```
final simplex: (array([[6.61779905e+02, 1.63912839e+04, 1.24457313e+03, 1.15802678e+00,
                                                                                                         2.80031076e+03, 2.26794577e+04, 6.81612071e-03, 8.10483112e-01,
                                                                                                         2.87330369e+01, 6.54963545e+04, 1.36107314e-03, 1.24265348e+00,
                                                                                                         4.04804928e+00, 2.34276270e+00, 1.26487940e+00],
                                                                                                         [6.61779905e+02, 1.63912839e+04, 1.24457313e+03, 1.15802678e+00,
                                                                                                         2.80031076e+03, 2.26794577e+04, 6.81612070e-03, 8.10483112e-01,
                                                                                                         2.87330362e+01, 6.54963545e+04, 1.36107315e-03, 1.24265348e+00,
                                                                                                         4.04804927e+00, 2.34276270e+00, 1.26487940e+00],
                                                                                                         [6.61779905e+02, 1.63912839e+04, 1.24457313e+03, 1.15802678e+00,
                                                                                                         2.80031076e+03, 2.26794577e+04, 6.81612070e-03, 8.10483112e-01,
                                                                                                         2.87330363e+01, 6.54963545e+04, 1.36107315e-03, 1.24265348e+00,
                                                                                                         4.04804927e+00, 2.34276270e+00, 1.26487940e+00],
                                                                                                         [6.61779905e+02, 1.63912839e+04, 1.24457313e+03, 1.15802678e+00,
                                                                                                         2.80031076e+03, 2.26794577e+04, 6.81612070e-03, 8.10483112e-01,
                                                                                                         2.87330367e+01, 6.54963545e+04, 1.36107315e-03, 1.24265348e+00,
                                                                                                         4.04804928e+00, 2.34276270e+00, 1.26487940e+00],
                                                                                                         [6.61779905e+02, 1.63912839e+04, 1.24457313e+03, 1.15802678e+00,
                                                                                                         2.80031076e+03, 2.26794577e+04, 6.81612070e-03, 8.10483112e-01,
                                                                                                         2.87330361e+01, 6.54963545e+04, 1.36107315e-03, 1.24265348e+00,
                                                                                                         4.04804927e+00, 2.34276270e+00, 1.26487940e+00],
                                                                                                        [6.61779905e+02, 1.63912839e+04, 1.24457313e+03, 1.15802678e+00,
                                                                                                         2.80031076e+03, 2.26794577e+04, 6.81612070e-03, 8.10483112e-01,
             ['SM data type data plots for mutation', 'Regulator', 6.54963545 = 0.00, Initial Guess 6.03, 1.24265348e + 0.00, ucer -> sensor (GFP output) inducer -> 5.66661975908410271.6391283 inducer -> 5.66661975908410271.6391283
       inducer -> sensor (GFP output)
                                                                                                         2.80031076e+03, 2.26794577+04Converged 70e-03, 8.10483112e-01,
                                                                                                         2.87330367e+01, 6.$4963545e+04Converged 15e-03, 1.24265348e+00,
10^{4}
                                                                                                         4.04804928e+00, 2.34276270e+0
                                                                                                                                                                                   0e+00],
                                                                   6 \times 10^3
                                                                                                        [6.61779905e+02, 1.6391283 e+0 Converged 13e+03, 1.15802678e+00,
                                                                                                         2.80031076e+03, 2.$6794577e+04, 6.81612070e-03, 8.10483112e-01,
                                                                                                         2.87330366e+01, 6.54963545e+04, 1.36107315e-03, 1.24265348e+00, 4.04804928e+00, 2.34276270e+00, 1.26487940e+00],
                                                                   4 \times 10^{3}
                                                                                                         3 \times 10^{3}
                                                                                                         2.80031076e+03, 2.26794577e+04, 6.81612070e-03, 8.10483112e-01,
10^{3}
                                                                                                            .87330367e+01, 6.$4963545e+04, 1.36107315e-03, 1.24265348e+00,
                                                                                                         4.048<del>04928e+00, 2</del>.$4276270e+00, 1.26487940e+00],
                                                                                                         6.61779905e+02.1.63912839e+04, 1.24457313e+03, 1.15802678e+00, 2.80031076e+03, 2.26794577e+04, 6.81612070e-03, 8.10483112e-01,
                                                                              10^{-5}
                  10^{-4}
                               10^{-3}
                                            10^{-2}
                                                          10^{-1}
                                                                                           10^{-4}
                                                                                         Full circuit & 7 36 36 36 36 20 1, 6.54963545e+04, 1.36107315e-03, 1.24265348e+00,
          inducer -> S -| Output (GFP)
                                                                                                              )<del>48049276+00, 2.</del>34276270e+00, 1.26487940e+00],
                                                                                                        [6.61779905e+02, 1.63912839e+04, 1.24457313e+03, 1.15802678e+00,
                                                                   6 \times 10^{3}
                                                                                                         2.80031076e+03, 2.26794577e+04, 6.81612070e-03, 8.10483112e-01,
                                                                                                      2.87330362e+01, 6.54963545e+04, 1.36107315e-03, 1.24265348e+00, 4.04804927e+00. 2.84276270e+00. 1.26487940e+001
                                                                                                           .04804927e+00, 2.34276270e+00, 1.26487940e+00],
10^{4}
                                                                                                         [6.6�779905e+02, 1.63912839e+04, 1.24457313e+03, 1.15802678e+00,
                                                                   4 \times 10^3
                                                                                                         2.80031076e+03, 2.26794577e+04, 6.81612070e-03, 8.10483112e-01, 2.87330366e+01, 6.54963545e+04, 1.36107315e-03, 1.24265348e+00,
                                                                                                        4.04804928e+00, 2.34276270e+00, 1.26487940e+00], [6.61779905e+02, 1.63912839e+04, 1.24457313e+03, 1.15802678e+00,
                                                                   3 \times 10^{3}
                                                                                                         2.80031076e+03, 2.26794577e+04, 6.81612070e-03, 8.10483112e-01,
                                                                                                          <u>2.87330363e+01, 6</u>.54963545e+04, 1.36107315e-03, 1.24265348e+00,
10^{3}
                                                                                                         ქი048049გ7e+00ე გ-34276270e+00, 1.26487940e+00],
     10^{-5}
                                10<sup>-3</sup>
                                             10^{-2}
                                                                                           10^{-4}
                  10^{-4}
                                                          10^{-1}
                                                                              10^{-5}
                                                                                                         [6.61779905e+02, 1.63912839e+04, 1.24457313e+03, 1.15802678e+00,
                                                                                                         2.80031076e+03, 2.26794577e+04, 6.81612070e-03, 8.10483112e-01,
               Across all four plots:
                                                                                                         2.87330364e+01, 6.54963545e+04, 1.36107315e-03, 1.24265348e+00,
                                                                                                         4.04804927e+00, 2.34276270e+00, 1.26487940e+00],
                  RSS (converged)=0.051
                                                                                                         [6.61779905e+02, 1.63912839e+04, 1.24457313e+03, 1.15802678e+00,
                                                                                                         2.80031076e+03, 2.26794577e+04, 6.81612070e-03, 8.10483112e-01,
                  RSS (initial)=0.84
                                                                                                         2.87330362e+01, 6.54963545e+04, 1.36107315e-03, 1.24265348e+00,
                                                                                                         4.04804927e+00, 2.34276270e+00, 1.26487940e+00],
                  RSS (% reduction)=0.943
                                                                                                         [6.61779905e+02, 1.63912839e+04, 1.24457313e+03, 1.15802678e+00,
                                                                                                         2.80031076e+03, 2.26794577e+04, 6.81612069e-03, 8.10483113e-01,
                            epsilon Initial guesses Converged
                                                                                                         2.87330355e+01, 6.54963546e+04, 1.36107315e-03, 1.24265348e+00,
                        53.382802
                                                608.397103 661.779905
                                                                                                         4.04804927e+00, 2.34276270e+00, 1.26487940e+00]]), array([0.05056482, 0.05056482, 0.05056482, 0.05056482, 0.05056482, 0.05056482, 0.05056482, 0.05056482, 0.05056482, 0.05056482, 0.05056482, 0.05056482, 0.05056482, 0.05056482, 0.05056482, 0.05056482, 0.05056482, 0.05056482, 0.05056482, 0.05056482, 0.05056482, 0.05056482, 0.05056482, 0.05056482, 0.05056482, 0.05056482, 0.05056482, 0.05056482, 0.05056482, 0.05056482, 0.05056482, 0.05056482, 0.05056482, 0.05056482, 0.05056482, 0.05056482, 0.05056482, 0.05056482, 0.05056482, 0.05056482, 0.05056482, 0.05056482, 0.05056482, 0.05056482, 0.05056482, 0.05056482, 0.05056482, 0.05056482, 0.05056482, 0.05056482, 0.05056482, 0.05056482, 0.05056482, 0.05056482, 0.05056482, 0.05056482, 0.05056482, 0.05056482, 0.05056482, 0.05056482, 0.05056482, 0.05056482, 0.05056482, 0.05056482, 0.05056482, 0.05056482, 0.05056482, 0.05056482, 0.05056482, 0.05056482, 0.05056482, 0.05056482, 0.05056482, 0.05056482, 0.05056482, 0.05056482, 0.05056482, 0.05056482, 0.05056482, 0.05056482, 0.05056482, 0.05056482, 0.05056482, 0.05056482, 0.05056482, 0.05056482, 0.05056482, 0.05056482, 0.05056482, 0.05056482, 0.05056482, 0.05056482, 0.05056482, 0.05056482, 0.05056482, 0.05056482, 0.05056482, 0.05056482, 0.05056482, 0.05056482, 0.05056482, 0.05056482, 0.05056482, 0.05056482, 0.05056482, 0.05056482, 0.05056482, 0.05056482, 0.05056482, 0.05056482, 0.05056482, 0.05056482, 0.05056482, 0.05056482, 0.05056482, 0.05056482, 0.05056482, 0.05056482, 0.05056482, 0.05056482, 0.05056482, 0.05056482, 0.05056482, 0.05056482, 0.05056482, 0.05056482, 0.05056482, 0.05056482, 0.05056482, 0.05056482, 0.05056482, 0.05056482, 0.05056482, 0.05056482, 0.05056482, 0.05056482, 0.05056482, 0.05056482, 0.05056482, 0.05056482, 0.05056482, 0.05056482, 0.05056482, 0.05056482, 0.05056482, 0.05056482, 0.05056482, 0.05056482, 0.05056482, 0.05056482, 0.05056482, 0.05056482, 0.05056482, 0.05056482, 0.05056482, 0.05056482, 0.05056482, 0.05056442, 0.0505644, 0.0505644, 0.05056444, 0.0505644, 0.0505644, 0.0505644, 0.0505644, 0.0505644, 0.0
              B s 1140.826188
                                                15250.457700 16391.283888
                                                                                                         0.05056482, 0.05056482, 0.05056482, 0.05056482, 0.05056482,
               C s -423.485921
                                                1668.059050 1244.573129
                                                                                                         0.05056482, 0.05056482, 0.05056482, 0.05056482, 0.05056482,
                        -0.040907
                                                 1.198934
                                                                  1.158027
                                                                                                        0.05056482]))
               Ar 2112.346070
                                                 687.964693 2800.310763
                                                                                                            fun: 0.05056482176175333
                                              23497.611400 22679.457715
              Βr
                     -818.153685
                                                                                                         message: 'Optimization terminated successfully.'
                        -0.055551
                                                0.062367
                                                                    0.006816
              Сr
                                                                                                           nfev: 17044
                         0.418752
                                                0.391731
                                                                    0.810483
              Νr
                                                                                                            nit: 12849
              A h -561.873511
                                                 590.606548 28.733037
                                                                                                         status: 0
              B h 30209.228794
                                                 35287.125700 65496.354494
                                                                                                         success: True
              C h
                         0.000831
                                                 0.000530
                                                                     0.001361
                                                                                                              x: array([6.61779905e+02, 1.63912839e+04, 1.24457313e+03, 1.15802678e+00,
              Αо
                         0.412824
                                                 0.829830
                                                                     1.242653
                                                                                                         2.80031076e+03, 2.26794577e+04, 6.81612071e-03, 8.10483112e-01,
                         -0.240121
                                                 4.288170
                                                                     4.048049
                                                                                                        2.87330369e+01, 6.54963545e+04, 1.36107314e-03, 1.24265348e+00,
                         -0.790459
                                                 3.133222
                                                                     2.342763
                                                                                                        4.04804928e+00, 2.34276270e+00, 1.26487940e+00])
                         -0.544139
                                                 1.809018
                                                                     1.264879
              N_o
```