```
1.91617561e+03, 1.88742408e+04, 9.03017988e-03, 8.20433340e-01,
                                                                                                          1.02261787e+03, 3.97364477e+04, 8.11306661e-04, 1.40914639e+00,
                                                                                                          1.54069520e-01, 1.58953131e+00, 3.97837047e+00, 1.33698805e+00],
                                                                                                         [6.18047086e+02, 1.62788566e+04, 1.30065379e+03, 1.09654125e+00, 1.91617561e+03, 1.88742408e+04, 9.03017988e-03, 8.20433340e-01,
                                                                                                          1.02261787e+03, 3.97364477e+04, 8.11306661e-04, 1.40914639e+00,
                                                                                                          1.54069520e-01, 1.58953131e+00, 3.97837047e+00, 1.33698805e+00
                                                                                                         [6.18047086e+02, 1.62788566e+04, 1.30065379e+03, 1.09654125e+00,
                                                                                                          1.91617561e+03, 1.88742408e+04, 9.03017988e-03, 8.20433340e-01,
                                                                                                          1.02261787e+03, 3.97364477e+04, 8.11306661e-04, 1.40914639e+00,
                                                                                                          1.54069520e-01, 1.58953131e+00, 3.97837047e+00, 1.33698805e+00],
                                                                                                         [6.18047086e+02, 1.62788566e+04, 1.30065379e+03, 1.09654125e+00,
                                                                                                          1.91617561e+03, 1.88742408e+04, 9.03017988e-03, 8.20433340e-01,
                                                                                                          1.02261787e+03, 3.97364477e+04, 8.11306661e-04, 1.40914639e+00,
                                                                                                          1.54069520e-01, 1.58953131e+00, 3.97837047e+00, 1.33698805e+00
                                                                                                         [6.18047086e+02, 1.62788566e+04, 1.30065379e+03, 1.09654125e+00,
                                                                                                          1.91617561e+03, 1.88742408e+04, 9.03017988e-03, 8.20433340e-01,
                                                                                                          1.02261787e+03, 3.97364476e+04, 8.11306661e-04, 1.40914639e+00,
                                                                                                          1.54069520e-01, 1.58953130e+00, 3.97837047e+00, 1.33698805e+00]
                                                                                                         [6.18047086e+02, 1.62788566e+04, 1.30065379e+03, 1.09654125e+00,
                                                                                                          1.91617561e+03, 1.88742408e+04, 9.03017988e-03, 8.20433340e-01,
                                                                                                          1.02261787e+03, 3.97364477e+04, 8.11306662e-04, 1.40914639e+00,
                                                                                                          1.54069519e-01, 1.58953131e+00, 3.97837047e+00, 1.33698805e+00]
                                                                                                         [6.18047086e+02, 1.62788566e+04, 1.30065379e+03, 1.09654125e+00,
                                                                                                          1.91617561e+03, 1.88742408e+04, 9.03017988e-03, 8.20433340e-01,
          ['SM data type data plots for mutation', 'Output 08] e+03, 3.9736447 = 0 Initial Guess 2e-04, 1.40914639e+00, 1.54069520e-01, 1.58953131 = 0 Initial Guess 2e-04, 1.40914639e+00, 1.54069520e-01, 1.58069520e-01, 1.5
  inducer -> sensor (GFP output)
                                                                                                          1.02261787e+03, 3.97364476e+04Converged 0e-04, 1.40914639e+00,
                                                                                                         1.54069521e-01, 1.58953130e+00, 1.9787047e+00, 1.33698805e+00], [6.18047086e+02, 1.6278856e+0 Converged 79e+03, 1.09654125e+00,
                                                                  4 \times 10^3
                                                                                                          1.91617561e+03, 1.$8742408e+04, 9.03017988e-03, 8.20433340e-01,
                                                                                                          1.02261787e+03, 3.$7364476e+04, 8.11306660e-04, 1.40914639e+00,
                                                                  3 \times 10^{3}
                                                                                                          1.54069520e-01, 1.58953130e+00, 3.97837047e+00, 1.33698805e+00]
                                                                                                          1.946.18047086e+02, 1.62788566e+04, 1.30065379e+03, 1.09654125e+00, 1.94617961e+03, 1.88742408e+04, 9.03017988e-03, 8.20433340e-01, 1.02261787e+03, 3.97364477e+04, 8.11306661e-04, 1.40914639e+00,
                                                                  2 \times 10^{3}
                                                                                                          1.54069520e-01, 1.58953131e+00, 3.97837047e+00, 1.33698805e+00],
                                                                                                          <u>6.18047086e+02.1.</u>62788566e+04, 1.30065379e+03, 1.09654125e+00,
1.91617581e+03, 1.88742408e+04, 9.03017988e-03, 8.20433340e-01,
                                                                             10<sup>-5</sup>
                           10^{-3}
                                          10-2
             10^{-4}
                                                        10^{-1}
                                                                                           10^{-4}
                                                                                         Full circult 0.761 3876+03, 3.97364476e+04, 8.11306661e-04, 1.40914639e+00, 1.54069521e-01, 1.58953130e+00, 3.97837047e+00, 1.33698805e+00],
     inducer -> S -| Output (GFP)
                                                                                                          [6.18047086e+02, 1.<mark>6</mark>2788566e+04, 1.30065379e+03, 1.09654125e+00,
                                                                                                          1.91617561e+03, 1.$8742408e+04, 9.03017988e-03, 8.20433340e-01,
                                                                  4 \times 10^3
                                                                                                           1.02261787e+03, 3.$7364476e+04, 8.11306659e-04, 1.40914639e+00,
                                                                                                          1.58953130e+00, 3.97837047e+00, 1.33698805e+00
                                                                  3 \times 10^{3}
                                                                                                           6.\$8047086e+02, 1.62788566e+04, 1.30065379e+03, 1.09654125e+00,
                                                                                                           191617561e+03, 1.$8742408e+04, 9.03017988e-03, 8.20433340e-01,
                                                                                                          1.02261787e+03, 3.$7364477e+04, 8.11306661e-04, 1.40914639e+00,
                                                                                                          1.54069520e-01, 1.58953131e+00, 3.97837047e+00, 1.33698805e+00],
                                                                  2 \times 10^{3}
                                                                                                         [6.18047986e+02, 1.62788566e+04, 1.30065379e+03, 1.09654125e+00, 1.91617561e+03, 1.88742408e+04, 9.03017988e-03, 8.20433340e-01,
                                                                                                           <u>1.02261787e+09, 3.</u>97364476e+04, 8.11306661e-04, 1.40914639e+00,
                                                                                                         10^{54}069520e-01,10^{58}953130e+00, 3.97837047e+00, 1.33698805e+00], [6.18047086e+02, 1.62788566e+04, 1.30065379e+03, 1.09654125e+00,
                           10^{-3}
                                          10^{-2}
                                                        10^{-1}
                                                                             10^{-5}
                                                                                           10^{-4}
10-5
              10^{-4}
           Across all four plots:
                                                                                                          1.91617561e+03, 1.88742408e+04, 9.03017988e-03, 8.20433340e-01,
                                                                                                          1.02261787e+03, 3.97364477e+04, 8.11306661e-04, 1.40914639e+00,
              RSS (converged)=0.066
                                                                                                          1.54069520e-01, 1.58953130e+00, 3.97837047e+00, 1.33698805e+00],
                                                                                                         [6.18047086e+02, 1.62788566e+04, 1.30065379e+03, 1.09654125e+00,
              RSS (initial)=0.75
                                                                                                          1.91617561e+03, 1.88742408e+04, 9.03017988e-03, 8.20433340e-01,
                                                                                                          1.02261787e+03, 3.97364477e+04, 8.11306661e-04, 1.40914639e+00,
              RSS (% reduction)=0.919
                                                                                                          1.54069520e-01, 1.58953131e+00, 3.97837047e+00, 1.33698805e+00]
                                                                                                         [6.18047086e+02, 1.62788566e+04, 1.30065379e+03, 1.09654125e+00, 1.09654125e+00]
                       epsilon Initial guesses
                                                                 Converged
                                                                                                          1.91617561e+03, 1.88742408e+04, 9.03017988e-03, 8.20433340e-01,
                    0.000000
                                          618.047086 618.047086
                                                                                                          1.02261787e+03, 3.97364477e+04, 8.11306662e-04, 1.40914639e+00
          Вs
                    0.000000
                                         16278.856600 16278.856600
                                                                                                          1.54069520e-01, 1.58953131e+00, 3.97837047e+00, 1.33698805e+00]]), array([0.06577891, 0.06577891, 0.06577891, 0.06577891, 0.06577891, 0.06577891, 0.06577891, 0.06577891, 0.06577891, 0.06577891, 0.06577891, 0.06577891, 0.06577891, 0.06577891, 0.06577891, 0.06577891, 0.06577891, 0.06577891, 0.06577891, 0.06577891, 0.06577891, 0.06577891, 0.06577891, 0.06577891, 0.06577891, 0.06577891, 0.06577891, 0.06577891, 0.06577891, 0.06577891, 0.06577891, 0.06577891, 0.06577891, 0.06577891, 0.06577891, 0.06577891, 0.06577891, 0.06577891, 0.06577891, 0.06577891, 0.06577891, 0.06577891, 0.06577891, 0.06577891, 0.06577891, 0.06577891, 0.06577891, 0.06577891, 0.06577891, 0.06577891, 0.06577891, 0.06577891, 0.06577891, 0.06577891, 0.06577891, 0.06577891, 0.06577891, 0.06577891, 0.06577891, 0.06577891, 0.06577891, 0.06577891, 0.06577891, 0.06577891, 0.06577891, 0.06577891, 0.06577891, 0.06577891, 0.06577891, 0.06577891, 0.06577891, 0.06577891, 0.06577891, 0.06577891, 0.06577891, 0.06577891, 0.06577891, 0.06577891, 0.06577891, 0.06577891, 0.06577891, 0.06577891, 0.06577891, 0.06577891, 0.06577891, 0.06577891, 0.06577891, 0.06577891, 0.06577891, 0.06577891, 0.06577891, 0.06577891, 0.06577891, 0.06577891, 0.06577891, 0.06577891, 0.06577891, 0.06577891, 0.06577891, 0.06577891, 0.06577891, 0.06577891, 0.06577891, 0.06577891, 0.06577891, 0.06577891, 0.06577891, 0.06577891, 0.06577891, 0.06577891, 0.06577891, 0.06577891, 0.06577891, 0.06577891, 0.06577891, 0.06577891, 0.06577891, 0.06577891, 0.06577891, 0.06577891, 0.06577891, 0.06577891, 0.06577891, 0.06577891, 0.06577891, 0.06577891, 0.06577891, 0.06577891, 0.06577891, 0.06577891, 0.06577891, 0.06577891, 0.06577891, 0.06577891, 0.06577891, 0.06577891, 0.06577891, 0.06577891, 0.06577891, 0.06577891, 0.06577891, 0.06577891, 0.06577891, 0.06577891, 0.06577891, 0.06577891, 0.06577891, 0.06577891, 0.06577891, 0.06577891, 0.06577891, 0.06577891, 0.06577891, 0.06577891, 0.06577891, 0.06577891, 0.06577891, 0.06577891, 0.06577891, 0.06577891, 0.06577891, 0.06577891, 0.06577891, 0.06577891, 0.
                                         1300.653790 1300.653790
                    0.000000
                                                                                                         0.06577891, 0.06577891, 0.06577891, 0.06577891, 0.06577891,
         N_s
                    0.000000
                                             1.096541
                                                                  1.096541
                                                                                                         0.06577891, 0.06577891, 0.06577891, 0.06577891, 0.06577891,
                                         1916.175610 1916.175610
                    0.000000
                                                                                                         0.06577891, 0.06577891]))
                                        18874.240800 18874.240800
                    0.000000
                                                                                                             fun: 0.0657789056195167
                    0.000000
                                             0.009030
                                                                  0.009030
                                                                                                         message: 'Optimization terminated successfully.'
          Νr
                    0.000000
                                             0.820433
                                                                  0.820433
                                                                                                            nfev: 2903
                  338.782230
                                             683.835638 1022.617868
                                                                                                             nit: 2031
                                            32464.380200 39736.447667
                 7272.067467
                                                                                                          status: 0
                                             0.000473
         Ch
                    0.000338
                                                                   0.000811
                                                                                                         success: True
                   -1.412205
                                             2.821352
                                                                  1.409146
          Fο
                                                                                                               x: array([6.18047086e+02, 1.62788566e+04, 1.30065379e+03, 1.09654125e+00,
                    -0.478079
                                             0.632148
                                                                   0.154070
                                                                                                         1.91617561e+03, 1.88742408e+04, 9.03017988e-03, 8.20433340e-01,
                                             0.972768
                                                                   1.589531
                                                                                                         1.02261787e+03, 3.97364477e+04, 8.11306661e-04, 1.40914639e+00,
          Во
                    0.616763
                    1.338197
                                             2.640174
                                                                   3.978370
                                                                                                         1.54069520e-01, 1.58953131e+00, 3.97837047e+00, 1.33698805e+00])
          Со
```

 10^{4}

 10^{3}

 10^{4}

Νo

-0.582351

1.919339

1.336988

final simplex: (array([[6.18047086e+02, 1.62788566e+04, 1.30065379e+03, 1.09654125e+00,