```
final simplex: (array([[1.17570217e+03, 3.51981913e+03, 2.06058415e+03, 1.74133413e+00,
                                                                                           7.54353008e+00, 9.76819748e+04, 8.11407844e-03, 4.53421056e+00,
                                                                                           1.67536681e+04, 5.07790297e+06, 1.12078443e-01, 1.37366516e-12,
                                                                                           6.21335781e+02, 9.56473868e+02, 1.85629434e+00],
                                                                                          [1.17570217e+03, 3.51981913e+03, 2.06058415e+03, 1.74133413e+00,
                                                                                           7.54353008e+00, 9.76819748e+04, 8.11407844e-03, 4.53421056e+00,
                                                                                           1.67536681e+04, 5.07790297e+06, 1.12078443e-01, 1.37366888e-12,
                                                                                           6.21335781e+02, 9.56473868e+02, 1.85629434e+00],
                                                                                          [1.17570217e+03, 3.51981913e+03, 2.06058415e+03, 1.74133413e+00,
                                                                                           7.54353008e+00, 9.76819748e+04, 8.11407844e-03, 4.53421056e+00,
                                                                                           1.67536681e+04, 5.07790297e+06, 1.12078443e-01, 1.37363776e-12,
                                                                                           6.21335781e+02, 9.56473868e+02, 1.85629434e+00],
                                                                                          [1.17570217e+03, 3.51981913e+03, 2.06058415e+03, 1.74133413e+00,
                                                                                           7.54353008e+00, 9.76819748e+04, 8.11407844e-03, 4.53421056e+00,
                                                                                           1.67536681e+04, 5.07790297e+06, 1.12078443e-01, 1.37369038e-12,
                                                                                           6.21335781e+02, 9.56473868e+02, 1.85629434e+00],
                                                                                          [1.17570217e+03, 3.51981913e+03, 2.06058415e+03, 1.74133413e+00,
                                                                                           7.54353008e+00, 9.76819748e+04, 8.11407844e-03, 4.53421056e+00,
                                                                                           1.67536681e+04, 5.07790297e+06, 1.12078443e-01, 1.37378693e-12,
                                                                                          6.21335781e+02, 9.56473868e+02, 1.85629434e+00], [1.17570217e+03, 3.51981913e+03, 2.06058415e+03, 1.74133413e+00,
                                                                                           7.54353008e+00, 9.76819748e+04, 8.11407844e-03, 4.53421056e+00,
              ['SM data type data plots for mutation', 'Sensor 3 1e+04, 5.07790297 1e+06 Initial Guess 3 e-01, 1.37366474e-12, 6.21335781e+02, 9.5647386 1e+02, 9.5647386 1e+02, 9.5647386 1e+00], cer -> sensor (GFP output) inducer -> S_{[1]}[R_{7}(9,62194409,8.5198191] 1e+05, 3 1.74133413e+00, 1.7413413e+00, 1.7413413e+00, 1.7413413e+00, 1.7413413e+00, 1.7413413e+00, 1.7413413e+00, 1.7413413e+00, 1.74134140e+00, 1.741400e+00, 1.741400e+000, 1.74140e+000, 1.741400e+000, 1.741400e+000, 1
      inducer -> sensor (GFP output)
                                                                                           7.54353008e+00, 9.76819748e+04Converged 44e-03, 4.53421056e+00,
                                                                                          1.67536681e+04. 5.07790297e+0 Converged 13e-01, 1.37364286e-12, 6.21335781e+02, 9.5647386 e+02 Converged 15e+03, 1.74133413e+00, 7.54353008e+00, 9.76819748e+04, 8.11407844e-03, 4.53421056e+00,
10^{4}
                                                              10^{3}
                                                                                           1.67536681e+04, 5.07790297e+06, 1.12078443e-01, 1.37370163e-12,
                                                                                           6.21335781e+02, 9.$6473868e+02, 1.85629434e+00],
                                                               10^{2}
                                                                                          [1.17570217e+03, 3.$1981913e+03, 2.06058415e+03, 1.74133413e+00,
                                                                                           7.54353008e+00, 9.76819748e+04, 8.11407844e-03, 4.53421056e+00,
10<sup>3</sup>
                                                                                           1.67536681e+04, 5.07790297e+06, 1.12078443e-01, 1.37363385e-12,
                                                               10<sup>1</sup>
                                                                                           <del>6.21335781e+02, 9</del>.$6473868e+02, 1.85629434e+00],
                                                                                          \begin{array}{l} \begin{array}{l} 1117570217e + 0373.51981913e + 03, 2.06058415e + 03, 1.74133413e + 00, \\ 7054353608e + 0079.76819748e + 04, 8.11407844e - 03, 4.53421056e + 00, \end{array}
                10^{-4}
                           10^{-3}
                                      10^{-2}
                                                  10^{-1}
                                                                   10^{-5}
                                                                               10^{-4}
                                                                             Full circult 6472668 hipe04, 5.07790297e+06, 1.12078443e-01, 1.37367742e-12,
         inducer -> S -| Output (GFP)
                                                                                                 <del>3357816+02, 9.</del>56473868e+02, 1.85629434e+00],
                                                                                          [1.17570217e+03, 3.51981913e+03, 2.06058415e+03, 1.74133413e+00,
                                                                                        7.54353008e+00, 9.76819748e+04, 8.11407844e-03, 4.53421056e+00, 1.67536681e+04, 5.07790297e+06, 1.12078443e-01, 1.37372075e-12, 6.21335781e+02, 9.56473868e+02, 1.85629434e+00],
                                                          6 \times 10^{3}
10^{4}
                                                                                          [1.17570217e+03, 3.$1981913e+03, 2.06058415e+03, 1.74133413e+00,
                                                          4 \times 10^{3}
                                                                                           7.54353008e+00, 9.76819748e+04, 8.11407844e-03, 4.53421056e+00,
                                                                                             .67536681e+04, 5.∮7790297e+06, 1.12078443e-01, 1.37365286e-12,
                                                                                          6.21335781e+02, 9.56473868e+02, 1.85629434e+00], [1.17570217e+03, 3.51981913e+03, 2.06058415e+03, 1.74133413e+00,
                                                          3 \times 10^{3}
                                                                                           7.54353008e+00, 9.76819748e+04, 8.11407844e-03, 4.53421056e+00,
                                                                                             <u>,67536681e+04, 5</u>.07790297e+06, 1.12078443e-01, 1.37365833e-12,
                                                                                           60^{2}133578^{1}e+0216^{3}56473868e+02, 1.85629434e+00],
                                       10^{-2}
    10^{-5}
                           10^{-3}
                                                                   10^{-5}
                                                                               10^{-4}
                10^{-4}
                                                  10^{-1}
                                                                                           [1.17570217e+03, 3.51981913e+03, 2.06058415e+03, 1.74133413e+00,
                                                                                           7.54353008e+00, 9.76819748e+04, 8.11407844e-03, 4.53421056e+00,
             Across all four plots:
                                                                                           1.67536681e+04, 5.07790297e+06, 1.12078443e-01, 1.37354742e-12,
                                                                                           6.21335781e+02, 9.56473868e+02, 1.85629434e+00],
                RSS (converged)=0.035
                                                                                          [1.17570217e+03, 3.51981913e+03, 2.06058415e+03, 1.74133413e+00,
                                                                                           7.54353008e+00, 9.76819748e+04, 8.11407844e-03, 4.53421056e+00,
                RSS (initial)=4.949
                                                                                           1.67536681e+04, 5.07790297e+06, 1.12078443e-01, 1.37364804e-12,
                                                                                           6.21335781e+02, 9.56473868e+02, 1.85629434e+00],
                RSS (% reduction)=0.993
                                                                                          [1.17570217e+03, 3.51981913e+03, 2.06058415e+03, 1.74133413e+00,
                                                                                           7.54353008e+00, 9.76819748e+04, 8.11407844e-03, 4.53421056e+00,
                        epsilon Initial guesses Converged
                                                                                           1.67536681e+04, 5.07790297e+06, 1.12078443e-01, 1.37375818e-12,
            A s 5.673051e+02
                                            608.397103 1.175702e+03
                                                                                           6.21335781e+02, 9.56473868e+02, 1.85629434e+00]]), array([0.03466555, 0.03466555, 0.03466555, 0.03466555, 0.03466555,
                                           15250.457700 3.519819e+03
            B s -1.173064e+04
                                                                                          0.03466555, 0.03466555, 0.03466555, 0.03466555,
            C s 3.925251e+02
                                           1668.059050 2.060584e+03
                                                                                          0.03466555, 0.03466555, 0.03466555, 0.03466555, 0.03466555,
            N s 5.424006e-01
                                             1.198934 1.741334e+00
                                                                                          0.03466555]))
            A r-6.804212e+02
                                            687.964693 7.543530e+00
                                                                                             fun: 0.03466555109261975
            Br 7.418436e+04
                                          23497.611400 9.768197e+04
                                                                                          message: 'Optimization terminated successfully.'
                                            0.062367 8.114078e-03
            C r -5.425309e-02
                                                                                            nfev: 49901
                                             0.391731 4.534211e+00
            N r 4.142480e+00
                                                                                             nit: 38121
            A h 1.616306e+04
                                            590.606548 1.675367e+04
                                                                                           status: 0
                                           35287.125700 5.077903e+06
            B h 5.042616e+06
                                                                                          success: True
                                             0.000530 1.120784e-01
            C h 1.115486e-01
                                                                                               x: array([1.17570217e+03, 3.51981913e+03, 2.06058415e+03, 1.74133413e+00,
            A o -8.298298e-01
                                             0.829830 1.373665e-12
                                                                                          7.54353008e+00, 9.76819748e+04, 8.11407844e-03, 4.53421056e+00,
            B o 6.170476e+02
                                              4.288170 6.213358e+02
                                                                                          1.67536681e+04, 5.07790297e+06, 1.12078443e-01, 1.37366516e-12,
            C o 9.533406e+02
                                              3.133222 9.564739e+02
                                                                                          6.21335781e+02, 9.56473868e+02, 1.85629434e+00])
            N o 4.727586e-02
                                             1.809018 1.856294e+00
```