```
final simplex: (array([[6.55458710e+02, 1.63953969e+04, 1.24181649e+03, 1.14919654e+00,
                                                                                                                         2.08640109e+03, 1.70366489e+04, 5.70544200e-03, 1.02261775e+00,
                                                                                                                         1.78026926e+02, 4.86019752e+04, 1.21239865e-03, 4.63297151e-03,
                                                                                                                         2.36398075e+00, 2.13381927e+00, 1.29356968e+00],
                                                                                                                        [6.55458710e+02, 1.63953969e+04, 1.24181649e+03, 1.14919654e+00,
                                                                                                                         2.08640109e+03, 1.70366489e+04, 5.70544198e-03, 1.02261775e+00,
                                                                                                                         1.78026926e+02, 4.86019752e+04, 1.21239865e-03, 4.63297150e-03,
                                                                                                                         2.36398075e+00, 2.13381927e+00, 1.29356968e+00],
                                                                                                                        [6.55458710e+02, 1.63953969e+04, 1.24181649e+03, 1.14919654e+00,
                                                                                                                         2.08640109e+03, 1.70366488e+04, 5.70544198e-03, 1.02261775e+00,
                                                                                                                         1.78026926e+02, 4.86019752e+04, 1.21239865e-03, 4.63297148e-03,
                                                                                                                         2.36398075e+00, 2.13381927e+00, 1.29356968e+00],
                                                                                                                        [6.55458710e+02, 1.63953969e+04, 1.24181649e+03, 1.14919654e+00,
                                                                                                                         2.08640109e+03, 1.70366488e+04, 5.70544198e-03, 1.02261775e+00,
                                                                                                                         1.78026926e+02, 4.86019752e+04, 1.21239865e-03, 4.63297148e-03,
                                                                                                                         2.36398075e+00, 2.13381927e+00, 1.29356968e+00],
                                                                                                                        [6.55458710e+02, 1.63953969e+04, 1.24181649e+03, 1.14919654e+00,
                                                                                                                         2.08640109e+03, 1.70366489e+04, 5.70544198e-03, 1.02261775e+00,
                                                                                                                         1.78026926e+02, 4.86019752e+04, 1.21239865e-03, 4.63297150e-03,
                                                                                                                         2.36398075e+00, 2.13381927e+00, 1.29356968e+00],
                                                                                                                        [6.55458710e+02, 1.63953969e+04, 1.24181649e+03, 1.14919654e+00,
                                                                                                                         2.08640109e+03, 1.70366489e+04, 5.70544198e-03, 1.02261775e+00,
                   ['SM data type data plots for mutation', 'Output 16e+02, 4.86019752e+04 Initial Guess 5e-03, 4.63297149e-03, 2.36398075e+00, 2.13381927e+0 Initial Guess 6e+00], cer -> sensor (GFP output) inducer -> S_{[6]} = S_{[6
        inducer -> sensor (GFP output)
                                                                                                                         2.08640109e+03, 1.7036648 2.08640109e+03, 1.02261775e+00,
                                                                                                                       1.78026926e+02, 4.8601975 e+0 Converged 5e-03, 4.63297149e-03, 2.36398075e+00, 2.13381927e+0 Converged 6e+00], [6.55458710e+02, 1.6395396 e+0 Converged 49e+03, 1.14919654e+00,
10^{4}
                                                                             4 \times 10^{3}
                                                                                                                         2.08640109e+03, 1.70366489e+04, 5.70544199e-03, 1.02261775e+00,
                                                                                                                         1.78026926e+02, 4.$6019752e+04, 1.21239865e-03, 4.63297150e-03,
                                                                             3 \times 10^{3}
                                                                                                                         2.36398075e+00, 2.13381927e+00, 1.29356968e+00],
                                                                                                                              5<mark>545</mark>8710e+02, 1.63953969e+04, 1.24181649e+03, 1.14919654e+00,
                                                                                                                         2.08640109e+03, 1.70366489e+04, 5.70544198e-03, 1.02261775e+00, 1.78026926e+02, 4.86019752e+04, 1.21239865e-03, 4.63297149e-03, 2.36398075e+00, 2.13381927e+00, 1.29356968e+00],
10^{3}
                                                                             2 \times 10^{3}
                                                                                                                         6.55458710e+02.1.63953969e+04, 1.24181649e+03, 1.14919654e+00, 2.08640109e+03, 1.70366488e+04, 5.70544198e-03, 1.02261775e+00,
                     10^{-4}
                                    10^{-3}
                                                   10^{-2}
                                                                  10^{-1}
                                                                                          10^{-5}
                                                                                                        10^{-4}
                                                                                                      Full circult \( \frac{\partial \text{Pipe}}{2.36398075e+00}, 4.86019752e+04, 1.21239865e-03, 4.63297149e-03, 2.36398075e+00, 2.13381927e+00, 1.29356968e+00],
            inducer -> S -| Output (GFP)
                                                                                                                        [6.55458710e+02, 1.63953969e+04, 1.24181649e+03, 1.14919654e+00,
                                                                                                                         2.08640109e+03, 1.70366488e+04, 5.70544197e-03, 1.02261775e+00,
                                                                             4 \times 10^{3}
                                                                                                                        \1.78026926e+02, 4.$6019752e+04, 1.21239865e-03, 4.63297148e-03,
10^{4}
                                                                                                                            36398075e+00, 2.13381927e+00, 1.29356968e+00],
                                                                                                                               ,5458710e+02, 1.$3953969e+04, 1.24181649e+03, 1.14919654e+00,
                                                                             3 \times 10^{3}
                                                                                                                             Q8640109e+03, 1.70366489e+04, 5.70544199e-03, 1.02261775e+00,
                                                                                                                       1.78026926e+02, 4.86019752e+04, 1.21239865e-03, 4.63297150e-03, 2.36398075e+00, 2.13381927e+00, 1.29356968e+00], [6.55458710e+02, 1.63953969e+04, 1.24181649e+03, 1.14919654e+00,
                                                                             2 \times 10^{3}
                                                                                                                         2.08640109e+03, 1.70366489e+04, 5.70544199e-03, 1.02261775e+00, 1.78026926e+02, 4.86019752e+04, 1.21239865e-03, 4.63297149e-03,
10^{3}
                                                                                                                         <u> </u>2<sub>0</sub>36398<u>0</u> გ5e+00<sub>1</sub> გ-13381927e+00, 1.29356968e+00],
      10^{-5}
                                    10^{-3}
                                                   10^{-2}
                                                                                          10^{-5}
                                                                                                        10^{-4}
                     10^{-4}
                                                                  10^{-1}
                                                                                                                        [6̃.554587ื10e+02, 1.63953969e+04, 1.24181649e+03, 1.14919654e+00,
                                                                                                                         2.08640109e+03, 1.70366489e+04, 5.70544199e-03, 1.02261775e+00,
                  Across all four plots:
                                                                                                                         1.78026926e+02, 4.86019752e+04, 1.21239865e-03, 4.63297150e-03,
                                                                                                                         2.36398075e+00, 2.13381927e+00, 1.29356968e+00],
                     RSS (converged)=0.067
                                                                                                                        [6.55458710e+02, 1.63953969e+04, 1.24181649e+03, 1.14919654e+00,
                                                                                                                         2.08640109e+03, 1.70366489e+04, 5.70544199e-03, 1.02261775e+00,
                     RSS (initial)=0.248
                                                                                                                         1.78026926e+02, 4.86019752e+04, 1.21239865e-03, 4.63297150e-03,
                                                                                                                         2.36398075e+00, 2.13381927e+00, 1.29356968e+00],
                     RSS (% reduction)=0.788
                                                                                                                        [6.55458710e+02, 1.63953969e+04, 1.24181649e+03, 1.14919654e+00,
                                                                                                                         2.08640109e+03, 1.70366489e+04, 5.70544199e-03, 1.02261775e+00,
                                epsilon Initial guesses Converged
                                                                                                                         1.78026926e+02, 4.86019752e+04, 1.21239865e-03, 4.63297149e-03,
                           47.061607
                                                       608.397103 655.458710
                                                                                                                         2.36398075e+00, 2.13381927e+00, 1.29356968e+00]]), array([0.06668933, 0.06668933, 0.06668933, 0.06668933, 0.06668933,
                 B s 1144.939229
                                                       15250.457700 16395.396929
                                                                                                                       0.06668933, \, 0.06668933, \, 0.06668933, \, 0.06668933, \, 0.06668933, \, 0.06668933, \, 0.06668933, \, 0.06668933, \, 0.06668933, \, 0.06668933, \, 0.06668933, \, 0.06668933, \, 0.06668933, \, 0.06668933, \, 0.06668933, \, 0.06668933, \, 0.06668933, \, 0.06668933, \, 0.06668933, \, 0.06668933, \, 0.06668933, \, 0.06668933, \, 0.06668933, \, 0.06668933, \, 0.06668933, \, 0.06668933, \, 0.06668933, \, 0.06668933, \, 0.06668933, \, 0.06668933, \, 0.06668933, \, 0.06668933, \, 0.06668933, \, 0.06668933, \, 0.06668933, \, 0.06668933, \, 0.06668933, \, 0.06668933, \, 0.06668933, \, 0.06668933, \, 0.06668933, \, 0.06668933, \, 0.06668933, \, 0.06668933, \, 0.06668933, \, 0.06668933, \, 0.06668933, \, 0.06668933, \, 0.06668933, \, 0.06668933, \, 0.06668933, \, 0.06668933, \, 0.06668933, \, 0.06668933, \, 0.06668933, \, 0.06668933, \, 0.06668933, \, 0.06668933, \, 0.06668933, \, 0.06668933, \, 0.06668933, \, 0.06668933, \, 0.06668933, \, 0.06668933, \, 0.06668933, \, 0.06668933, \, 0.06668933, \, 0.06668933, \, 0.06668933, \, 0.06668933, \, 0.06668933, \, 0.06668933, \, 0.06668933, \, 0.06668933, \, 0.06668933, \, 0.06668933, \, 0.06668933, \, 0.06668933, \, 0.06668933, \, 0.06668933, \, 0.06668933, \, 0.06668933, \, 0.06668933, \, 0.06668933, \, 0.06668933, \, 0.06668933, \, 0.06668933, \, 0.06668933, \, 0.06668933, \, 0.06668933, \, 0.06668933, \, 0.06668933, \, 0.06668933, \, 0.06668933, \, 0.06668933, \, 0.06668933, \, 0.06668933, \, 0.06668933, \, 0.06668933, \, 0.06668933, \, 0.06668933, \, 0.06668933, \, 0.06668933, \, 0.06668933, \, 0.06668933, \, 0.06668933, \, 0.06668933, \, 0.06668933, \, 0.06668933, \, 0.06668933, \, 0.06668933, \, 0.06668933, \, 0.06668933, \, 0.06668933, \, 0.06668933, \, 0.06668933, \, 0.06668933, \, 0.06668933, \, 0.06668933, \, 0.06668933, \, 0.06668933, \, 0.06668933, \, 0.06668933, \, 0.06668933, \, 0.06668933, \, 0.06668933, \, 0.06668933, \, 0.06668933, \, 0.06668933, \, 0.06668933, \, 0.06668933, \, 0.06668933, \, 0.06668933, \, 0.06668933, \, 0.06668933, \, 0.06668933, \, 0.06668933, \, 0.06668933, \, 0.066689940, \, 0.066689940, \, 0.066689940, \, 0.066689940, \, 0.066689940, \, 0.066689940, \, 0.066689940, \, 0.06668
                 C s -426.242558
                                                       1668.059050 1241.816492
                                                                                                                        0.06668933, 0.06668933, 0.06668933, 0.06668933, 0.06668933,
                 Ns
                            -0.049737
                                                        1.198934
                                                                            1.149197
                                                                                                                       0.06668933]))
                 A_r 1398.436400
                                                        687.964693 2086.401093
                                                                                                                            fun: 0.06668933030517052
                 Br -6460.962515
                                                       23497.611400 17036.648885
                                                                                                                        message: 'Optimization terminated successfully.'
                                                                              0.005705
                            -0.056662
                                                       0.062367
                 Сr
                                                                                                                           nfev: 28577
                            0.630887
                                                        0.391731
                 Νr
                                                                             1.022618
                                                                                                                            nit: 21880
                 A h -412.579622
                                                        590.606548 178.026926
                                                                                                                         status: 0
                                                        35287.125700 48601.975161
                 B h 13314.849461
                                                                                                                        success: True
                             0.000683
                                                        0.000530
                                                                               0.001212
                 Сh
                                                                                                                              x: array([6.55458710e+02, 1.63953969e+04, 1.24181649e+03, 1.14919654e+00,
                                                                                                                        2.08640109e+03, 1.70366489e+04, 5.70544200e-03, 1.02261775e+00,
                 Αо
                            -0.825197
                                                        0.829830
                                                                                0.004633
                            -1.924189
                                                        4.288170
                                                                                2.363981
                                                                                                                        1.78026926e+02, 4.86019752e+04, 1.21239865e-03, 4.63297151e-03,
                            -0.999403
                                                        3.133222
                                                                                2.133819
                                                                                                                       2.36398075e+00, 2.13381927e+00, 1.29356968e+00])
                            -0.515449
                                                        1.809018
                                                                                1.293570
                 N_o
```