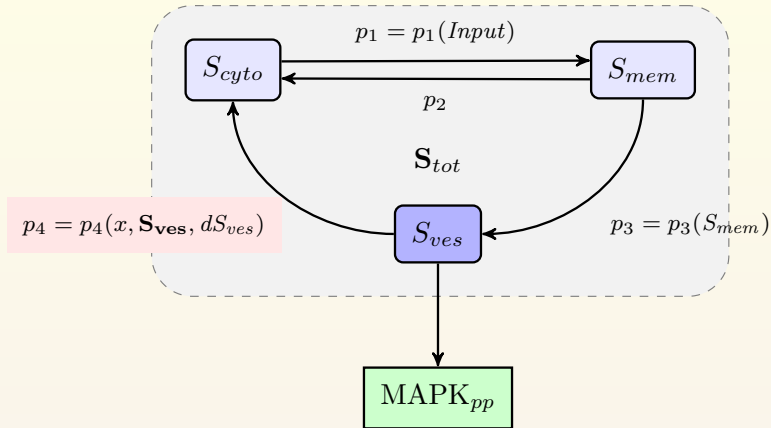
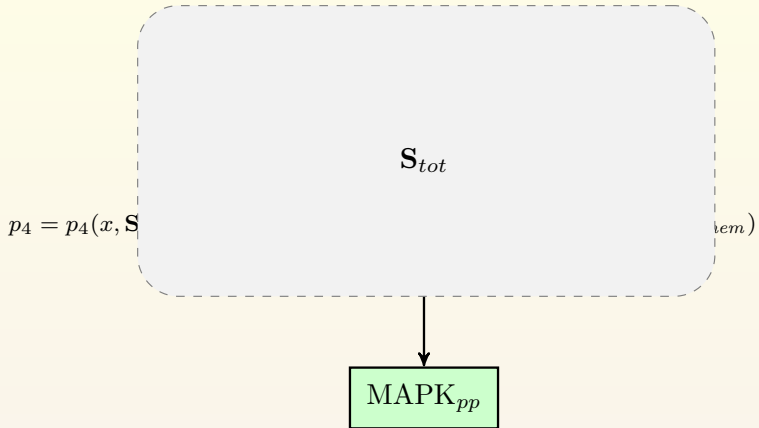


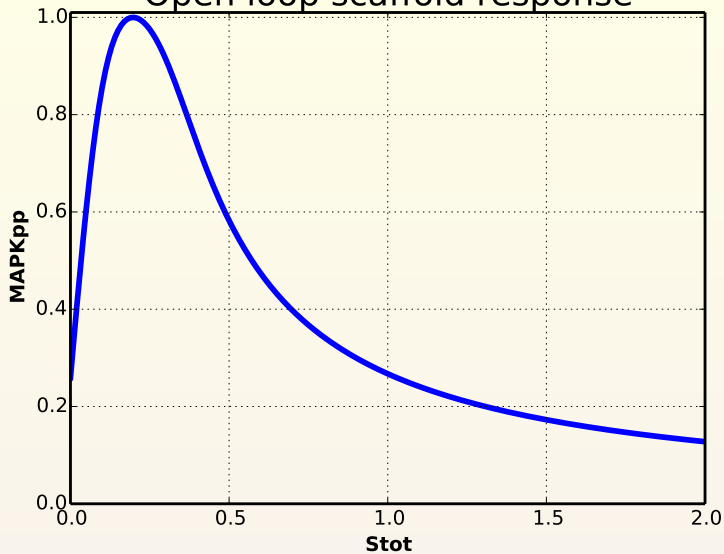
Model Schematic



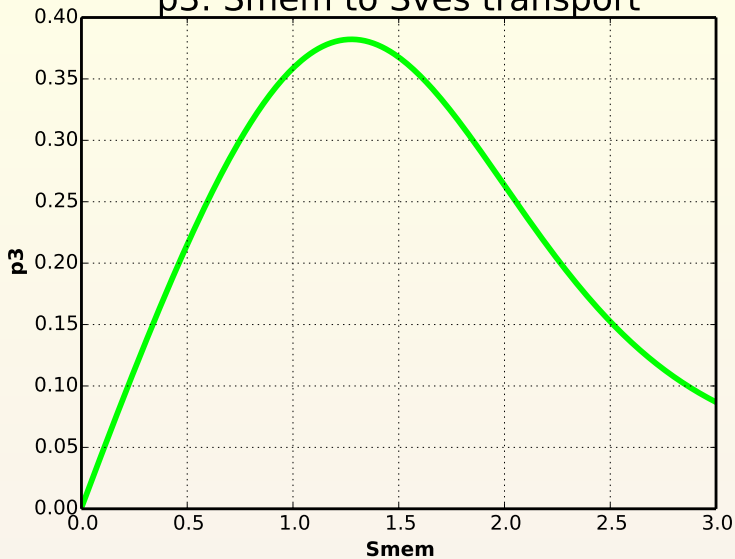
Open Loop Response



Open loop scaffold response



p3: Smem to Sves transport

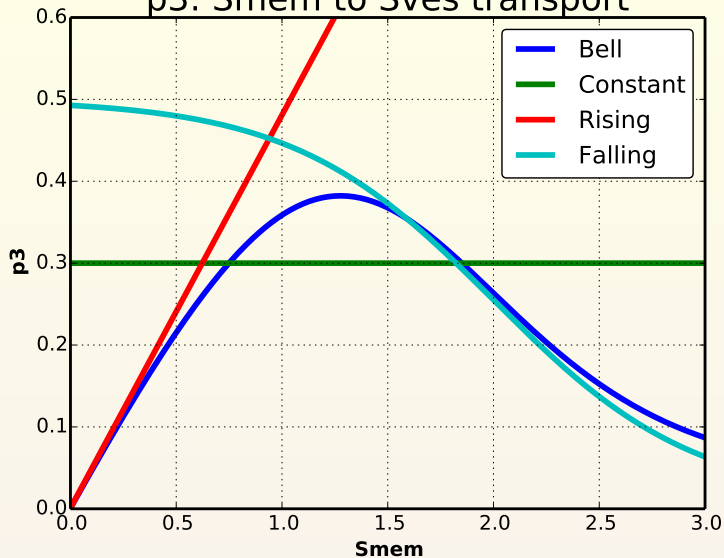


Why is p3 a bell shaped response?

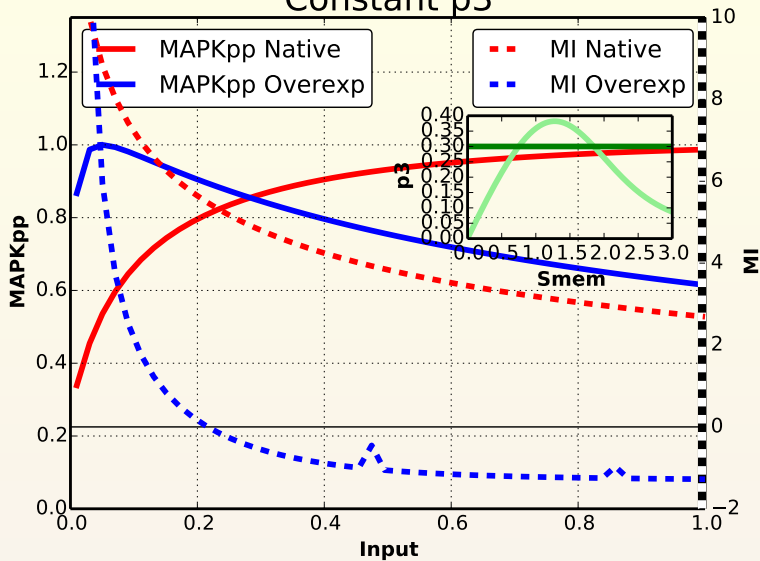
- Each part of the bell shaped curved is simulated to justify its use
 - Constant term
 - Linear rising term
 - Just the falling side
 - Bell shape
 - by combining the rising and falling terms

this is a test
another line ok

p3: Smem to Sves transport



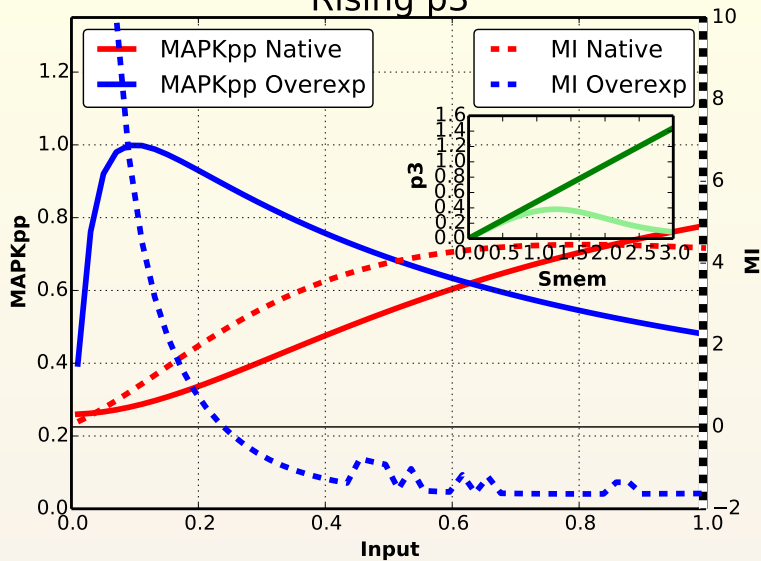
Constant p3



Results for constant p3

- At native levels, we get a saturating increase in MAPKpp, producing a negatively sloping MI curve
 - Experimentally MI is constant w.r.t. dose
- At overexpressed levels, the simulation only produces negative MI values
 - Experimentally MI goes from negative to positive

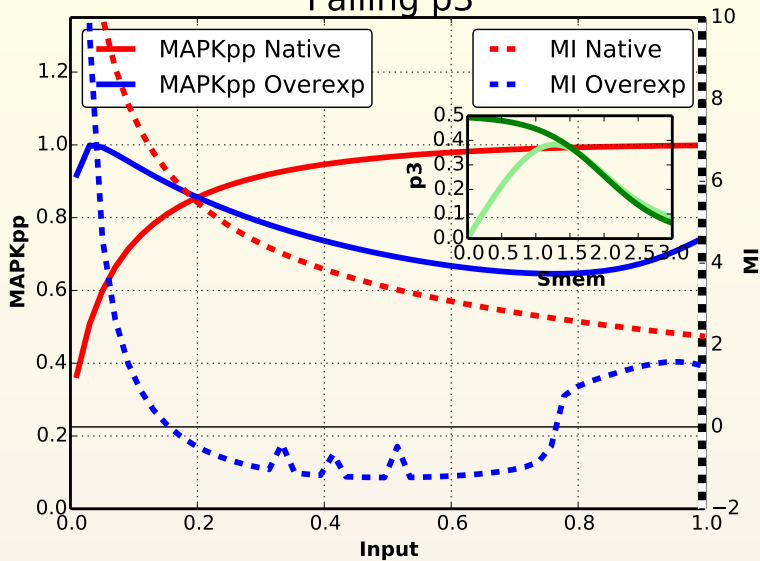
Rising p3



Results for rising p3

- At native levels, MAPKpp now rises linearly with dose, producing a flat MI response since it is the derivative
 - This is what is observed experimentally
- At overexpressed levels, the simulation still only produces negative MI values
 - Experimentally MI goes from negative to positive

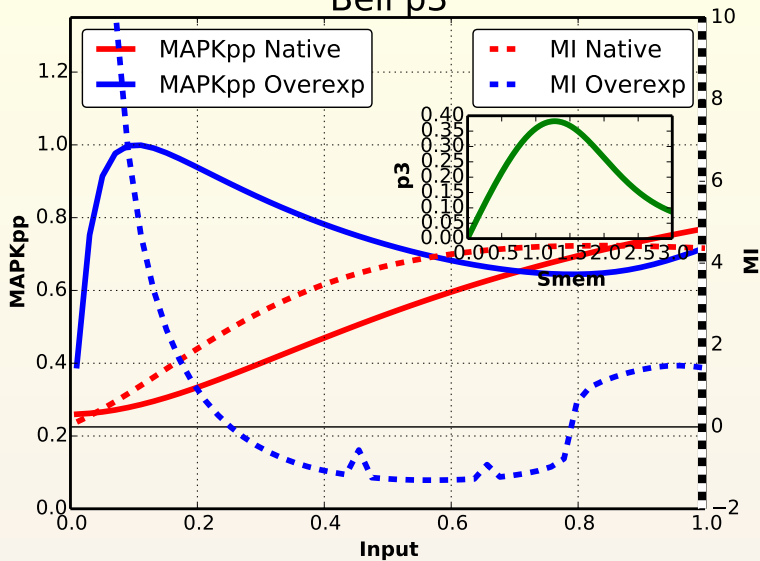
Falling p3



Results for falling p3

- At native levels, MAPKpp saturates rapidly just like the constant case, producing a decreasing MI response
 - MI should be constant
- At overexpressed levels, MAPKpp is now able to rise at high inputs after falling, producing a MI response that goes from negative to positive
 - Experimentally MI goes from negative to positive

Bell p3

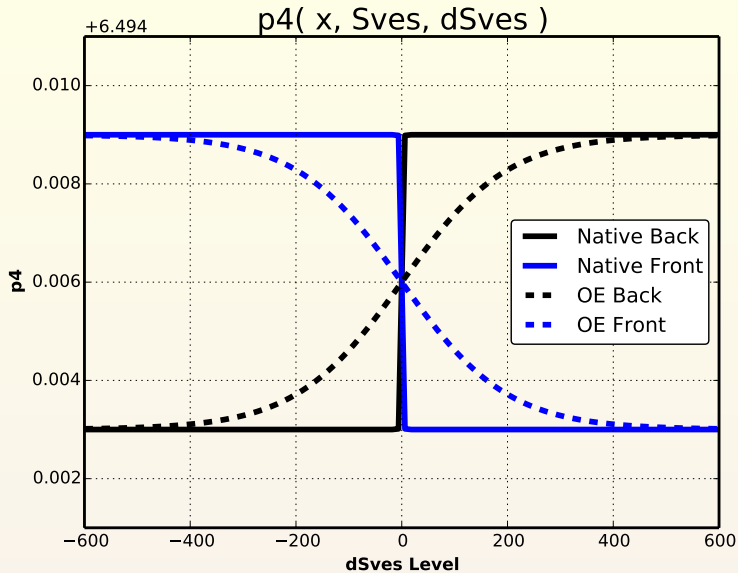


Results for bell shaped p3

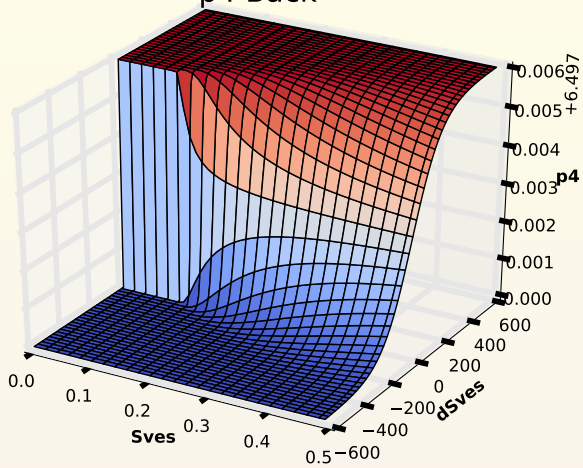
- Now the experimental results can be satisfied at both expression levels
- At native levels, MAPKpp rises linearly, producing constant MI
- At overexpressed levels, MAPKpp has an inverted bell response, producing a MI curve that changes sign

p4 as a function of Sves and dSves

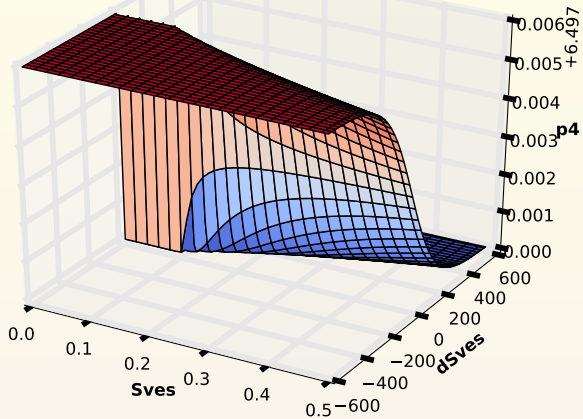
- Previously I've demonstrated why p4 had to be a function of dSves
- dSves serves as the polarity compass btw front and back of the cell
- Now I'm demonstrating why p4 needs to be a function of Sves as well
- Sves serves as sigmoidal strength factor
 - Low Sves: short transition range
 - High Sves: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



p4 Back



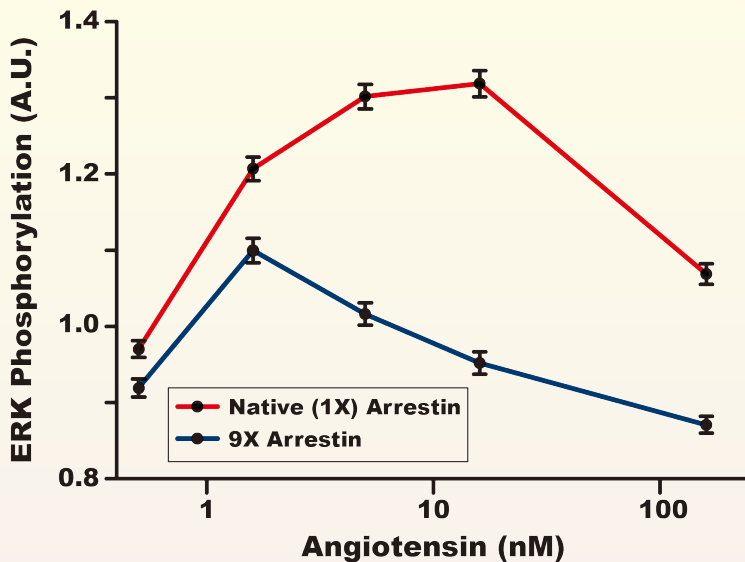
p4 Front



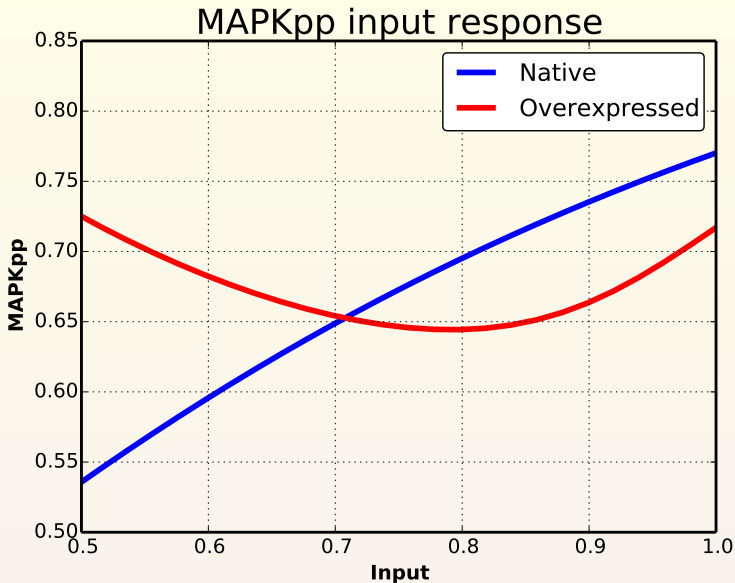
Comparison with experiments

MAPKpp Dose Response

D

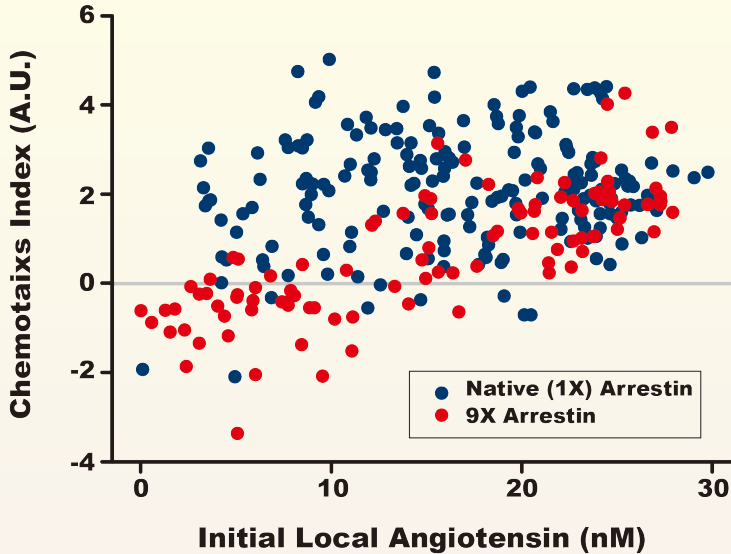


MAPKpp Dose Response

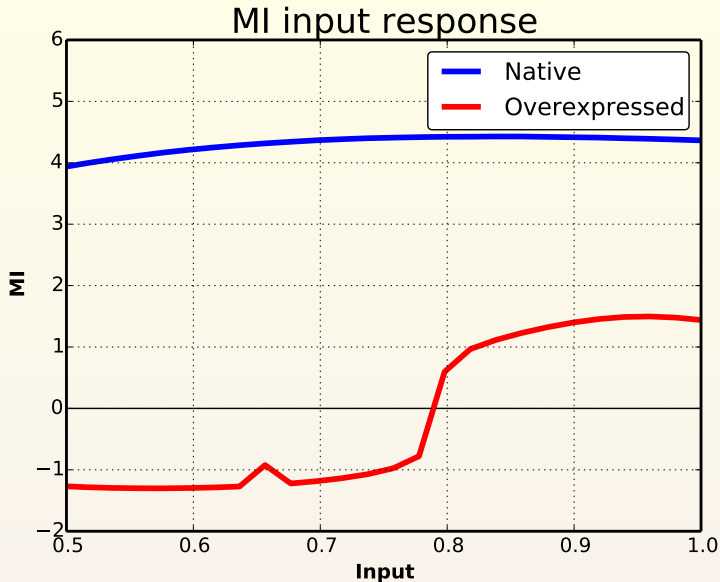


MI Dose Response

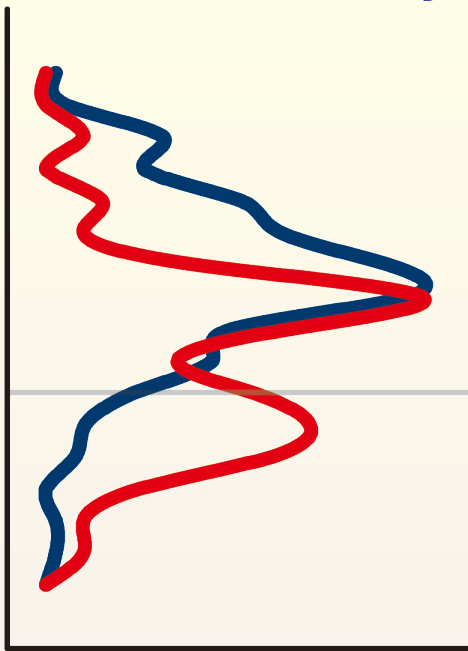
B



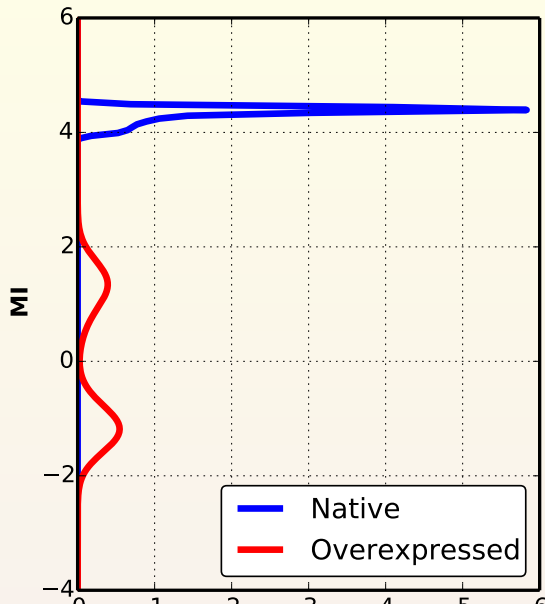
MI Dose Response



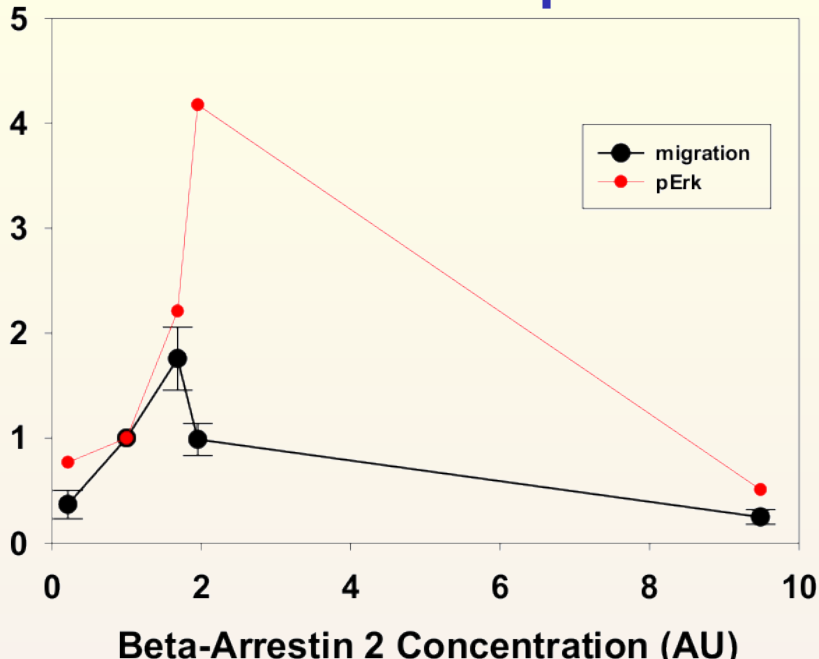
MI Density Response



MI Density Response

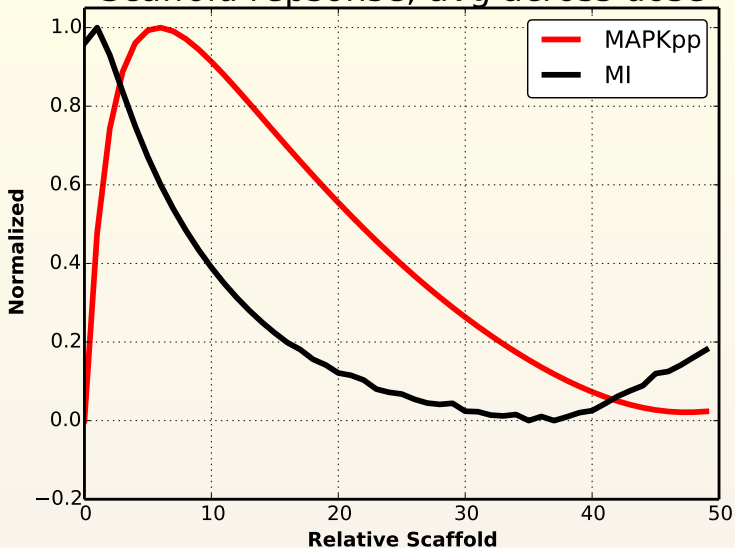


Scaffold Response

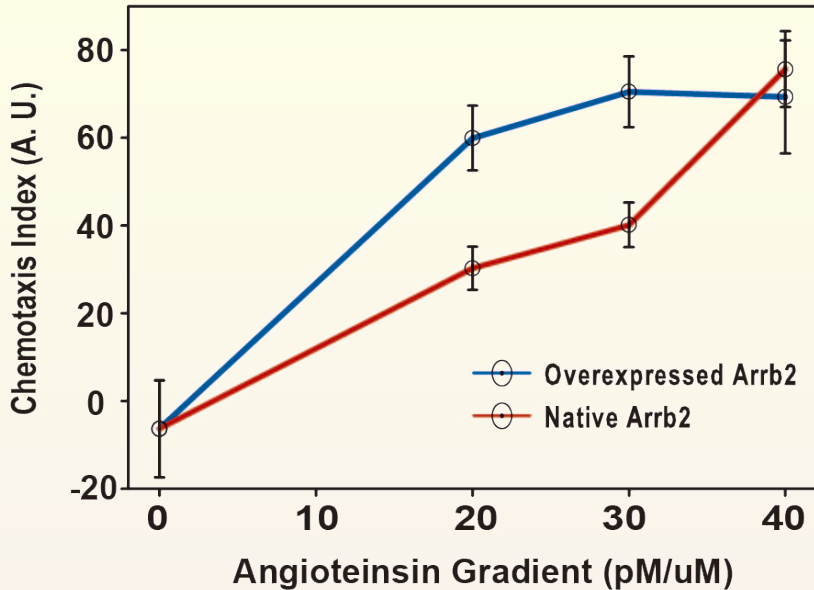


Scaffold Response

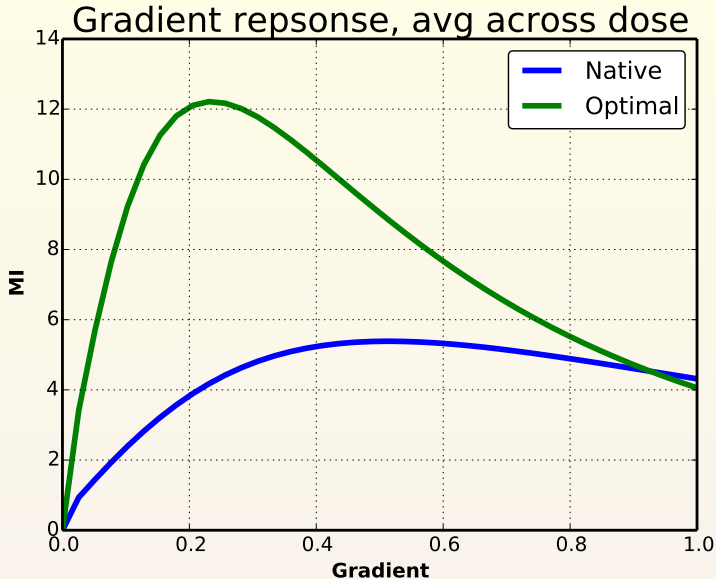
Scaffold response, avg across dose



Gradient Response

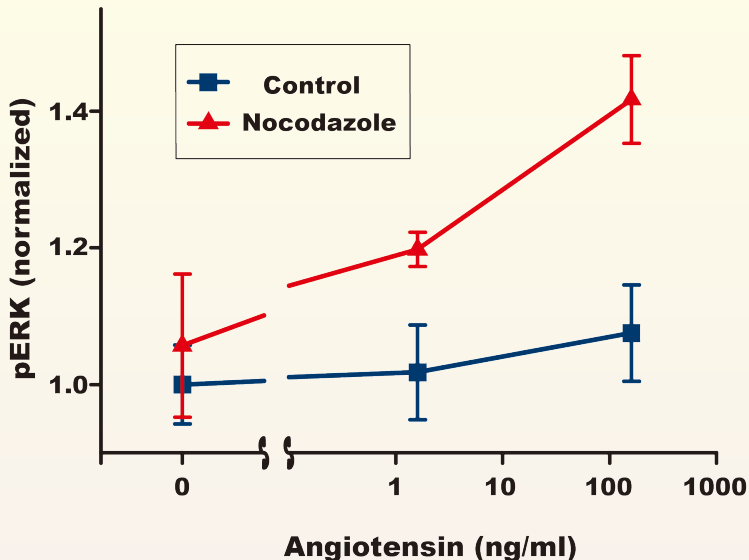


Gradient Response



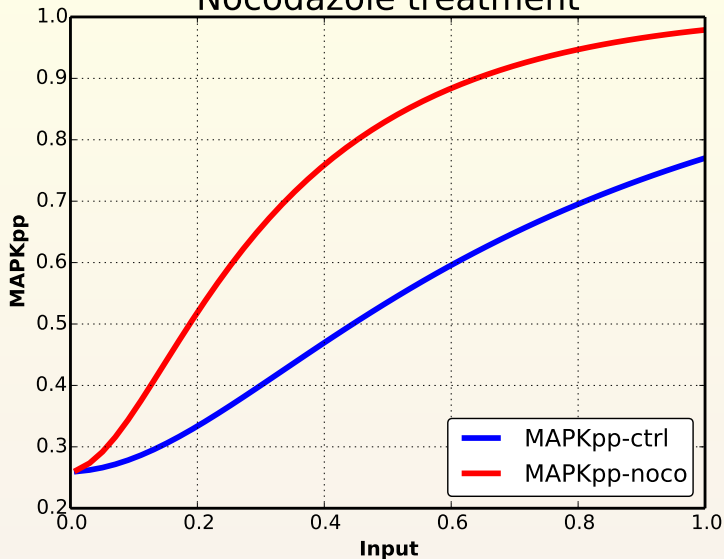
Nocodazole treatment

E



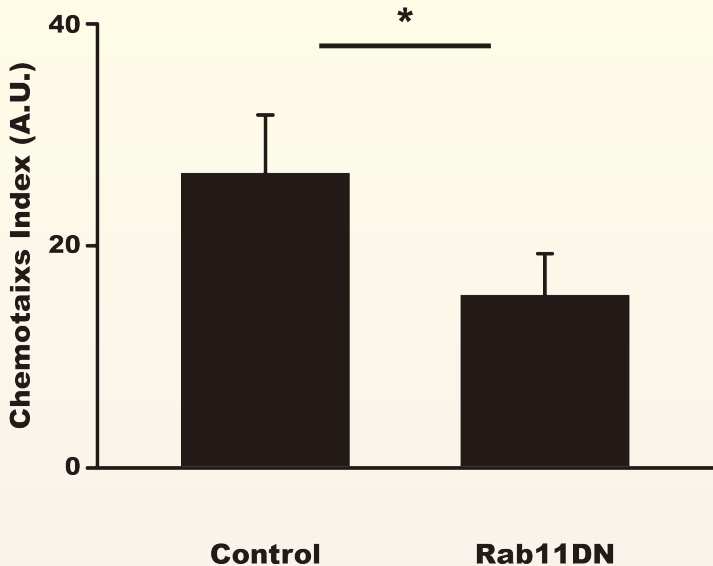
$S_{ves} \rightarrow S_{cyto}, 20\%p_4$

Nocodazole treatment



Rab11-DN

F



Rab11-DN

