```
final simplex: (array([[8.24884537e+02, 1.68205953e+04, 1.54605538e+03, 1.11473340e+00,
                                                                                          3.95600466e+02, 4.77925548e+04, 4.88627208e-02, 9.53837021e-01,
                                                                                          6.66518970e+02, 3.11527545e+04, 3.83219398e-04, 8.09186559e-05,
                                                                                          8.49828163e-01, 5.57226217e+00, 1.39640293e+00],
                                                                                         [8.24884537e+02, 1.68205953e+04, 1.54605538e+03, 1.11473340e+00,
                                                                                          3.95600466e+02, 4.77925548e+04, 4.88627208e-02, 9.53837020e-01,
                                                                                          6.66518970e+02, 3.11527545e+04, 3.83219398e-04, 8.09186558e-05,
                                                                                          8.49828165e-01, 5.57226217e+00, 1.39640293e+00],
                                                                                         [8.24884537e+02, 1.68205953e+04, 1.54605538e+03, 1.11473340e+00,
                                                                                          3.95600466e+02, 4.77925548e+04, 4.88627208e-02, 9.53837020e-01,
                                                                                          6.66518970e+02, 3.11527544e+04, 3.83219398e-04, 8.09186557e-05,
                                                                                          8.49828165e-01, 5.57226217e+00, 1.39640293e+00]
                                                                                         [8.24884537e+02, 1.68205953e+04, 1.54605538e+03, 1.11473340e+00,
                                                                                          3.95600466e+02, 4.77925548e+04, 4.88627208e-02, 9.53837020e-01,
                                                                                          6.66518970e+02, 3.11527545e+04, 3.83219398e-04, 8.09186558e-05,
                                                                                          8.49828165e-01, 5.57226217e+00, 1.39640293e+00],
                                                                                         [8.24884537e+02, 1.68205953e+04, 1.54605538e+03, 1.11473340e+00,
                                                                                          3.95600466e+02, 4.77925548e+04, 4.88627208e-02, 9.53837020e-01,
                                                                                          6.66518970e+02, 3.11527545e+04, 3.83219398e-04, 8.09186558e-05,
                                                                                          8.49828164e-01, 5.57226217e+00, 1.39640293e+00],
                                                                                         [8.24884537e+02, 1.68205953e+04, 1.54605538e+03, 1.11473340e+00,
                                                                                          3.95600466e+02, 4.77925548e+04, 4.88627208e-02, 9.53837020e-01,
        ['SM data type data plots for mutation', 'Sensōr29] 0e+02, 3.11527544 = +0 Initial Guess e+00], eer-> sensor (GFP output) inducer ->S_{[8]} \frac{49828165e-01}{24881539} \frac{5}{10} \frac{5}{10
inducer -> sensor (GFP output)
                                                                                          3.95600466e+02, 4.7792554 Converged 3e-02, 9.53837020e-01,
                                                                                          6.66518970e+02, 3.11527545e+04Converged 3e-04, 8.09186558e-05,
                                                                                          8.49828165e-01, 5.57226217e+00
                                                                                                                                                               3e+00],
                                                                                                                                          Converged 38e+03, 1.11473340e+00,
                                                                                          [<del>8</del>.24884537e+02, 1.68205953e+
                                                                                          3.95<del>600466e+02, 4.</del>77925548e+04, 4.88627208e-02, 9.53837020e-01,
                                                                                          6.66518970e+02, 3.11527545e+04, 3.83219398e-04, 8.09186558e-05,
                                                                                          8.49828165e-01, 5.5/226217e+00, 1.39640293e+00],
                                                            10^{3}
                                                                                         [8.24884537e+02, 1.68205953e+04, 1.54605538e+03, 1.11473340e+00,
                                                                                          3.95600466e+02, 4.77925548e+04, 4.88627208e-02, 9.53837020e-01,
                                                                                          6.66518970e+02, 3.11527545e+04, 3.83219398e-04, 8.09186558e-05,
                                                                                          8.<del>49828164e-01, 5.</del>5|7226217e+00, 1.39640293e+00],
                                                                                          [<u>8</u>:24884537e+02:1.68205953e+04, 1.54605538e+03, 1.11473340e+00, 5.95600486e+02, 4.77925548e+04, 4.88627208e-02, 9.53837021e-01,
                                              10^{-1}
                                                                 10^{-5}
                                                                             10^{-4}
                                                                            Full circum 6674837 Prote02, 3.11527545e+04, 3.83219398e-04, 8.09186560e-05,
                                                                                             <del>498281636-01, 5.5</del>7226216e+00, 1.39640293e+00],
                                                                                         [8.24884537e+02, 1.68205953e+04, 1.54605538e+03, 1.11473340e+00,
                                                                                          3.95600466e+02, 4.77925548e+04, 4.88627208e-02, 9.53837020e-01,
                                                       4 \times 10^{3}
                                                                                          ,6.66518970e+02, 3.11527545e+04, 3.83219398e-04, 8.09186559e-05,
                                                                                             ,49828164e-01, 5.5/7226217e+00, 1.39640293e+00],
                                                       3 \times 10^{3}
                                                                                              2√4884537e+02, 1.68205953e+04, 1.54605538e+03, 1.11473340e+00,
                                                                                             95000466e+02, 4.77925548e+04, 4.88627208e-02, 9.53837020e-01,
                                                                                          6.60518970e+02, 3.11527544e+04, 3.83219398e-04, 8.09186556e-05,
                                                       2 \times 10^{3}
                                                                                          8.49828166e-01, 5.57226217e+00, 1.39640293e+00]
                                                                                          [8.2488423e+02, 1.68205953e+04, 1.54605538e+03, 1.11473340e+00,
                                                                                          3.95600466e<del>+02, 4</del>.77925548e+04, 4.88627208e-02, 9.53837020e-01, 6.66518970e+07, 9.11527544e+04, 3.83219398e-04, 8.09186557e-05,
                                                                                          <u>8</u><sub>0</sub>49828<u>1</u>65e-01,<sub>1</sub>5<sub>0</sub>57226217e+00, 1.39640293e+00],
                                                                 10^{-5}
                                                                             10^{-4}
                                              10^{-1}
                                                                                          [8.24884537e+02, 1.68205953e+04, 1.54605538e+03, 1.11473340e+00,
                                                                                          3.95600466e+02, 4.77925548e+04, 4.88627208e-02, 9.53837020e-01,
                                                                                          6.66518970e+02, 3.11527545e+04, 3.83219398e-04, 8.09186557e-05,
                                                                                          8.49828165e-01, 5.57226217e+00, 1.39640293e+00],
                                                                                          [8.24884537e+02, 1.68205953e+04, 1.54605538e+03, 1.11473340e+00,
                                                                                          3.95600466e+02, 4.77925548e+04, 4.88627208e-02, 9.53837020e-01,
                                                                                          6.66518970e+02, 3.11527545e+04, 3.83219398e-04, 8.09186560e-05,
                                                                                          8.49828163e-01, 5.57226216e+00, 1.39640293e+00],
                                                                                         [8.24884537e+02, 1.68205953e+04, 1.54605538e+03, 1.11473340e+00,
                                                                                          3.95600466e+02, 4.77925548e+04, 4.88627208e-02, 9.53837020e-01,
                  epsilon Initial guesses Converged
                                                                                          6.66518970e+02, 3.11527545e+04, 3.83219398e-04, 8.09186558e-05,
                                      608.397103 824.884537
                                                                                          15250.457700 16820.595300
                                                                                         0.03252903, 0.03252903, 0.03252903, 0.03252903, 0.03252903,
                                     1668.059050 1546.055376
                                                                                         0.03252903, 0.03252903, 0.03252903, 0.03252903, 0.03252903,
                                      1.198934
                                                      1.114733
                                                                                         0.03252903]))
                                     687.964693 395.600466
                                                                                             fun: 0.03252902702708126
                                     23497.611400 47792.554787
                                                                                         message: 'Optimization terminated successfully.'
                                     0.062367
                                                        0.048863
                                                                                            nfev: 16151
                                     0.391731
                                                        0.953837
                                                                                             nit: 12176
                                     590.606548 666.518970
                                                                                          status: 0
                                     35287.125700 31152.754475
                                                                                         success: True
                                      0.000530
                                                         0.000383
                                                                                               x: array([8.24884537e+02, 1.68205953e+04, 1.54605538e+03, 1.11473340e+00,
                                      0.829830
                                                        0.000081
                                                                                         3.95600466e+02, 4.77925548e+04, 4.88627208e-02, 9.53837021e-01,
                                      4.288170
                                                        0.849828
                                                                                         6.66518970e+02, 3.11527545e+04, 3.83219398e-04, 8.09186559e-05,
                                      3.133222
                                                         5.572262
                                                                                         8.49828163e-01, 5.57226217e+00, 1.39640293e+00])
                                      1.809018
                                                        1.396403
```

 10^{4}

 10^{3}

 10^{4}

 10^{-5}

 10^{-4}

 10^{-4}

10⁻³

inducer -> S -| Output (GFP)

10⁻³

RSS (converged)=0.033

RSS (% reduction)=0.906

Across all four plots:

RSS (initial)=0.312

A_s 216.487434

B s 1570.137600

C_s -122.003674

Ar -292.364227

B r 24294.943387

B h -4134.371225

-0.084200

-0.013504

0.562106

75.912422

-0.000147

-0.829749

-3.438342

2.439040

-0.412616

Νs

 C_{r}

Νr

Αh

C h

Αо

Со

N_o

 10^{-2}

 10^{-2}