```
final simplex: (array([[5.04193213e+02, 5.91267506e+03, 1.37611685e+03, 1.06105523e+00,
                                                                               6.77743259e+02, 2.63750523e+04, 3.88040631e-02, 9.55141330e-01,
                                                                               4.29938049e+02, 7.21126261e+04, 3.27328995e-04, 8.89624167e-01,
                                                                               2.53450128e-01, 3.42845418e+00, 1.80332138e+00]
                                                                               [5.04193213e+02, 5.91267506e+03, 1.37611685e+03, 1.06105523e+00,
                                                                               6.77743260e+02, 2.63750524e+04, 3.88040631e-02, 9.55141330e-01,
                                                                               4.29938047e+02, 7.21126261e+04, 3.27328995e-04, 8.89624169e-01,
                                                                               2.53450128e-01, 3.42845418e+00, 1.80332138e+00],
                                                                               [5.04193213e+02, 5.91267506e+03, 1.37611685e+03, 1.06105523e+00,
                                                                               6.77743259e+02, 2.63750524e+04, 3.88040632e-02, 9.55141329e-01,
                                                                               4.29938046e+02, 7.21126260e+04, 3.27328996e-04, 8.89624171e-01,
                                                                               2.53450129e-01, 3.42845418e+00, 1.80332138e+00]
                                                                               [5.04193213e+02, 5.91267506e+03, 1.37611685e+03, 1.06105523e+00,
                                                                               6.77743259e+02, 2.63750524e+04, 3.88040630e-02, 9.55141331e-01,
                                                                                4.29938048e+02, 7.21126262e+04, 3.27328994e-04, 8.89624168e-01,
                                                                               2.53450127e-01, 3.42845418e+00, 1.80332138e+00],
                                                                               [5.04193213e+02, 5.91267506e+03, 1.37611685e+03, 1.06105523e+00,
                                                                               6.77743260e+02, 2.63750524e+04, 3.88040631e-02, 9.55141330e-01,
                                                                               4.29938046e+02, 7.21126261e+04, 3.27328995e-04, 8.89624170e-01,
                                                                               2.53450128e-01, 3.42845418e+00, 1.80332138e+00]
                                                                               [5.04193213e+02, 5.91267506e+03, 1.37611685e+03, 1.06105523e+00,
                                                                                6.77743259e+02, 2.63750524e+04, 3.88040631e-02, 9.55141330e-01,
         ['SM data type data plots for mutation', 'Sensor 50] 7e+02, 7.21126261 = 0.00 Initial Guess 9e-04, 9e-01, 9e-0
  inducer -> sensor (GFP output)
                                                                                6.77743259e+02, 2.63750524e+04Converged31e-02, 9.55141331e-01,
                                                                               4.29938048e+02, 7.21126262e+04Converged 4e-04, 8.89624169e-01,
                                                  4 \times 10^{3}
                                                                               2.53450127e-01, 3.42845418 e+00 [5.04193213e+02, 5.9126750 e+0
                                                                                                                                          8e+00],
                                                                                                                      Converged 5e+03, 1.06105523e+00,
                                                  3 \times 10^{3}
                                                                                6-77743259e+02, 2.63750523e+04, 3.88040631e-02, 9.55141329e-01,
                                                                                4.29938049e+02, 7.21126261e+04, 3.27328996e-04, 8.89624166e-01,
                                                 2 \times 10^{3}
                                                                               2.53450129e-01, 3.42845418e+00, 1.80332138e+00],
                                                                               [5.04193213e+02, 5.$1267506e+03, 1.37611685e+03, 1.06105523e+00,
                                                                                6.77743259e+02, 2.63750524e+04, 3.88040631e-02, 9.55141330e-01,
                                                      10^{3}
                                                                                4.29938047e+02, 7.21126261e+04, 3.27328996e-04, 8.89624169e-01,
                                                                                2.53450128e-01, 3.42845418e+00, 1.80332138e+00],
                                                                               [5<u>04193213e+02</u>5<u>9</u>1267506e+03, 1.37611685e+03, 1.06105523e+00, 6077743<del>25</del>9e+02<del>1</del>9.63750523e+04, 3.88040630e-02, 9.55141330e-01,
                    10^{-3}
          10^{-4}
                                10^{-2}
                                          10^{-1}
                                                          10^{-5}
                                                                     10^{-4}
                                                                   Full circuft 2093 804 Prote 02, 7.21126261e+04, 3.27328995e-04, 8.89624166e-01,
    inducer -> S -| Output (GFP)
                                                                                     <del>4501276-01, 3.4</del>2845418e+00, 1.80332138e+00],
                                                                               [5.04193213e+02, 5.91267506e+03, 1.37611685e+03, 1.06105523e+00,
                                                                                6.77743259e+02, 2.63750523e+04, 3.88040630e-02, 9.55141331e-01,
                                                                                  .29938049e+02, 7.$1126262e+04, 3.27328995e-04, 8.89624167e-01,
                                                  4 \times 10^{3}
                                                                                   53450127e-01, 3.42845418e+00, 1.80332138e+00],
                                                                                  04193213e+02, 5.91267506e+03, 1.37611685e+03, 1.06105523e+00,
                                                                                  77X43259e+02, 2.63750523e+04, 3.88040630e-02, 9.55141331e-01,
                                                                               4.29938048e 02, 7.21126262e+04, 3.27328995e-04, 8.89624168e-01, 2.58450127e-01, 3.42845418e+00, 1.80332138e+00], [5.04193213e+02, 5.91267506e+03, 1.37611685e+03, 1.06105523e+00, 6.77743260e+02, 2.63750524e+04, 3.88040631e-02, 9.55141330e-01,
                                                 3 \times 10^{3}
                                                                                  <u>,29938047e+07,7</u>.21126261e+04, 3.27328995e-04, 8.89624169e-01,
                                                                                2<sub>0</sub>53450128e-01,<sub>13</sub>42845418e+00, 1.80332138e+00],
          10^{-4}
                     10<sup>-3</sup>
                                10^{-2}
                                                          10^{-5}
                                                                     10^{-4}
10^{-5}
                                          10^{-1}
                                                                               [͡5.ઁ041932ੈ13e+02, Š.91267506e+03, 1.37611685e+03, 1.06105523e+00,
                                                                               6.77743259e+02, 2.63750523e+04, 3.88040630e-02, 9.55141330e-01,
        Across all four plots:
                                                                               4.29938050e+02, 7.21126261e+04, 3.27328995e-04, 8.89624165e-01,
                                                                               2.53450128e-01, 3.42845418e+00, 1.80332138e+00],
          RSS (converged)=0.029
                                                                               [5.04193213e+02, 5.91267506e+03, 1.37611685e+03, 1.06105523e+00,
                                                                               6.77743259e+02, 2.63750523e+04, 3.88040630e-02, 9.55141331e-01,
          RSS (initial)=2.036
                                                                               4.29938049e+02, 7.21126262e+04, 3.27328994e-04, 8.89624167e-01,
                                                                               2.53450126e-01, 3.42845418e+00, 1.80332139e+00],
          RSS (% reduction)=0.986
                                                                               [5.04193213e+02, 5.91267506e+03, 1.37611685e+03, 1.06105523e+00, 1.06105523e+00]
                                                                               6.77743259e+02, 2.63750524e+04, 3.88040631e-02, 9.55141330e-01,
                  epsilon Initial guesses Converged
                                                                               4.29938048e+02, 7.21126261e+04, 3.27328995e-04, 8.89624168e-01,
       A s -104.203890
                                  608.397103 504.193213
                                                                               2.53450127e-01, 3.42845418e+00, 1.80332138e+00]]), array([0.02932677, 0.02932677, 0.02932677, 0.02932677, 0.02932677,
       B s -9337.782645
                                  15250.457700 5912.675055
                                                                               0.02932677, 0.02932677, 0.02932677, 0.02932677, 0.02932677,
       C s -291.942201
                                  1668.059050 1376.116849
                                                                               0.02932677, 0.02932677, 0.02932677, 0.02932677, 0.02932677,
              -0.137878
                                  1.198934
                                                1.061055
       Νs
                                                                               0.02932677]))
                                  687.964693 677.743259
             -10.221434
                                                                                  fun: 0.029326765474249887
       B r 2877.440946
                                 23497.611400 26375.052346
                                                                               message: 'Optimization terminated successfully.'
       C_{r}
                                  0.062367
              -0.023563
                                                  0.038804
                                                                                 nfev: 10690
               0.563410
                                  0.391731
                                                  0.955141
       Νr
                                                                                  nit: 7969
       A h -160.668499
                                   590.606548 429.938049
                                                                               status: 0
                                  35287.125700 72112.626114
       B h 36825.500414
                                                                               success: True
       C h
               -0.000203
                                   0.000530
                                                   0.000327
                                                                                    x: array([5.04193213e+02, 5.91267506e+03, 1.37611685e+03, 1.06105523e+00,
       Αо
                0.059794
                                   0.829830
                                                   0.889624
                                                                               6.77743259e+02, 2.63750523e+04, 3.88040631e-02, 9.55141330e-01,
               -4.034720
                                   4.288170
                                                   0.253450
                                                                               4.29938049e+02, 7.21126261e+04, 3.27328995e-04, 8.89624167e-01,
       Со
                0.295232
                                   3.133222
                                                   3.428454
                                                                               2.53450128e-01, 3.42845418e+00, 1.80332138e+00])
               -0.005697
                                   1.809018
                                                   1.803321
       N_o
```

 10^{4}

 10^{3}

 10^{4}