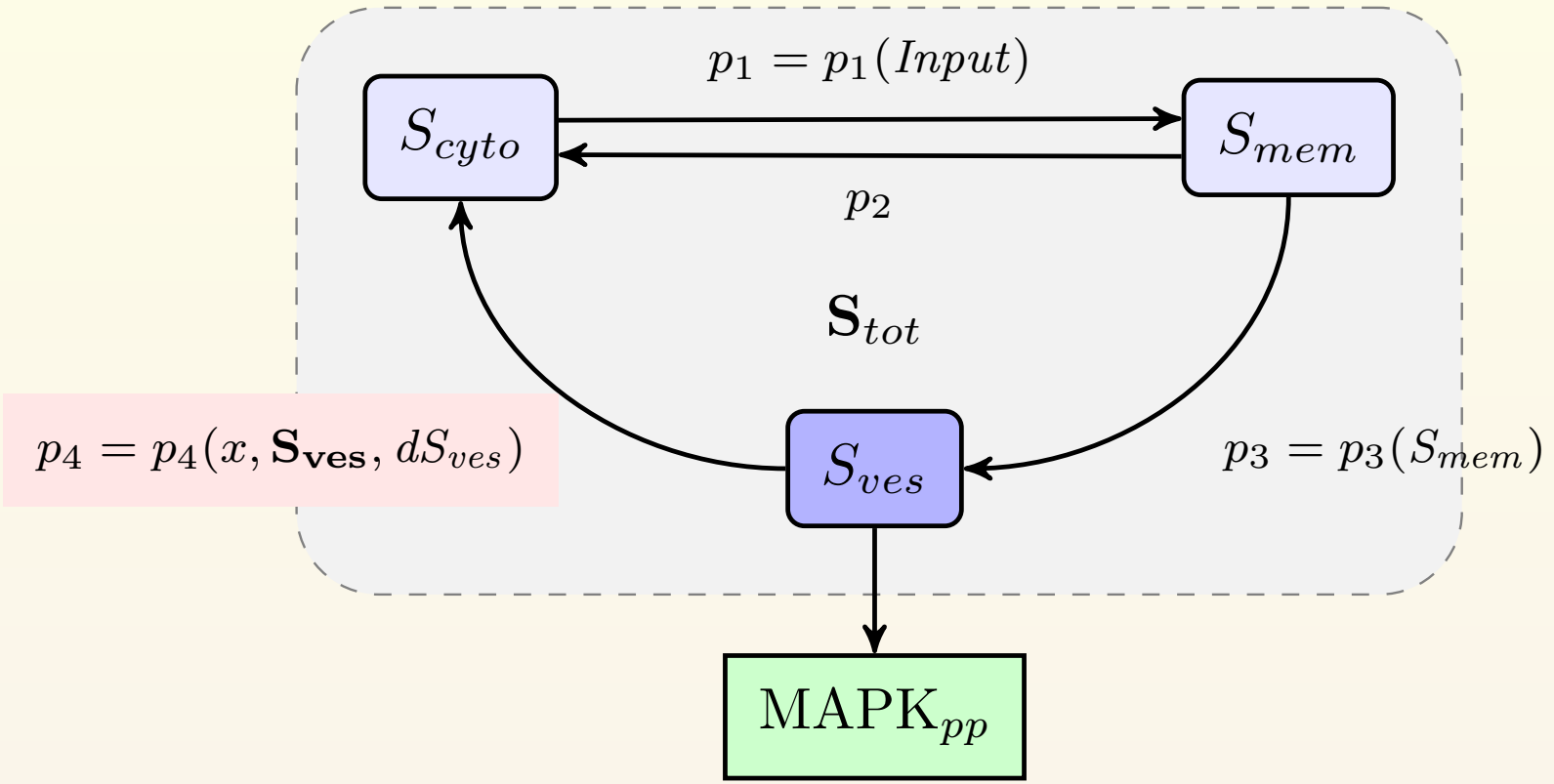
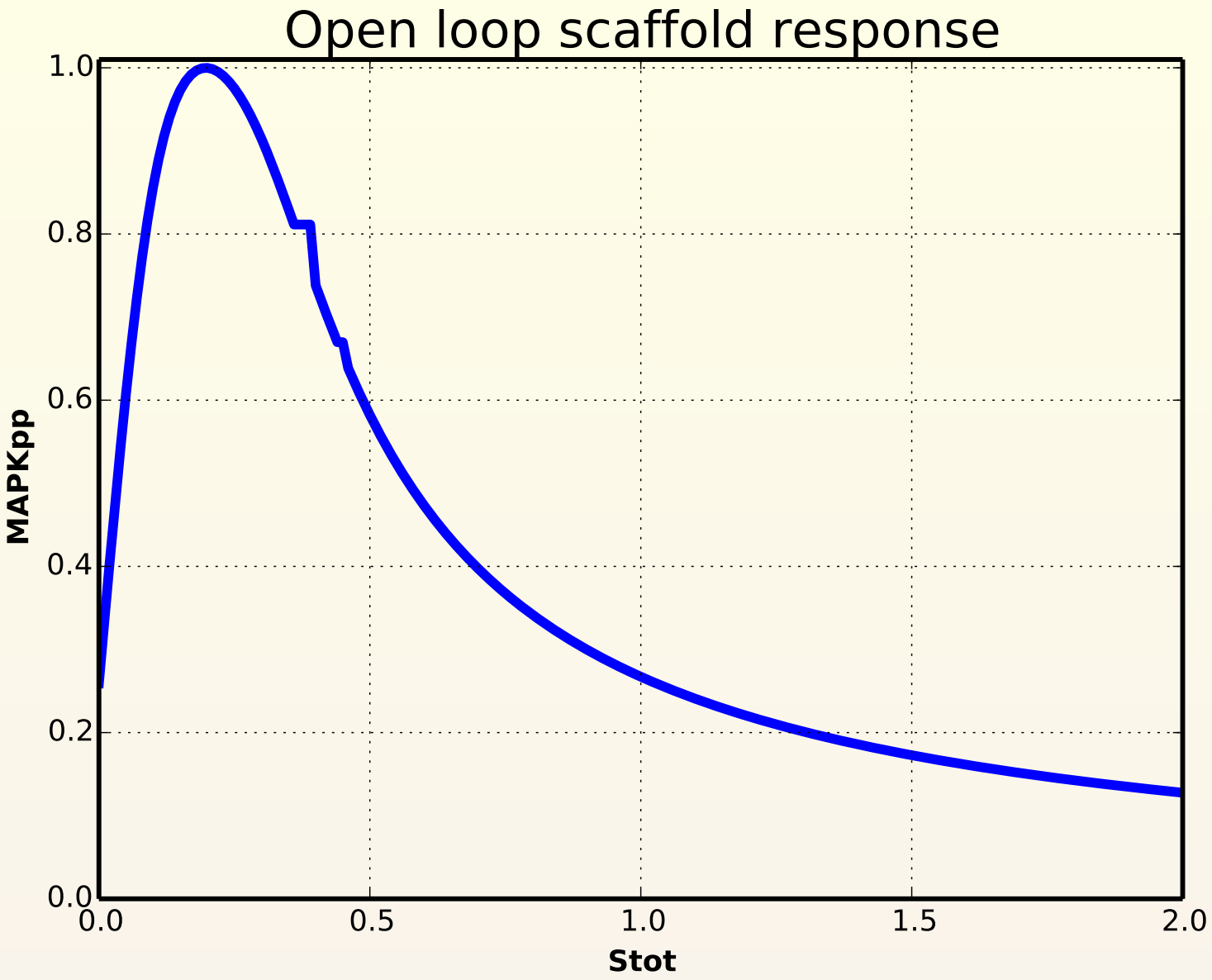
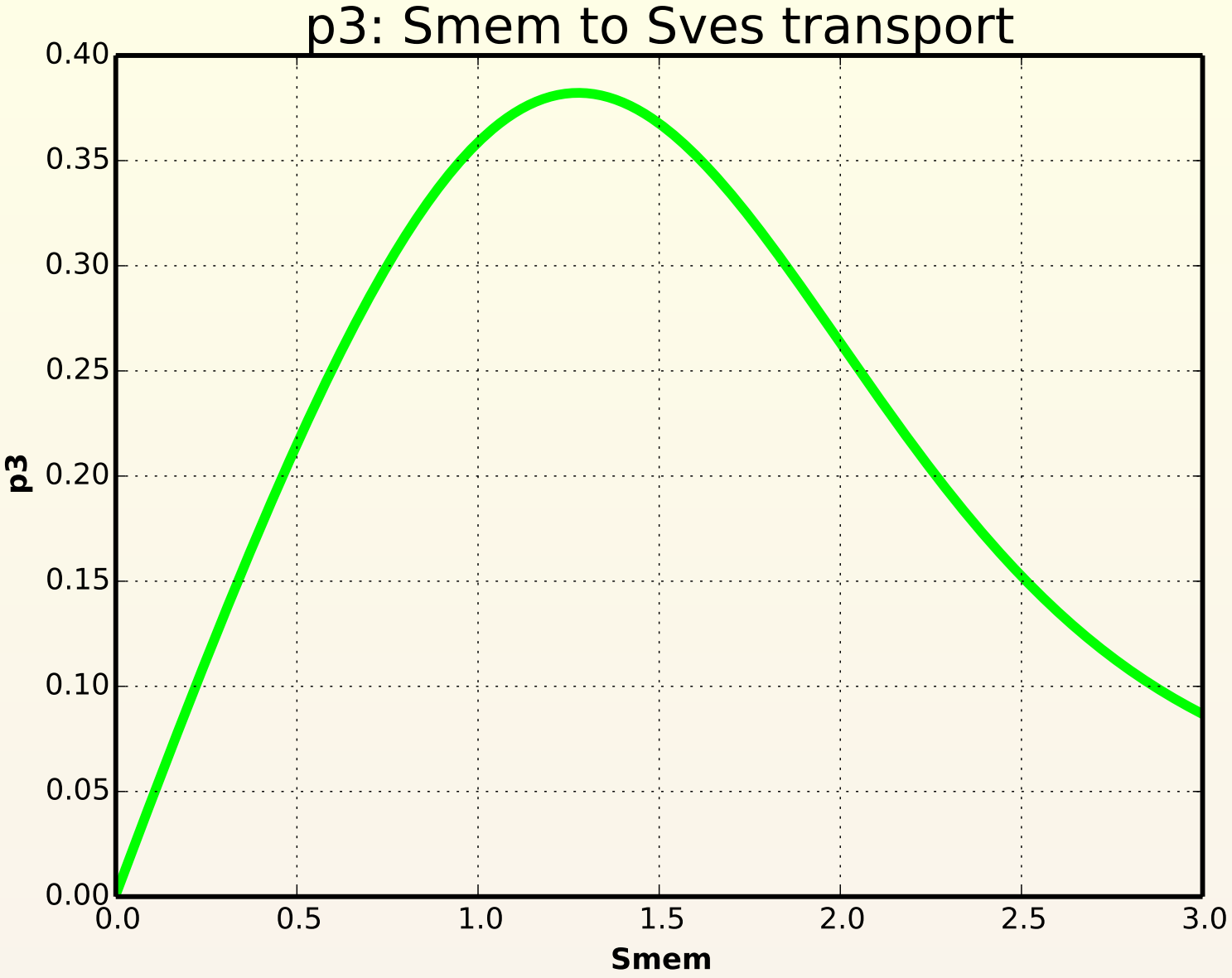
Model Schematic

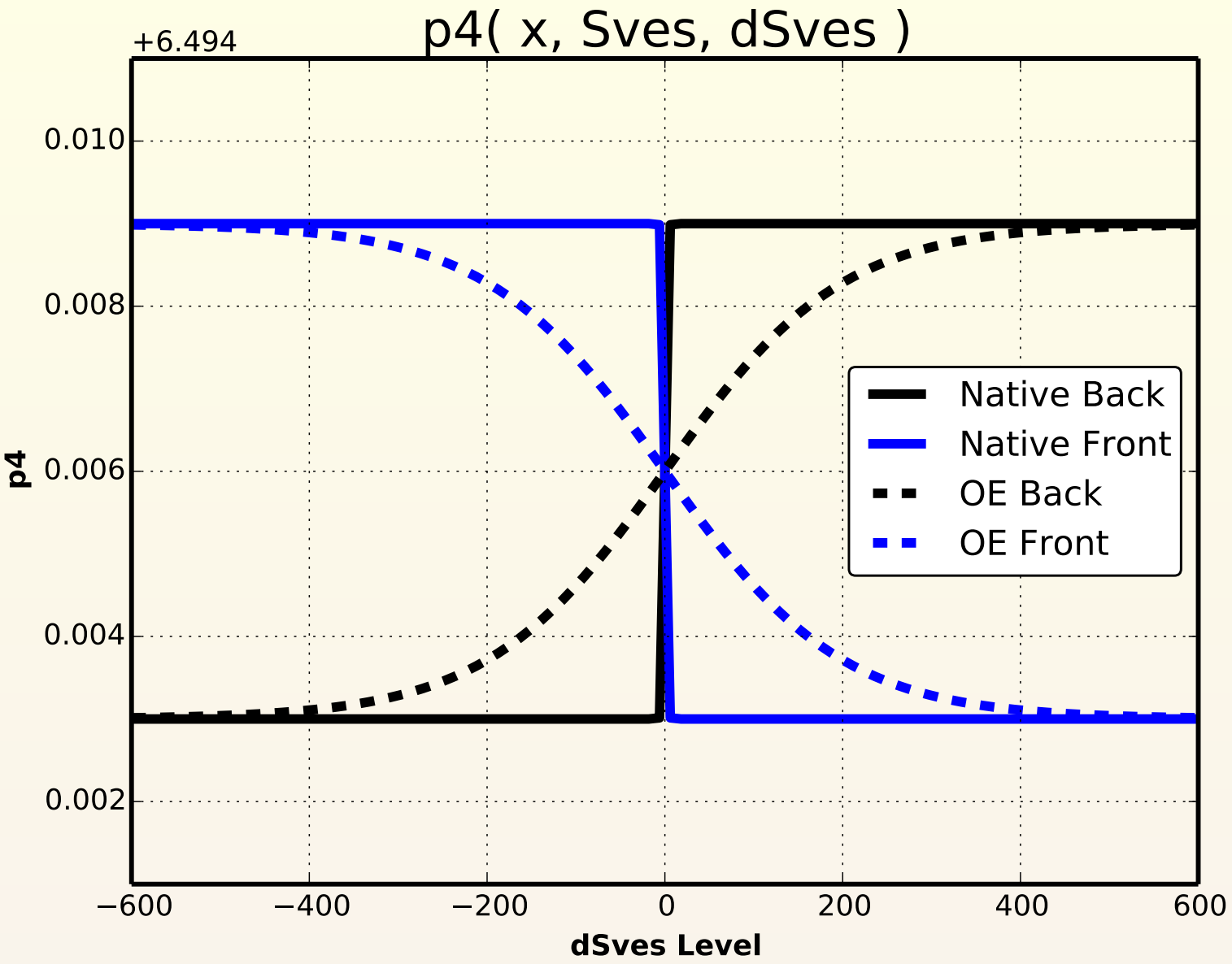


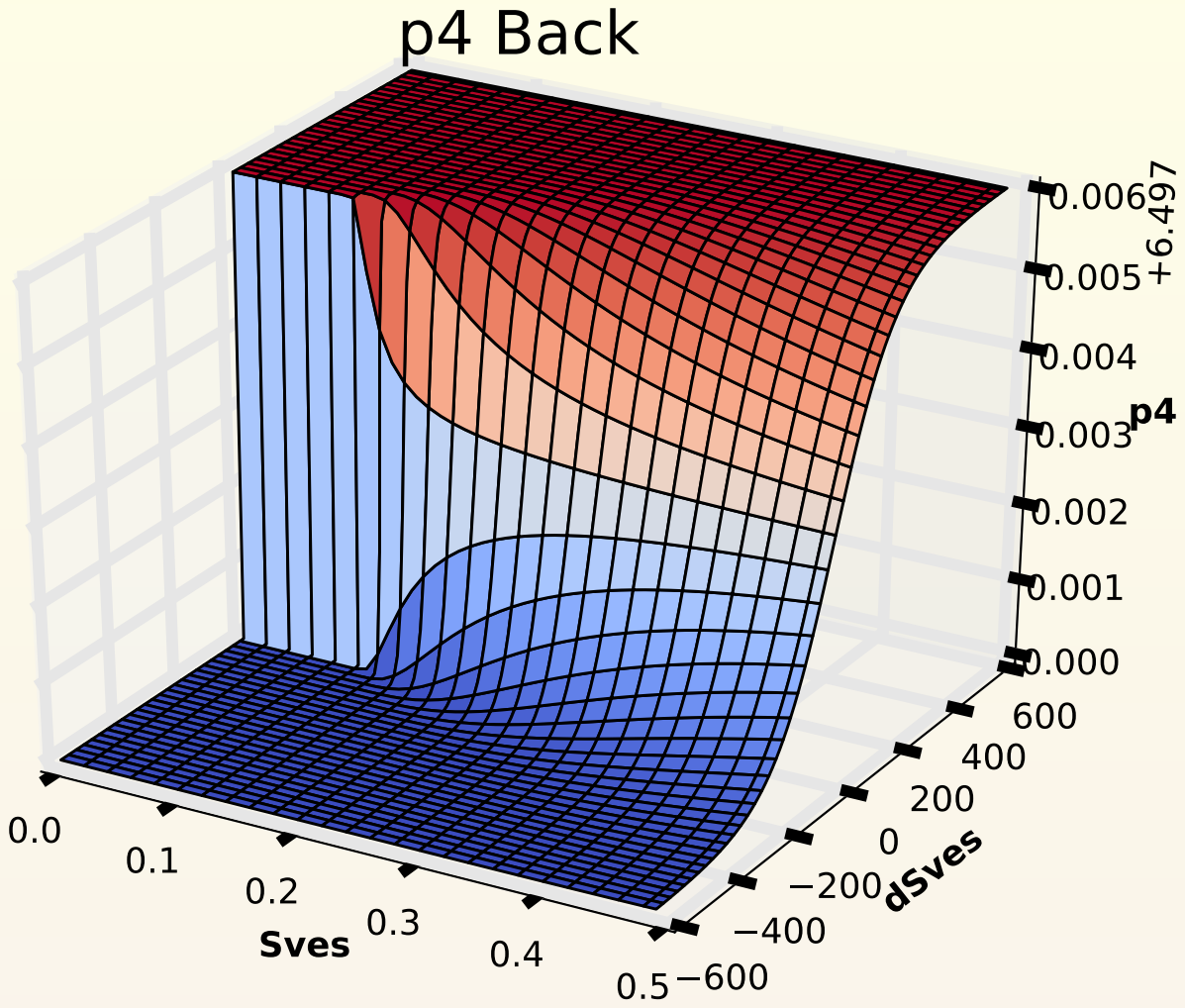

Open loop scaffold response
MAPKpp
Stot
0.0
0.2
0.4
0.6
0.8
1.0
0.0
0.5
1.0
1.5
2.0

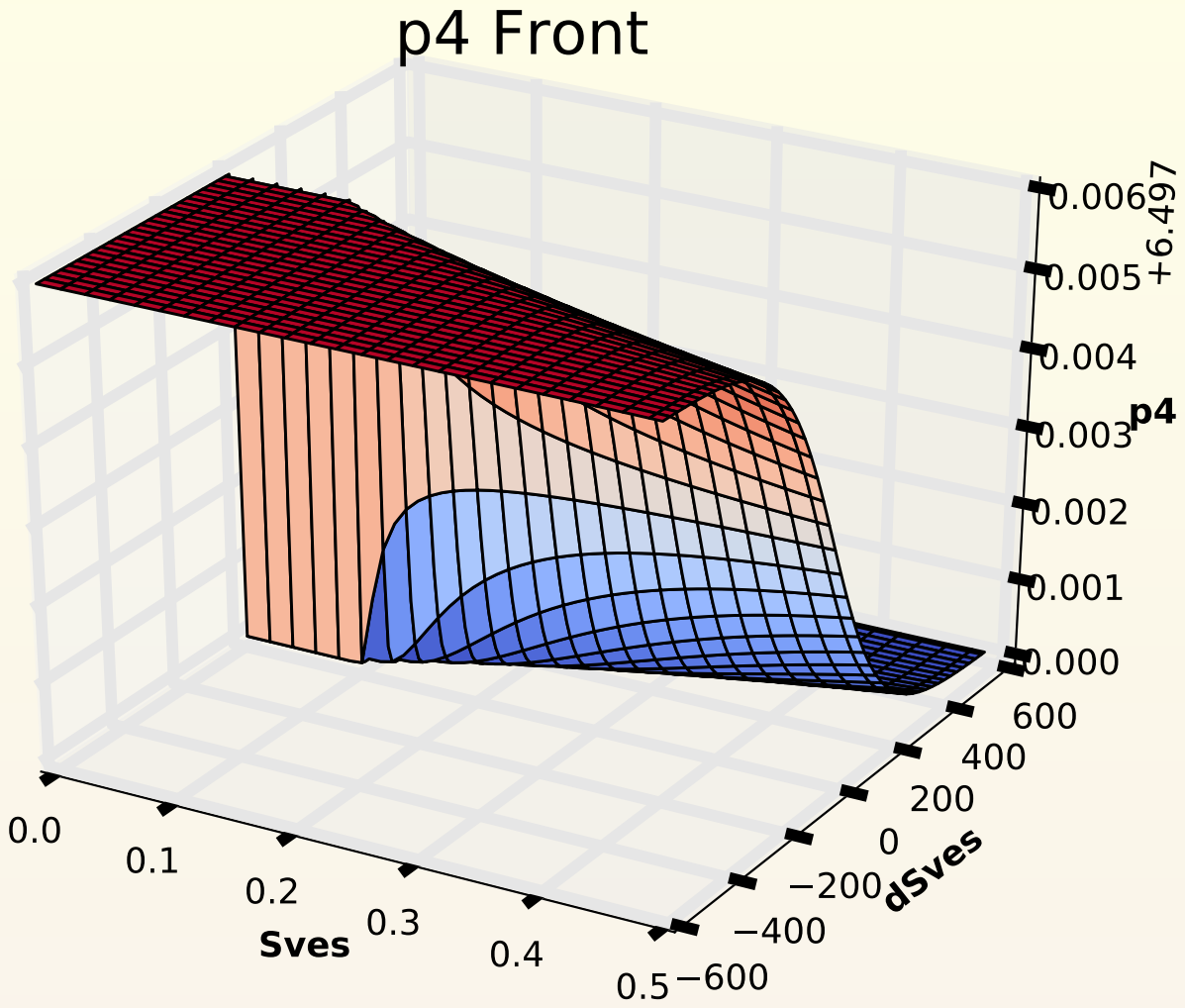

p3: Smem to Sves transport
0.40
0.35
0.30
0.25
0.20
0.15
0.10
0.05
0.00
p3
0.0
0.5
1.0
1.5
2.0
2.5
3.0
Smem

p4 as a function of Sves and dSves

- Previously I've demonstrated why p4 had to be a function of dSves
- dSves serves as the polarity compass btw front and back of the cell
- Now I'm demonstrating why p4 needs to be a function of Sves as well
- Sves serves as sigmoidal strength factor
  - Low Sves: short transition range
  - High Sves: long transition range


p4(x, Sves, dSves)
+6.494
0.010
0.008
0.006
0.004
0.002
p4
−600
−400
−200
0
200
400
600
dSves Level
Native Back
Native Front
OE Back
OE Front

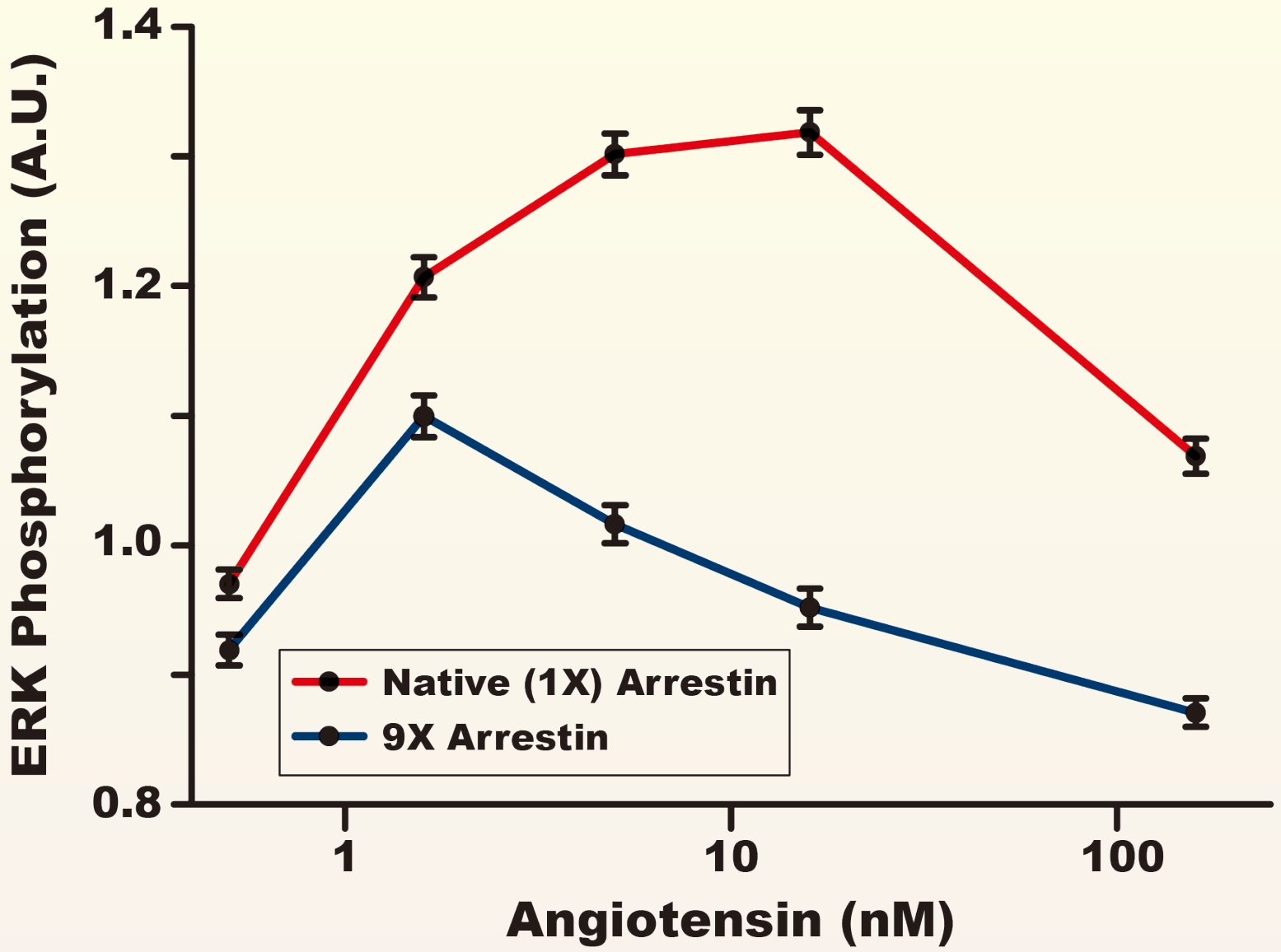

p4 Back
0.006
0.005
0.004
0.003
0.002
0.001
0.000
+6.497
p4
600
400
200
0
−200
−400
−600
dSves
0.0
0.1
0.2
0.3
0.4
0.5
Sves


p4 Front
0.006
0.005
0.004
0.003
0.002
0.001
0.000
+6.497
p4
600
400
200
0
−200
−400
−600
dSves
0.0
0.1
0.2
0.3
0.4
0.5
Sves

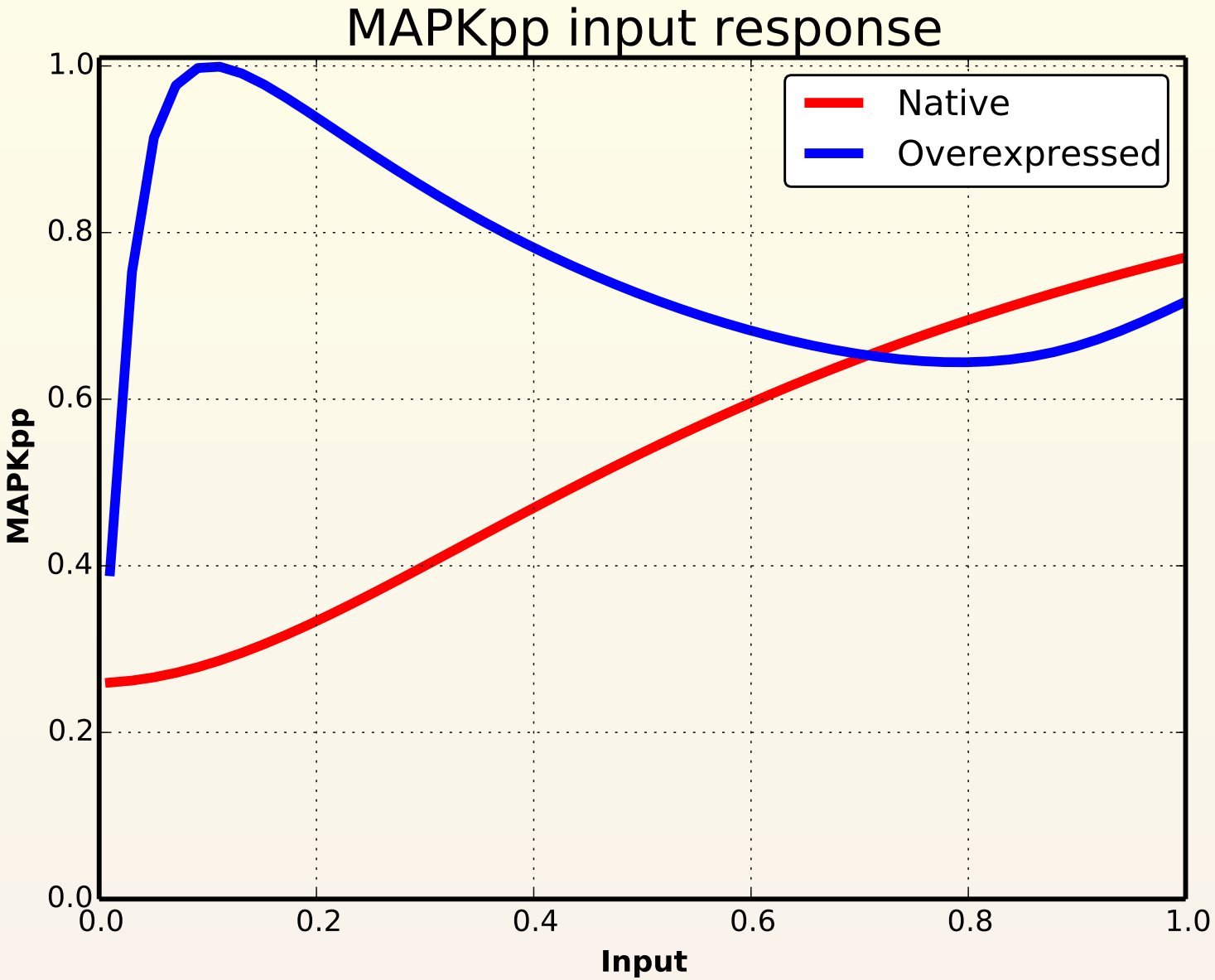
Comparison with experiments

MAPKpp Dose Response

D

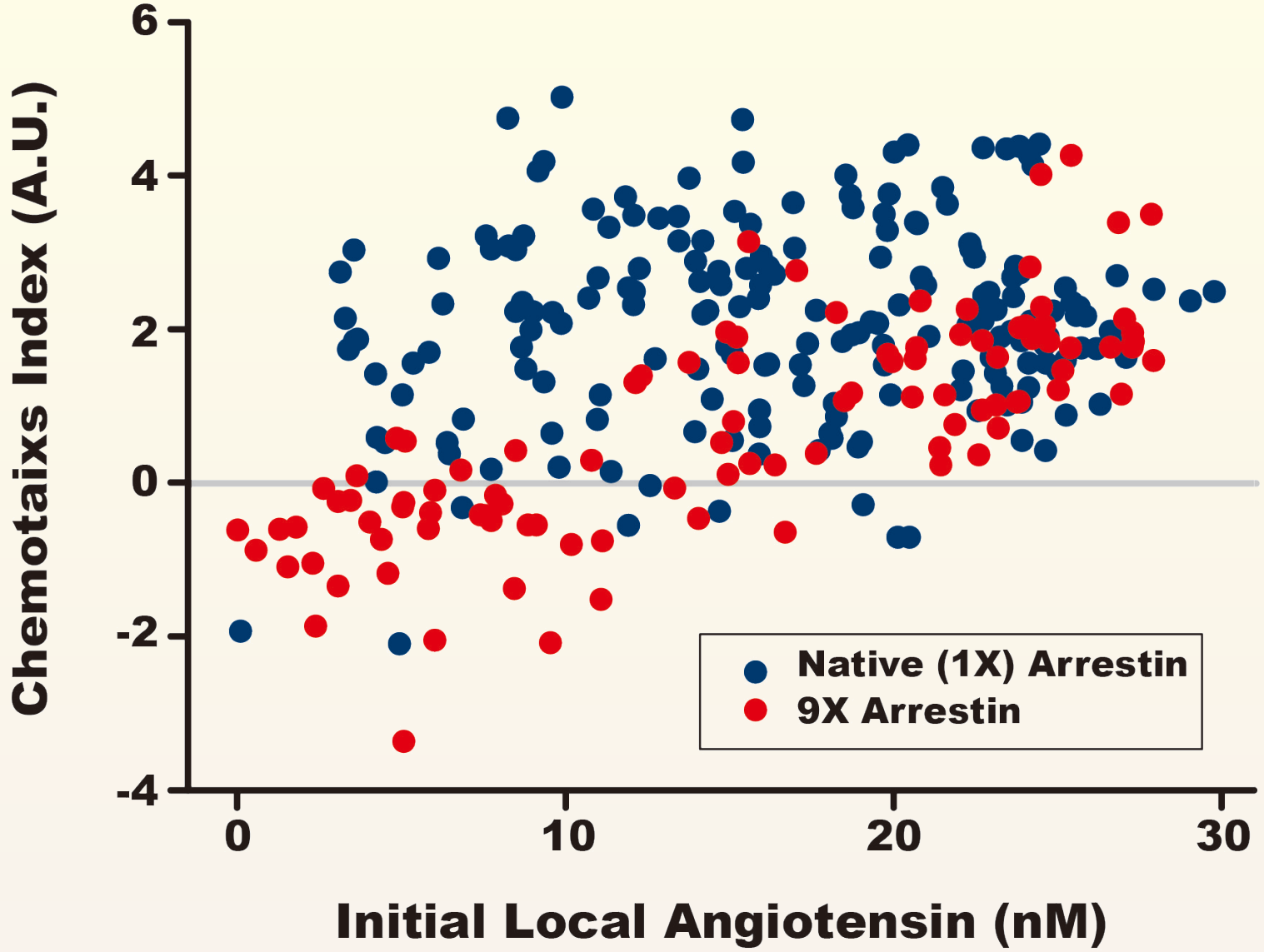


MAPKpp Dose Response

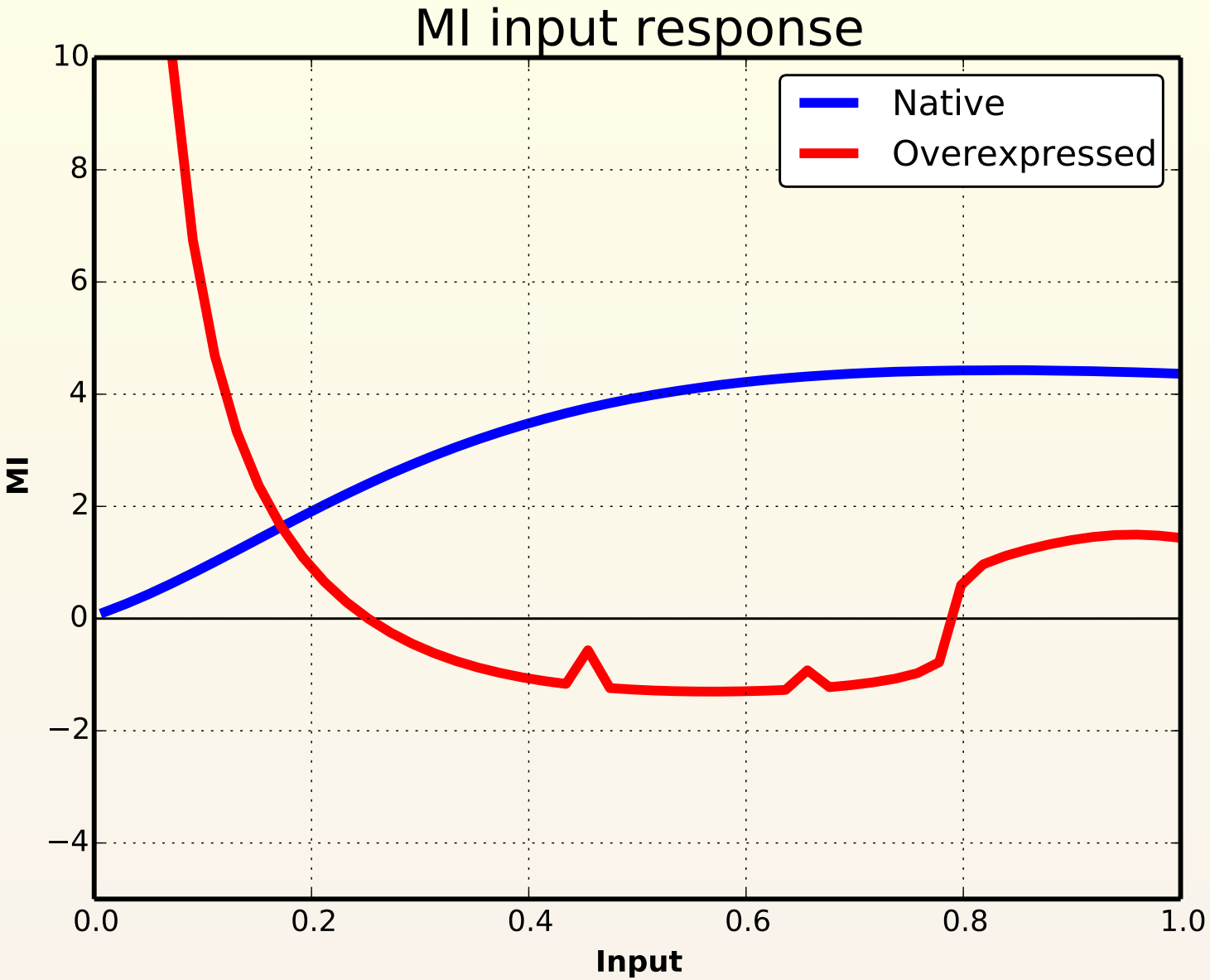


MI Dose Response

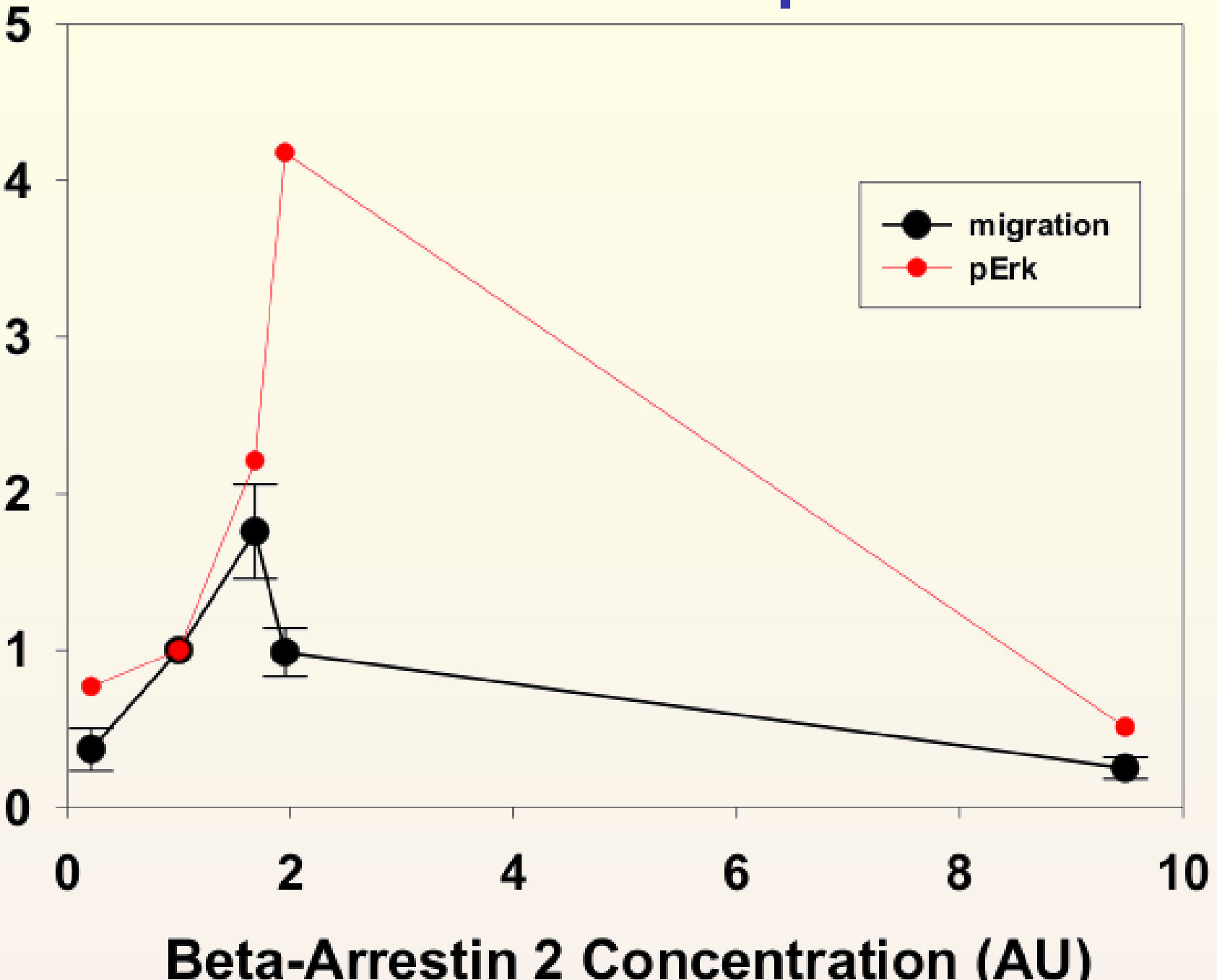
B



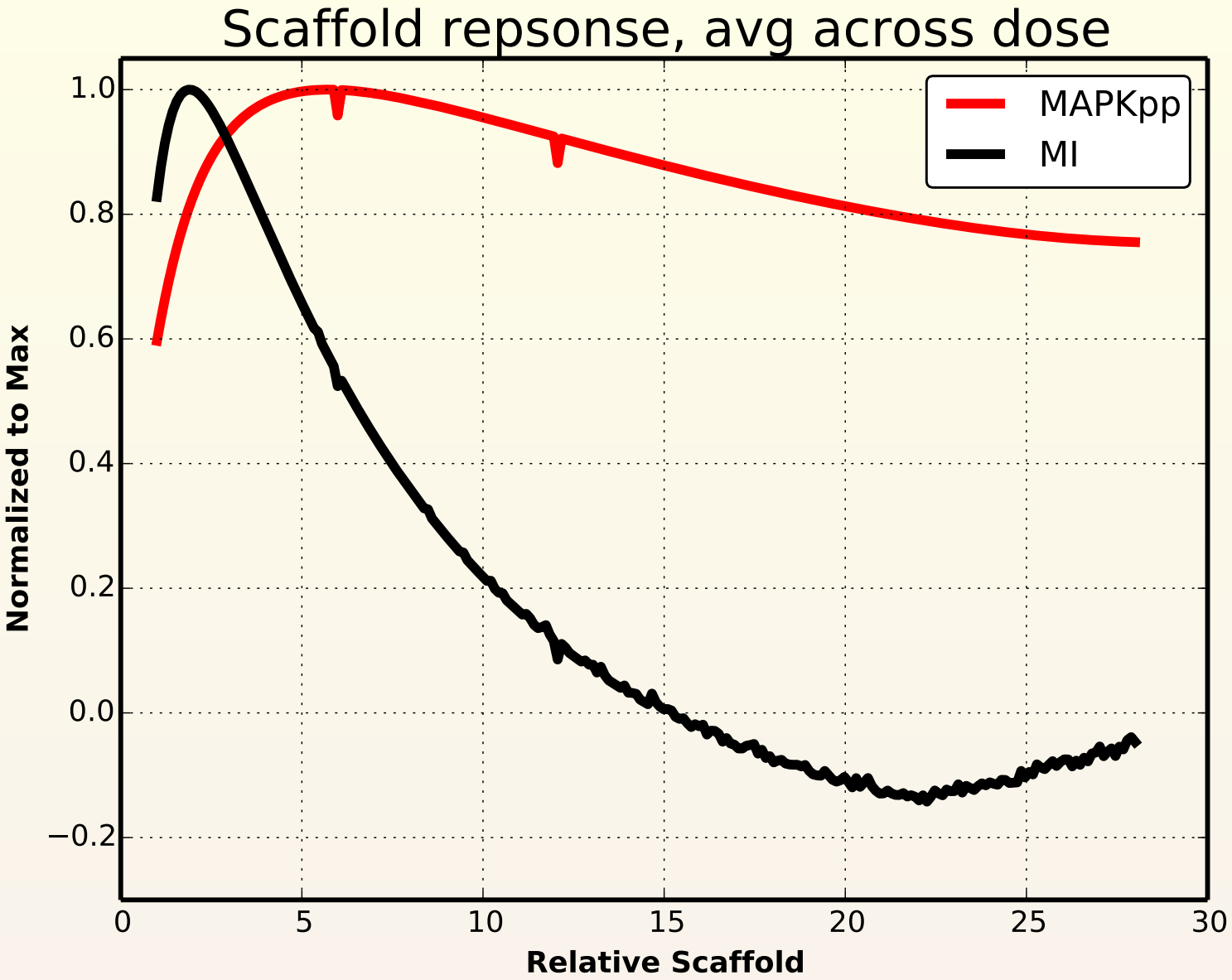
MI Dose Response



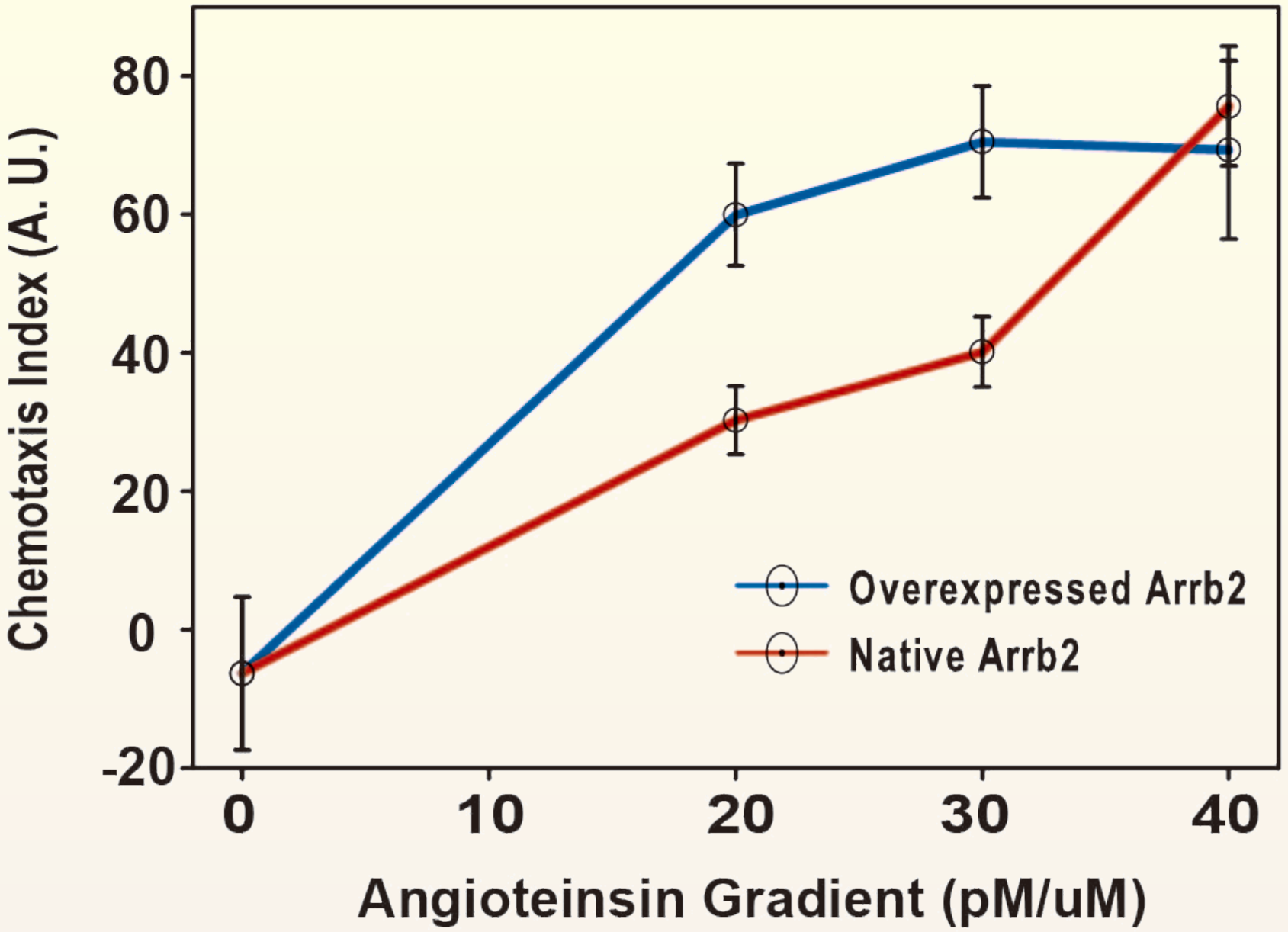
Scaffold Response



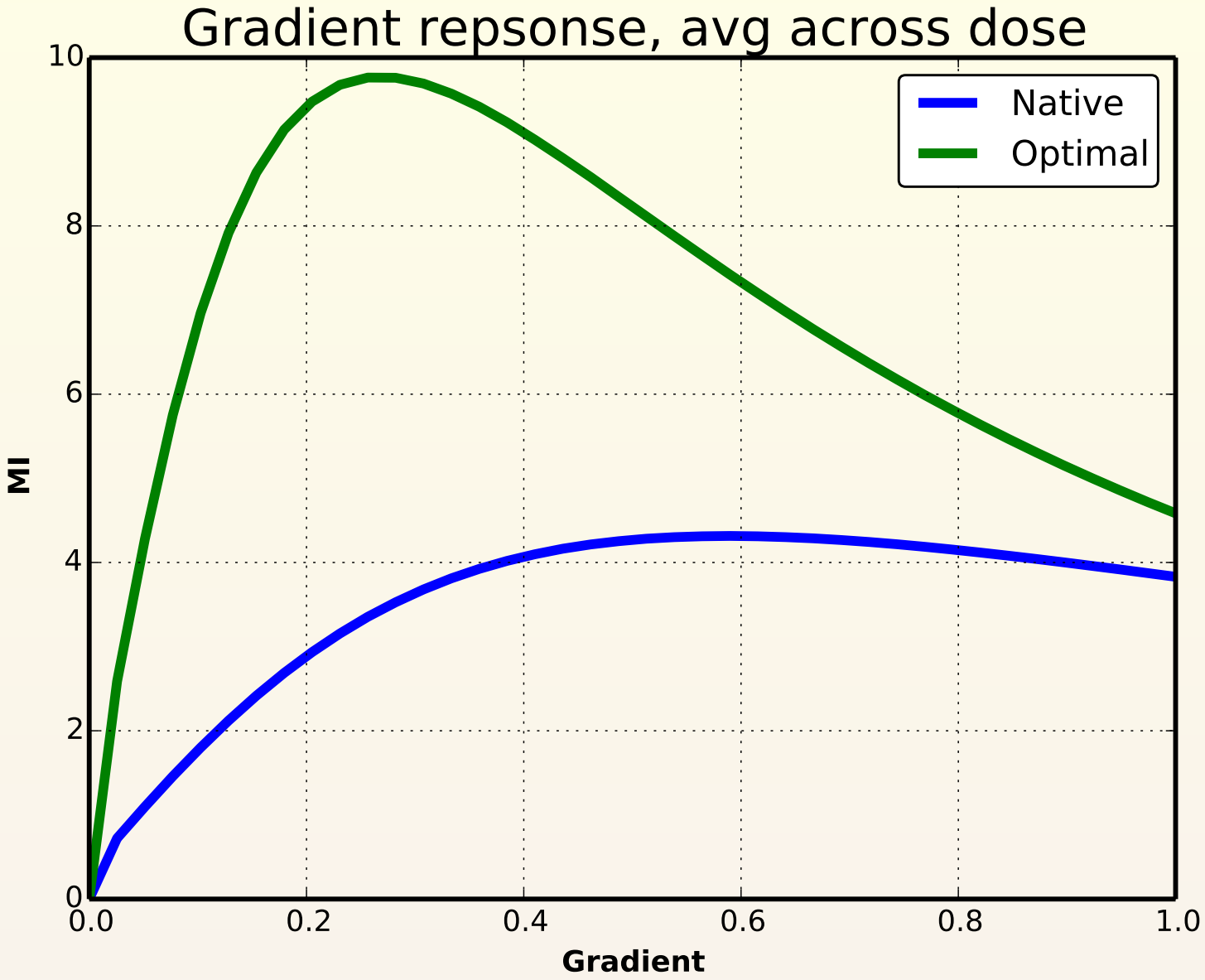
Scaffold Response



Gradient Response

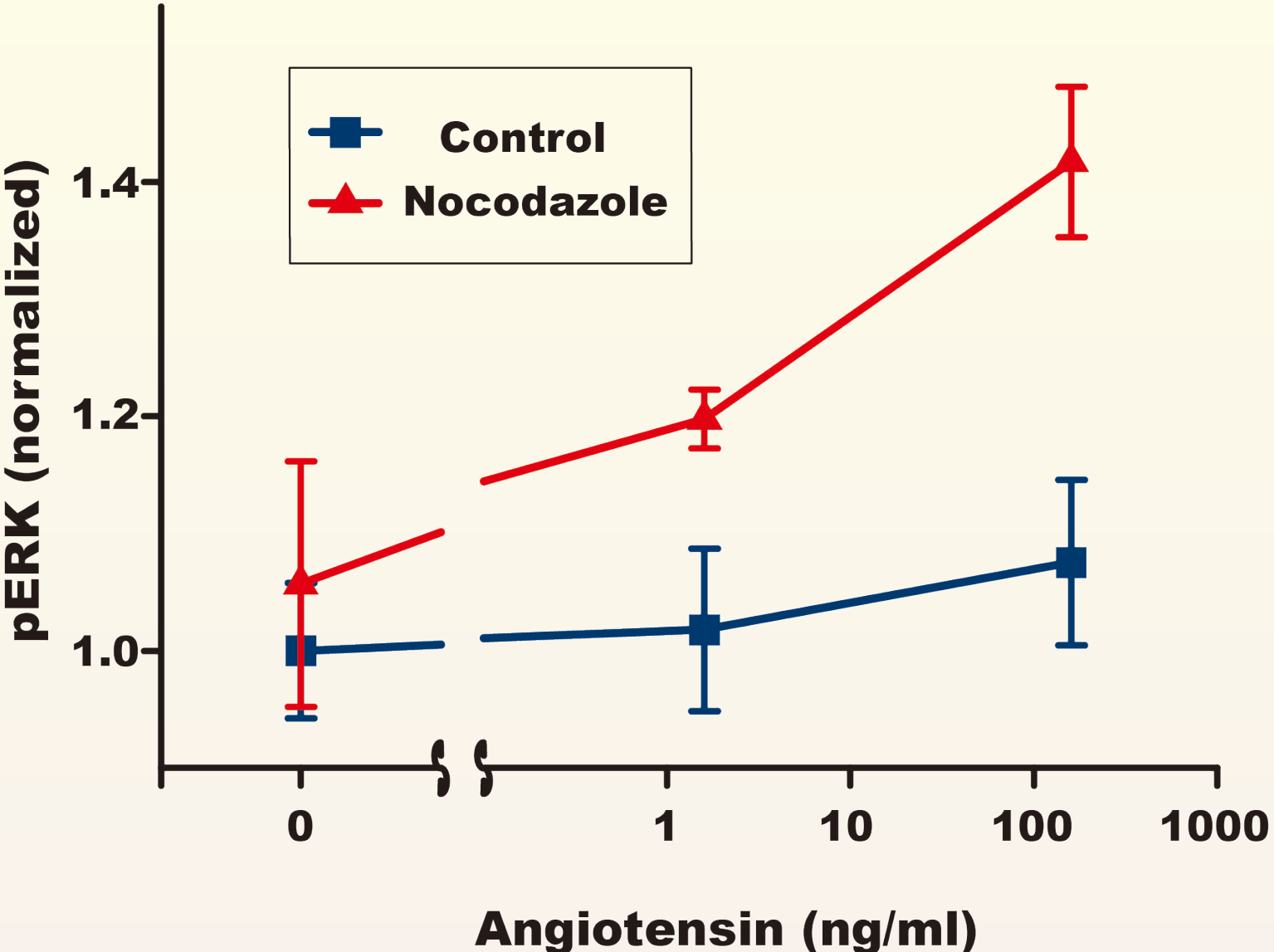


Gradient Response

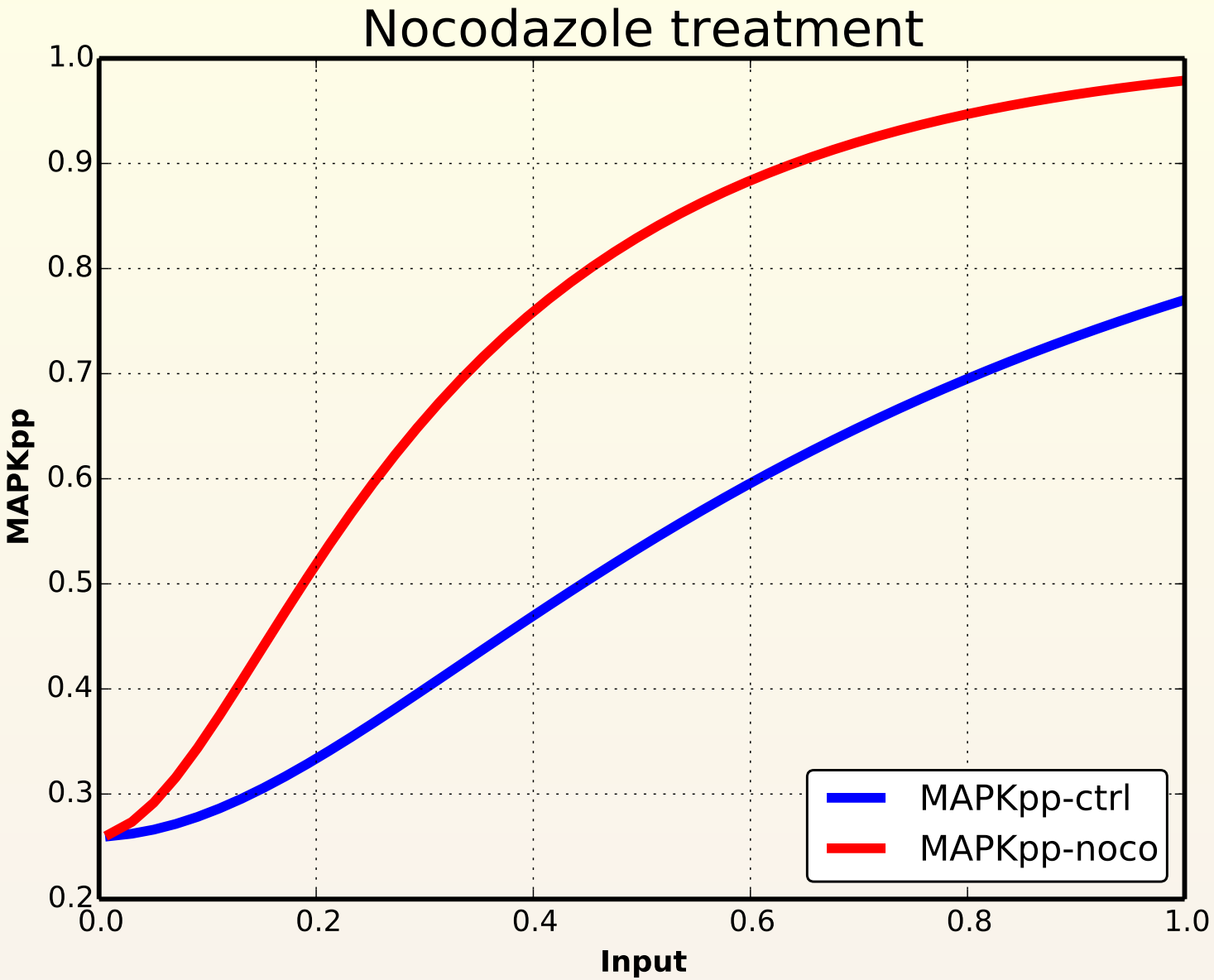


Nocodazole treatment

E

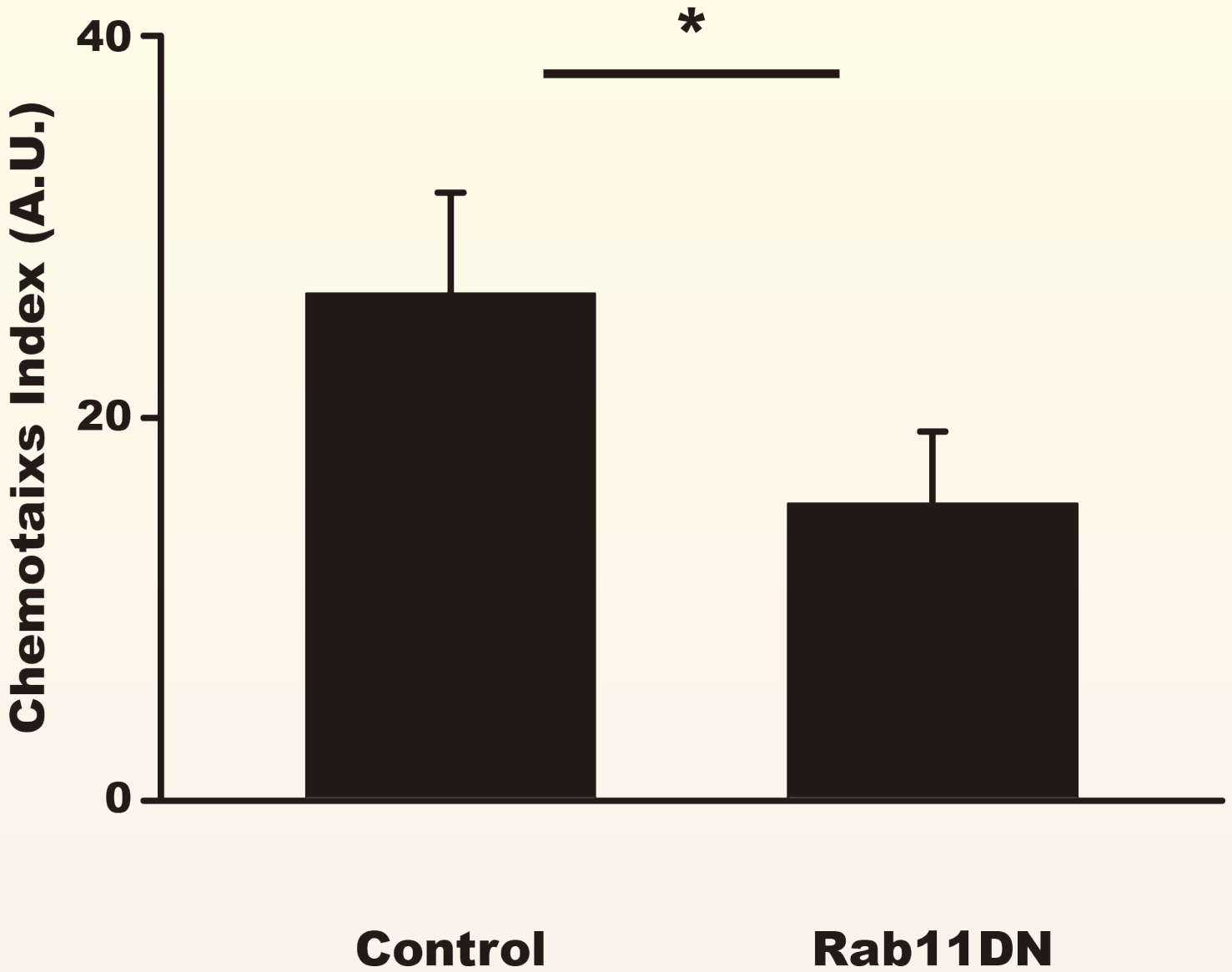


$S_{ves} \rightarrow S_{cyto}, 20\% p_4$



Rab11-DN

F



Rab11-DN