

# SIGNALING DYNAMICS OF SMAD PROTEINS

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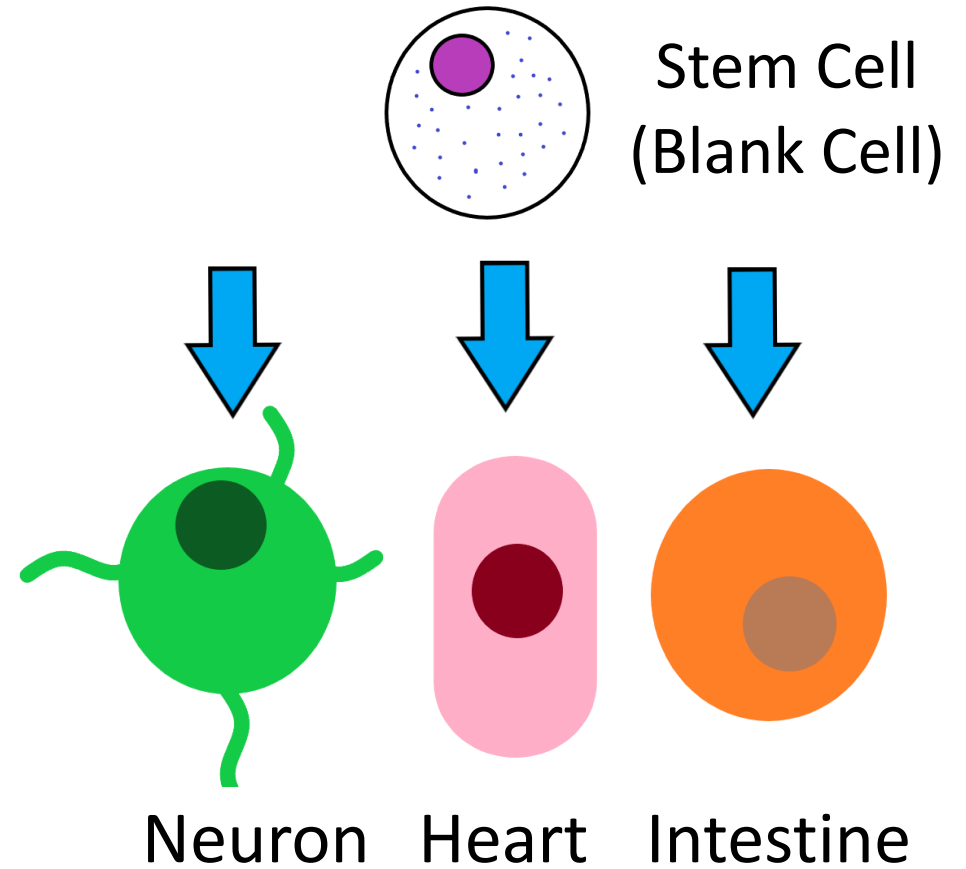
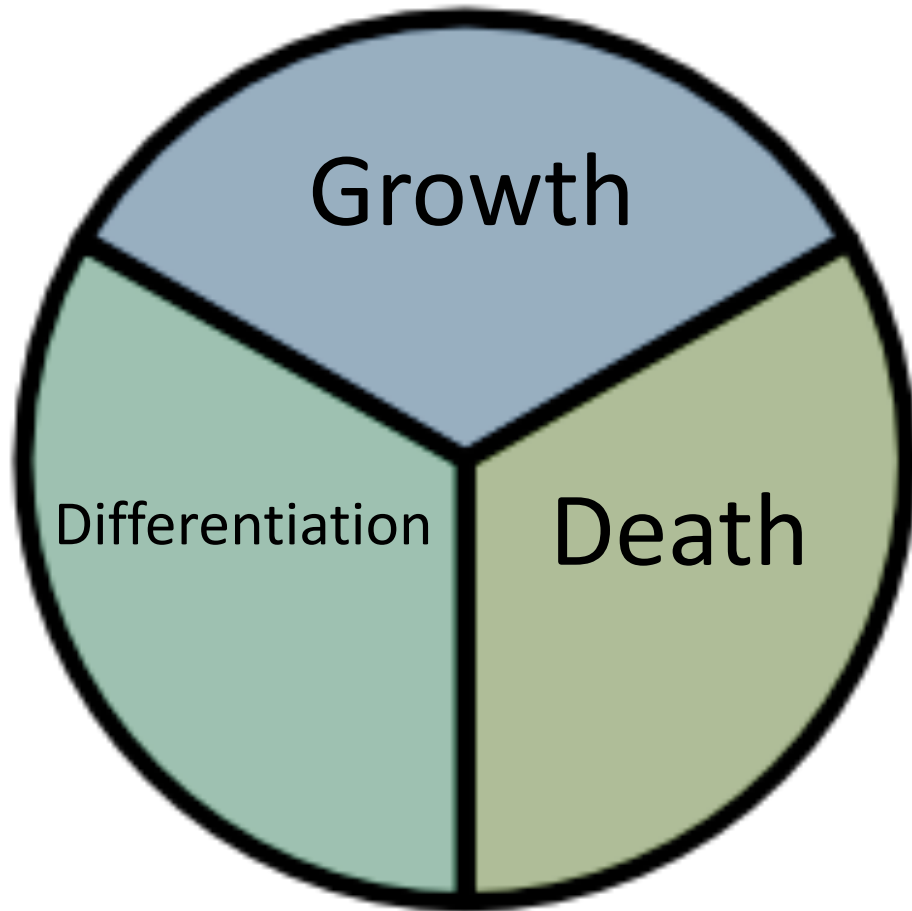
Molecular, Cellular And Developmental Biology

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# WHY ARE SMADS IMPORTANT?

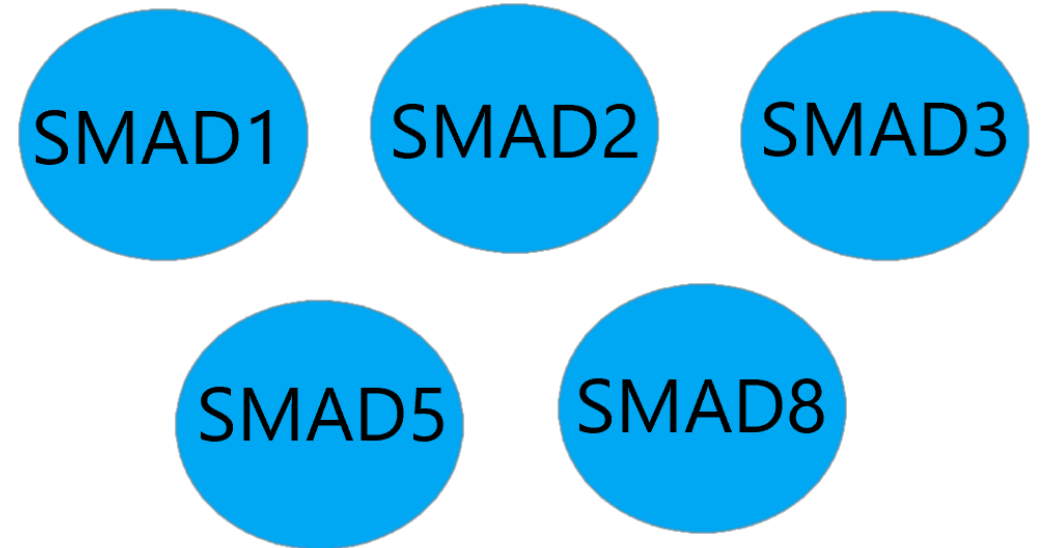
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# WHAT ARE THE DYNAMICS OF SMAD PROTEINS?

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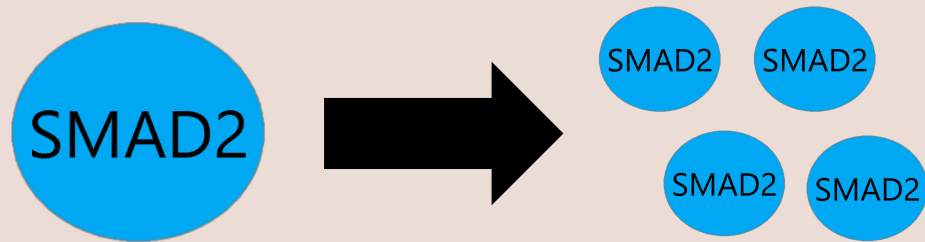
- SMADS are a family of proteins
- Interact with the cell's nucleus
- Help cells to make decisions
- How do these proteins interact with each other?



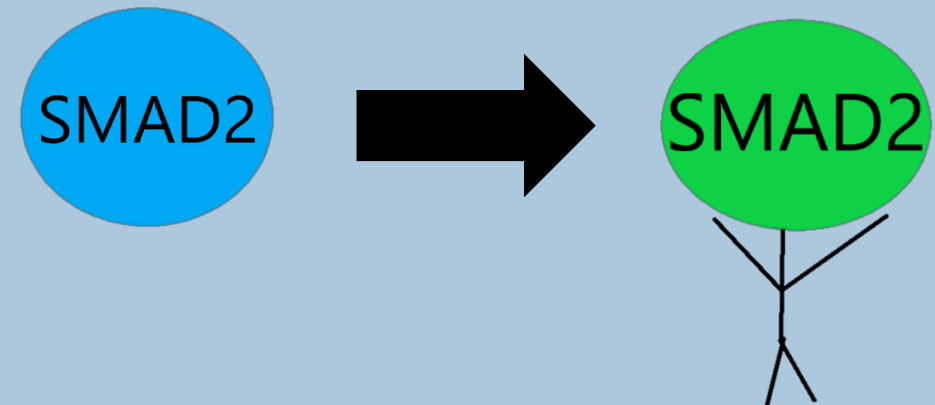
# PLAN TO STUDY SMAD PROTEINS (3 STEPS)

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## Cloning SMAD



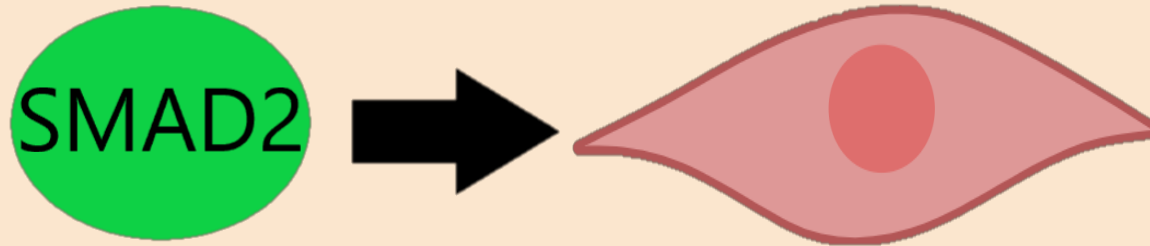
## Make a Backbone for SMAD with a Fluorescent protein



# PLAN TO STUDY SMAD PROTEINS (3 STEPS)

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Put SMADs into cell and watch their  
Dynamics

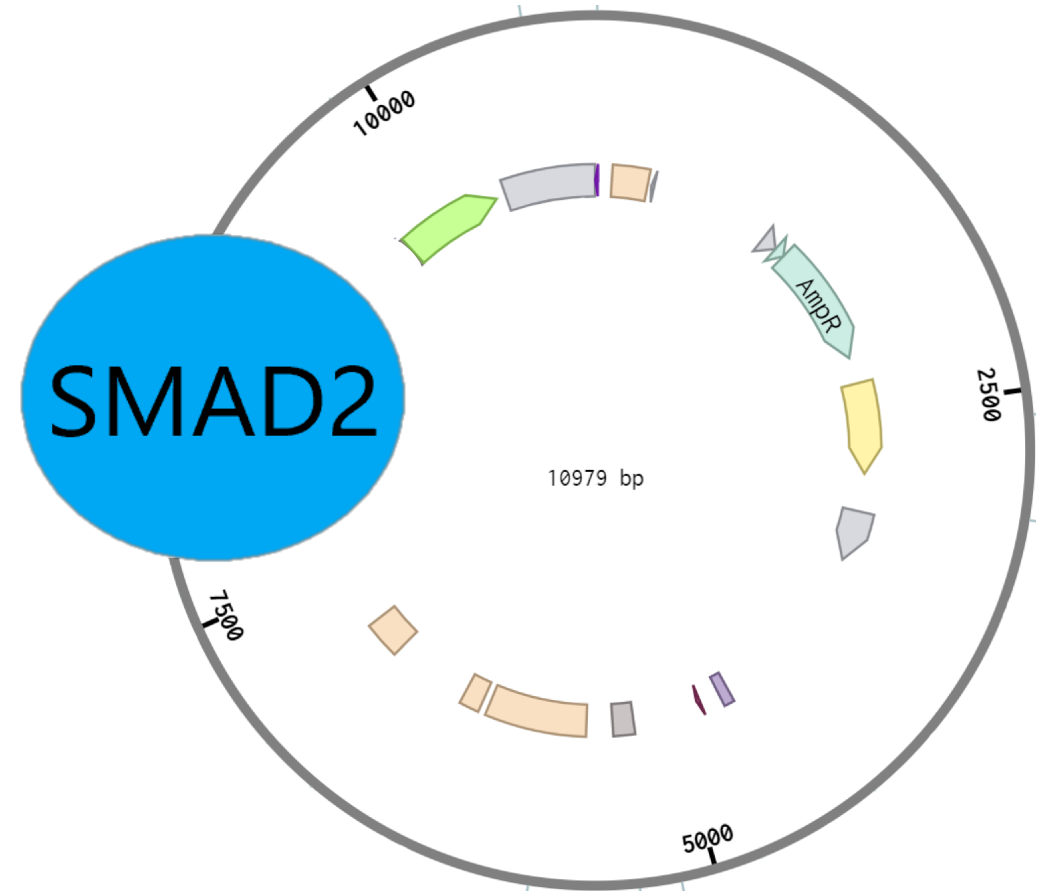


\*Repeat these steps for the other SMADs\*

# PROGRESS IN THE PROJECT

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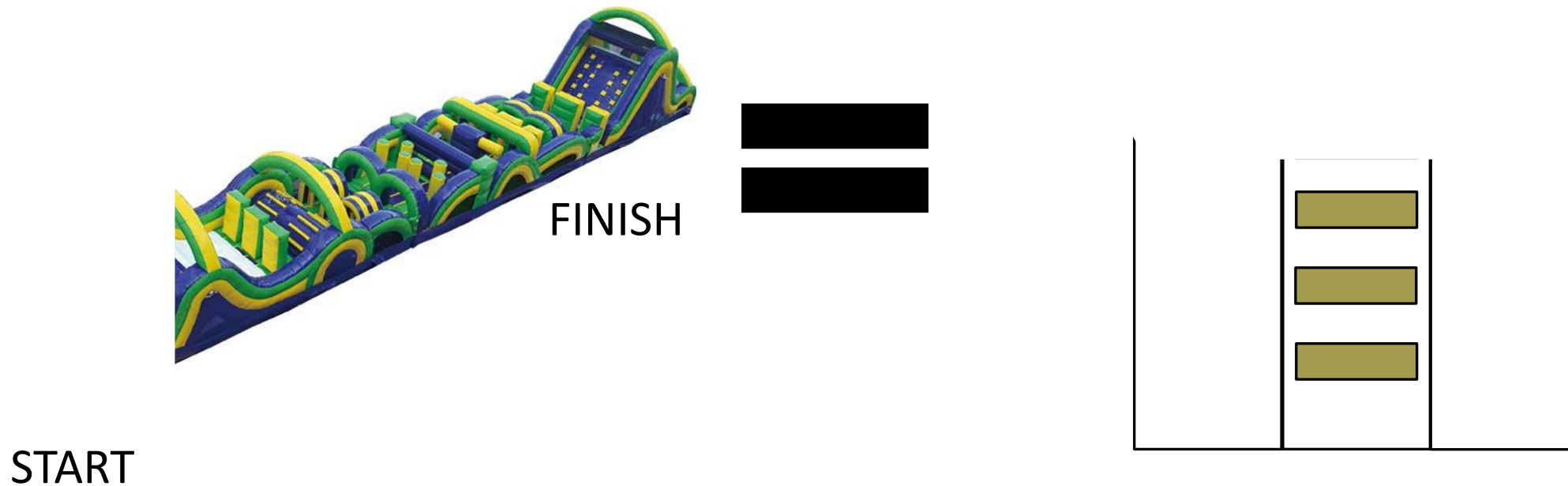
- We are in the 2<sup>nd</sup> step
- Difficulties cloning of backbone (skeleton)
- Backbone has the fluorescent protein



# DETERMINING SUCCESS OF CLONING

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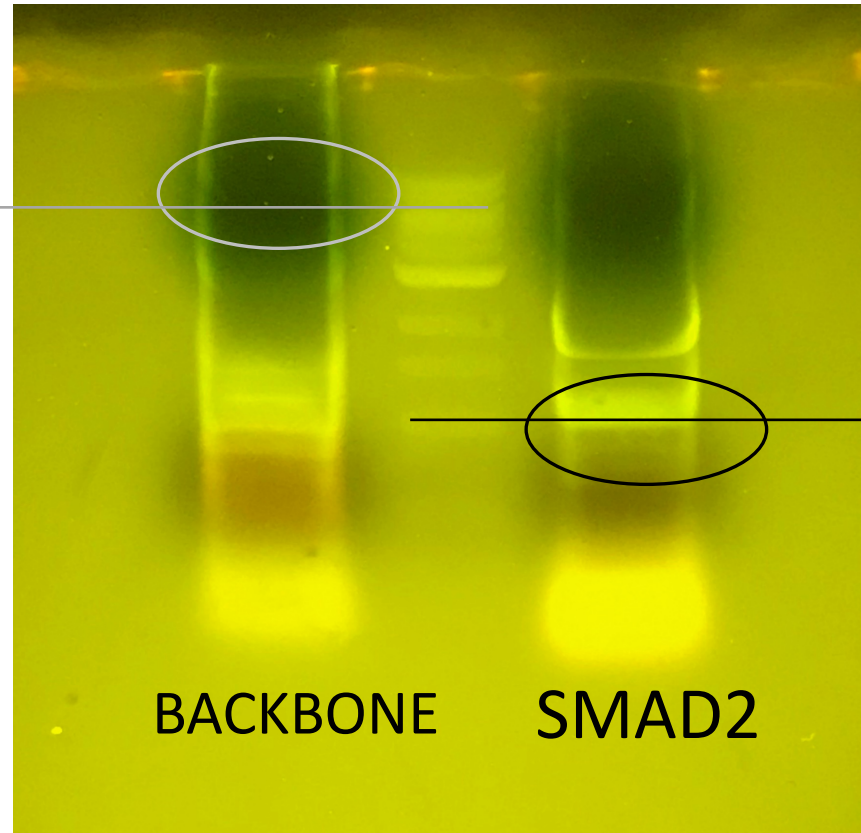
- How do we know if our cloning worked?
- We use “Electrophoresis”



# SMAD CLONING WAS SUCCESSFUL

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Lack of line in “10,000”  
mark says there is no  
backbone

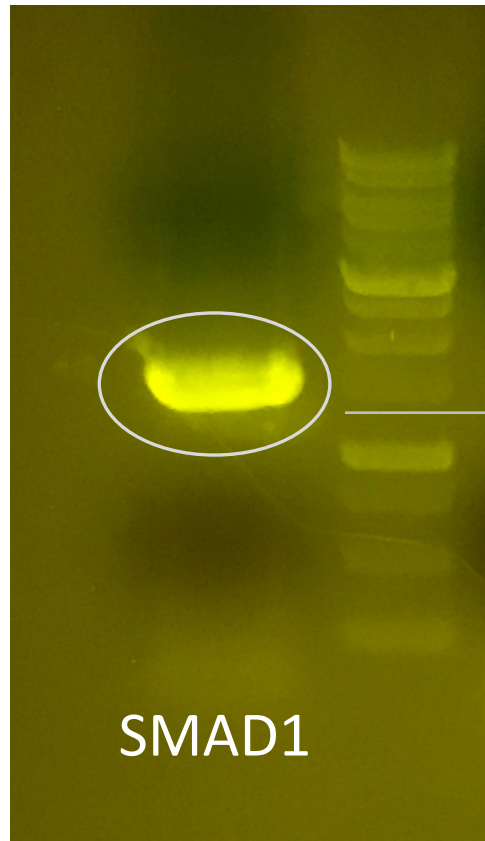


“1,000” line mark  
confirms that we  
cloned SMAD2



# PROGRESS ON THE OTHER SMADS

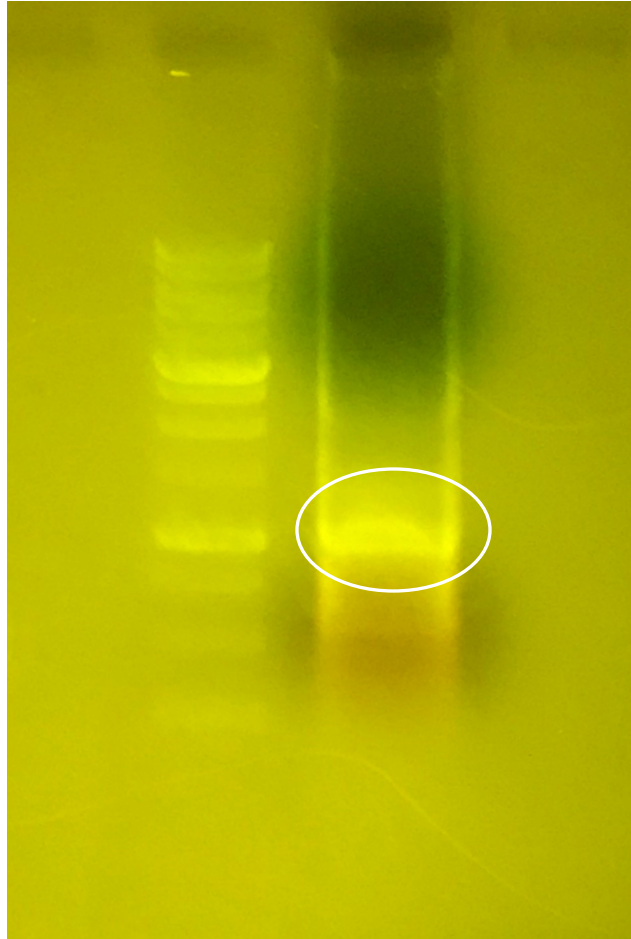
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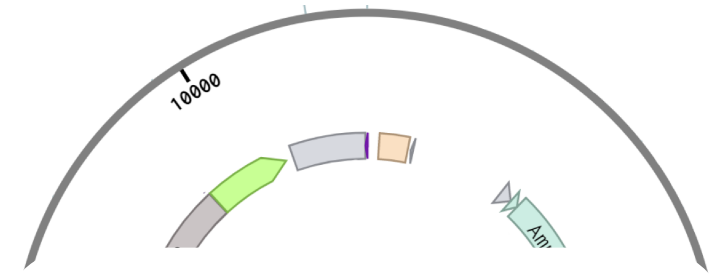
“1500” Line mark confirms  
Cloning of SMAD1

# INTERESTING RESULTS OF BACKBONE

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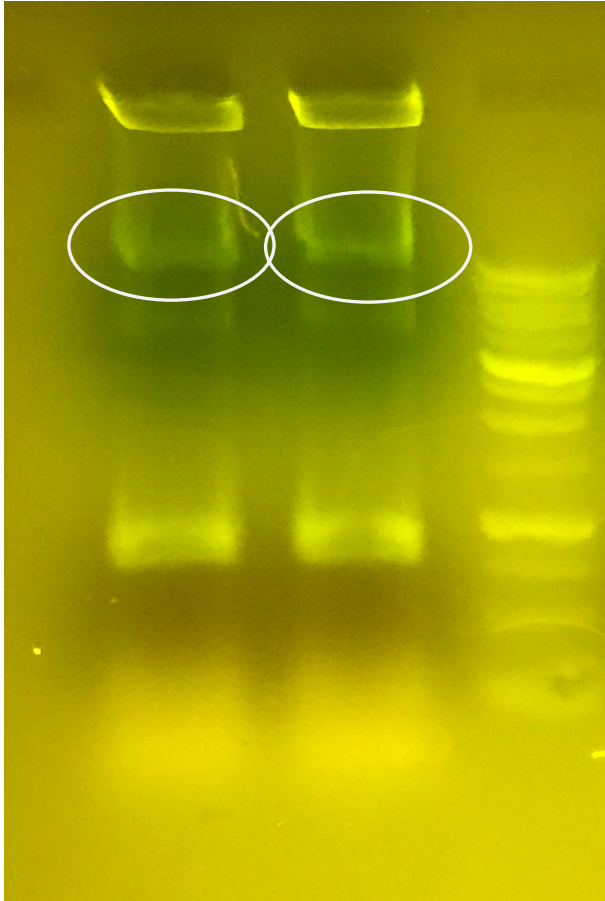


- What did we clone?
- Just some part from the whole circle!



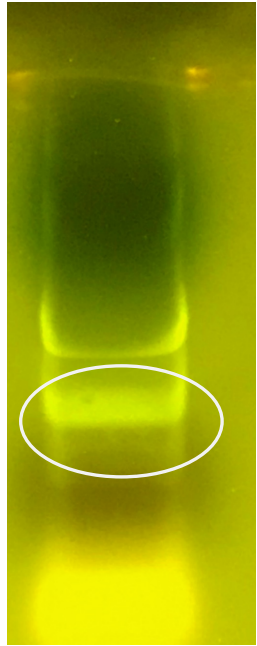
# BACKBONE CLONING

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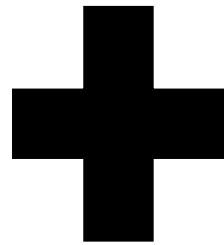


- Backbone was successful
- Still cloning somewhere else

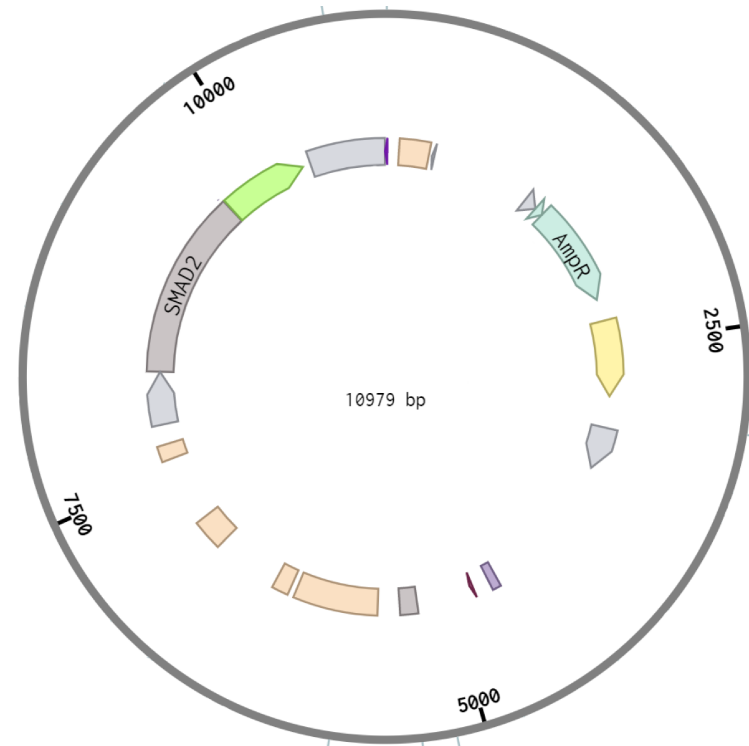
# INGREDIENTS FOR SMAD + BACKBONE



SMAD2

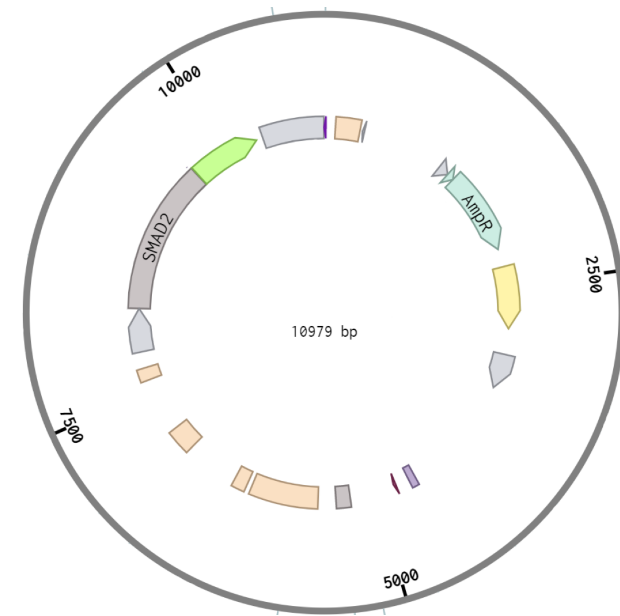
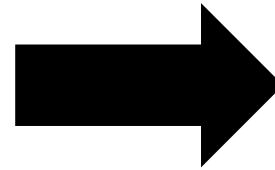
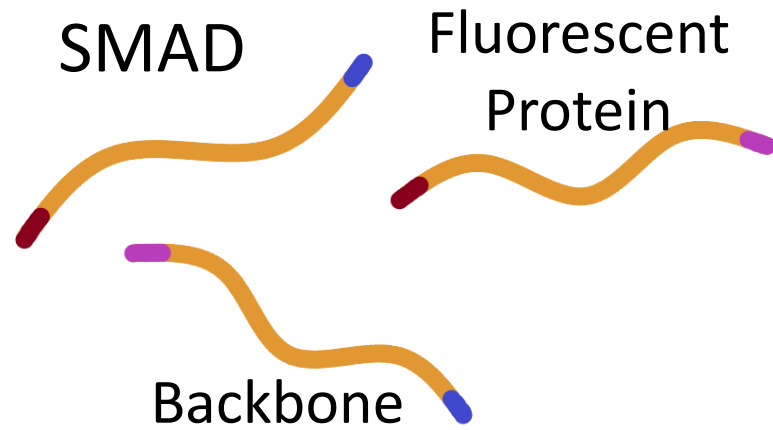


Backbone +  
Fluorescent protein



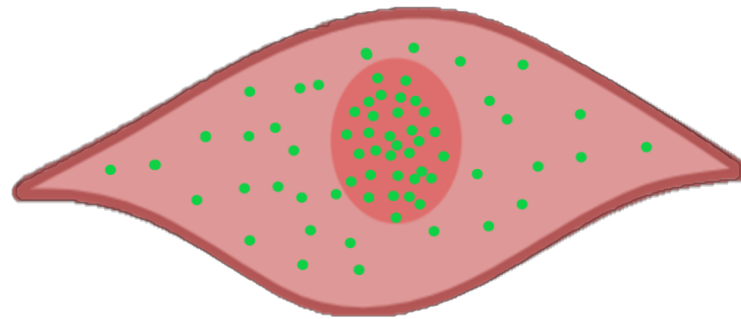
# ASSEMBLING THE BACKBONE AND SMAD

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# WHAT TO EXPECT OF SMADS PROTEINS

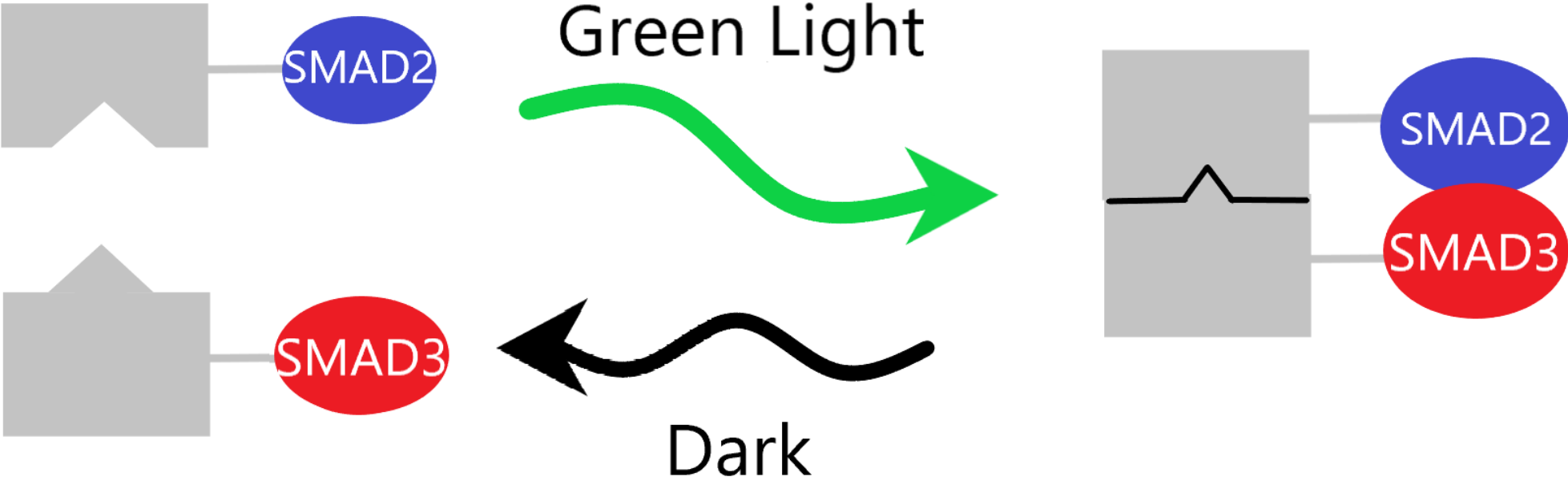
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How long does this process take?

# FUTURE PROJECT: CONTROLLING SMAD BEHAVIOR

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# ACKNOWLEDGEMENTS

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Max Wilson  
Principal Investigator



Markus Merk  
Mentor

# CSEP

EUREKA! Program and  
Coordinators