final_simplex: (array([[6.55908984e+02, 1.64668089e+04, 1.22141533e+03, 1.14464337e+00,
1.86390024e+03, 1.22052905e+05, 2.05329107e-01, 7.16154373e-01,
1.76771864e+02, 6.55740303e+04, 1.77889455e-03, 3.07825994e-01,
2.72924107e+00, 2.82613287e+00, 1.33151215e+00],
[6.55908984e+02, 1.64668089e+04, 1.22141533e+03, 1.14464337e+00,
1.86390024e+03, 1.22052905e+05, 2.05329107e-01, 7.16154373e-01,
1.76771864e+02, 6.55740303e+04, 1.77889455e-03, 3.07825994e-01,
2.72924107e+00, 2.82613287e+00, 1.33151215e+00],
[6.55908984e+02, 1.64668089e+04, 1.22141533e+03, 1.14464337e+00,
1.86390024e+03, 1.22052905e+05, 2.05329107e-01, 7.16154373e-01,
1.76771864e+02, 6.55740303e+04, 1.77889455e-03, 3.07825994e-01,
2.72924107e+00, 2.82613287e+00, 1.33151215e+00],
[6.55908984e+02, 1.64668089e+04, 1.22141533e+03, 1.14464337e+00,
1.86390024e+03, 1.22052905e+05, 2.05329107e-01, 7.16154373e-01,
1.76771864e+02, 6.55740303e+04, 1.77889455e-03, 3.07825995e-01,
2.72924107e+00, 2.82613287e+00, 1.33151215e+00],
[6.55908984e+02, 1.64668089e+04, 1.22141533e+03, 1.14464337e+00,
1.86390024e+03, 1.22052905e+05, 2.05329107e-01, 7.16154373e-01,
1.76771864e+02, 6.55740303e+04, 1.77889455e-03, 3.07825994e-01,
2.72924107e+00, 2.82613287e+00, 1.33151215e+00],
[6.55908984e+02, 1.64668089e+04, 1.22141533e+03, 1.14464337e+00,
1.86390024e+03, 1.22052905e+05, 2.05329107e-01, 7.16154373e-01,
1.76771864e+02, 6.55740303e+04, 1.77889455e-03, 3.07825994e-01,
2.72924107e+00, 2.82613287e+00, 1.33151215e+00],
[6.55908984e+02, 1.64668089e+04, 1.22141533e+03, 1.14464337e+00,
1.86390024e+03, 1.22052905e+05, 2.05329107e-01, 7.16154373e-01,
1.76771864e+02, 6.55740303e+04, 1.77889455e-03, 3.07825994e-01,
2.72924107e+00, 2.82613287e+00, 1.33151215e+00],
[6.55908984e+02, 1.64668089e+04, 1.22141533e+03, 1.14464337e+00,
1.86390024e+03, 1.22052905e+05, 2.05329107e-01, 7.16154373e-01,
1.76771864e+02, 6.55740303e+04, 1.77889455e-03, 3.07825994e-01,
2.72924107e+00, 2.82613287e+00, 1.33151215e+00],
[6.55908984e+02, 1.64668089e+04, 1.22141533e+03, 1.14464337e+00,
1.86390024e+03, 1.22052905e+05, 2.05329107e-01, 7.16154373e-01,
1.76771864e+02, 6.55740303e+04, 1.77889455e-03, 3.07825994e-01,
2.72924107e+00, 2.82613287e+00, 1.33151215e+00],
[6.55908984e+02, 1.64668089e+04, 1.22141533e+03, 1.14464337e+00,
1.86390024e+03, 1.22052905e+05, 2.05329107e-01, 7.16154373e-01,
1.76771864e+02, 6.55740303e+04, 1.77889455e-03, 3.07825994e-01,
2.72924107e+00, 2.82613287e+00, 1.33151215e+00],
[6.55908984e+02, 1.64668089e+04, 1.22141533e+03, 1.14464337e+00,
1.86390024e+03, 1.22052905e+05, 2.05329107e-01, 7.16154373e-01,
1.76771864e+02, 6.55740303e+04, 1.77889455e-03, 3.07825994e-01,
2.72924107e+00, 2.82613287e+00, 1.33151215e+00],
[6.55908984e+02, 1.64668089e+04, 1.22141533e+03, 1.14464337e+00,
1.86390024e+03, 1.22052905e+05, 2.05329106e-01, 7.16154373e-01,
1.76771864e+02, 6.55740303e+04, 1.77889455e-03, 3.07825993e-01,
2.72924107e+00, 2.82613287e+00, 1.33151215e+00],
[6.55908984e+02, 1.64668089e+04, 1.22141533e+03, 1.14464337e+00,
1.86390024e+03, 1.22052905e+05, 2.05329107e-01, 7.16154373e-01,
1.76771864e+02, 6.55740303e+04, 1.77889455e-03, 3.07825994e-01,
2.72924107e+00, 2.82613287e+00, 1.33151215e+00]]), array([0.07493248, 0.07493248, 0.07493248, 0.07493248, 0.07493248,
0.07493248, 0.07493248, 0.07493248, 0.07493248, 0.07493248,
0.07493248, 0.07493248, 0.07493248, 0.07493248, 0.07493248,
0.07493248]))
fun: 0.0749324830857175
message: 'Optimization terminated successfully.'
nfev: 18810
nit: 14246
status: 0
success: True
x: array([6.55908984e+02, 1.64668089e+04, 1.22141533e+03, 1.14464337e+00,
1.86390024e+03, 1.22052905e+05, 2.05329107e-01, 7.16154373e-01,
1.76771864e+02, 6.55740303e+04, 1.77889455e-03, 3.07825994e-01,
2.72924107e+00, 2.82613287e+00, 1.33151215e+00])

['SM data type data plots for mutation', 'Output3']

inducer -> sensor (GFP output)

inducer -> S -|R (GFP output)

inducer -> S -| Output (GFP)

Full circuit with stripe

Initial Guess
Converged
Converged
Converged
Converged

Across all four plots:

RSS (converged)=0.075

RSS (initial)=0.975
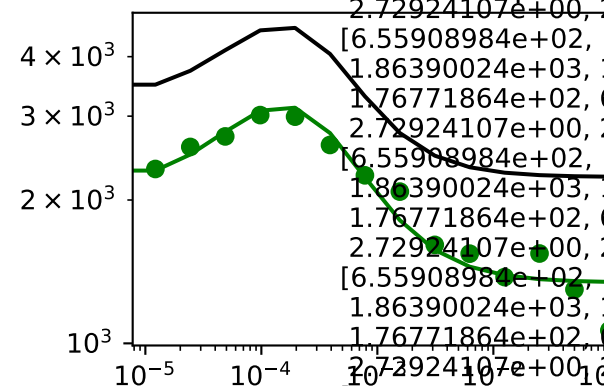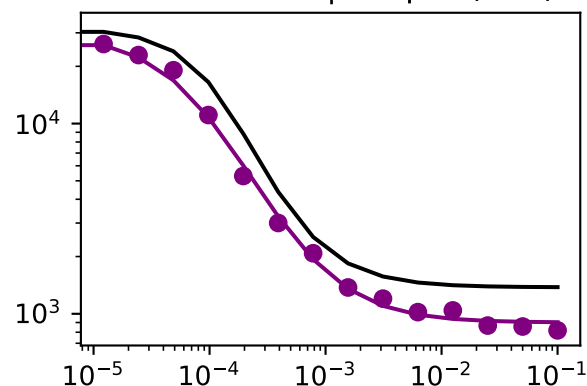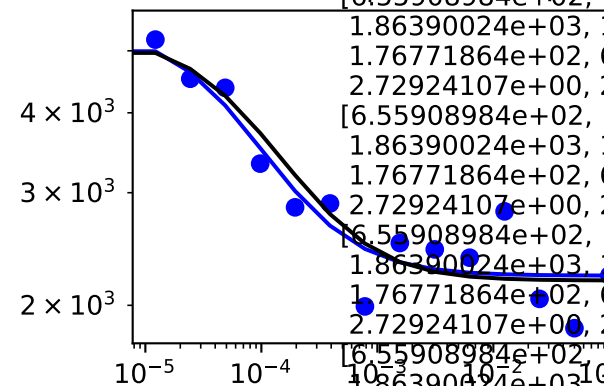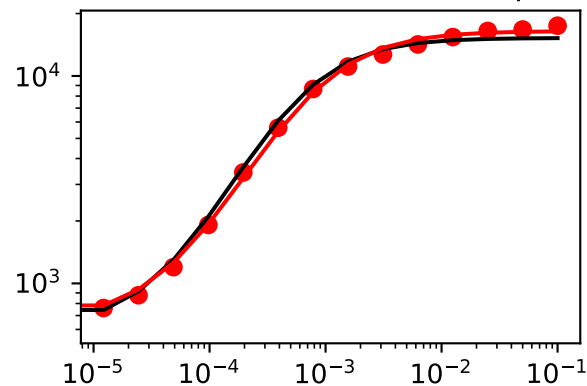
RSS (% reduction)=0.929

	epsilon	Initial_guesses	Converged
A_s	47.511881	608.397103	655.908984
B_s	1216.351188	15250.457700	16466.808888
C_s	-446.643715	1668.059050	1221.415335
N_s	-0.054290	1.198934	1.144643
A_r	1175.935543	687.964693	1863.900236
B_r	98555.293456	23497.611400	122052.904856
C_r	0.142962	0.062367	0.205329
N_r	0.324423	0.391731	0.716154
A_h	-413.834684	590.606548	176.771864
B_h	30286.904598	35287.125700	65574.030298
C_h	0.001249	0.000530	0.001779
A_o	-0.522004	0.829830	0.307826
B_o	-1.558929	4.288170	2.729241
C_o	-0.307089	3.133222	2.826133
N_o	-0.477506	1.809018	1.331512