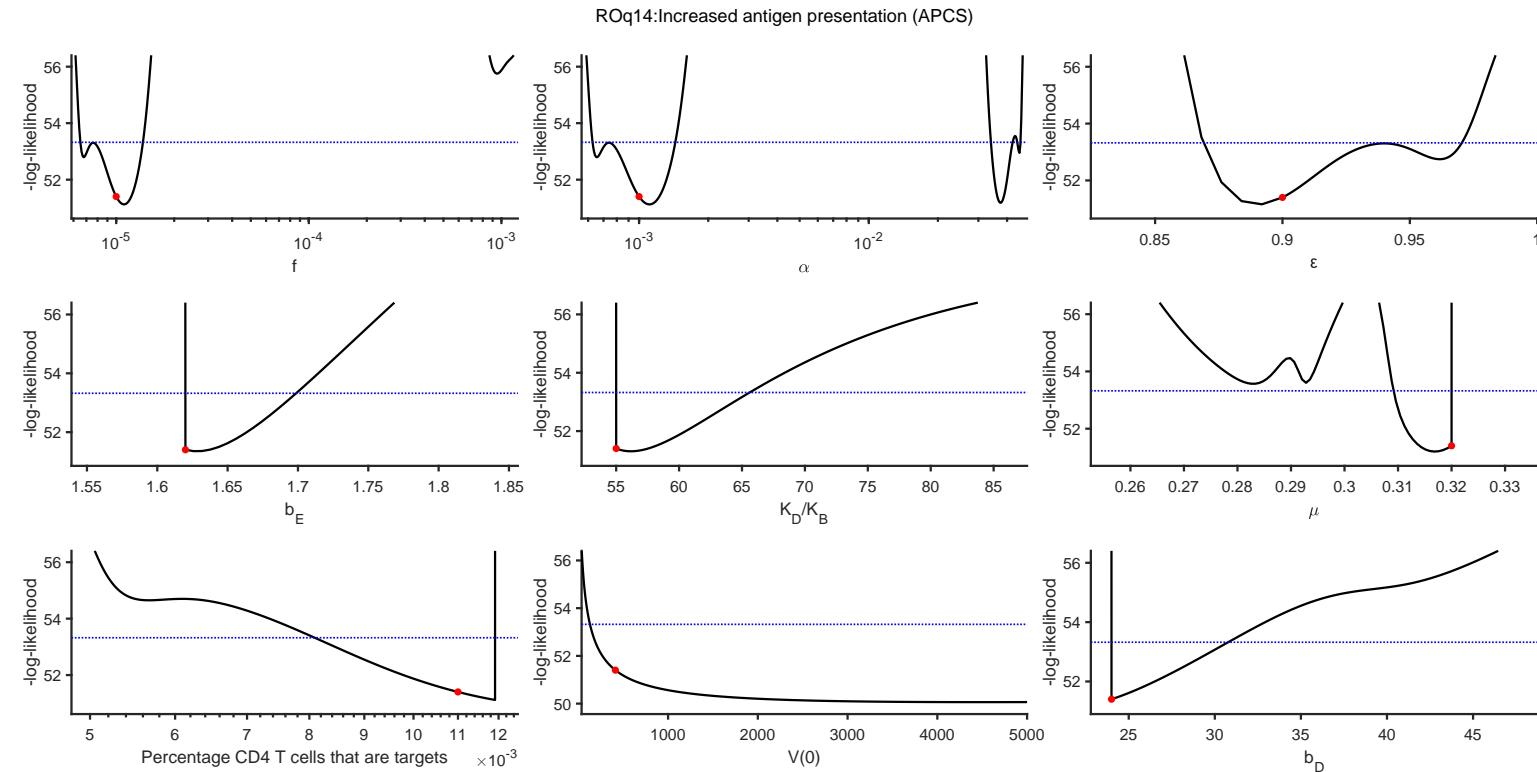


RSd14:Increased antigen presentation (SS)

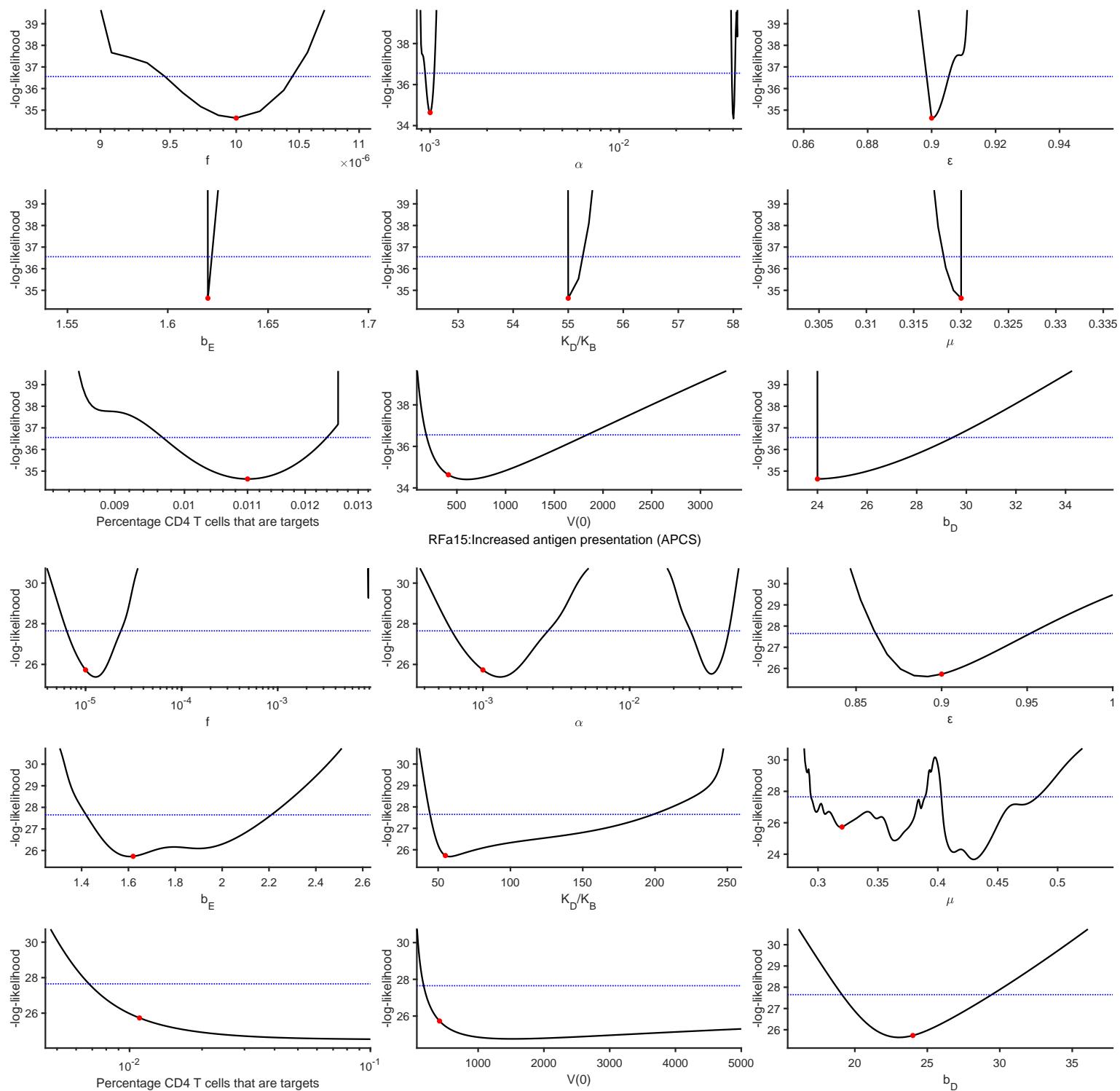




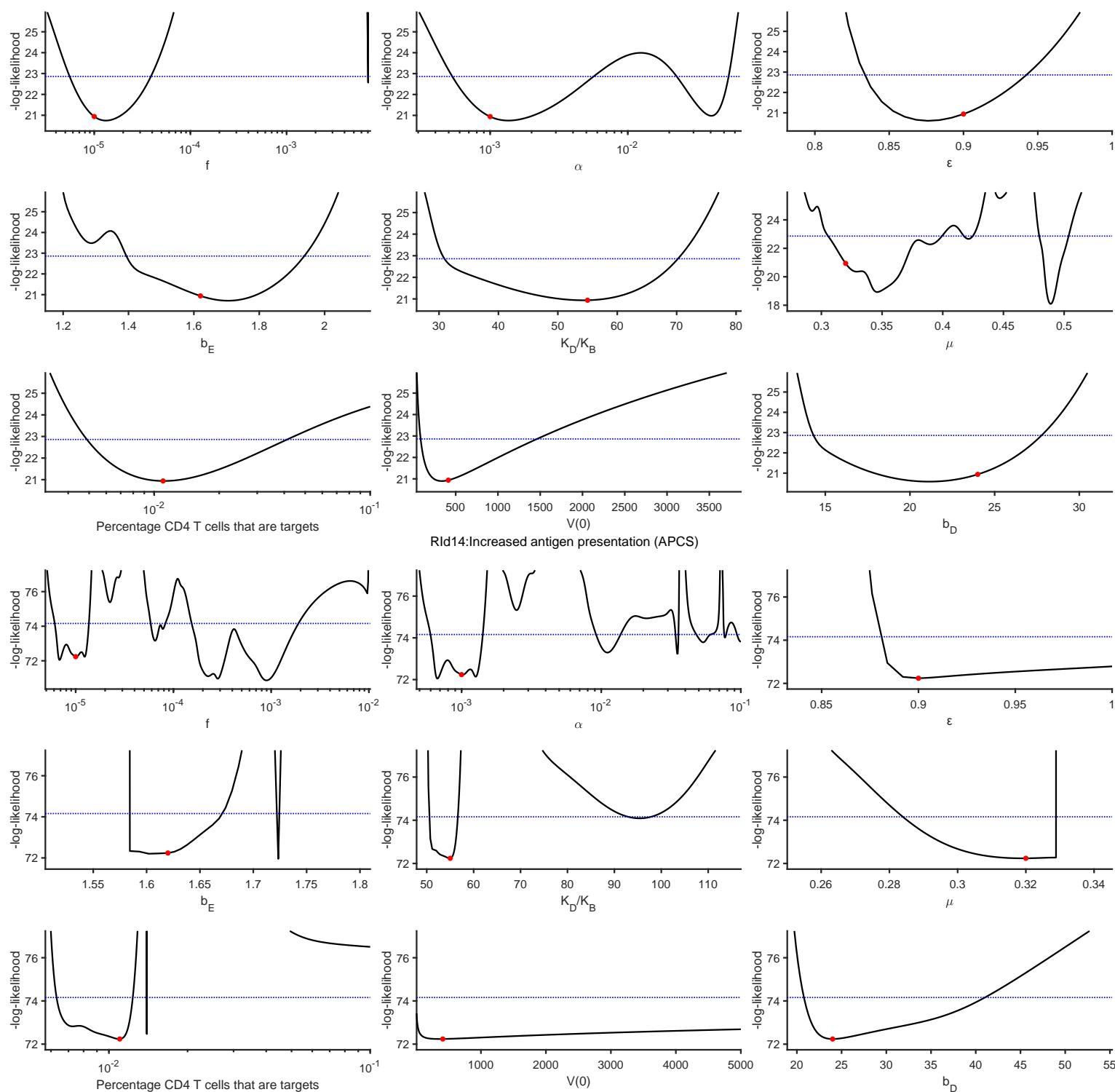
### 10.3 Antigen presenting cell effector cell source model



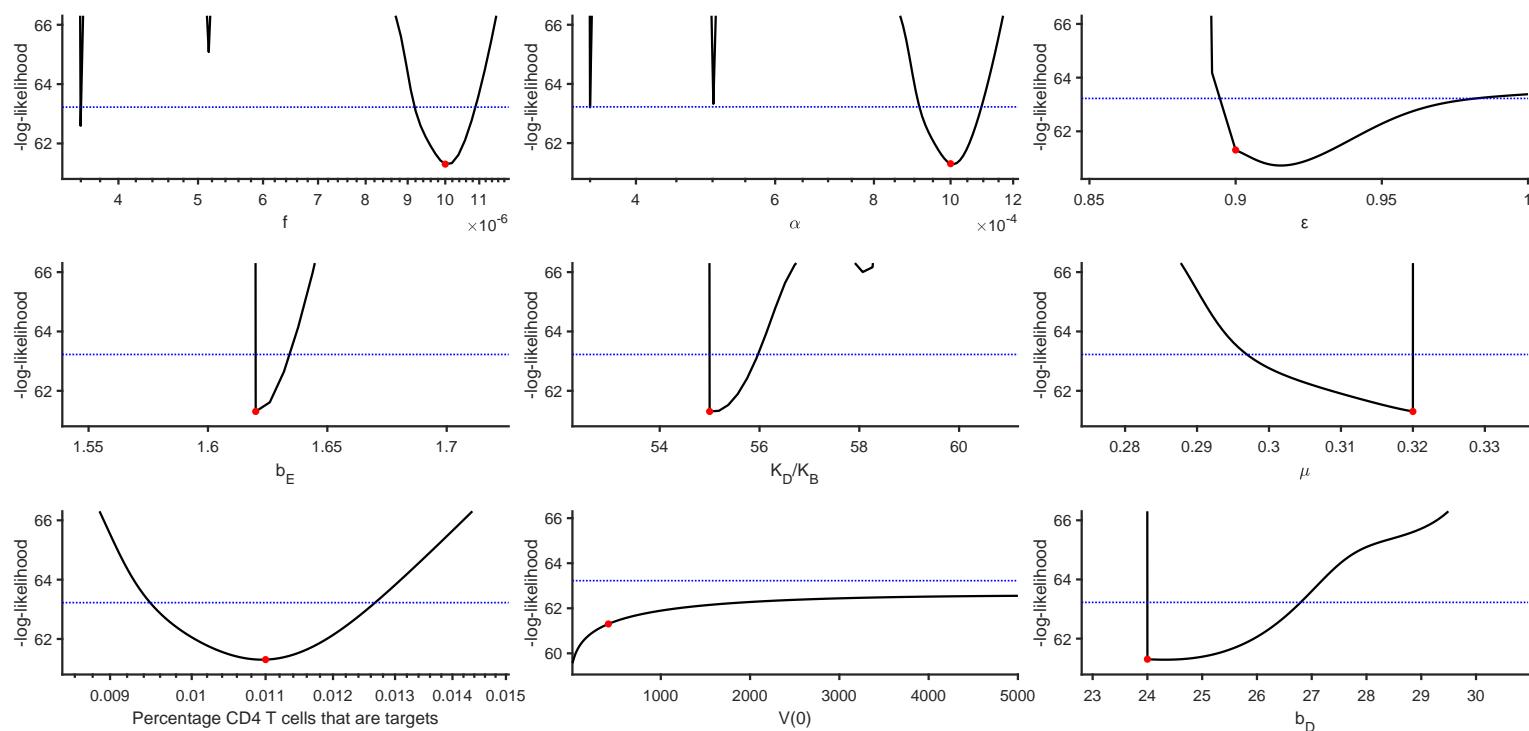
RDa15:Increased antigen presentation (APCS)



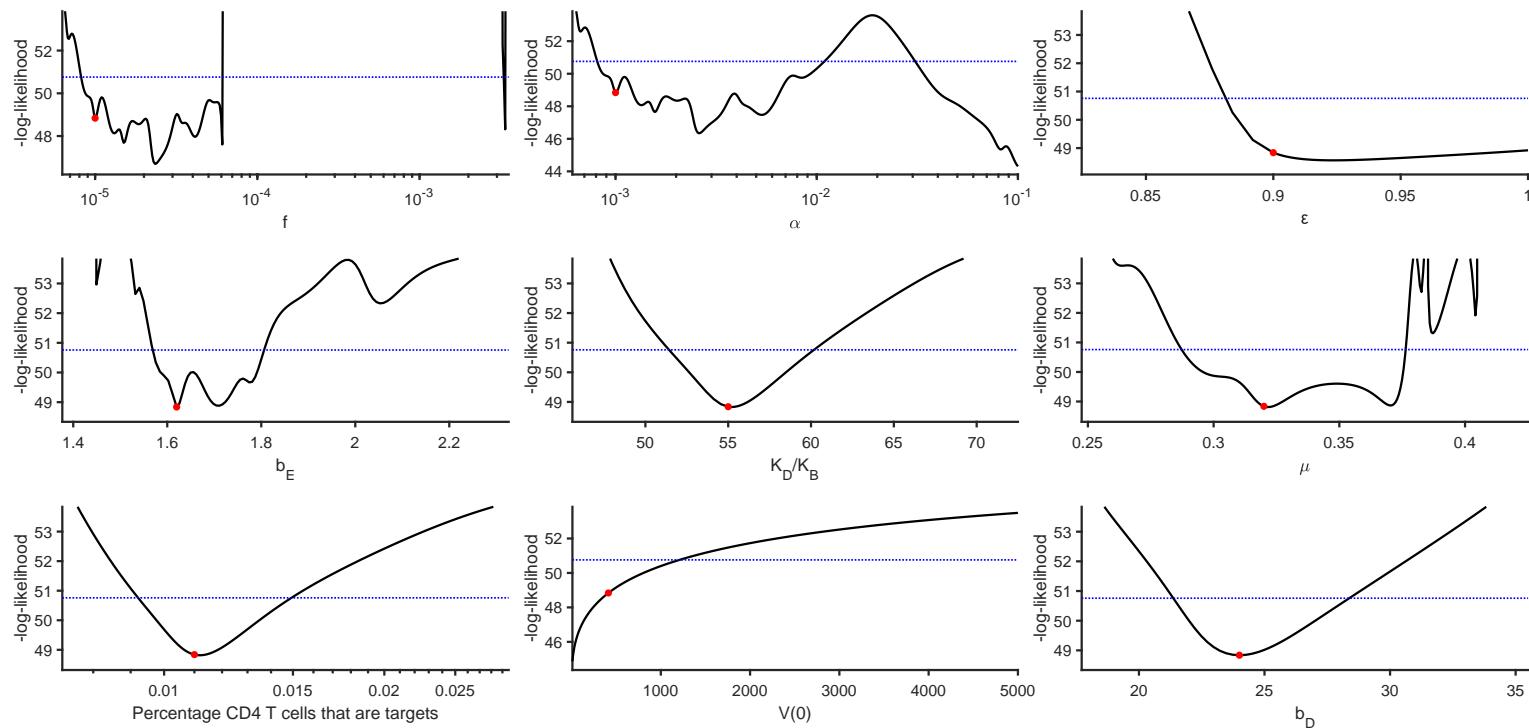
RLn12:Increased antigen presentation (APCS)



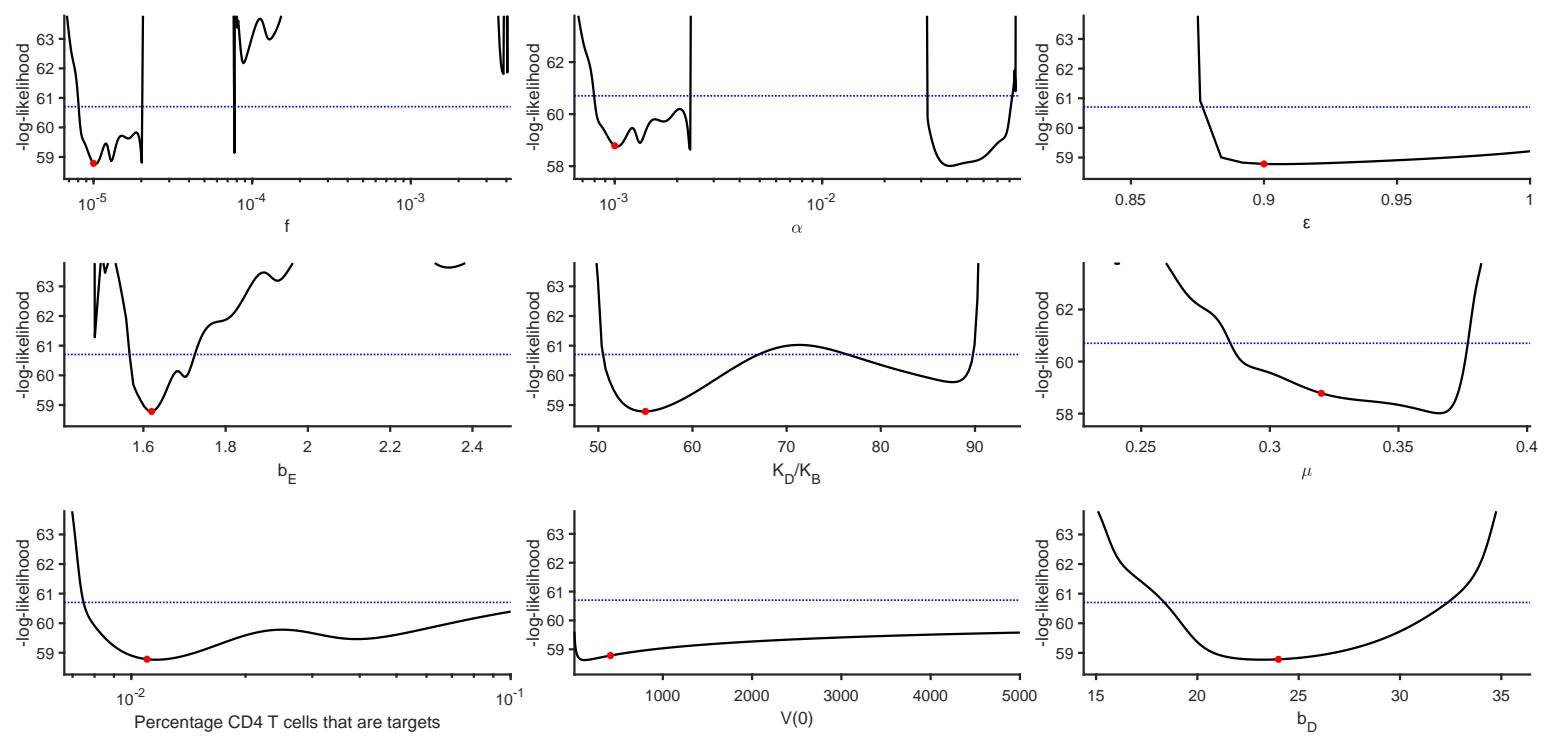
ROo13:Increased antigen presentation (APCS)



RSd14:Increased antigen presentation (APCS)

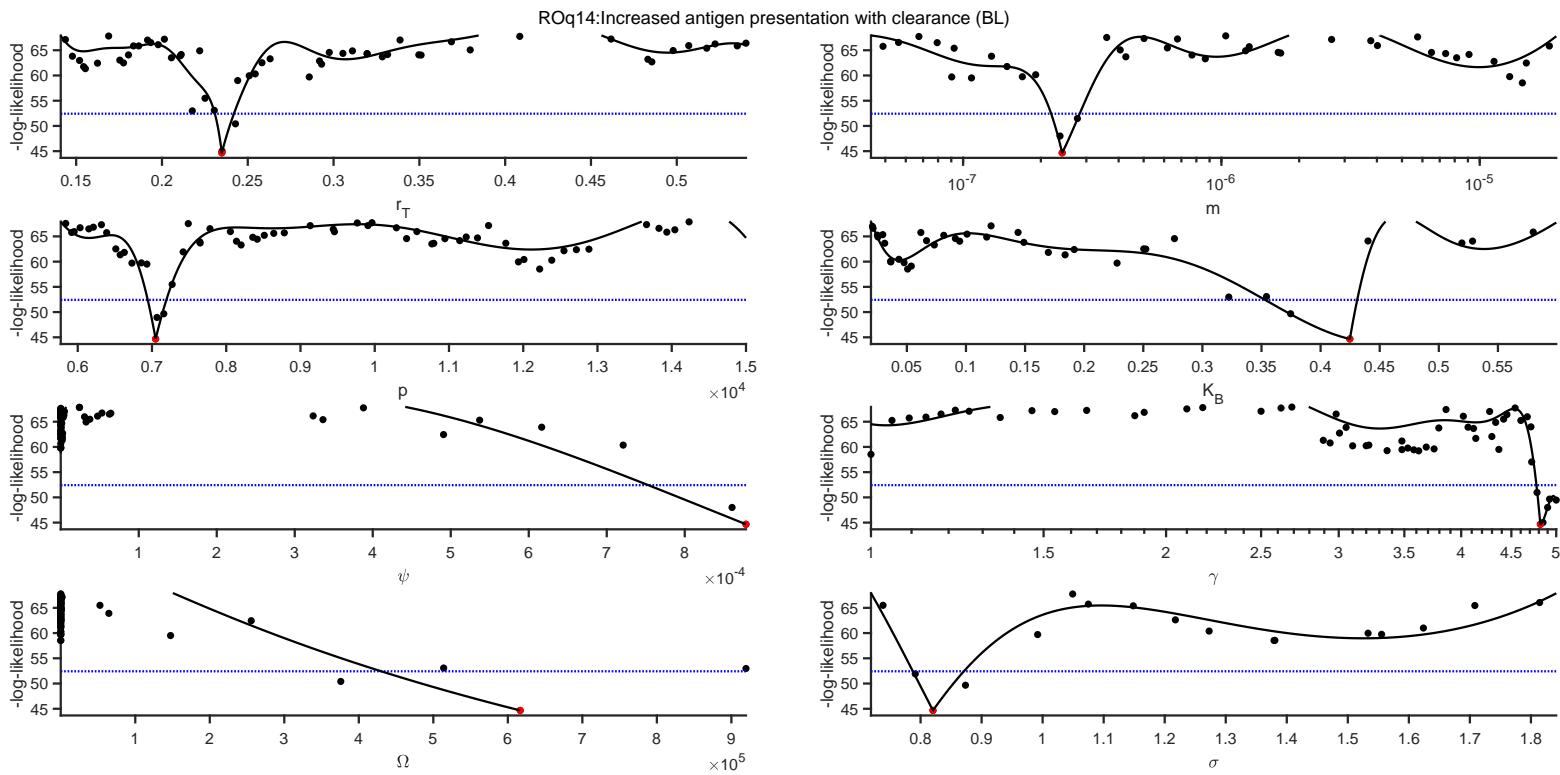


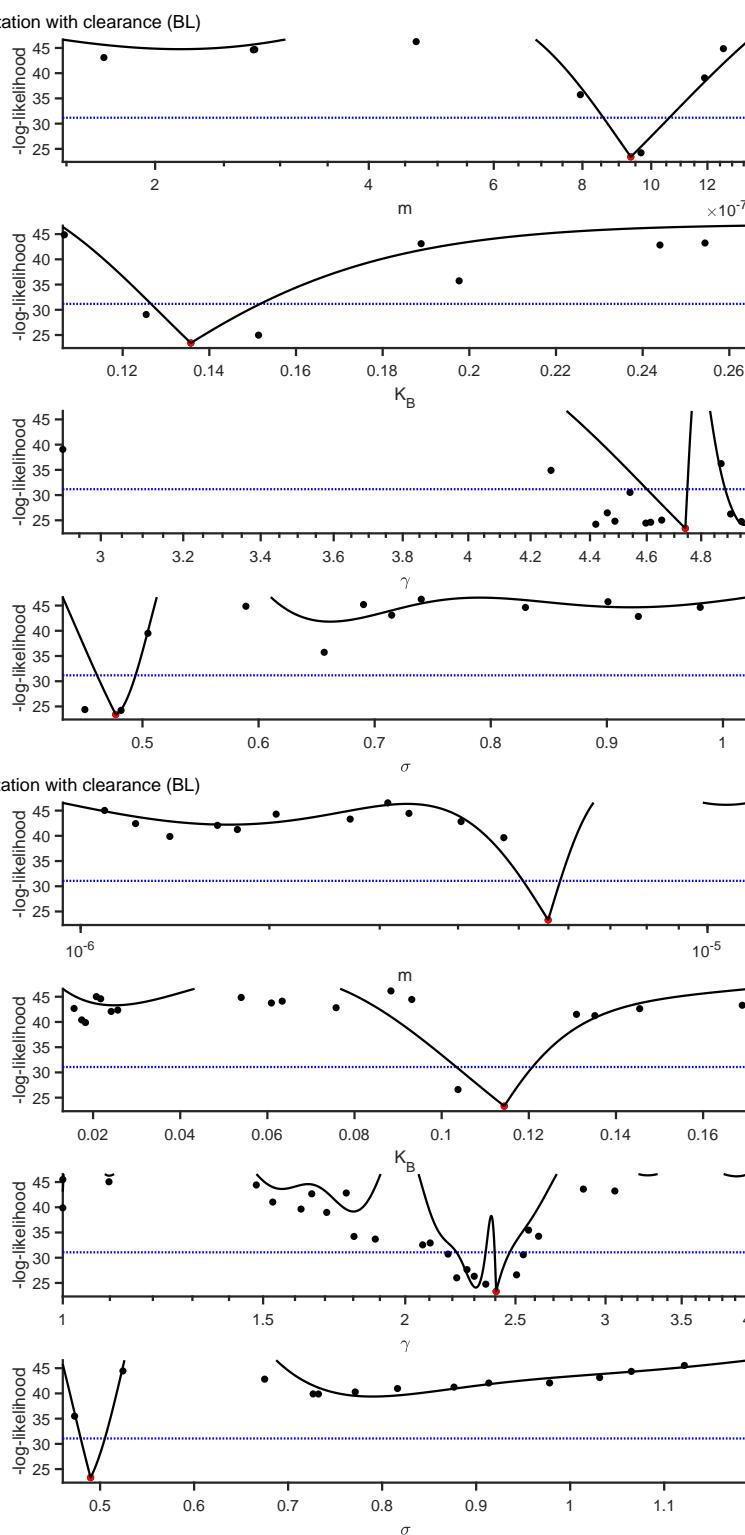
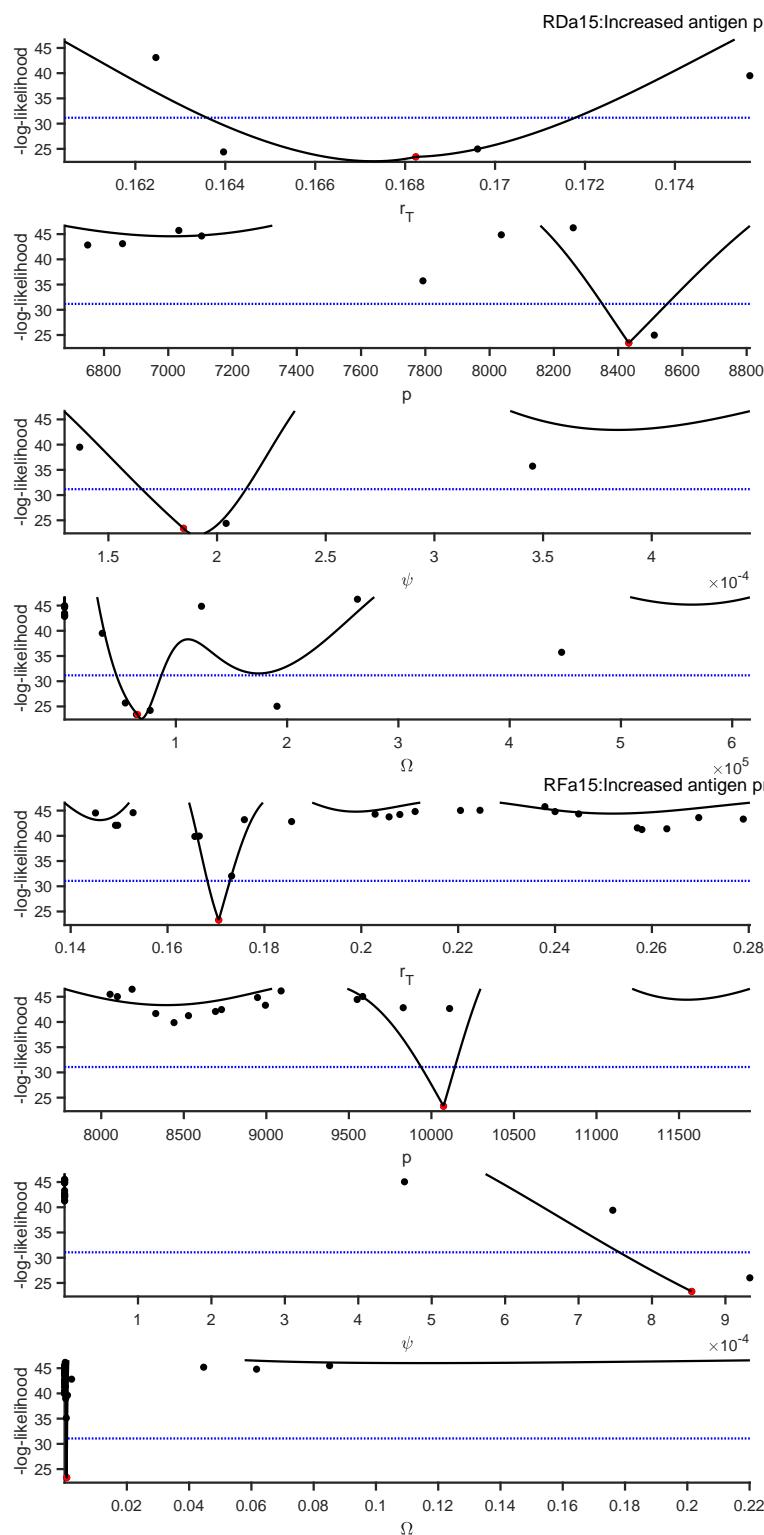
ROv14:Increased antigen presentation (APCS)

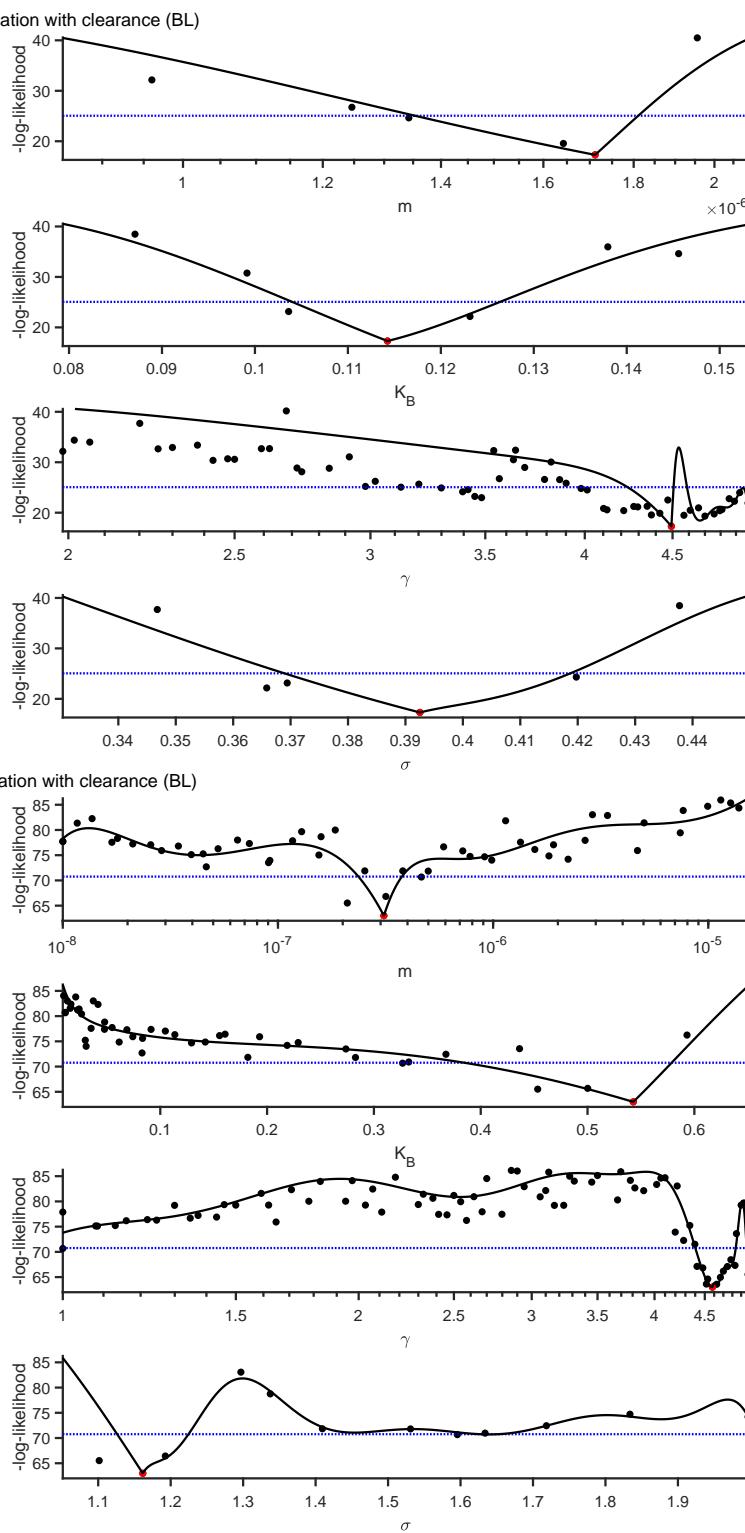
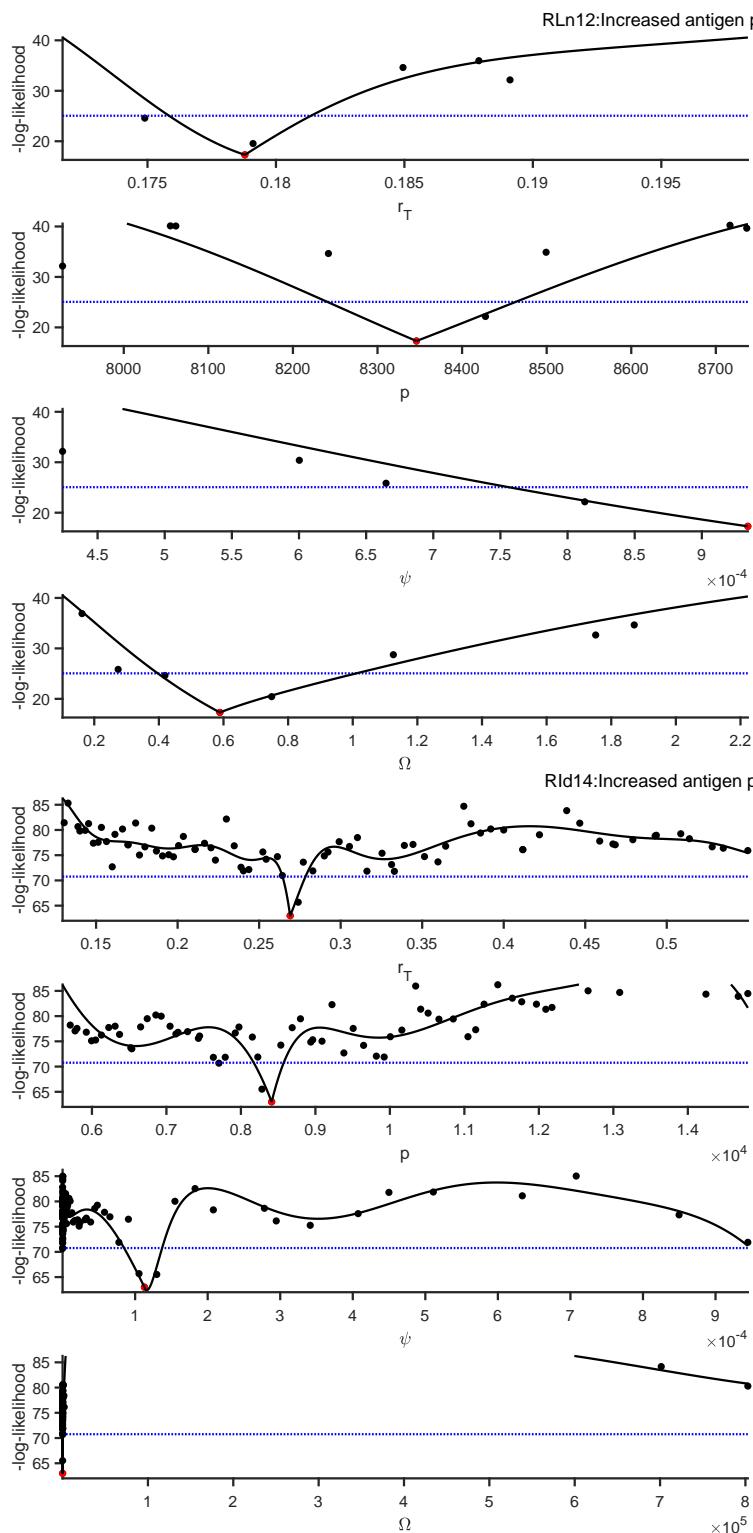


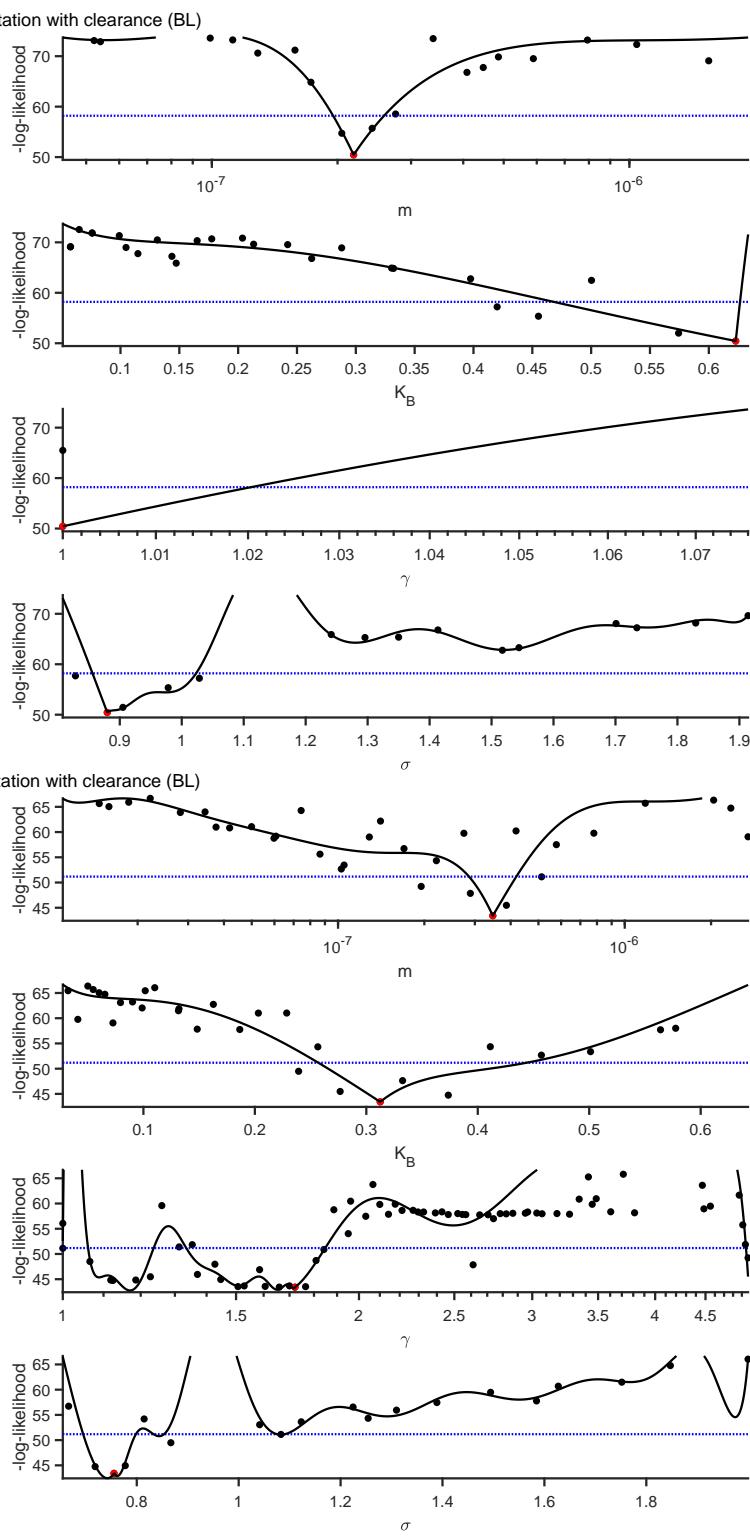
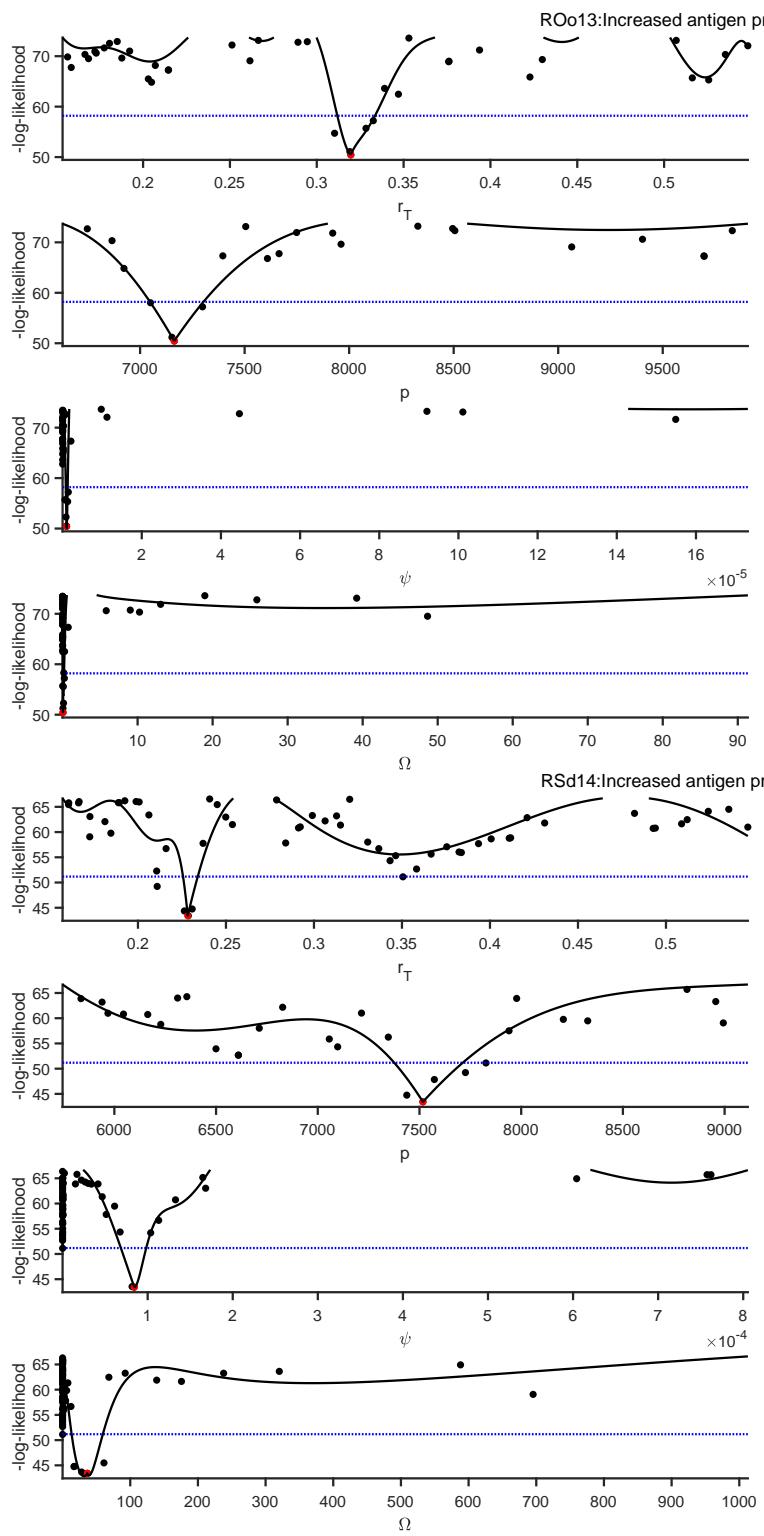
# 11 Likelihood profiles: Increased antigen presentation with increased viral clearance

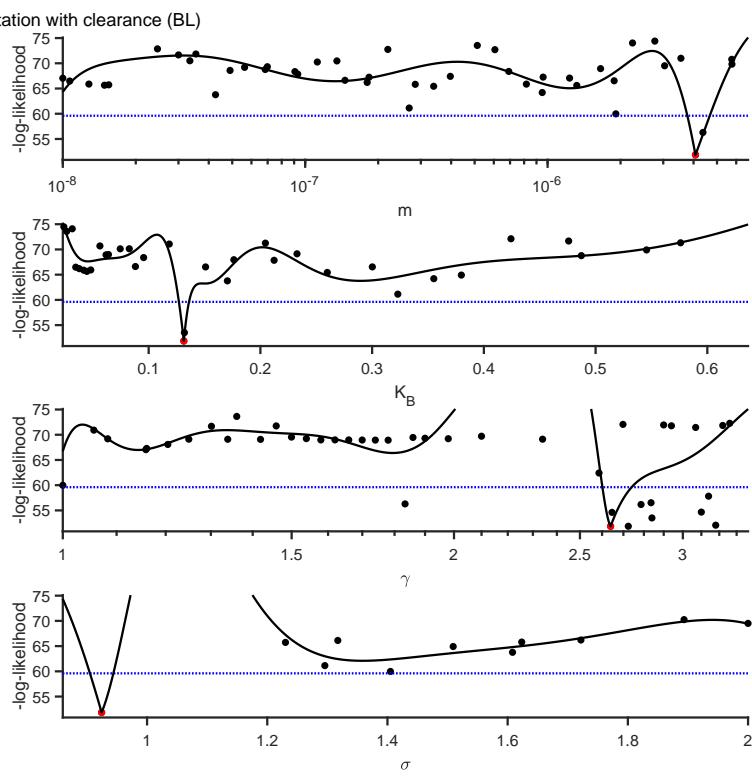
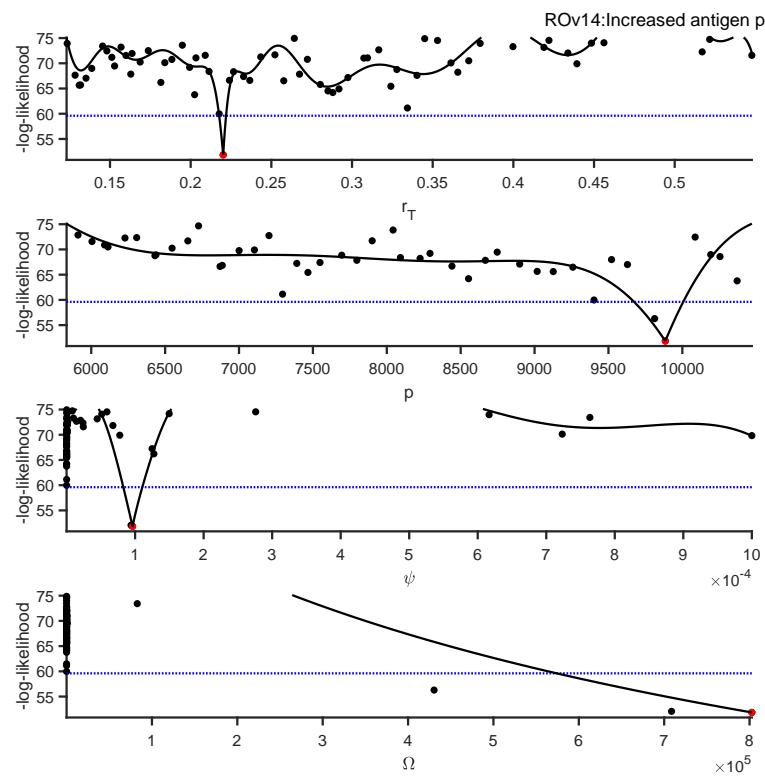
## 11.1 Baseline effector cell source model





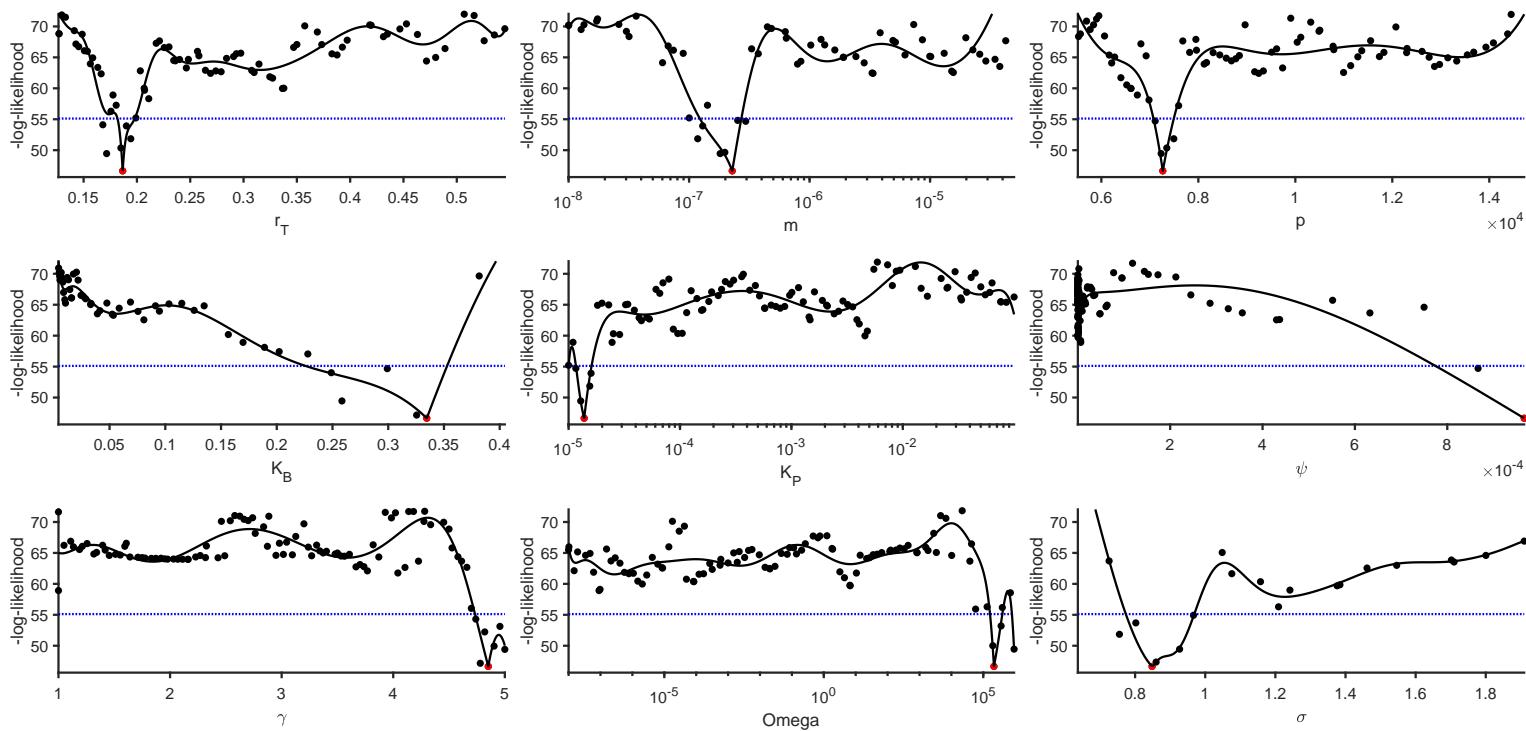




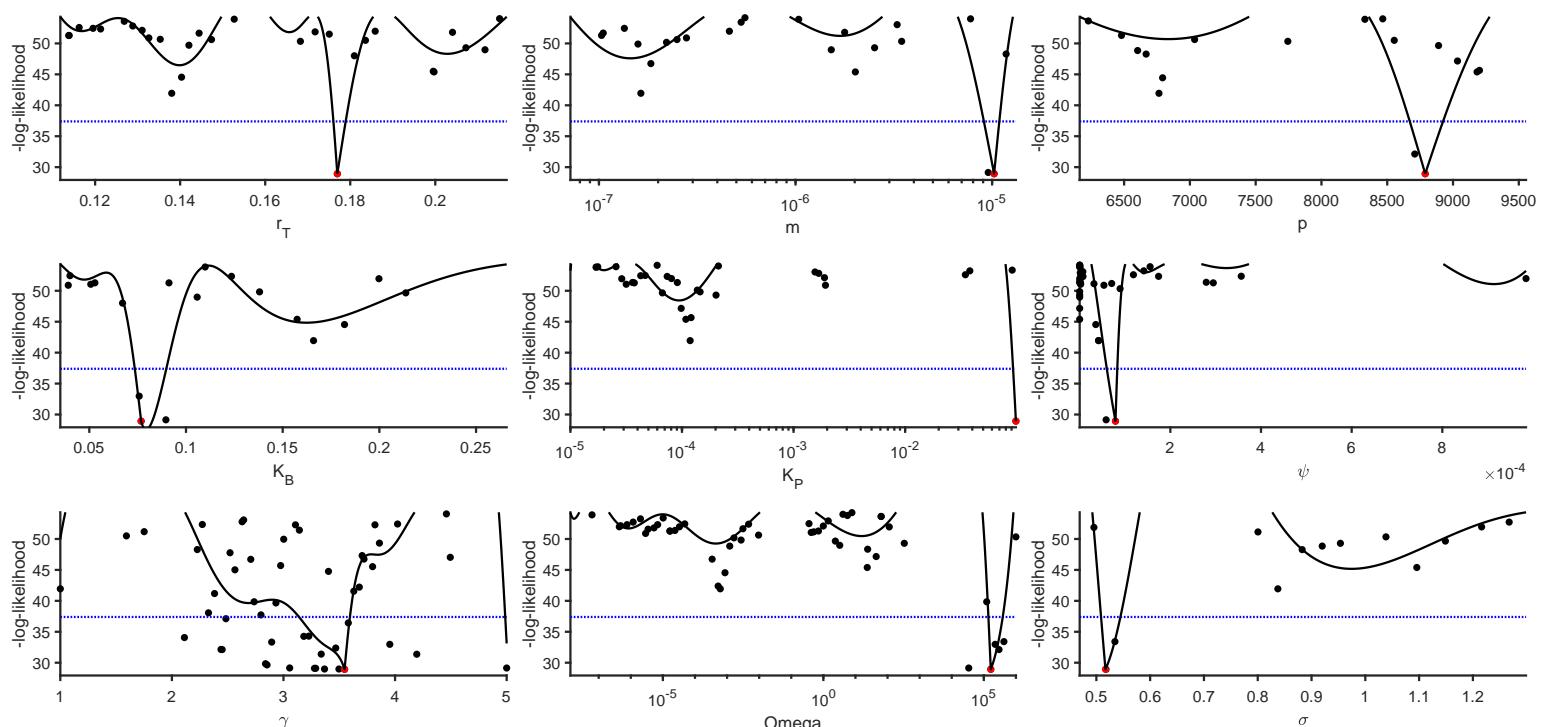


## 11.2 Saturated effector cell source model

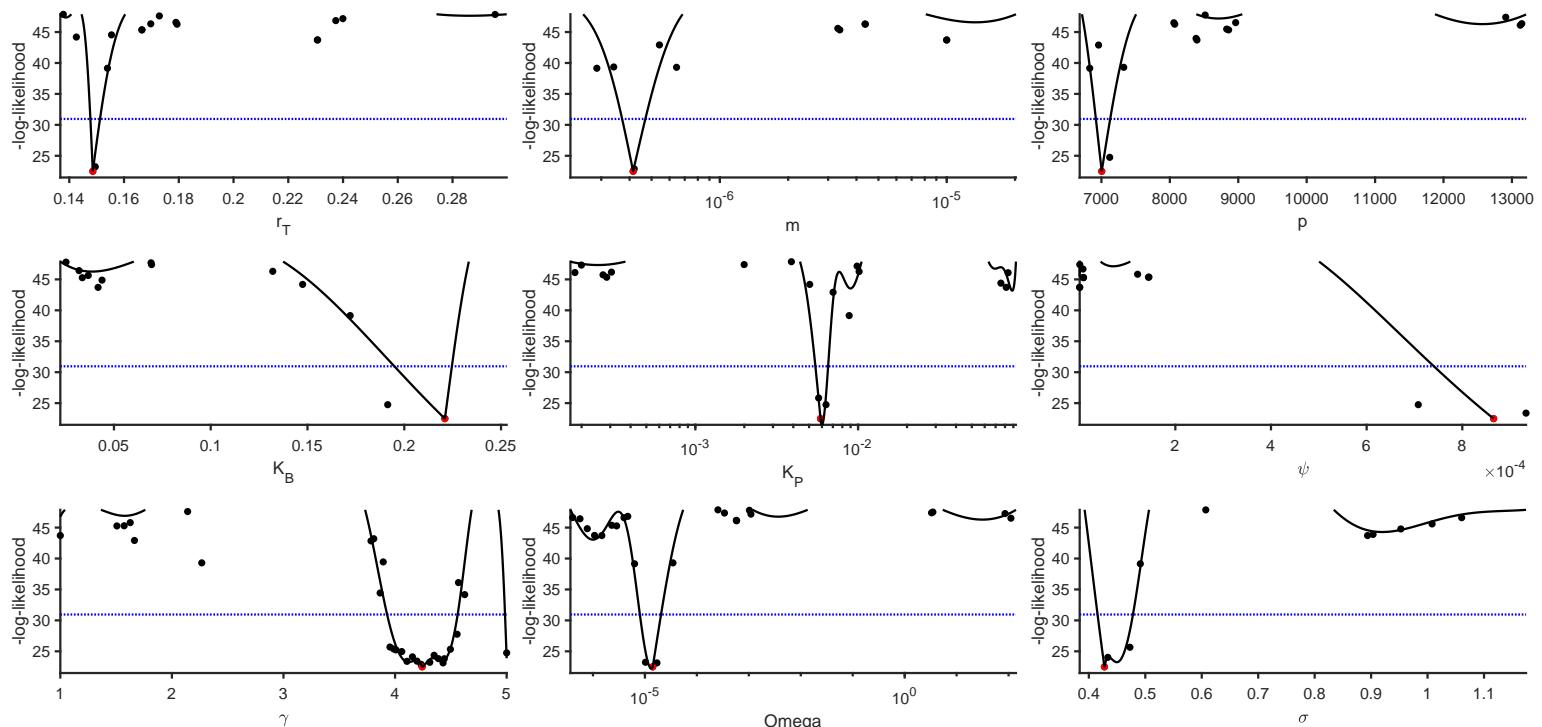
ROq14:Increased antigen presentation with clearance (SS)



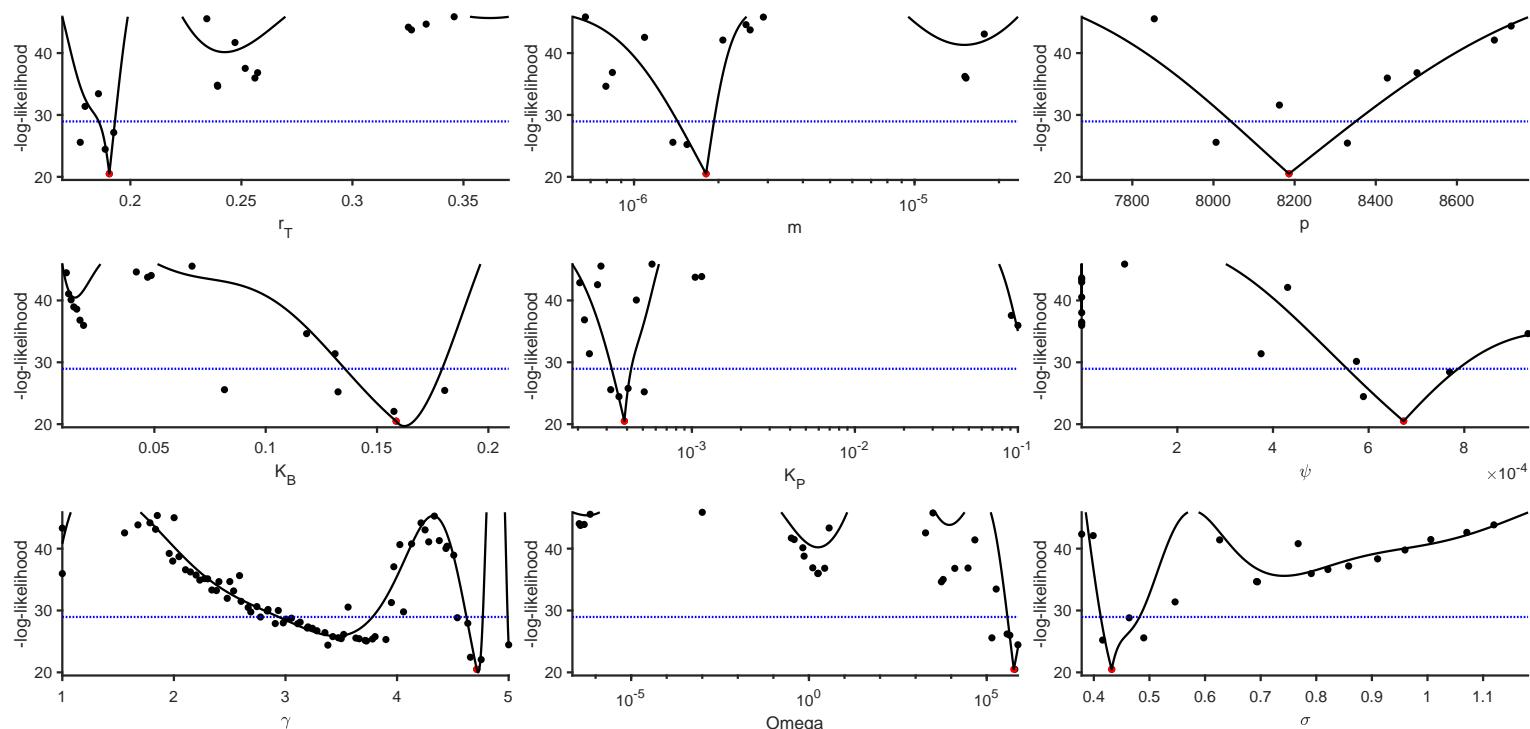
RDa15:Increased antigen presentation with clearance (SS)



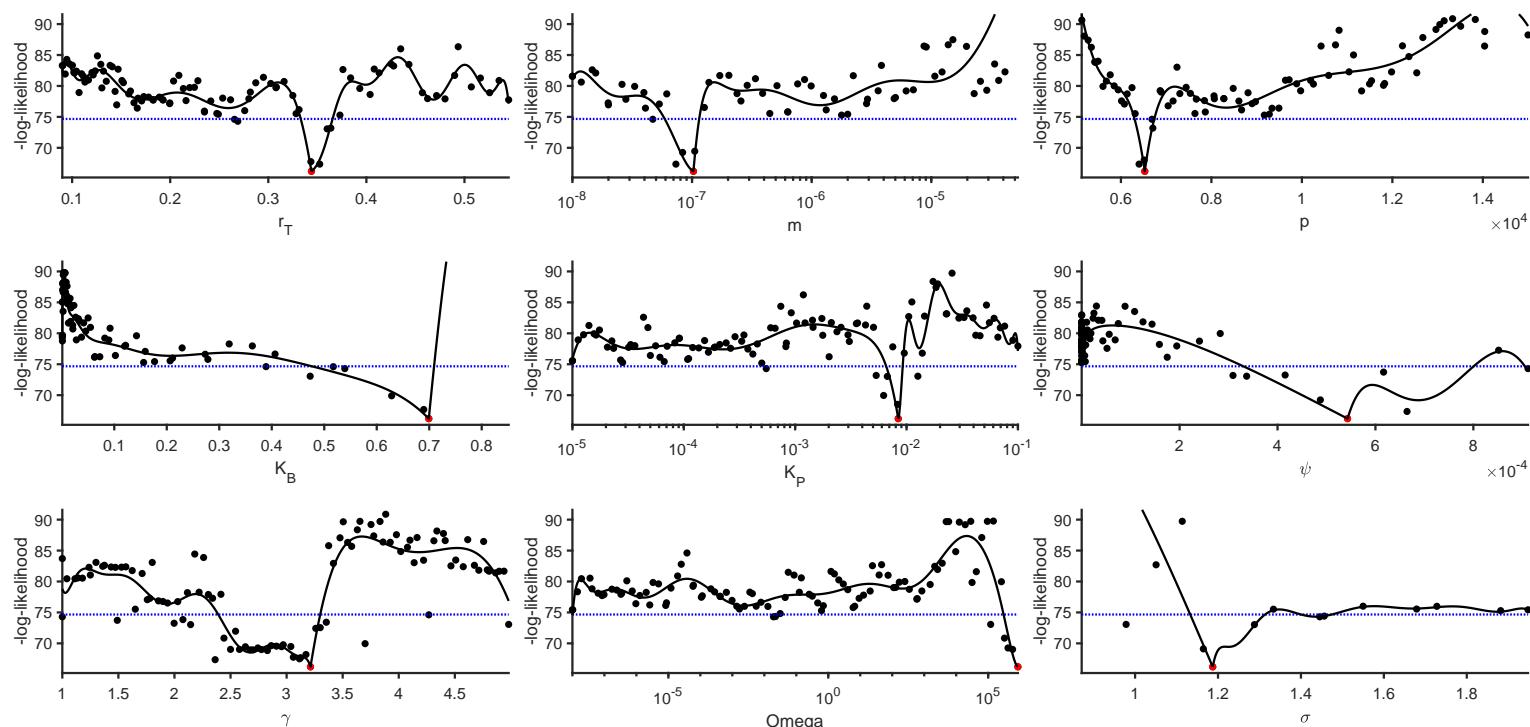
RFa15:Increased antigen presentation with clearance (SS)



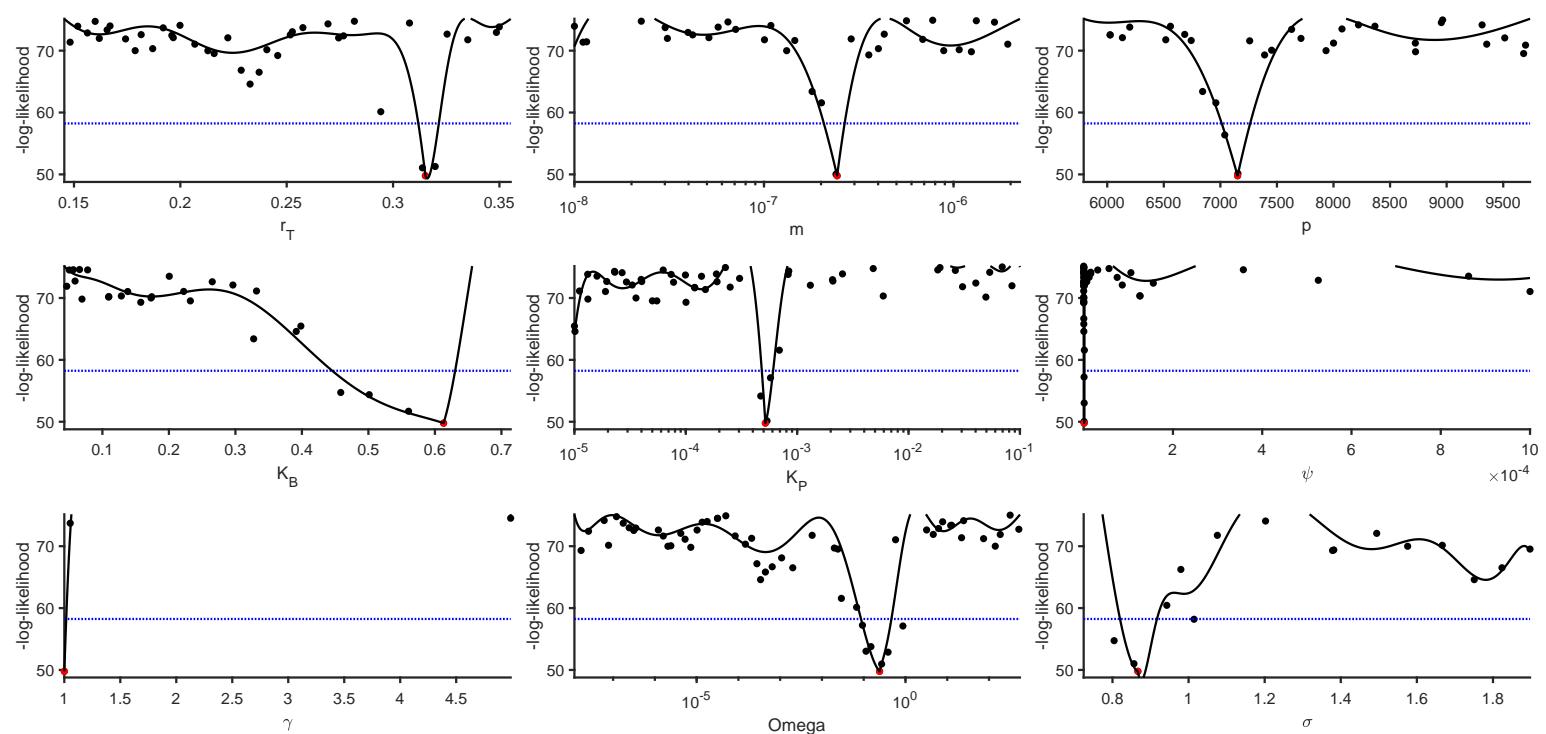
RLn12:Increased antigen presentation with clearance (SS)



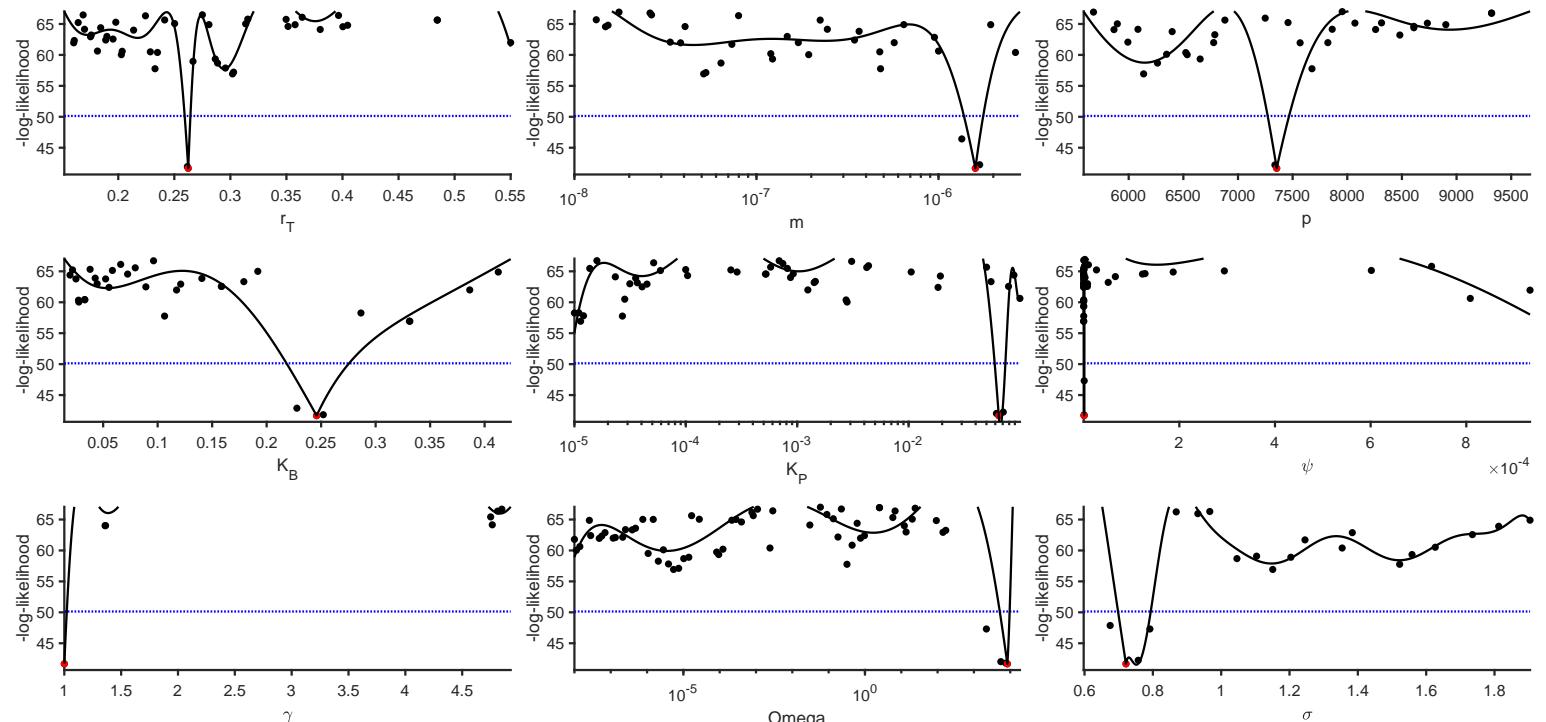
Rid14:Increased antigen presentation with clearance (SS)



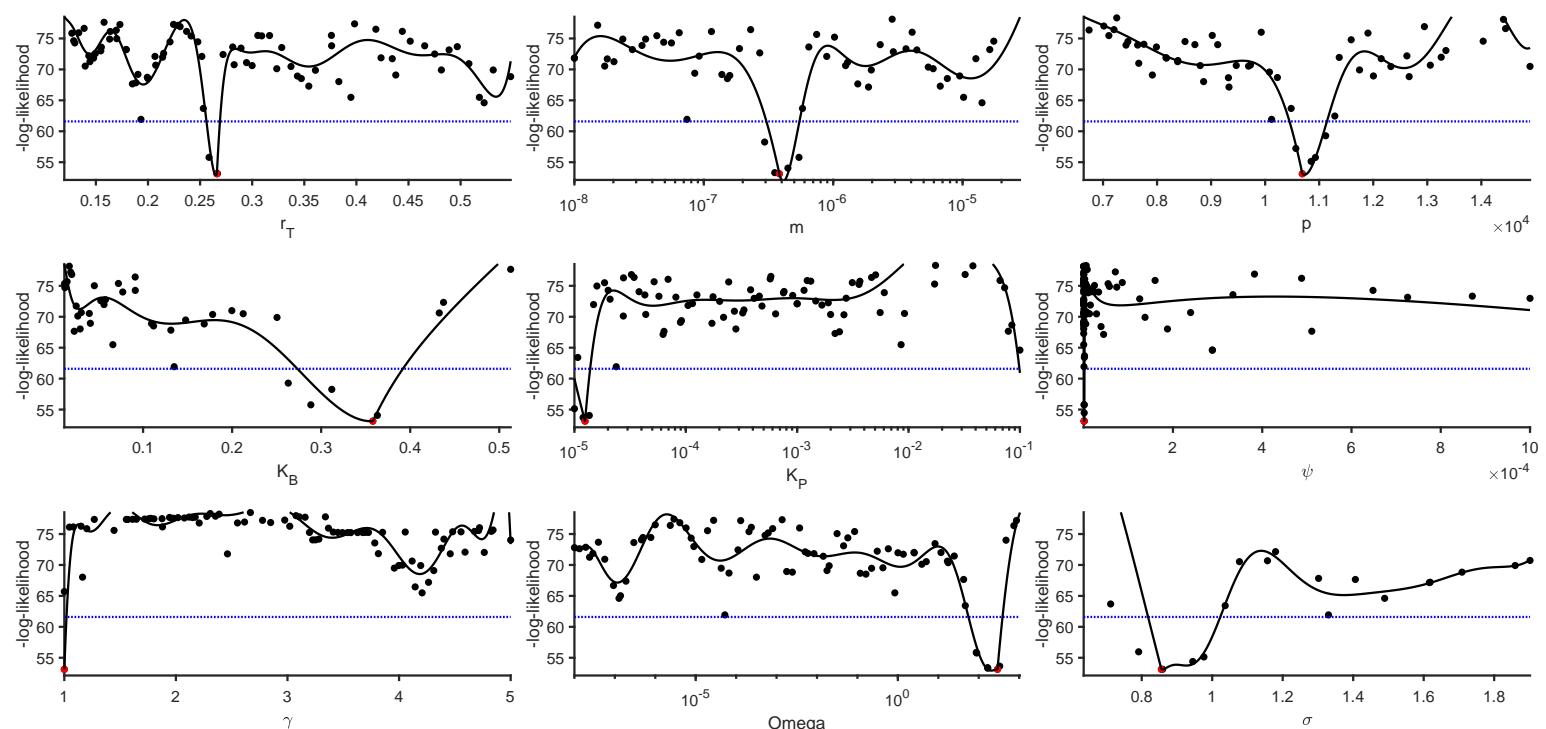
ROo13:Increased antigen presentation with clearance (SS)



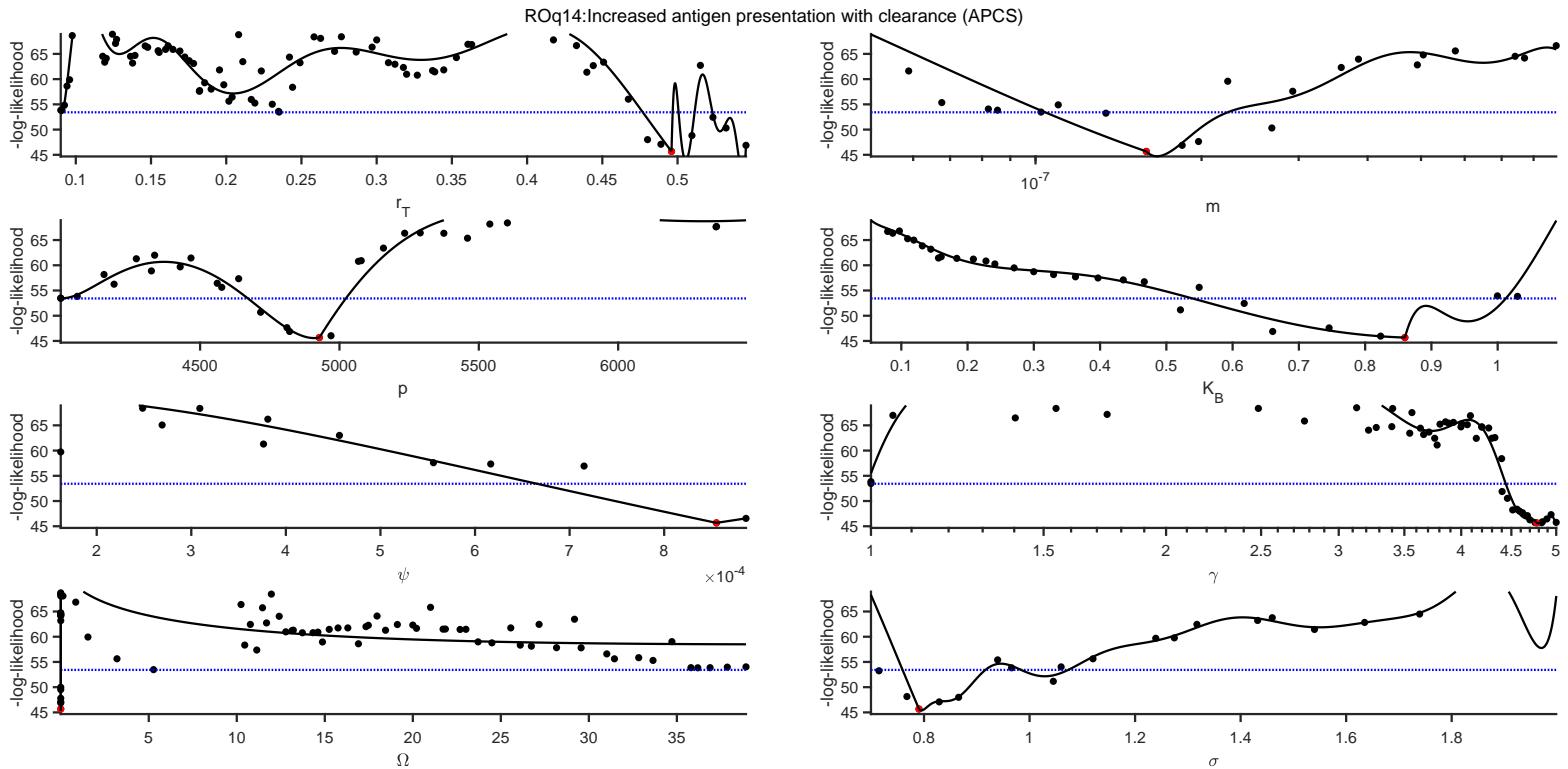
RSd14:Increased antigen presentation with clearance (SS)

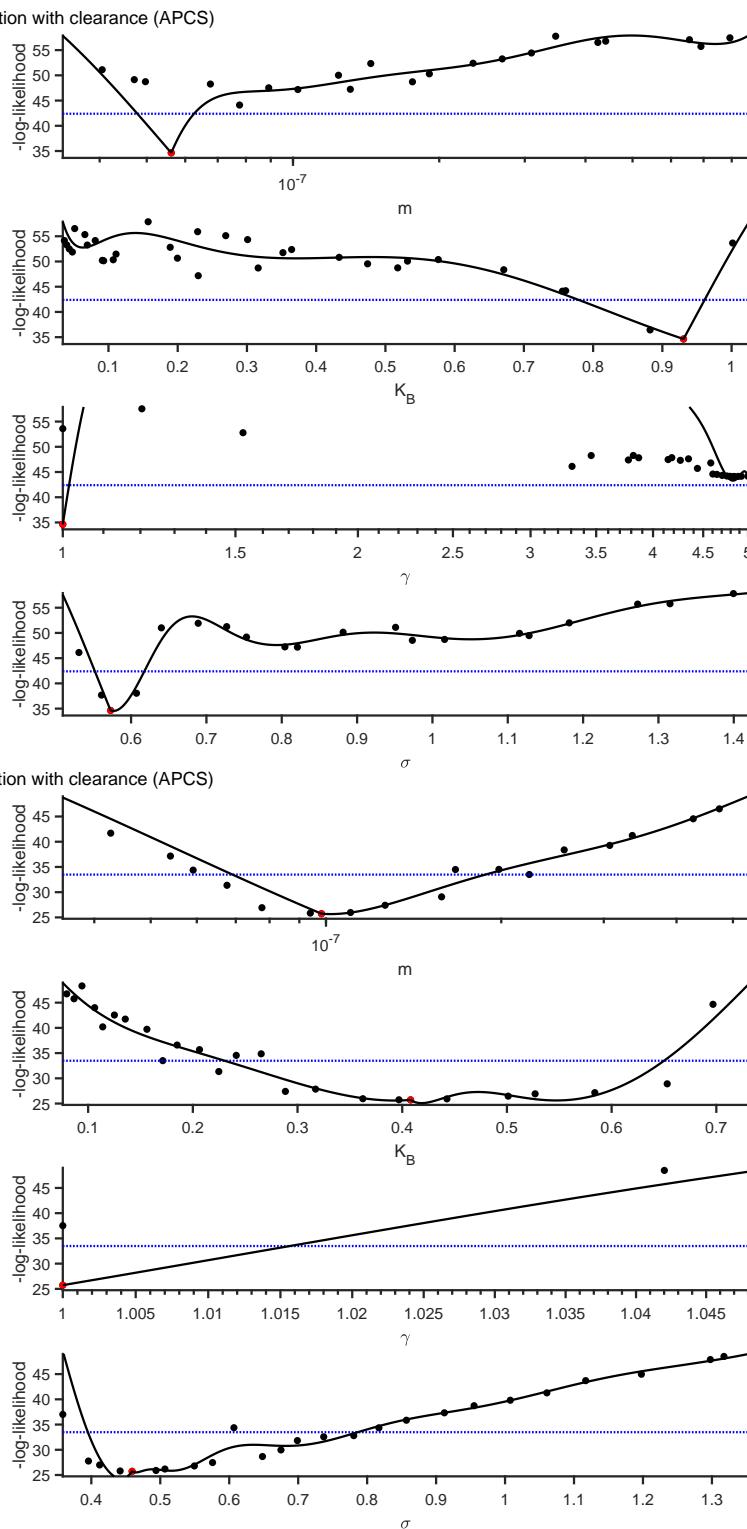
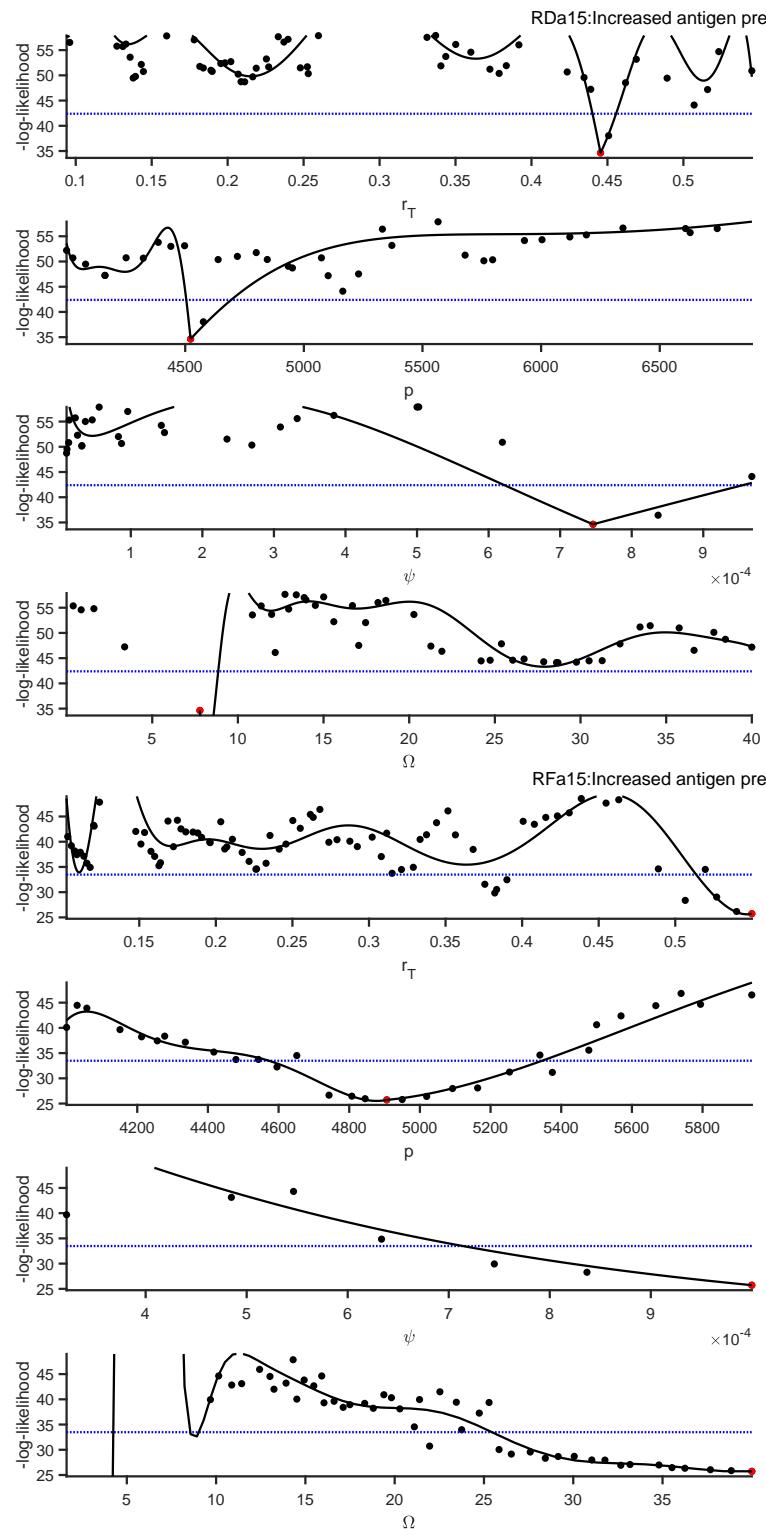


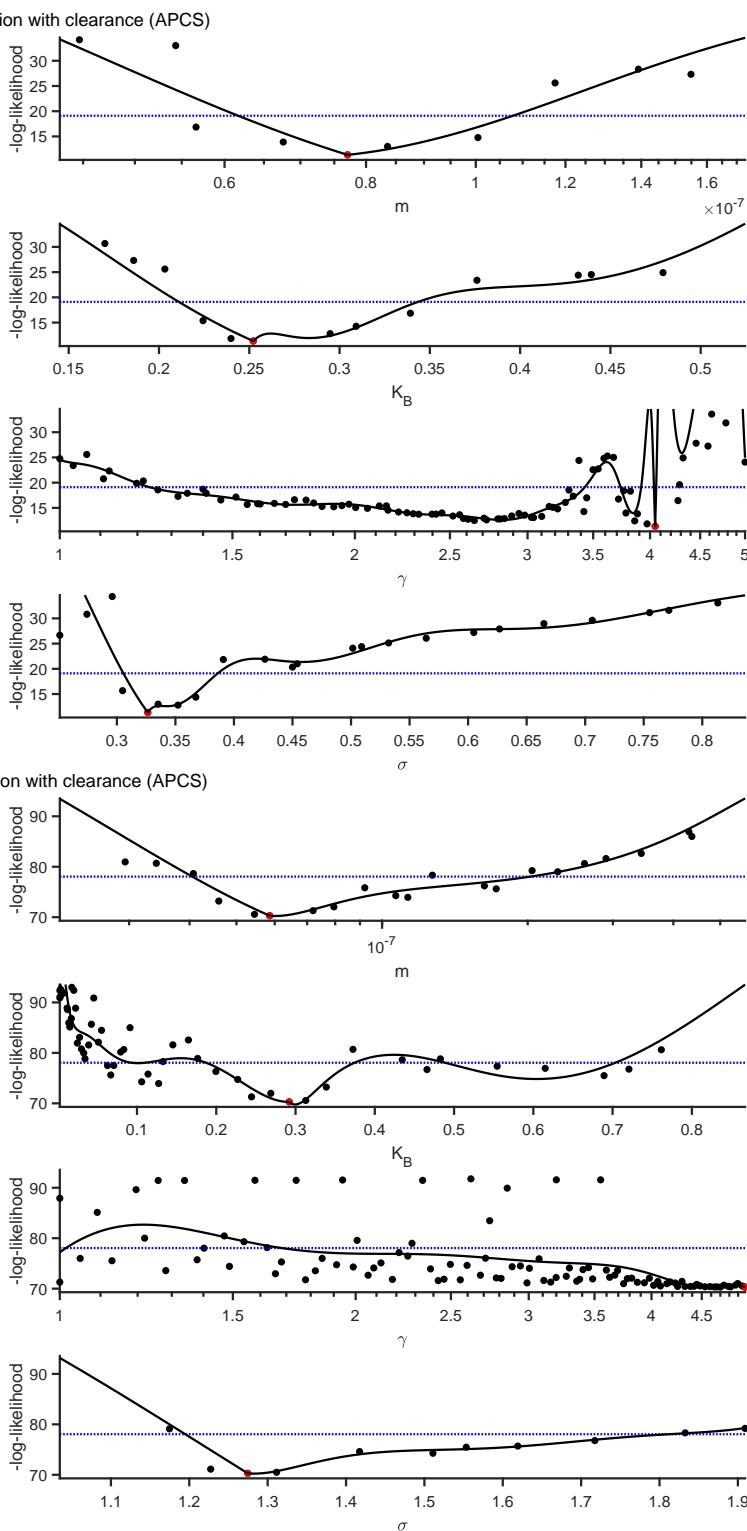
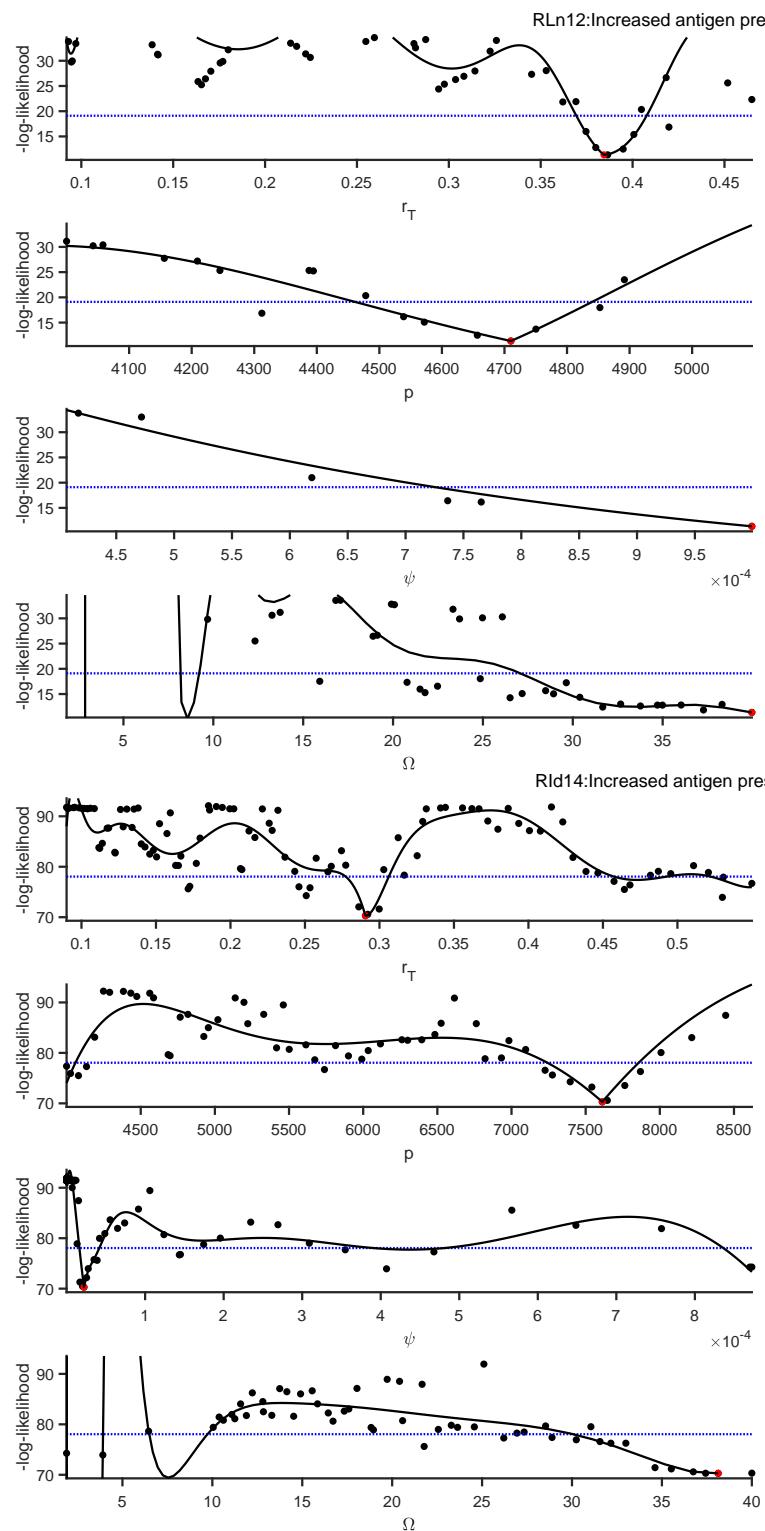
ROv14:Increased antigen presentation with clearance (SS)

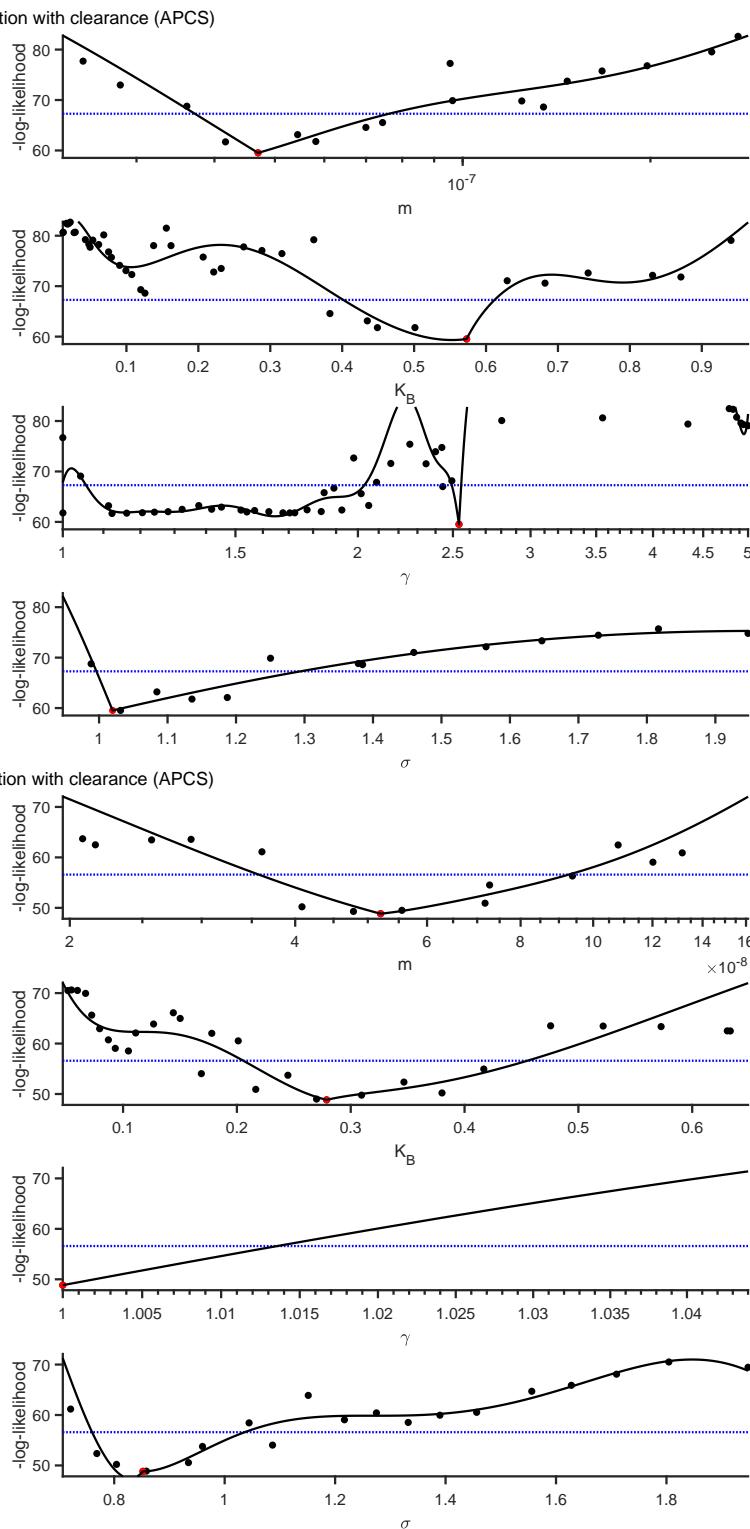
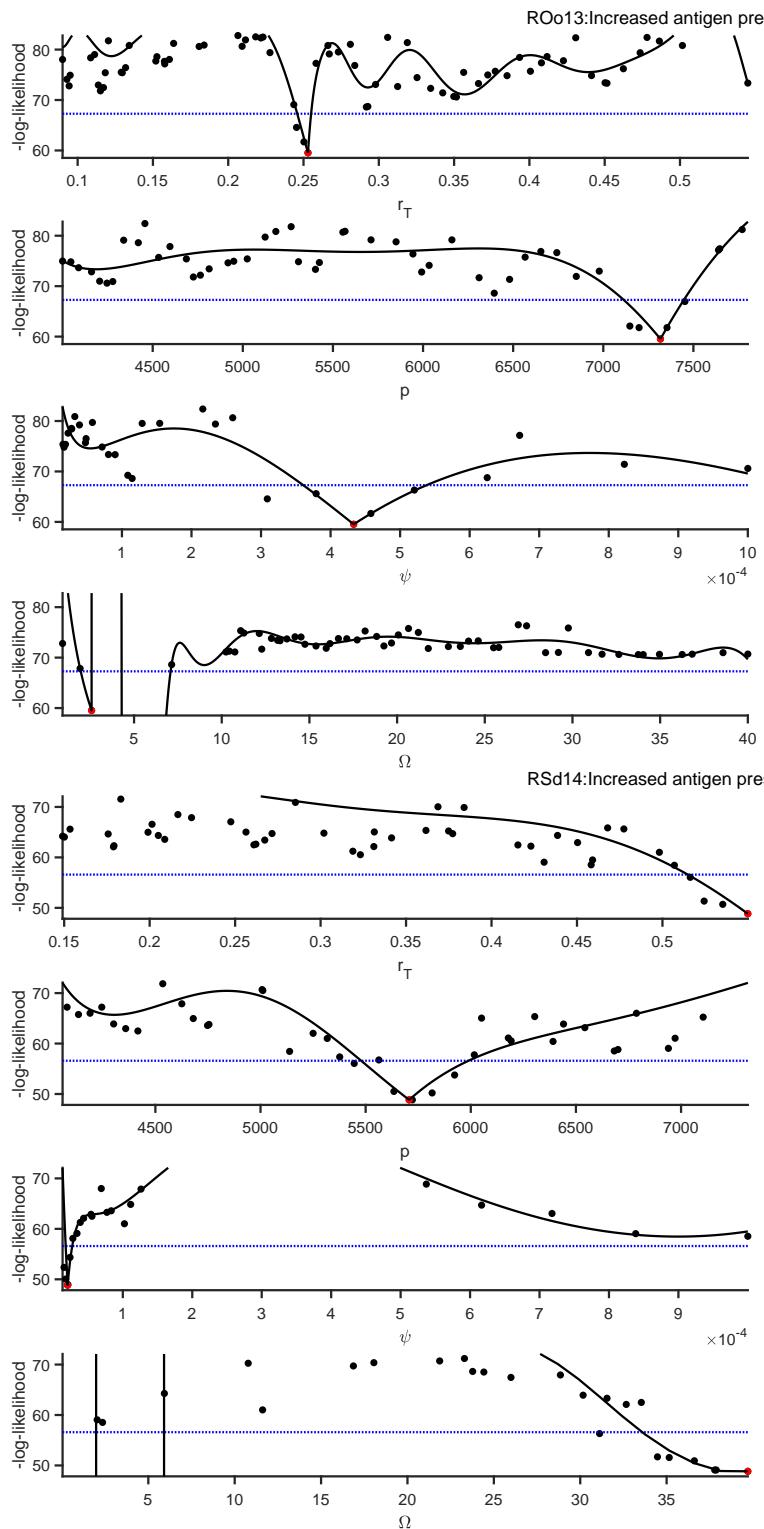


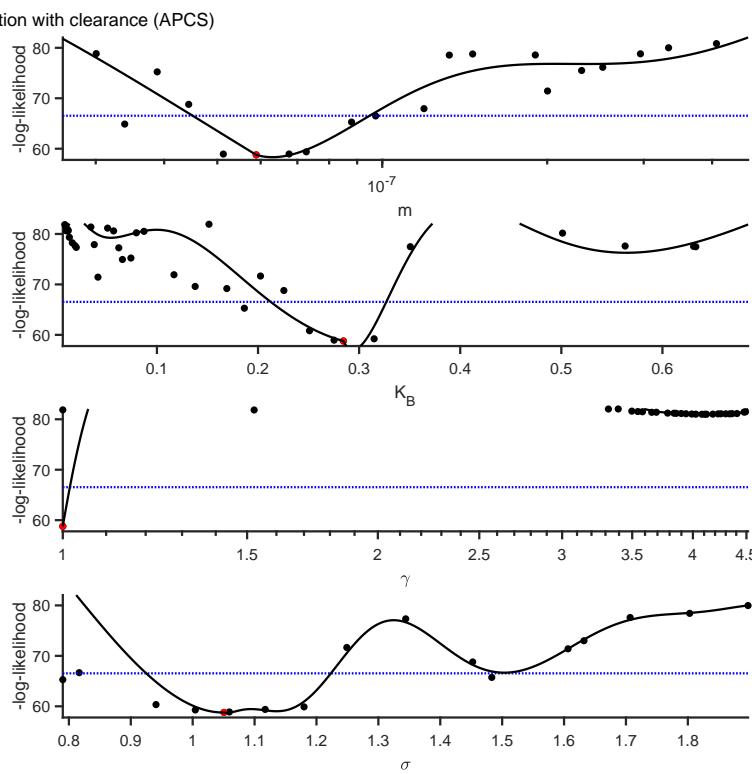
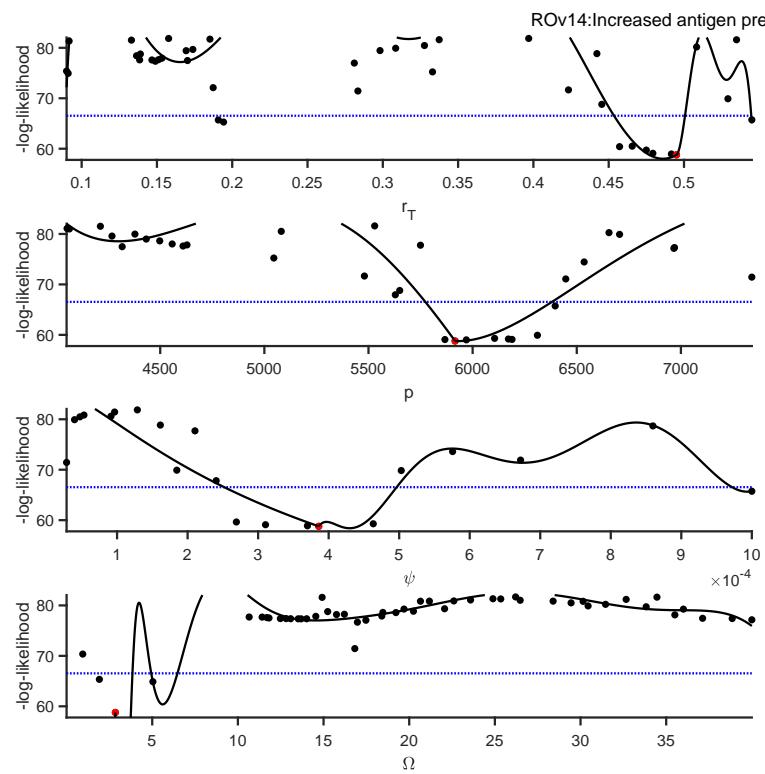
### 11.3 Antigen presenting cell effector cell source model







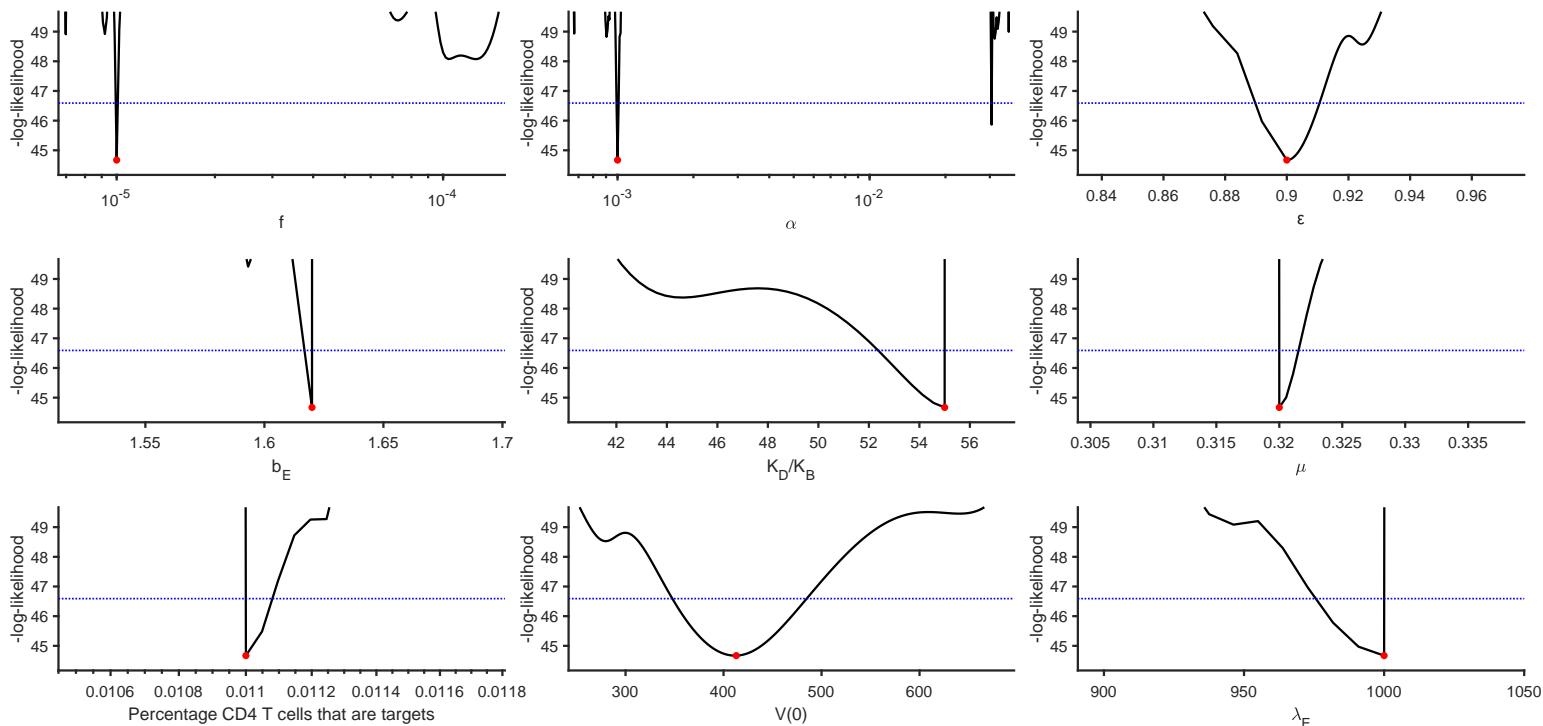




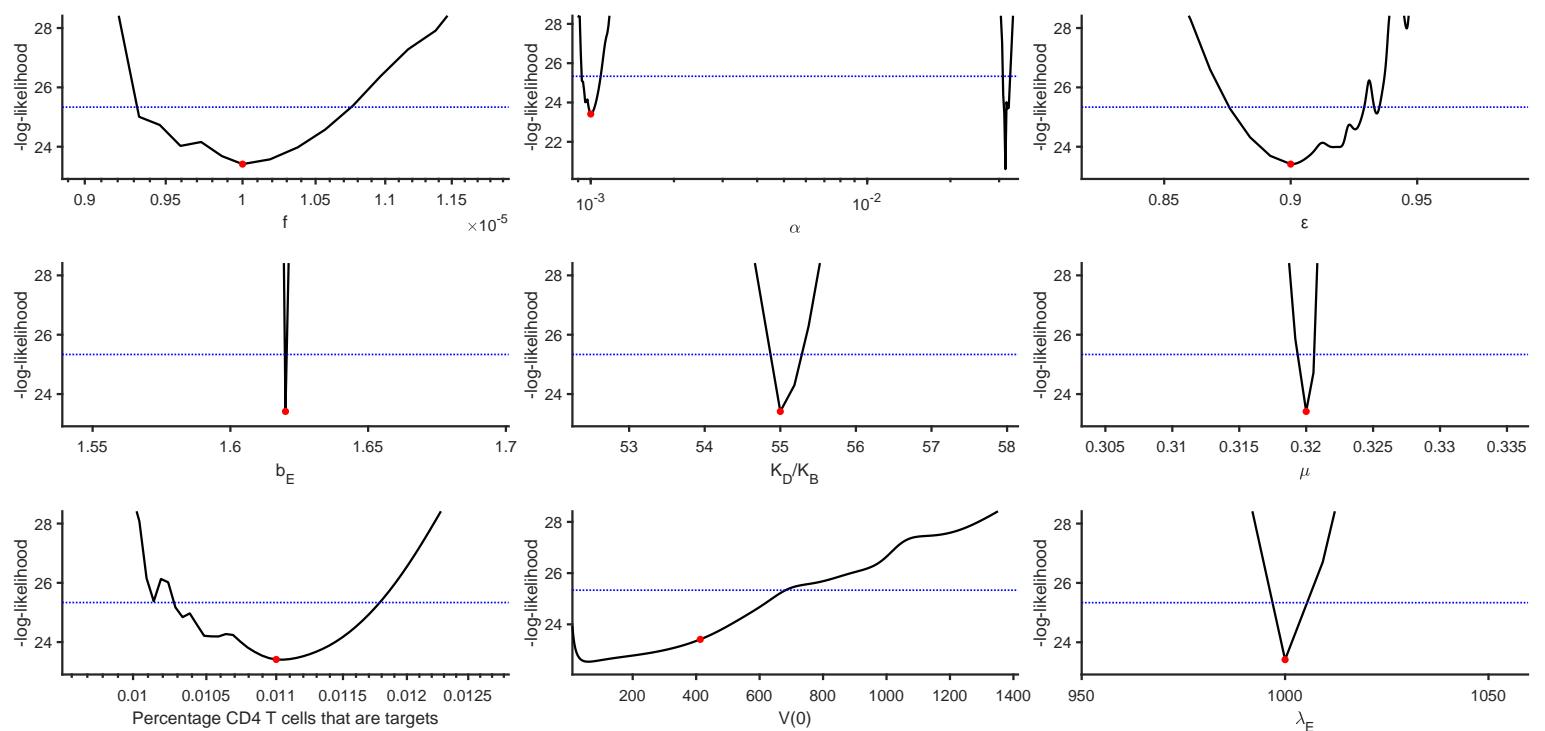
## 12 Sensitivity analysis: Increased antigen presentation with increased viral clearance

### 12.1 Baseline effector cell source model

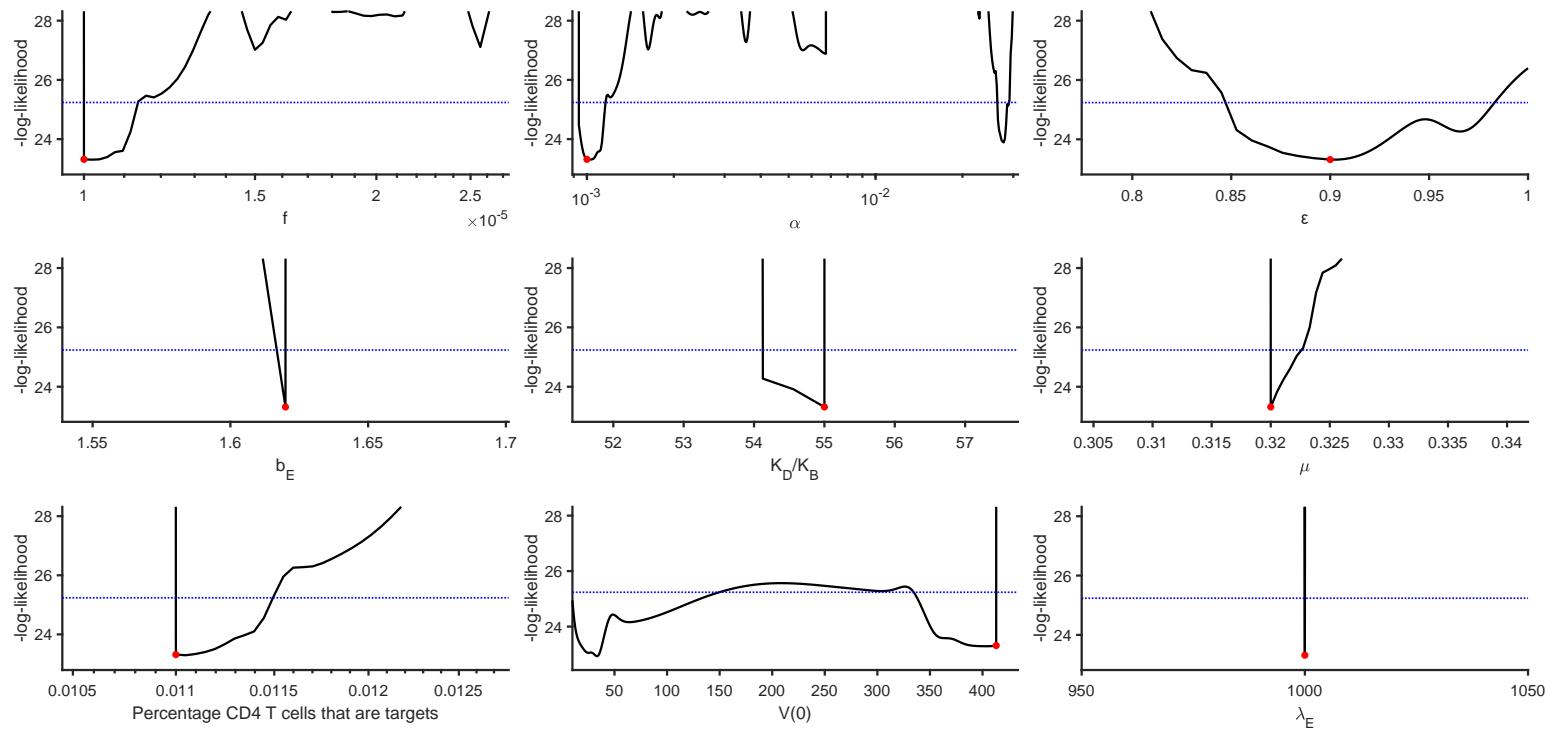
ROq14:Increased antigen presentation with clearance (BL)



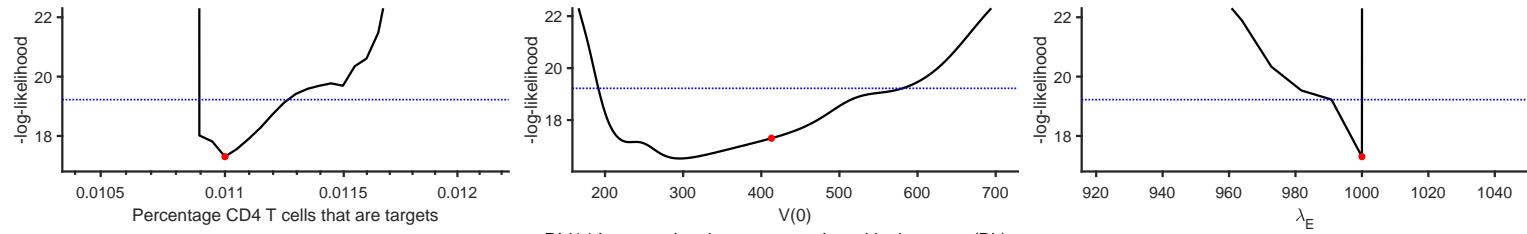
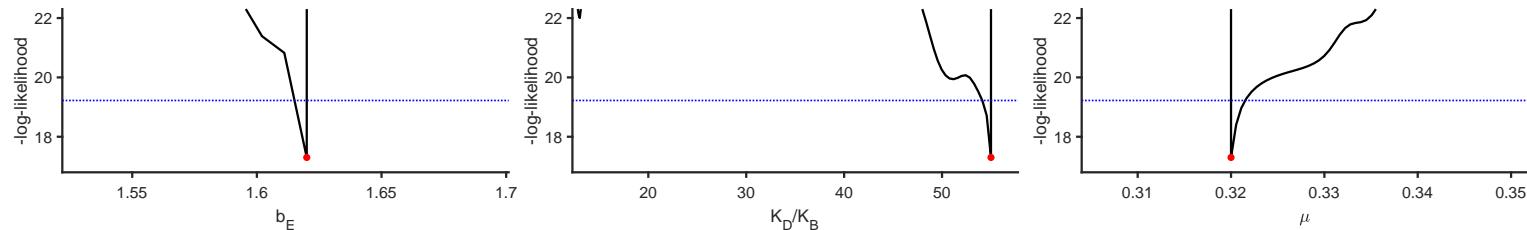
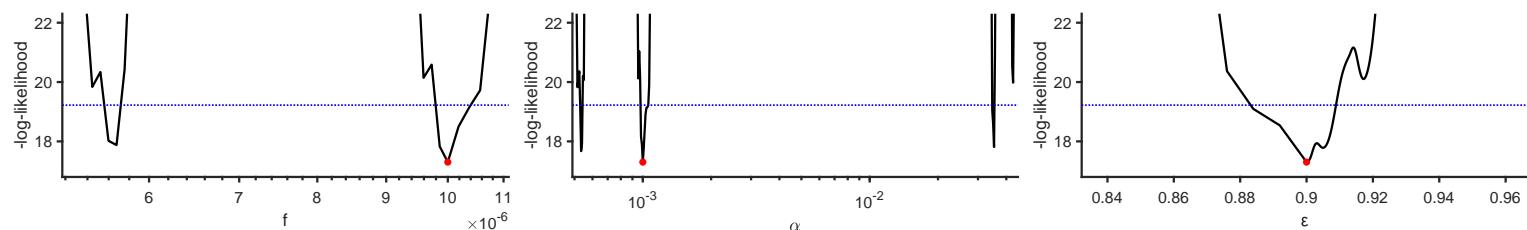
RDa15:Increased antigen presentation with clearance (BL)



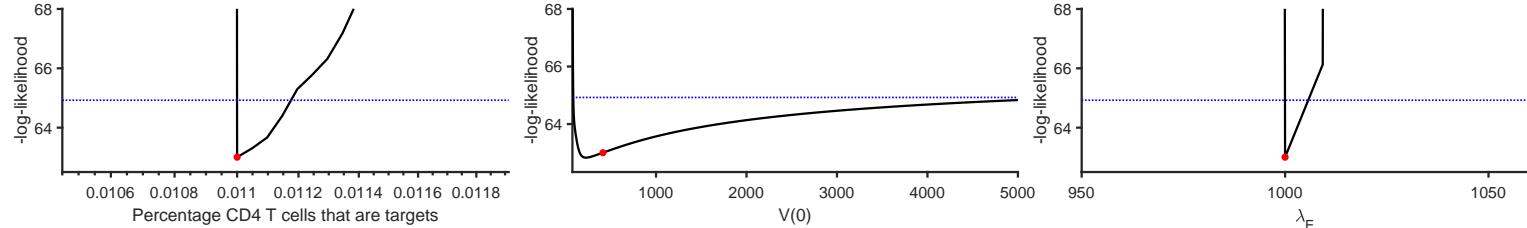
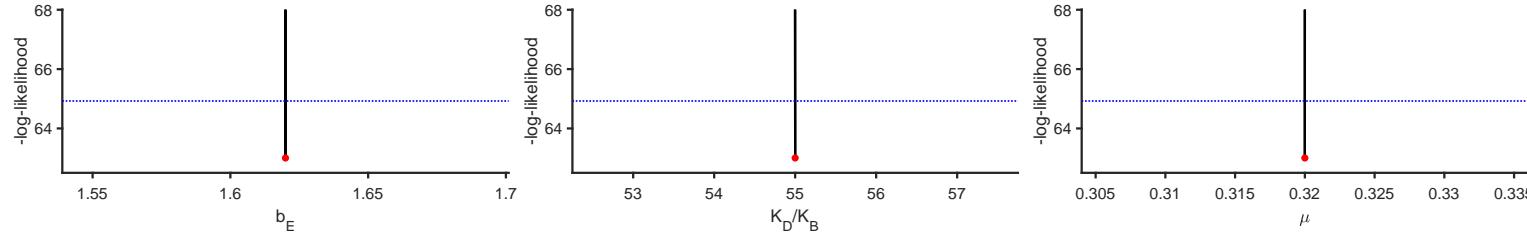
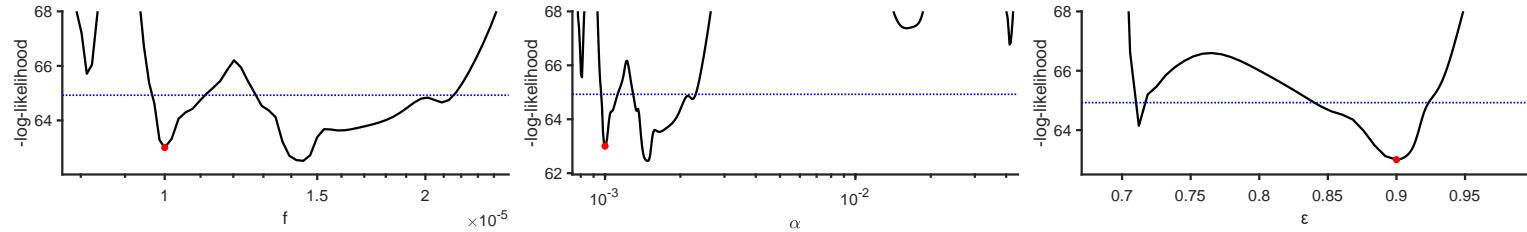
RFa15:Increased antigen presentation with clearance (BL)



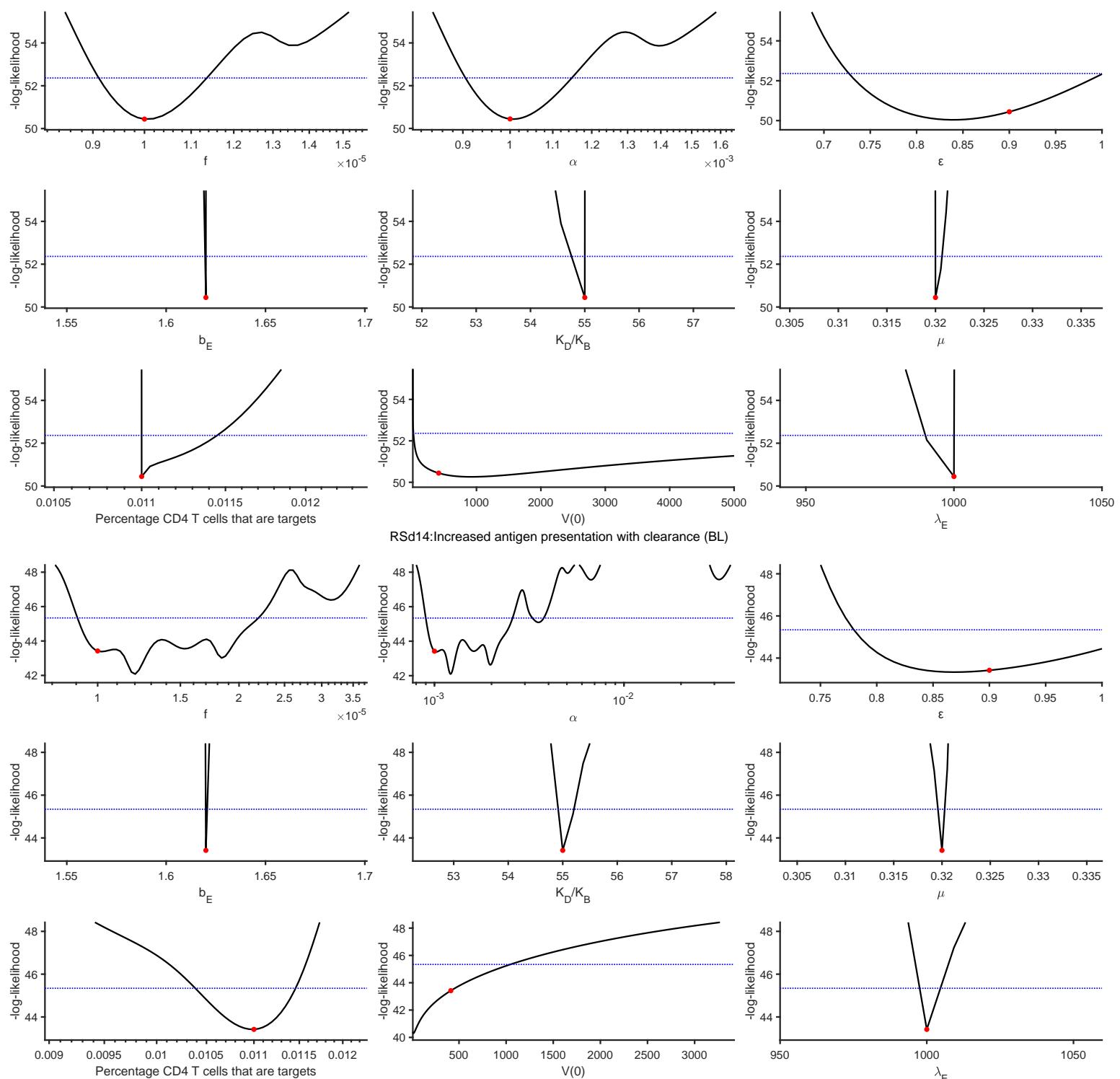
RLn12:Increased antigen presentation with clearance (BL)



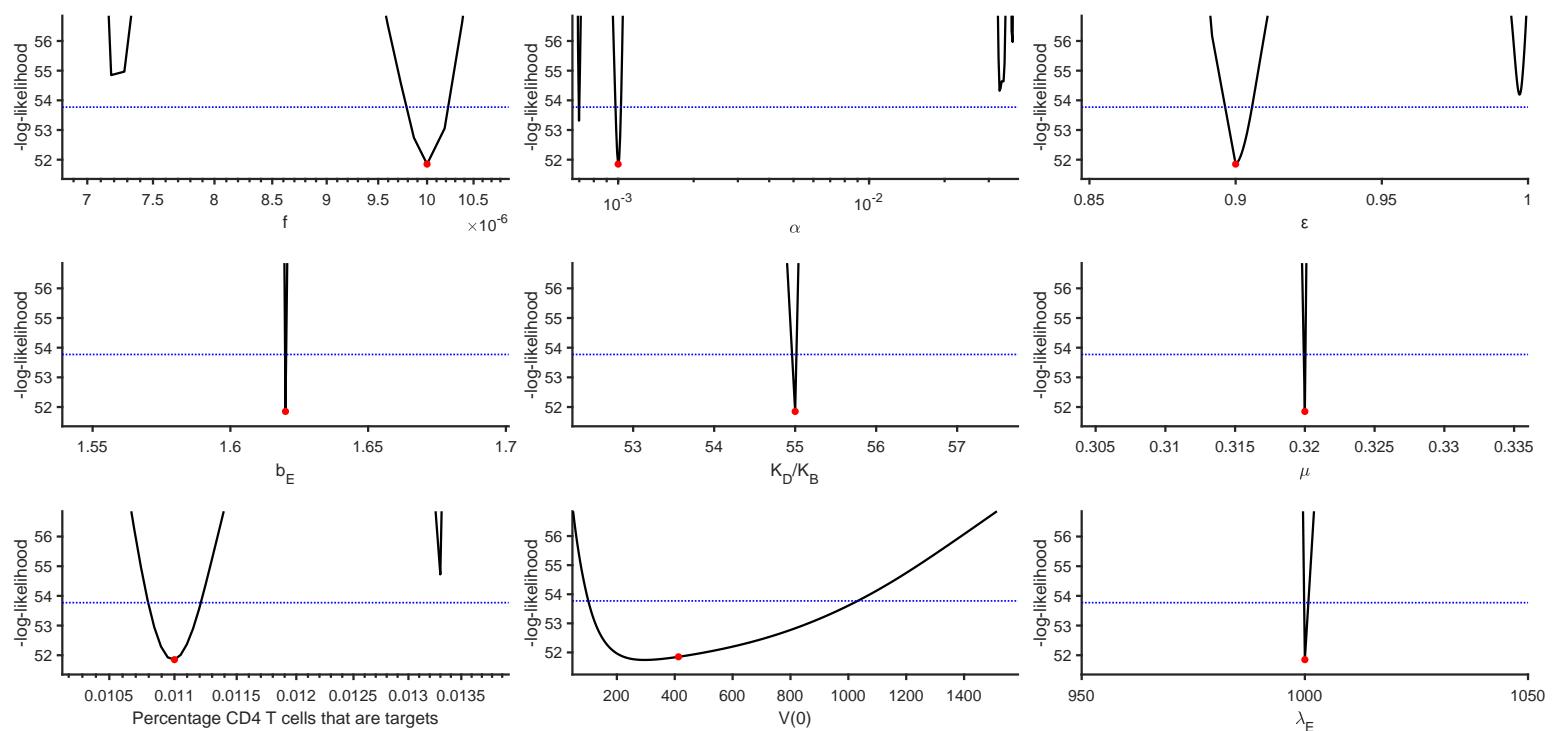
Rid14:Increased antigen presentation with clearance (BL)



ROo13:Increased antigen presentation with clearance (BL)

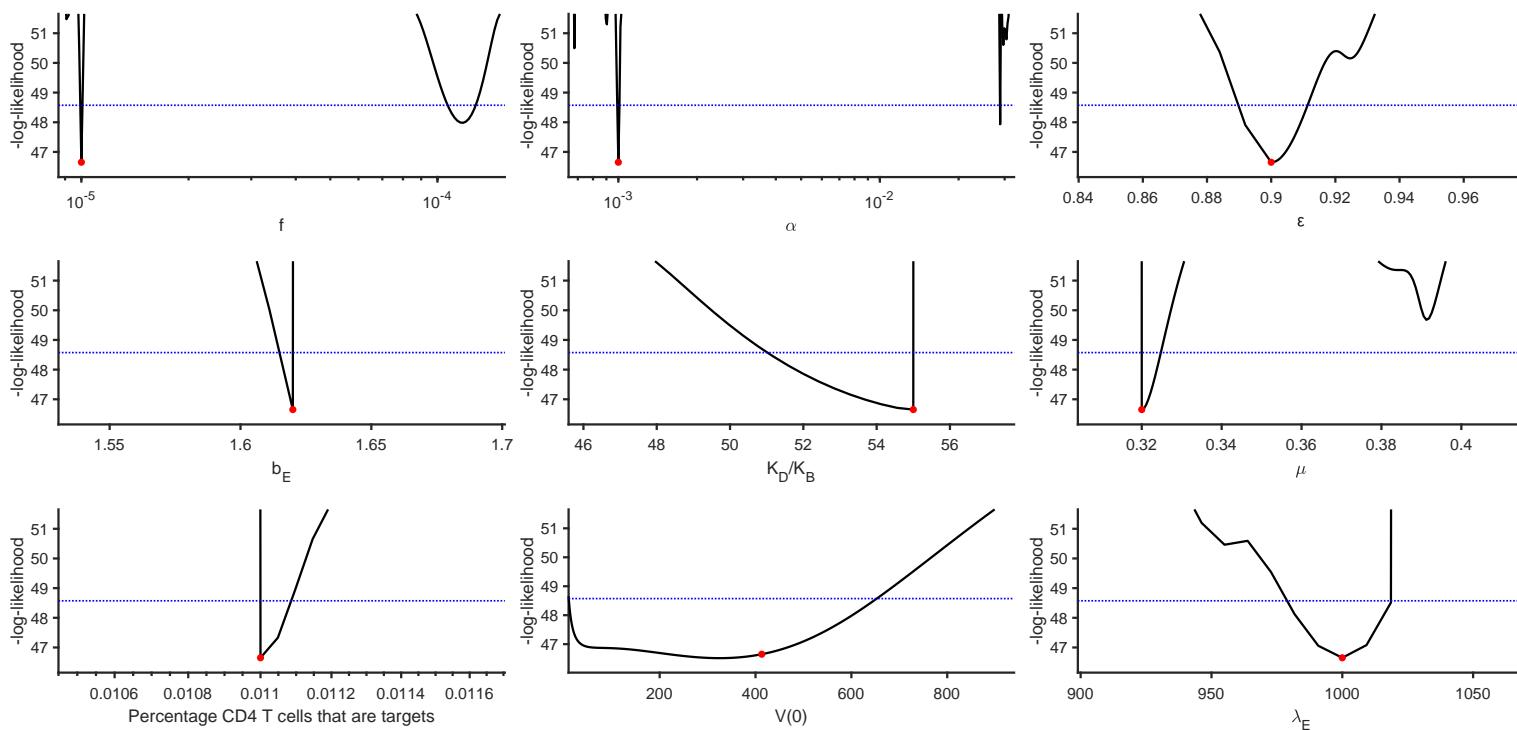


ROv14:Increased antigen presentation with clearance (BL)

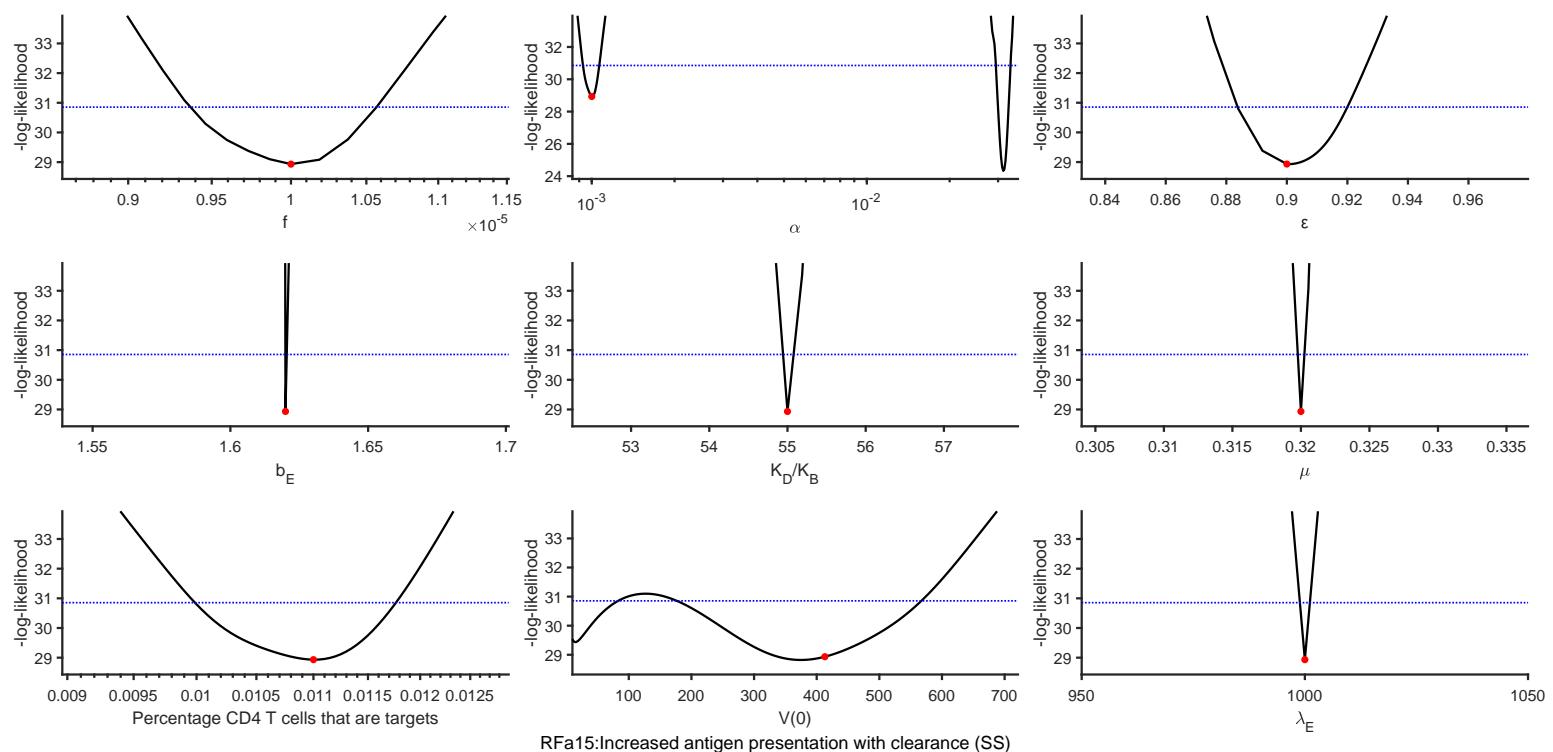


## 12.2 Saturated effector cell source model

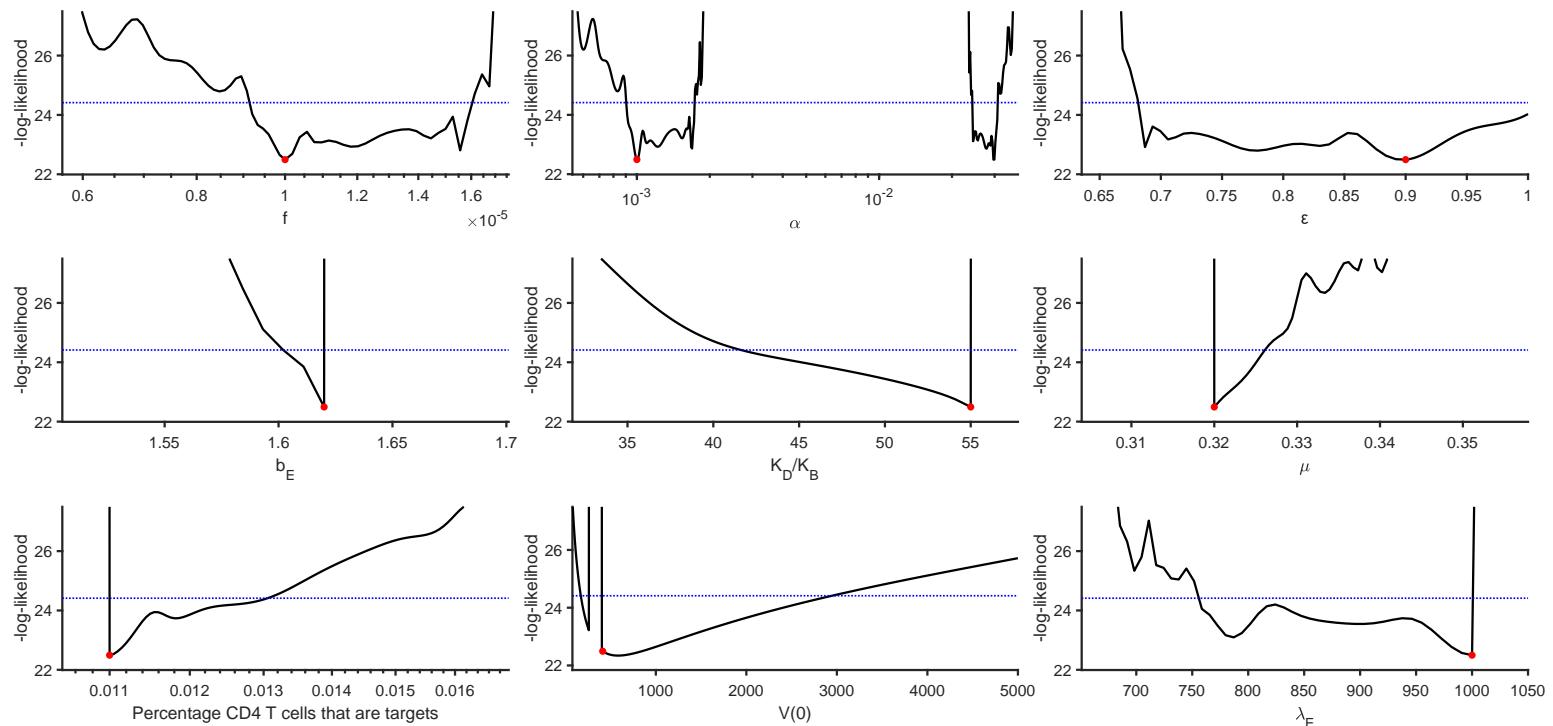
ROq14:Increased antigen presentation with clearance (SS)



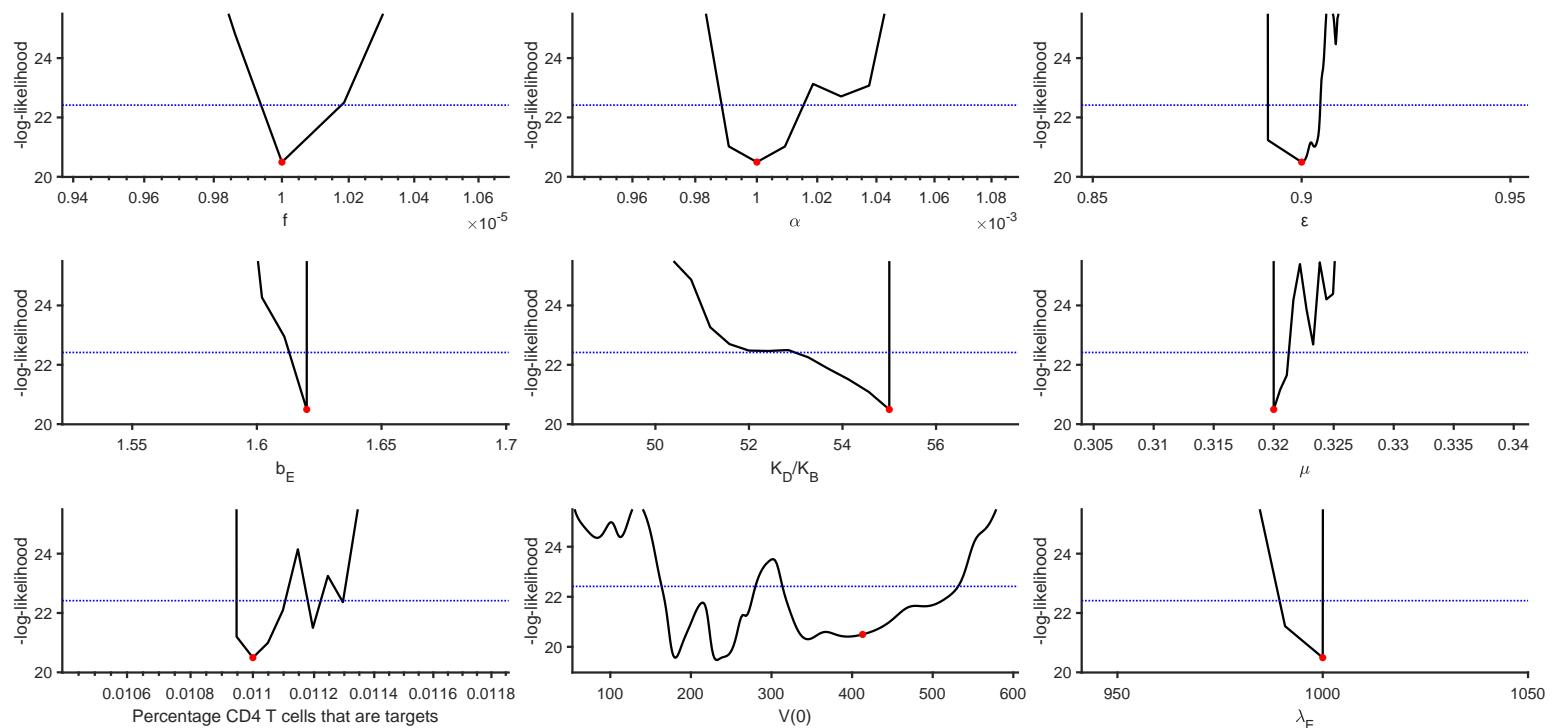
RDa15:Increased antigen presentation with clearance (SS)



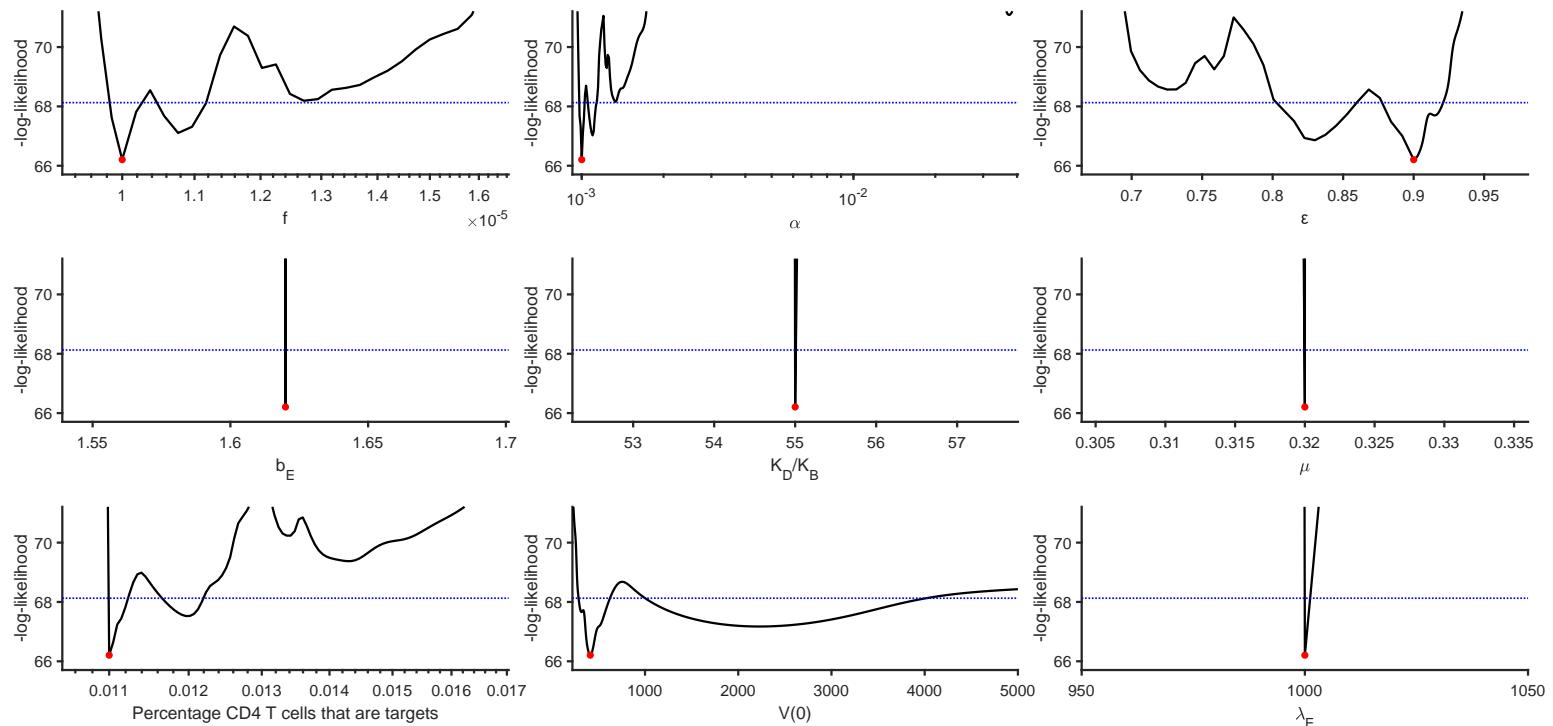
RFa15:Increased antigen presentation with clearance (SS)



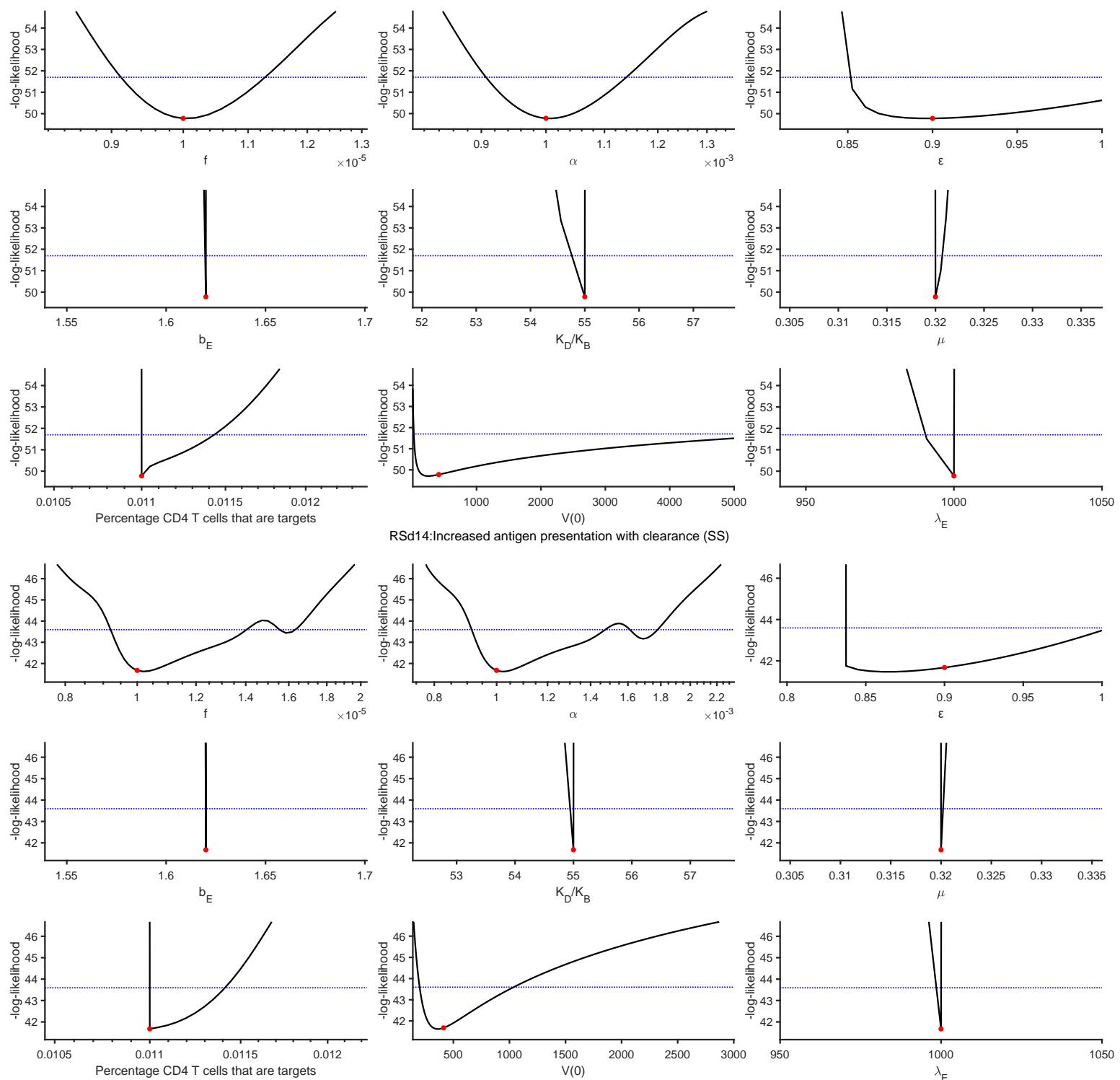
RLn12:Increased antigen presentation with clearance (SS)



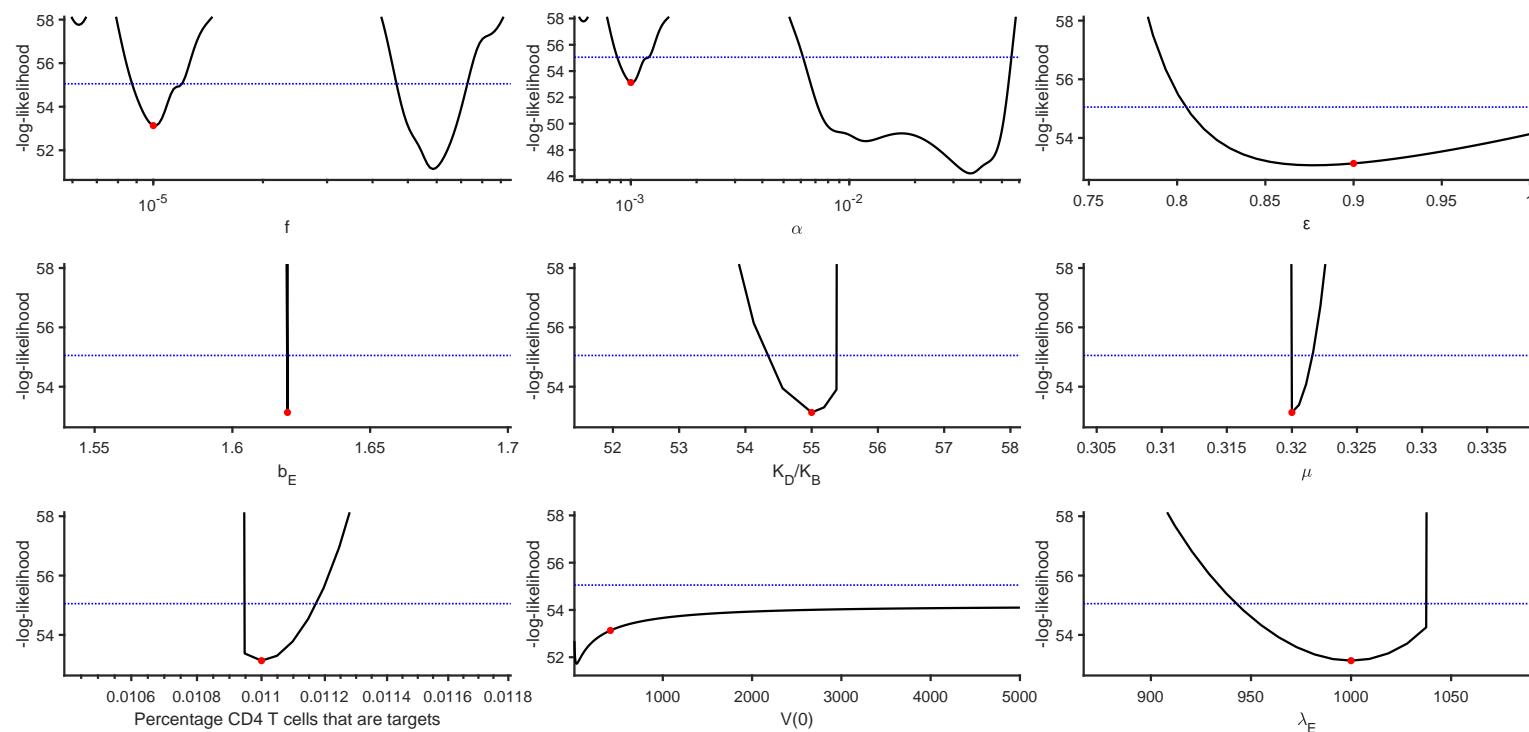
Rid14:Increased antigen presentation with clearance (SS)



ROo13:Increased antigen presentation with clearance (SS)

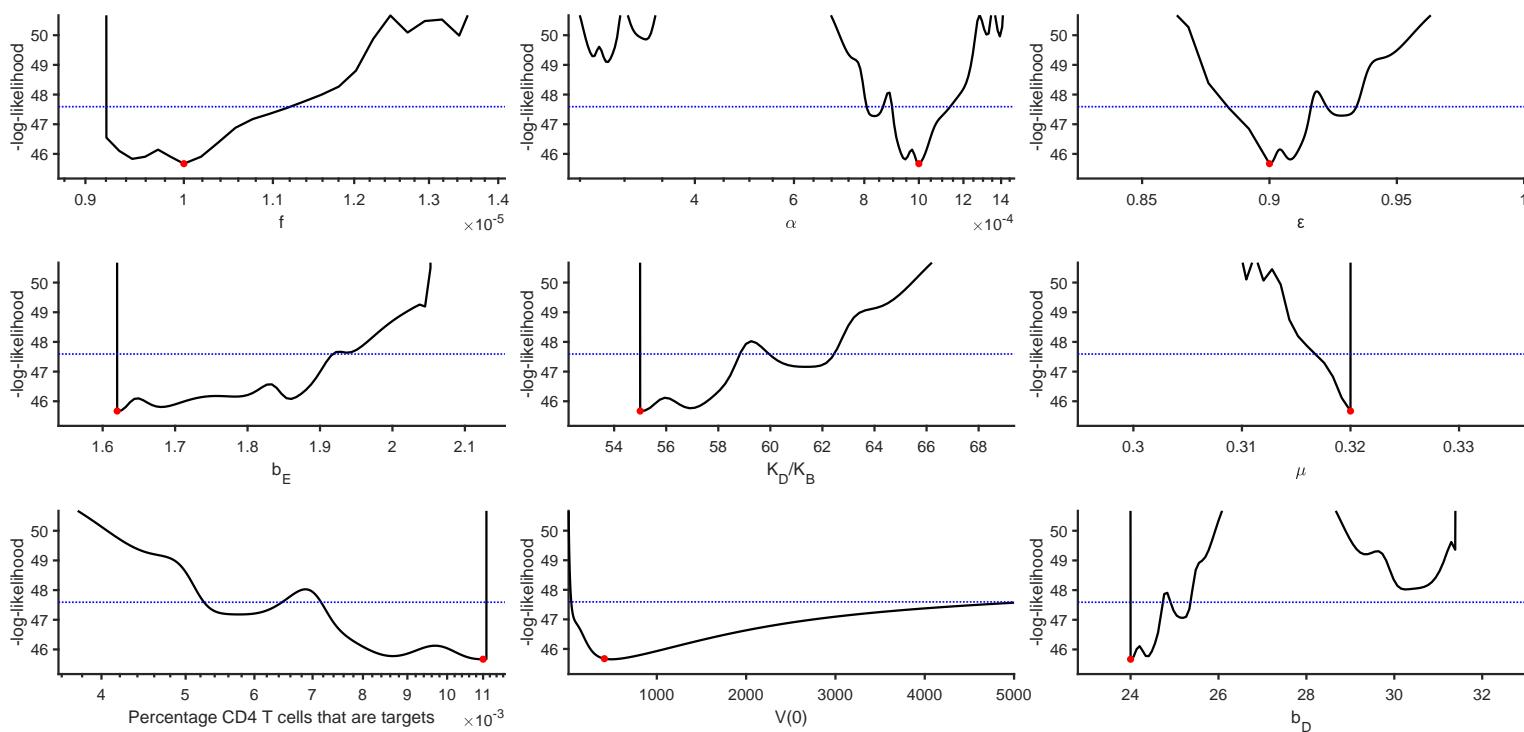


ROv14:Increased antigen presentation with clearance (SS)

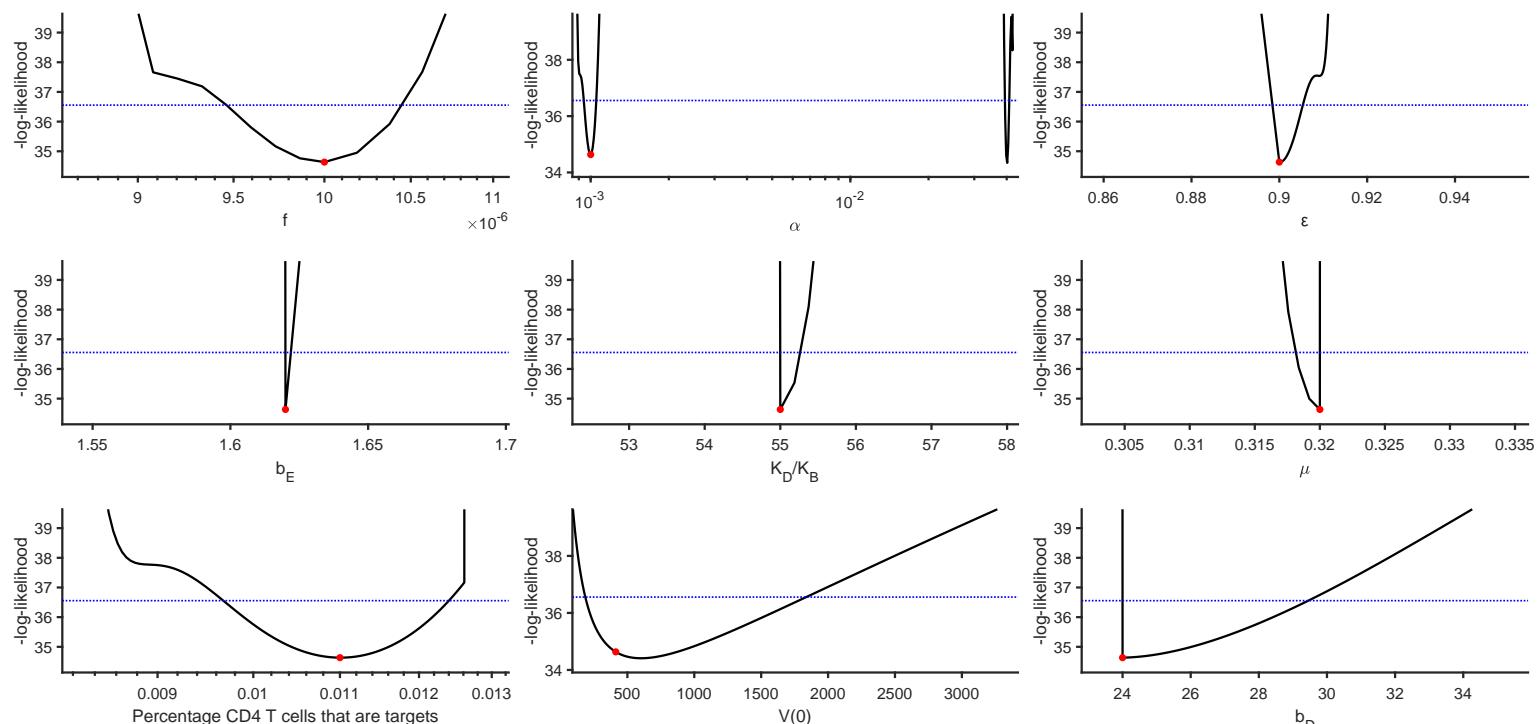


## 12.3 Antigen presenting cell effector cell source model

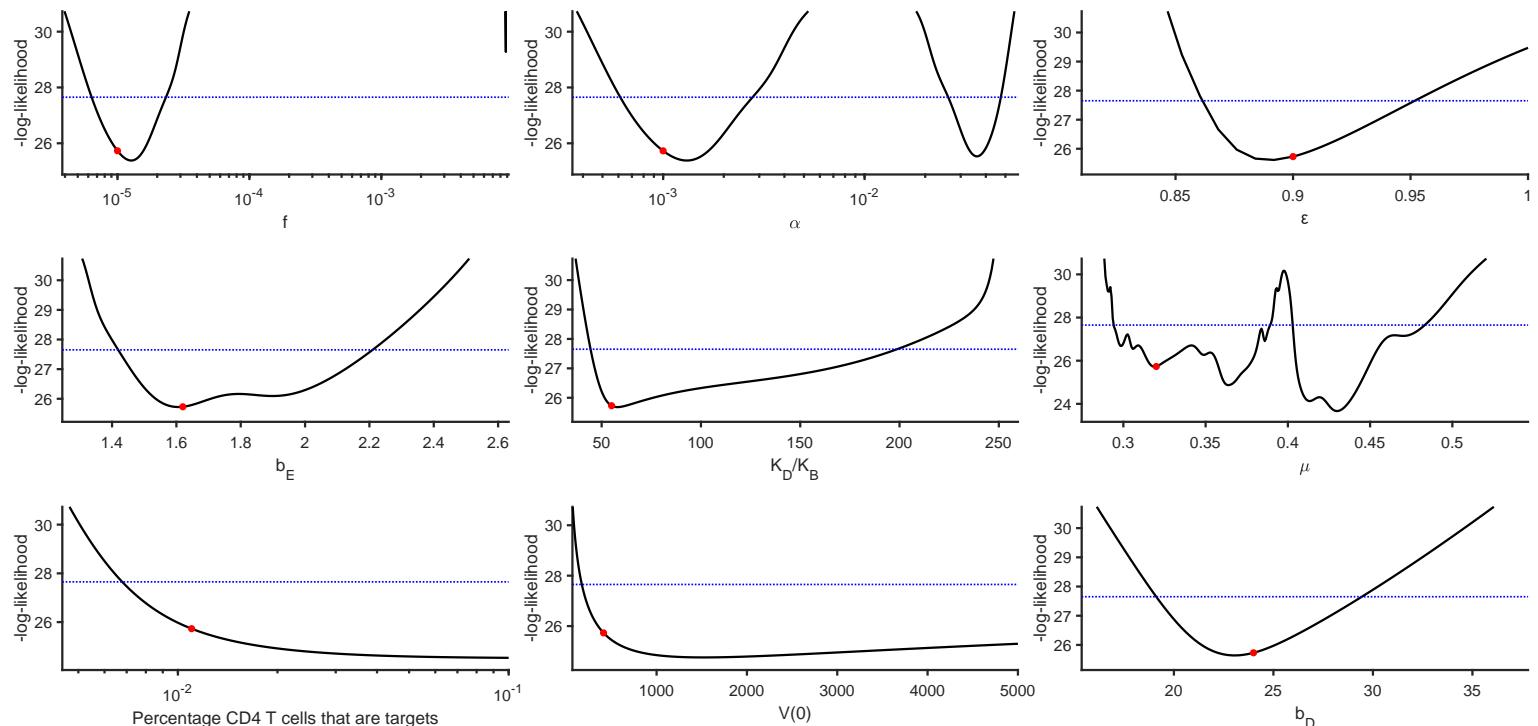
ROq14:Increased antigen presentation with clearance (APCS)



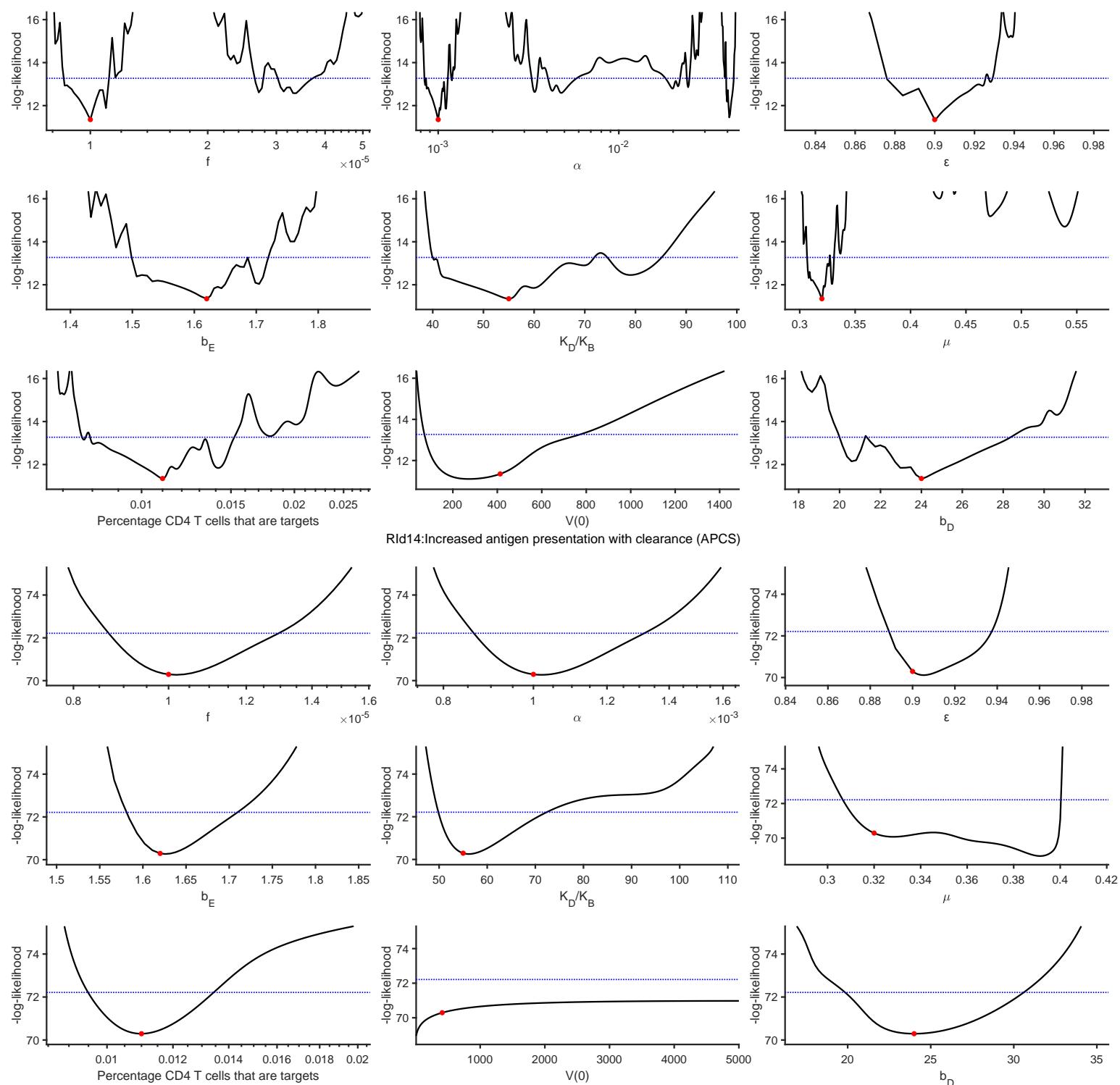
RDa15:Increased antigen presentation with clearance (APCS)



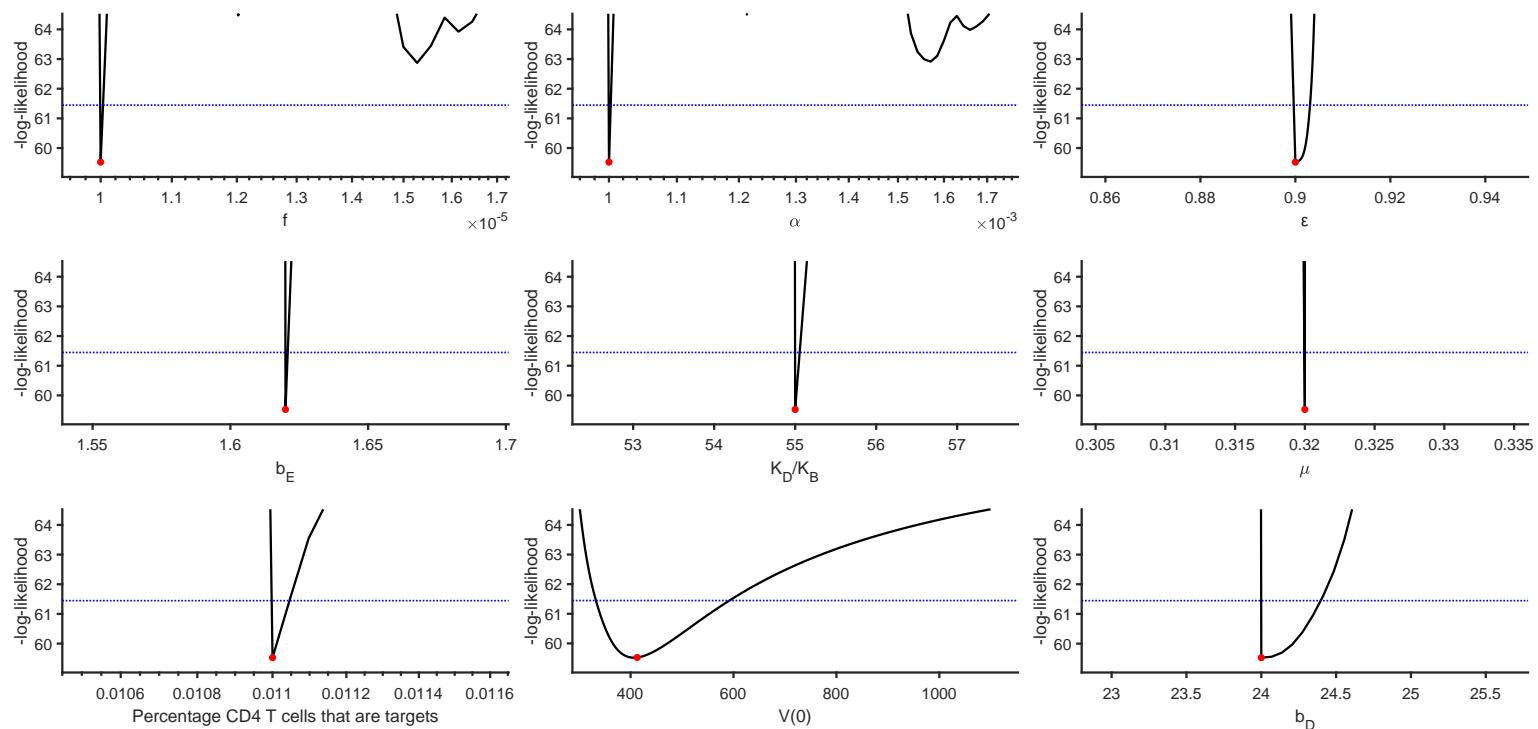
RFa15:Increased antigen presentation with clearance (APCS)



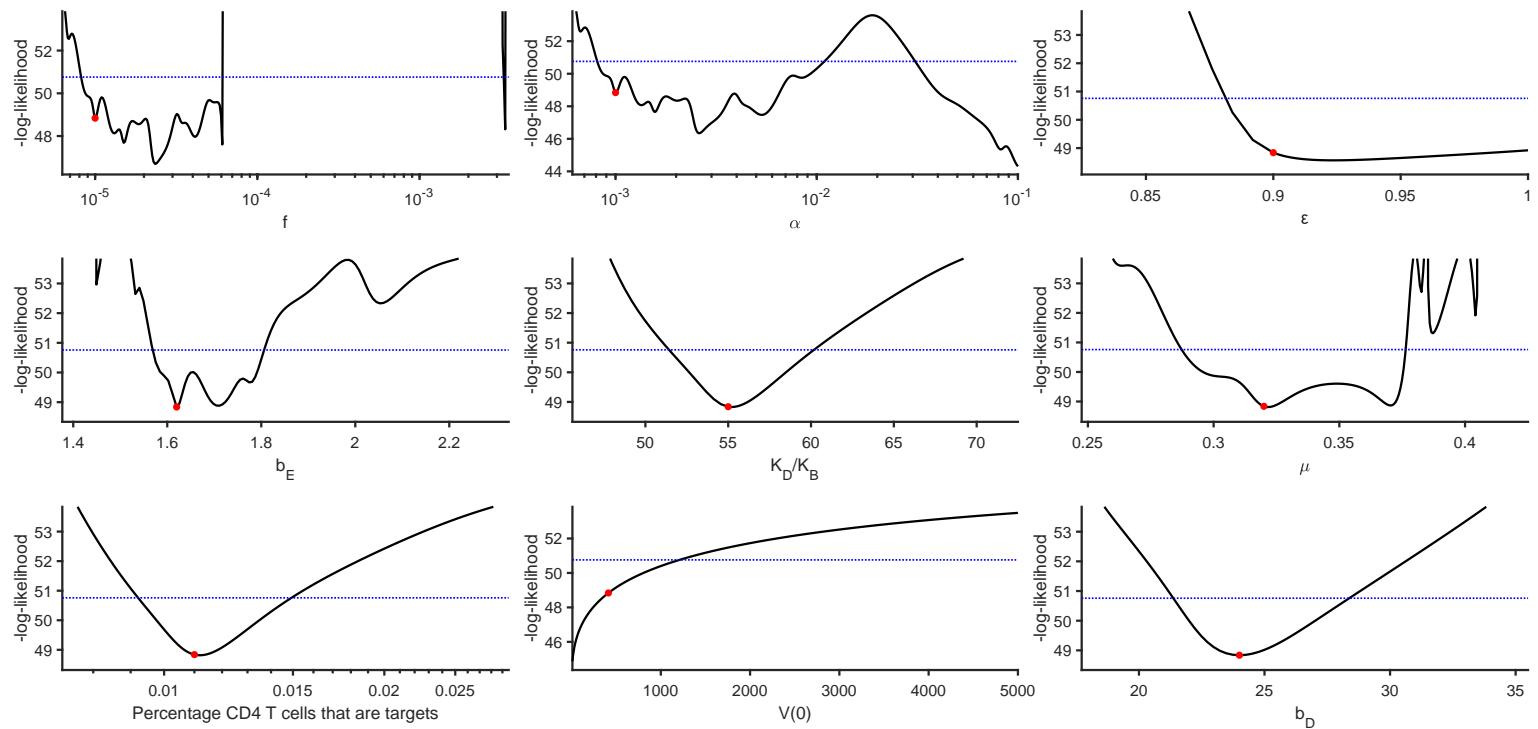
RLn12:Increased antigen presentation with clearance (APCS)



ROo13:Increased antigen presentation with clearance (APCS)



RSd14:Increased antigen presentation with clearance (APCS)



ROv14:Increased antigen presentation with clearance (APCS)

