```
final simplex: (array([[6.57058550e+02, 1.63624380e+04, 1.24904683e+03, 1.15172579e+00,
                                                                                         4.87336502e+03, 3.07391670e+05, 9.42296353e-02, 7.84035746e-01,
                                                                                         2.19330979e+02, 5.57517711e+04, 1.07647782e-03, 1.41362087e-01,
                                                                                         4.37503838e+00, 1.13561212e+00, 1.36570003e+00],
                                                                                         [6.57058550e+02, 1.63624380e+04, 1.24904683e+03, 1.15172579e+00,
                                                                                         4.87336502e+03, 3.07391670e+05, 9.42296353e-02, 7.84035747e-01,
                                                                                         2.19330979e+02, 5.57517711e+04, 1.07647782e-03, 1.41362087e-01,
                                                                                         4.37503838e+00, 1.13561212e+00, 1.36570002e+00],
                                                                                         [6.57058550e+02, 1.63624380e+04, 1.24904683e+03, 1.15172579e+00,
                                                                                         4.87336502e+03, 3.07391670e+05, 9.42296352e-02, 7.84035747e-01,
                                                                                         2.19330979e+02, 5.57517711e+04, 1.07647782e-03, 1.41362087e-01,
                                                                                         4.37503838e+00, 1.13561212e+00, 1.36570002e+00],
                                                                                        [6.57058550e+02, 1.63624380e+04, 1.24904683e+03, 1.15172579e+00,
                                                                                         4.87336502e+03, 3.07391670e+05, 9.42296353e-02, 7.84035747e-01,
                                                                                         2.19330979e+02, 5.57517711e+04, 1.07647782e-03, 1.41362087e-01,
                                                                                         4.37503838e+00, 1.13561212e+00, 1.36570002e+00],
                                                                                         [6.57058550e+02, 1.63624380e+04, 1.24904683e+03, 1.15172579e+00,
                                                                                         4.87336502e+03, 3.07391670e+05, 9.42296353e-02, 7.84035746e-01,
                                                                                         2.19330979e+02, 5.57517711e+04, 1.07647782e-03, 1.41362087e-01,
                                                                                         4.37503838e+00, 1.13561212e+00, 1.36570002e+00],
                                                                                        [6.57058550e+02, 1.63624380e+04, 1.24904683e+03, 1.15172579e+00,
                                                                                         4.87336502e+03, 3.07391670e+05, 9.42296353e-02, 7.84035747e-01,
           ['SM data type data plots for mutation', 'Regulator99] +02, 5.5751771 +04 Initial Guess 2e-03, 1.41362087e-01, ucer -> sensor (GFP output) inducer -> 566576385594692, 1.1356121 2e+0 Converged 3e+03, 1.15172579e+00,
      inducer -> sensor (GFP output)
                                                                                         4.87336502e+03, 3.0739167 \rightarrow 5 Converged 53e-02, 7.84035747e-01,
                                                                                         2.19330979e+02, 5.5751771 e+04Converged 32e-03, 1.41362087e-01,
10^{4}
                                                                                         4.37503838e+00, 1.13561212e+0
                                                                                                                                                        2e+00],
                                                             10^{4}
                                                                                        [6.57058550e+02, 1.6362438 e+0 Converged 3e+03, 1.15172579e+00,
                                                                                         4.87336502e+03, 3.07391670e+05, 9.42296353e-02, 7.84035747e-01,
                                                                                         19350979e+02, 5.57517711e+04, 1.07647782e-03, 1.41362087e-01, 4.37503838e+00, 1.13561212e+00, 1.36570002e+00],
                                                         6 \times 10^{3}
                                                                                         [6.57058550e+02, 1.63624380e+04, 1.24904683e+03, 1.15172579e+00,
                                                         4 \times 10^{3}
                                                                                         4.87336502e+03, 3.07391670e+05, 9.42296353e-02, 7.84035747e-01,
                                                         3 \times 10^{3}
10^{3}
                                                                                          2.19330979e+02, 5.$7517711e+04, 1.07647782e-03, 1.41362087e-01,
                                                                                         4.<del>37503838e+00, 1</del>.‡3561212e+00, 1.36570002e+00],
                                                         2 \times 10^{3}
                                                                                         6.57058550e+02.1.63624380e+04, 1.24904683e+03, 1.15172579e+00, 4.87336502e+03, 3.07391670e+05, 9.42296353e-02, 7.84035746e-01,
                                                                  10^{-5}
               10^{-4}
                          10^{-3}
                                      10^{-2}
                                                 10^{-1}
                                                                             10^{-4}
                                                                            Full circult 1993 95 Piote 02, 5.57517711e+04, 1.07647782e-03, 1.41362087e-01,
         inducer -> S -| Output (GFP)
                                                                                                <del>5038386+00, 1.1</del>3561212e+00, 1.36570003e+00],
                                                                                        [6.57058550e+02, 1.63624380e+04, 1.24904683e+03, 1.15172579e+00,
                                                         6 \times 10^{3}
                                                                                         4.87336502e+03, 3.$\psi$7391670e+05, 9.42296353e-02, 7.84035747e-01,
                                                                                         🔽.19330979e+02, 5.$7517711e+04, 1.07647782e-03, 1.41362087e-01,
                                                                                         437503838e+00, 1.13561212e+00, 1.36570002e+00],
10^{4}
                                                                                         [6.37058550e+02, 1.63624380e+04, 1.24904683e+03, 1.15172579e+00,
                                                         4 \times 10^{3}
                                                                                         4.87336502e+03, 3.07391670e+05, 9.42296353e-02, 7.84035747e-01, 2.19336979e+02, 5.57517711e+04, 1.07647782e-03, 1.41362087e-01,
                                                                                        4.87503838e+00, 1.13561212e+00, 1.36570002e+00], [6.54058550e+02, 1.63624380e+04, 1.24904683e+03, 1.15172579e+00,
                                                         3 \times 10^{3}
                                                                                         4.87336502e+03, 3.07391670e+05, 9.42296353e-02, 7.84035747e-01,
                                                                                         <u>2,19330979e+02,5</u>.$7517711e+04, 1.07647782e-03, 1.41362087e-01,
10^{3}
                                                                                         40^{3}7503878e+001d-13561212e+00, 1.36570002e+00],
    10^{-5}
                           10^{-3}
                                      10^{-2}
                                                                  10^{-5}
                                                                             10^{-4}
               10^{-4}
                                                 10^{-1}
                                                                                         [6.57058550e+02, 1.63624380e+04, 1.24904683e+03, 1.15172579e+00,
                                                                                         4.87336502e+03, 3.07391670e+05, 9.42296353e-02, 7.84035747e-01,
             Across all four plots:
                                                                                         2.19330979e+02, 5.57517711e+04, 1.07647782e-03, 1.41362087e-01,
                                                                                         4.37503838e+00, 1.13561212e+00, 1.36570002e+00],
               RSS (converged)=0.043
                                                                                         [6.57058550e+02, 1.63624380e+04, 1.24904683e+03, 1.15172579e+00,
                                                                                         4.87336502e+03, 3.07391670e+05, 9.42296353e-02, 7.84035747e-01,
               RSS (initial) = 3.233
                                                                                         2.19330979e+02, 5.57517711e+04, 1.07647782e-03, 1.41362087e-01,
                                                                                         4.37503838e+00, 1.13561212e+00, 1.36570002e+00],
                RSS (% reduction)=0.987
                                                                                         [6.57058550e+02, 1.63624380e+04, 1.24904683e+03, 1.15172579e+00,
                                                                                         4.87336502e+03, 3.07391670e+05, 9.42296353e-02, 7.84035747e-01,
                        epsilon Initial guesses
                                                           Converged
                                                                                         2.19330979e+02, 5.57517711e+04, 1.07647782e-03, 1.41362087e-01,
                     48.661447
                                         608.397103 657.058550
                                                                                         4.37503838e+00, 1.13561212e+00, 1.36570002e+00]), array([0.04344377, 0.04344377, 0.04344377, 0.04344377, 0.04344377, 0.04344377, 0.04344377, 0.04344377, 0.04344377, 0.04344377, 0.04344377, 0.04344377, 0.04344377, 0.04344377, 0.04344377, 0.04344377, 0.04344377, 0.04344377, 0.04344377, 0.04344377, 0.04344377, 0.04344377, 0.04344377, 0.04344377, 0.04344377, 0.04344377, 0.04344377, 0.04344377, 0.04344377, 0.04344377, 0.04344377, 0.04344377, 0.04344377, 0.04344377, 0.04344377, 0.04344377, 0.04344377, 0.04344377, 0.04344377, 0.04344377, 0.04344377, 0.04344377, 0.04344377, 0.04344377, 0.04344377, 0.04344377, 0.04344377, 0.04344377, 0.04344377, 0.04344377, 0.04344377, 0.04344377, 0.04344377, 0.04344377, 0.04344377, 0.04344377, 0.04344377, 0.04344377, 0.04344377, 0.04344377, 0.04344377, 0.04344377, 0.04344377, 0.04344377, 0.04344377, 0.04344377, 0.04344377, 0.04344377, 0.04344377, 0.04344377, 0.04344377, 0.04344377, 0.04344377, 0.04344377, 0.04344377, 0.04344377, 0.04344377, 0.04344377, 0.04344377, 0.04344377, 0.04344377, 0.04344377, 0.04344377, 0.04344377, 0.04344377, 0.043444377, 0.043444377, 0.043444377, 0.043444377, 0.043444377, 0.043444377, 0.043444377, 0.043444377, 0.043444377, 0.043444377, 0.043444377, 0.043444377, 0.043444377, 0.043444377, 0.043444377, 0.043444377, 0.043444477, 0.043444477, 0.043444477, 0.043444477, 0.043444477, 0.04344477, 0.04344477, 0.04344477, 0.04344477, 0.04344477, 0.04344477, 0.04344477, 0.04344477, 0.04344477, 0.0434477, 0.0434477, 0.0434477, 0.0434477, 0.0434477, 0.0434477, 0.0434477, 0.0434477, 0.0434477, 0.0434477, 0.0434477, 0.0434477, 0.0434477, 0.0434477, 0.0434477, 0.0434477, 0.0434477, 0.0434477, 0.0434477, 0.0434477, 0.0434477, 0.043477, 0.0434477, 0.0434477, 0.0434477, 0.0434477, 0.0434477, 0.0434477, 0.0434477, 0.0434477, 0.0434477, 0.0434477, 0.0434477, 0.0434477, 0.0434477, 0.0434477, 0.0434477, 0.0434477, 0.0434477, 0.043477, 0.043477, 0.043477, 0.043477, 0.043477, 0.0454777, 0.0454777, 0.0454777, 0.0454777, 0.0454777, 0.0454777, 0.0454777, 0.0454777, 0.045477, 0.04
                   1111.980284
                                         15250.457700 16362.437984
                                                                                         0.04344377, 0.04344377, 0.04344377, 0.04344377, 0.04344377,
                   -419.012222
                                         1668.059050 1249.046828
                                                                                         0.04344377, 0.04344377, 0.04344377, 0.04344377, 0.04344377,
                     -0.047208
                                          1.198934
                                                           1.151726
                                                                                        0.04344377]))
                  4185.400326
                                           687.964693 4873.365019
                                                                                           fun: 0.04344376701879155
            B r 283894.058450
                                          23497.611400 307391.669850
                                                                                        message: 'Optimization terminated successfully.'
            Сr
                      0.031862
                                          0.062367
                                                           0.094230
                                                                                           nfev: 17891
                      0.392305
                                          0.391731
                                                            0.784036
            Νr
                                                                                           nit: 13552
                    -371.275569
                                          590.606548
                                                             219.330979
            Αh
                                                                                         status: 0
                   20464.645376
                                          35287.125700 55751.771076
            Βh
                                                                                        success: True
            C h
                      0.000547
                                          0.000530
                                                            0.001076
                                                                                             x: array([6.57058550e+02, 1.63624380e+04, 1.24904683e+03, 1.15172579e+00,
                                                                                         4.87336502e+03, 3.07391670e+05, 9.42296353e-02, 7.84035746e-01,
            Αо
                      -0.688468
                                          0.829830
                                                            0.141362
                      0.086868
                                          4.288170
                                                            4.375038
                                                                                        2.19330979e+02, 5.57517711e+04, 1.07647782e-03, 1.41362087e-01,
                      -1.997610
                                          3.133222
                                                            1.135612
                                                                                        4.37503838e+00, 1.13561212e+00, 1.36570003e+00])
                      -0.443318
                                          1.809018
                                                            1.365700
            N_o
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