```
final simplex: (array([[8.50396457e+02, 1.85305789e+04, 1.25910528e+03, 1.06645014e+00,
                                                                                                            1.91617561e+03, 1.88742408e+04, 9.03017988e-03, 8.20433340e-01,
                                                                                                            6.83835638e+02, 3.24643802e+04, 4.73376905e-04, 2.44991941e+00,
                                                                                                            6.32148081e-01, 9.72768210e-01, 2.64017386e+00, 1.91933916e+00],
                                                                                                          [8.50396458e+02, 1.85305789e+04, 1.25910527e+03, 1.06645014e+00, 1.91617561e+03, 1.88742408e+04, 9.03017988e-03, 8.20433340e-01,
                                                                                                            6.83835638e+02, 3.24643802e+04, 4.73376905e-04, 2.44991941e+00,
                                                                                                            6.32148081e-01, 9.72768210e-01, 2.64017386e+00, 1.91933916e+00],
                                                                                                           [8.50396455e+02, 1.85305789e+04, 1.25910527e+03, 1.06645014e+00,
                                                                                                            1.91617561e+03, 1.88742408e+04, 9.03017988e-03, 8.20433340e-01,
                                                                                                            6.83835638e+02, 3.24643802e+04, 4.73376905e-04, 2.44991942e+00,
                                                                                                           6.32148081e-01, 9.72768210e-01, 2.64017386e+00, 1.91933916e+00],
                                                                                                           [8.50396459e+02, 1.85305789e+04, 1.25910527e+03, 1.06645014e+00,
                                                                                                            1.91617561e+03, 1.88742408e+04, 9.03017988e-03, 8.20433340e-01,
                                                                                                           6.83835638e+02, 3.24643802e+04, 4.73376905e-04, 2.44991941e+00, 6.32148081e-01, 9.72768210e-01, 2.64017386e+00, 1.91933916e+00],
                                                                                                          [8.50396460e+02, 1.85305789e+04, 1.25910528e+03, 1.06645014e+00,
                                                                                                            1.91617561e+03, 1.88742408e+04, 9.03017988e-03, 8.20433340e-01,
                                                                                                            6.83835638e+02, 3.24643802e+04, 4.73376905e-04, 2.44991941e+00,
                                                                                                            6.32148081e-01, 9.72768210e-01, 2.64017386e+00, 1.91933916e+00],
                                                                                                           [8.50396459e+02, 1.85305789e+04, 1.25910527e+03, 1.06645014e+00,
                                                                                                            1.91617561e+03, 1.88742408e+04, 9.03017988e-03, 8.20433340e-01,
                                                                                                            6.83835638e+02, 3.24643802e+04, 4.73376905e-04, 2.44991942e+00,
                                                                                                            6.32148081e-01, 9.72768210e-01, 2.64017386e+00, 1.91933916e+00],
                                                                                                           [8.50396458e+02, 1.85305789e+04, 1.25910528e+03, 1.06645014e+00,
                                                                                                            1.91617561e+03, 1.88742408e+04, 9.03017988e-03, 8.20433340e-01,
          ['SM data type data plots for mutation', 'Sensor 26]8e+02, 3.24643802e+0 Initial Guess 6-04, 2.44991941e+00, 6.32148081e-01, 9.72768210e-01, 2.44991941e+00, 1.91933916e+00], cer -> sensor (GFP output) inducer -> Senso
inducer -> sensor (GFP output)
                                                                                                            6.83835638e+02, 3.2464380 e+0 Converged 5e-04, 2.44991941e+00, 6.32148081e-01, 9.72768210e-01, Converged 5e-04, 2.44991941e+00], [8.50396457e+02, 1.8530578 e+0 Converged 3e+03, 1.06645014e+00,
                                                                  4 \times 10^{3}
                                                                                                            1.91617561e+03, 1.$8742408e+04, 9.03017988e-03, 8.20433340e-01,
                                                                                                            6.83835638e+02, 3.24643802e+04, 4.73376905e-04, 2.44991941e+00, 6.32148081e-01, 9.72768210e-01, 2.64017386e+00, 1.91933916e+00],
                                                                  3 \times 10^3
                                                                                                           [8.50396456e+02, 1.85305789e+04, 1.25910528e+03, 1.06645014e+00,
                                                                                                            1.91617561e+03, 1.$8742408e+04, 9.03017988e-03, 8.20433340e-01,
                                                                                                             $3835638e+02, 3.24643802e+04, 4.73376905e-04, 2.44991941e+00,
                                                                                                            6.321<del>48081e-01, 9.</del>72768210e-01, 2.64017386e+00, 1.91933916e+00],
                                                                                                            <u>8.50396461e+02,1.</u>85305789e+04,1.25910528e+03,1.06645014e+00,
1.91617<del>5</del>81e+03,1.88742408e+04,9.03017988e-03,8.20433340e-01,
                                                                             10<sup>-5</sup>
                                         10^{-2}
                                                                                            10^{-4}
                                                                                          Full circuft 83935 6789 602, 3.24643802e+04, 4.73376905e-04, 2.44991941e+00, 6.32148081e-01, 9.72768210e-01, 2.64017386e+00, 1.91933916e+00],
   inducer -> S -| Output (GFP)
                                                                                                           [8.50396454e+02, 1.85305789e+04, 1.25910528e+03, 1.06645014e+00,
                                                                                                            1.91617561e+03, 1.$8742408e+04, 9.03017988e-03, 8.20433340e-01,
                                                                  4 \times 10^{3}
                                                                                                            .6.83835638e+02, 3.24643802e+04, 4.73376905e-04, 2.44991941e+00,
                                                                                                            🖎 32148081e-01, 9.72768210e-01, 2.64017386e+00, 1.91933916e+00],
                                                                  3 \times 10^{3}
                                                                                                          18.50396457e+02, 1.85305789e+04, 1.25910320e103, 1.8651.
1.91617561e+03, 1.88742408e+04, 9.03017988e-03, 8.20433340e-01,
                                                                                                                50396457e+02, 1.85305789e+04, 1.25910528e+03, 1.06645014e+00,
                                                                                                            6.83835638e+02, 3.24643802e+04, 4.73376905e-04, 2.44991941e+00, 6.32148081e-01, 9.72768210e-01, 2.64017386e+00, 1.91933916e+00],
                                                                  2 \times 10^{3}
                                                                                                          10^{-1}
                                                                              10^{-5}
                                         10^{-2}
                                                                                            10^{-4}
         Across all four plots:
                                                                                                            1.91617561e+03, 1.88742408e+04, 9.03017988e-03, 8.20433340e-01,
                                                                                                            6.83835638e+02, 3.24643802e+04, 4.73376905e-04, 2.44991941e+00,
            RSS (converged)=0.092
                                                                                                            6.32148081e-01, 9.72768210e-01, 2.64017386e+00, 1.91933916e+00],
                                                                                                           [8.50396459e+02, 1.85305789e+04, 1.25910528e+03, 1.06645014e+00,
            RSS (initial)=0.283
                                                                                                           1.91617561e+03, 1.88742408e+04, 9.03017988e-03, 8.20433340e-01,
                                                                                                            6.83835638e+02, 3.24643802e+04, 4.73376905e-04, 2.44991941e+00,
            RSS (% reduction)=0.755
                                                                                                            6.32148081e-01, 9.72768210e-01, 2.64017386e+00, 1.91933916e+00],
                                                                                                          [8.50396457e+02, 1.85305789e+04, 1.25910527e+03, 1.06645014e+00,
                     epsilon Initial_guesses Converged
                                                                                                            1.91617561e+03, 1.88742408e+04, 9.03017988e-03, 8.20433340e-01,
                                            618.047086 850.396457
                                                                                                            6.83835638e+02, 3.24643802e+04, 4.73376905e-04, 2.44991941e+00
                                          16278.856600 18530.578860
                                                                                                            6.32148081e-01, 9.72768210e-01, 2.64017386e+00, 1.91933916e+00]), array([0.09177228, 0.09177228, 0.09177228, 0.09177228, 0.09177228, 0.09177228, 0.09177228, 0.09177228, 0.09177228, 0.09177228, 0.09177228, 0.09177228, 0.09177228, 0.09177228, 0.09177228, 0.09177228, 0.09177228, 0.09177228, 0.09177228, 0.09177228, 0.09177228, 0.09177228, 0.09177228, 0.09177228, 0.09177228, 0.09177228, 0.09177228, 0.09177228, 0.09177228, 0.09177228, 0.09177228, 0.09177228, 0.09177228, 0.09177228, 0.09177228, 0.09177228, 0.09177228, 0.09177228, 0.09177228, 0.09177228, 0.09177228, 0.09177228, 0.09177228, 0.09177228, 0.09177228, 0.09177228, 0.09177228, 0.09177228, 0.09177228, 0.09177228, 0.09177228, 0.09177228, 0.09177228, 0.09177228, 0.09177228, 0.09177228, 0.09177228, 0.09177228, 0.09177228, 0.09177228, 0.09177228, 0.09177228, 0.09177228, 0.09177228, 0.09177228, 0.09177228, 0.09177228, 0.09177228, 0.09177228, 0.09177228, 0.09177228, 0.09177228, 0.09177228, 0.09177228, 0.09177228, 0.09177228, 0.09177228, 0.09177228, 0.09177228, 0.09177228, 0.09177228, 0.09177228, 0.09177228, 0.09177228, 0.09177228, 0.09177228, 0.09177228, 0.09177228, 0.09177228, 0.09177228, 0.09177228, 0.09177228, 0.09177228, 0.09177228, 0.09177228, 0.09177228, 0.09177228, 0.09177228, 0.09177228, 0.0917228, 0.09177228, 0.09177228, 0.0917228, 0.0917228, 0.0917228, 0.0917228, 0.0917228, 0.0917228, 0.0917228, 0.0917228, 0.0917228, 0.0917228, 0.0917228, 0.0917228, 0.0917228, 0.0917228, 0.0917228, 0.0917228, 0.0917228, 0.0917228, 0.0917228, 0.0917228, 0.0917228, 0.0917228, 0.0917228, 0.0917228, 0.0917228, 0.0917228, 0.0917228, 0.0917228, 0.0917228, 0.0917228, 0.0917228, 0.0917228, 0.0917228, 0.091728, 0.091728, 0.0917228, 0.0917228, 0.0917228, 0.0917228, 0.0917228, 0.0917228, 0.0917228, 0.0917228, 0.0917228, 0.0917228, 0.0917228, 0.0917228, 0.0917228, 0.0917228, 0.0917228, 0.0917228, 0.0917228, 0.091728, 0.091728, 0.091728, 0.091728, 0.091728, 0.091728, 0.091728, 0.091728, 0.091728, 0.091728, 0.091728, 0.091728, 0.091728, 0.091728, 0.091728, 0.091728, 0.091728, 
                                          1300.653790 1259.105281
                                                                                                           0.09177228, 0.09177228, 0.09177228, 0.09177228, 0.09177228,
                                            1.096541 1.066450
                                                                                                           0.09177228, 0.09177228, 0.09177228, 0.09177228, 0.09177228,
                                        1916.175610 1916.175610
                                                                                                           0.09177228, 0.09177228]))
                                       18874.240800 18874.240800
                                                                                                              fun: 0.09177227894500686
                                            0.009030
                                                                  0.009030
                                                                                                           message: 'Optimization terminated successfully.'
                                            0.820433
                                                                  0.820433
                                                                                                             nfev: 1129
                                          683.835638
                                                                683.835638
                                                                                                              nit: 680
                                        32464.380200 32464.380200
                                                                                                            status: 0
                                             0.000473
                                                                   0.000473
                                                                                                           success: True
                                            2.821352
                                                                   2.449919
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                                            0.632148
                                                                   0.632148
                                                                                                           1.91617561e+03, 1.88742408e+04, 9.03017988e-03, 8.20433340e-01,
                                            0.972768
                                                                   0.972768
                                                                                                           6.83835638e+02, 3.24643802e+04, 4.73376905e-04, 2.44991941e+00,
                                             2.640174
                                                                   2.640174
                                                                                                           6.32148081e-01, 9.72768210e-01, 2.64017386e+00, 1.91933916e+00])
```

 $10^{4}$ 

 $10^{3}$ 

 $10^{4}$ 

 $10^{-5}$ 

 $10^{-4}$ 

 $10^{-4}$ 

10<sup>-3</sup>

 $10^{-3}$ 

232.349371

-41.548509

-0.030091

0.000000

0.000000

0.000000

0.000000

0.000000

0.000000

0.000000

-0.371432

0.000000

0.000000

0.000000

0.000000

1.919339

1.919339

B s 2251.722260

 $N_s$ 

Сr

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