```
final simplex: (array([[1.19494445e+03, 7.16371201e+03, 1.28136304e+03, 1.31606154e+00,
                                                                   1.91617561e+03, 1.88742408e+04, 9.03017988e-03, 8.20433340e-01,
                                                                   6.83835638e+02, 3.24643802e+04, 4.73376905e-04, 2.85644356e+00,
                                                                   6.32148081e-01, 9.72768210e-01, 2.64017386e+00, 1.91933916e+00],
                                                                  [1.19494445e+03, 7.16371201e+03, 1.28136303e+03, 1.31606157e+00, 1.91617561e+03, 1.88742408e+04, 9.03017988e-03, 8.20433340e-01,
                                                                   6.83835638e+02, 3.24643802e+04, 4.73376905e-04, 2.85644357e+00,
                                                                   6.32148081e-01, 9.72768210e-01, 2.64017386e+00, 1.91933916e+00],
                                                                  [1.19494445e+03, 7.16371207e+03, 1.28136302e+03, 1.31606153e+00,
                                                                   1.91617561e+03, 1.88742408e+04, 9.03017988e-03, 8.20433340e-01,
                                                                   6.83835638e+02, 3.24643802e+04, 4.73376905e-04, 2.85644356e+00,
                                                                   6.32148081e-01, 9.72768210e-01, 2.64017386e+00, 1.91933916e+00],
                                                                  [1.19494447e+03, 7.16371204e+03, 1.28136305e+03, 1.31606158e+00,
                                                                   1.91617561e+03, 1.88742408e+04, 9.03017988e-03, 8.20433340e-01,
                                                                   6.83835638e+02, 3.24643802e+04, 4.73376905e-04, 2.85644357e+00, 6.32148081e-01, 9.72768210e-01, 2.64017386e+00, 1.91933916e+00],
                                                                  [1.19494446e+03, 7.16371206e+03, 1.28136304e+03, 1.31606156e+00,
                                                                   1.91617561e+03, 1.88742408e+04, 9.03017988e-03, 8.20433340e-01,
                                                                   6.83835638e+02, 3.24643802e+04, 4.73376905e-04, 2.85644356e+00,
                                                                   6.32148081e-01, 9.72768210e-01, 2.64017386e+00, 1.91933916e+00],
                                                                  [1.19494445e+03, 7.16371210e+03, 1.28136299e+03, 1.31606153e+00,
                                                                   1.91617561e+03, 1.88742408e+04, 9.03017988e-03, 8.20433340e-01,
                                                                   6.83835638e+02, 3.24643802e+04, 4.73376905e-04, 2.85644357e+00,
                                                                   6.32148081e-01, 9.72768210e-01, 2.64017386e+00, 1.91933916e+00],
                                                                  [1.19494446e+03, 7.16371207e+03, 1.28136299e+03, 1.31606154e+00,
                                                                   1.91617561e+03, 1.88742408e+04, 9.03017988e-03, 8.20433340e-01,
      ['SM data type data plots for mutation', 'Sensor 83]8e+02, 3.24643802 e+0 Initial Guess 6-04, 2.85644357e+00, 6.32148081e-01, 9.72768210 e-01 Initial Guess 6-04, 2.85644357e+00, 6.32148081e-01, 9.72768210 e-01 Initial Guess 6-04, 2.85644357e+00, cer -> sensor (GFP output) inducer -> S[1|F9\49\49\49\49\49\49\49\49\50,7.1637120 e-01 Converged 3e+03, 1.31606153e+00,
inducer -> sensor (GFP output)
                                                                   6.83835638e+02, 3.2464380 e+0 Converged 5e-04, 2.85644356e+00, 6.32148081e-01, 9.72768210 e-01, Converged 5e-04, 1.91933916e+00], [1.19494445e+03, 7.1637120 e+0 Converged 3e+03, 1.31606152e+00,
                                         4 \times 10^{3}
                                                                   1.91617561e+03, 1.$8742408e+04, 9.03017988e-03, 8.20433340e-01,
                                                                   6.83835638e+02, 3.24643802e+04, 4.73376905e-04, 2.85644355e+00, 6.32148081e-01, 9.72768210e-01, 2.64017386e+00, 1.91933916e+00],
                                         3 \times 10^{3}
                                                                  N.19494444e+03, 7.‡6371207e+03, 1.28136302e+03, 1.31606154e+00,
                                                                   1.91617561e+03, 1.$8742408e+04, 9.03017988e-03, 8.20433340e-01,
                                                                   6.83835638e+02, 3.24643802e+04, 4.73376905e-04, 2.85644358e+00,
                                                                   6.321<del>48081e 01, 9.</del>72768210e-01, 2.64017386e+00, 1.91933916e+00],
                                                                  [<u>1,19494445e+03,7,1</u>6371200e+03, 1.28136305e+03, 1.31606157e+00,
191617<del>5</del>81e+03,9.88742408e+04, 9.03017988e-03, 8.20433340e-01,
                                                10<sup>-5</sup>
                         10^{-2}
                                   10^{-1}
                                                         10^{-4}
                                                        inducer -> S -| Output (GFP)
                                         6 \times 10^{3}
                                                                  [1.19494447e+03, 7.16371202e+03, 1.28136303e+03, 1.31606156e+00,
                                                                   1_91617561e+03, 1.$8742408e+04, 9.03017988e-03, 8.20433340e-01,
                                                                   6.83835638e+02, 3.24643802e+04, 4.73376905e-04, 2.85644357e+00, 6.32148081e-01, 9.72768210e-01, 2.64017386e+00, 1.91933916e+00],
                                         4 \times 10^{3}
                                                                  1.19494446e+03, 7.16371203e+03, 1.28136300e+03, 1.31606153e+00, 1.91617561e+03, 1.88742408e+04, 9.03017988e-03, 8.20433340e-01, 6.83835638e+02, 3.24643802e+04, 4.73376905e-04, 2.85644355e+00, 6.32148081e-01, 9.72768210e-01, 2.64017386e+00, 1.91933916e+00],
                                         3 \times 10^{3}
                                                                  [1.19494446e+03, 7.16371200e+03, 1.28136304e+03, 1.31606156e+00,
                                                                   1.91617561e+03, 1.88742408e+04, 9.03017988e-03, 8.20433340e-01,
                                                                  \begin{array}{l} 6.83835638e \pm 07.3 \\ 24643802e \pm 04.4.73376905e \pm 04.2.85644354e \pm 00. \\ 6032148981e \pm 01.19.72768210e \pm 01.2.64017386e \pm 00.1.91933916e \pm 00. \\ [1.19494445e \pm 03.7.16371197e \pm 03.1.28136304e \pm 03.1.31606156e \pm 00. \\ \end{array}
                                  10^{-1}
                                                10^{-5}
                         10^{-2}
                                                         10^{-4}
     Across all four plots:
                                                                   1.91617561e+03, 1.88742408e+04, 9.03017988e-03, 8.20433340e-01,
                                                                   6.83835638e+02, 3.24643802e+04, 4.73376905e-04, 2.85644356e+00,
       RSS (converged)=0.037
                                                                   6.32148081e-01, 9.72768210e-01, 2.64017386e+00, 1.91933916e+00],
                                                                  [1.19494445e+03, 7.16371209e+03, 1.28136301e+03, 1.31606153e+00,
       RSS (initial)=1.607
                                                                   1.91617561e+03, 1.88742408e+04, 9.03017988e-03, 8.20433340e-01,
                                                                   6.83835638e+02, 3.24643802e+04, 4.73376905e-04, 2.85644357e+00,
       RSS (% reduction)=0.977
                                                                   6.32148081e-01, 9.72768210e-01, 2.64017386e+00, 1.91933916e+00],
                                                                  [1.19494444e+03, 7.16371203e+03, 1.28136300e+03, 1.31606150e+00,
             epsilon Initial_guesses Converged
                                                                   1.91617561e+03, 1.88742408e+04, 9.03017988e-03, 8.20433340e-01,
                           618.047086 1194.944449
                                                                   6.83835638e+02, 3.24643802e+04, 4.73376905e-04, 2.85644357e+00
                          16278.856600 7163.712006
                                                                   1300.653790 1281.363041
                                                                  0.03727399, 0.03727399, 0.03727399, 0.03727399, 0.03727399,
                           1.096541 1.316062
                                                                  0.03727399, 0.03727399, 0.03727399, 0.03727399, 0.03727399,
                         1916.175610 1916.175610
                                                                  0.03727399, 0.03727399]))
                        18874.240800 18874.240800
                                                                     fun: 0.03727398604885324
                           0.009030
                                         0.009030
                                                                  message: 'Optimization terminated successfully.'
                           0.820433
                                         0.820433
                                                                    nfev: 1231
                          683.835638
                                        683.835638
                                                                    nit: 778
                         32464.380200 32464.380200
                                                                   status: 0
                           0.000473
                                         0.000473
                                                                  success: True
                           2.821352
                                         2.856444
                                                                      x: array([1.19494445e+03, 7.16371201e+03, 1.28136304e+03, 1.31606154e+00,
                           0.632148
                                         0.632148
                                                                  1.91617561e+03, 1.88742408e+04, 9.03017988e-03, 8.20433340e-01,
                           0.972768
                                         0.972768
                                                                  6.83835638e+02, 3.24643802e+04, 4.73376905e-04, 2.85644356e+00,
                            2.640174
                                          2.640174
                                                                  6.32148081e-01, 9.72768210e-01, 2.64017386e+00, 1.91933916e+00])
```

 $10^{4}$ 

 $10^{3}$ 

 $10^{4}$ 

 $10^{-5}$ 

 $10^{-4}$ 

 $10^{-4}$ 

A s 576.897363

B s -9115.144594

0.219520

0.000000

0.000000

0.000000

0.000000

0.000000

0.000000

0.000000

0.035092

0.000000

0.000000

0.000000

0.000000

1.919339

1.919339

C\_s -19.290749

 $N_s$ 

Сr

Νr

Αh

Βh

C h

Fο

Αо

Во

Со

10<sup>-3</sup>

 $10^{-3}$