

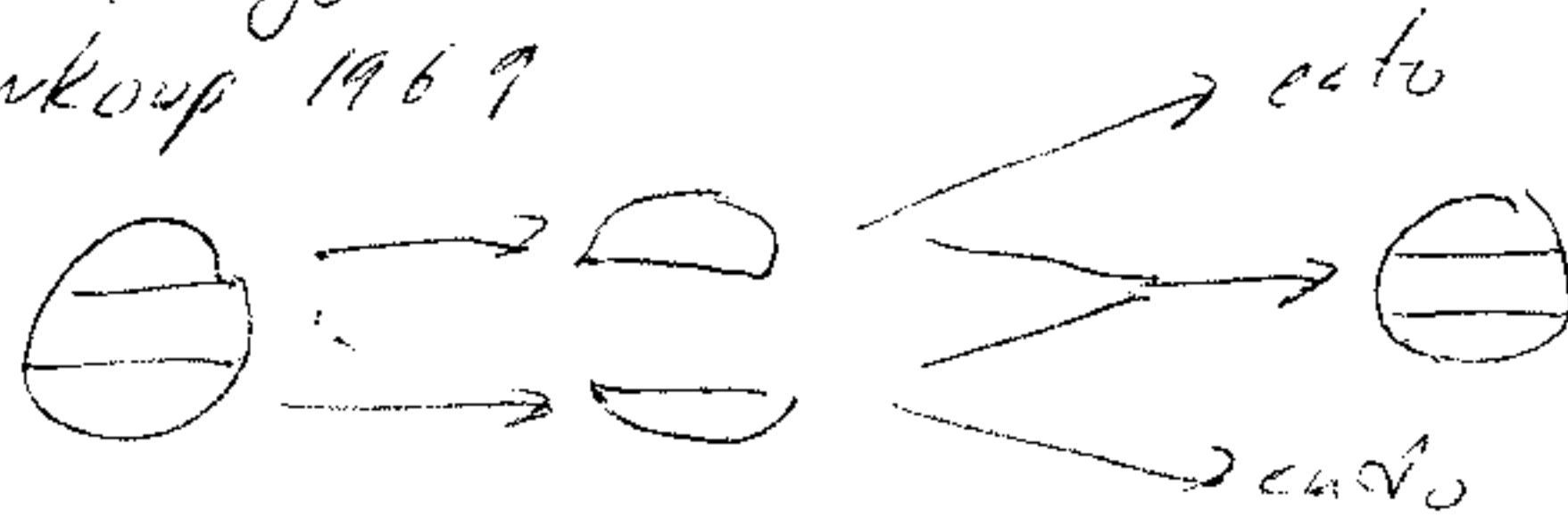
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# Role of Activins in Xenopus Mesoderm Induction

How is the dorsal axis made

How does mesoderm get induced

① Nieuwkamp 1969



② Bot. screened for what could do this to animal cap

① Proteins

① FGF family

② TGF- $\beta$

DVRs

Activins

③ But what matters is what does this in embryo

So... what is receptor?

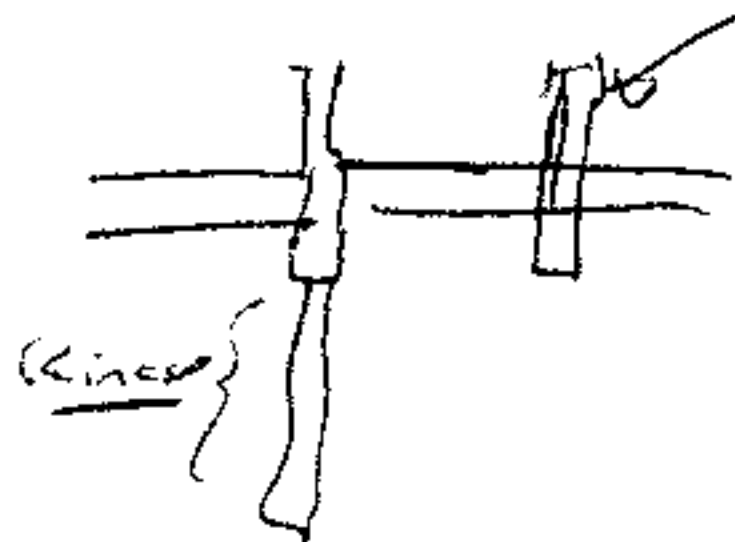
XAR

① add extra XAR got weird axes

② introduced mutant XAR1 - maybe mess w/ normal f/f

① either as competitor

② or mess w/ dimerization



inject to animal

→ grow to blastula → isolate animal cap

→ buffer

→ add activin → normal if no truncated receptor

→ add FGF → abnormal if truncated

→ normal regardless of receptor

③ mutant also affected expression of mesoderm genes

④ If inject receptor in early development  
block marker expression

⑤ Injected mutant receptor mRNA into both cells  
of two cell embryo. - no axis  
- still look like blastula  
- no mesoderm characters

⑥ add mutant receptor  
& then add incr. amts. of wt receptor  
GET "NORMAL" DVLP

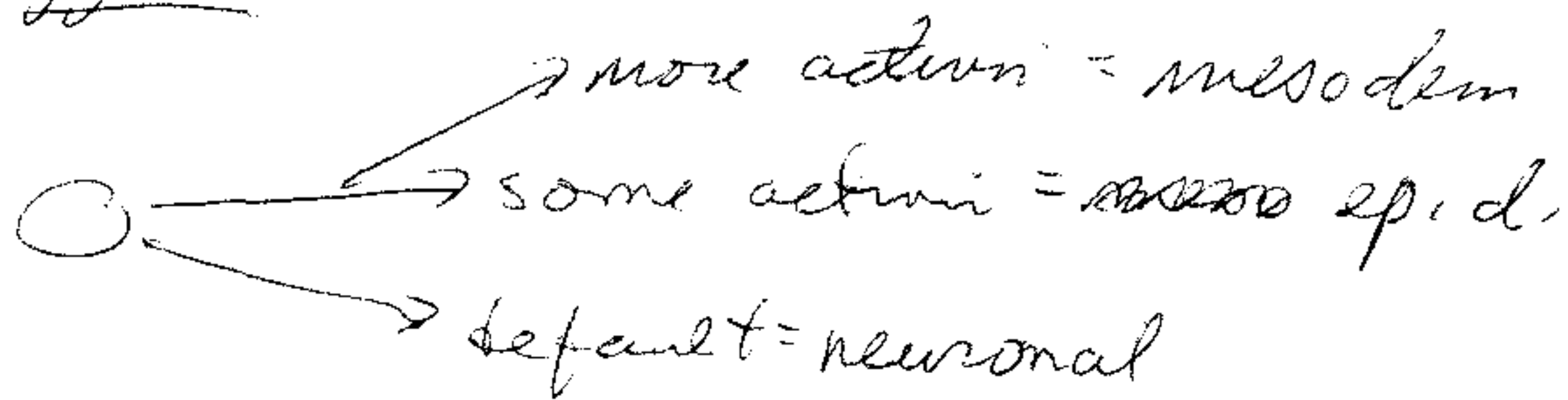
⑦ FGF is more potent when mutant receptor added

⑧ Does anything increase when mutant added  
- neural NCAM increases

⑨ Competitors of activin

⑩ inhibin -- leads to incr. in neural markers

Suggests



Others

- can study if other inducers work w/ activin receptor

Does it show that these use activin  
pathway or that they work  
in combination of downstream events