

Giving an effective presentation: Using Powerpoint and structuring a scientific talk

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We may not be experts at public speaking,
but we are all experts at listening to talks

What do you want from a talk?

Here are some of the things many listeners want from a talk:

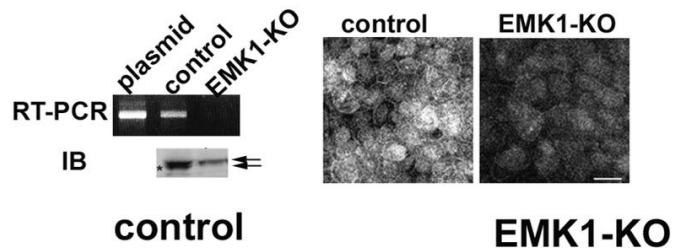
| | |
|--|---|
| CONTENT Conveys new information Poses an interesting question Conveys how people in other fields think Describes important ideas Novel discovery | CLARITY AND ORGANIZATION Understandable Avoids jargon Uses clear and simple visual aids Well organized Enables me to catch up if I space out Doesn't run over time |
| STYLE AND DELIVERY Keeps me awake Varies voice Conveys enthusiasm Doesn't stay in one place Friendly and approachable | EXPERTISE Credible Inspires trust and confidence Answers questions clearly |

This presentation focuses solely on ways of using Powerpoint and organizing a talk to achieve:

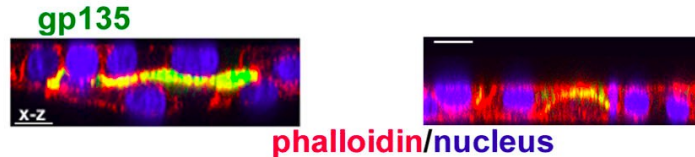
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What do you think of the following slide?

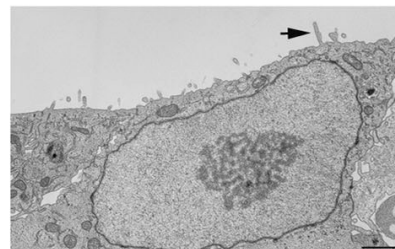
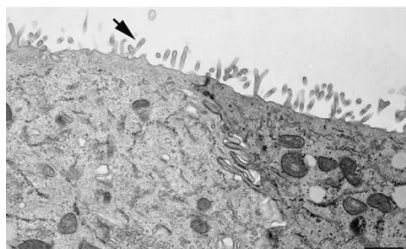
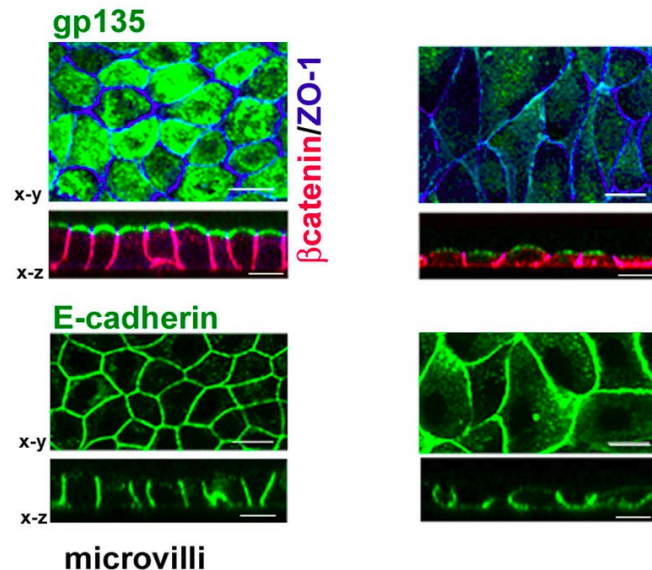
A EMK1-knockdown



B collagen overlay



C Ca-switch



Emk1 knockdown inhibits lumen formation in MDCK cells:

-RT-PCR: EMK1 is effectively knocked down in MDCK cells 24 hours after transfection with P-SUPER (control) or P-SUPER-siEMK1 plasmid; knockdown confirmed on the right with antibodies to EMK1.

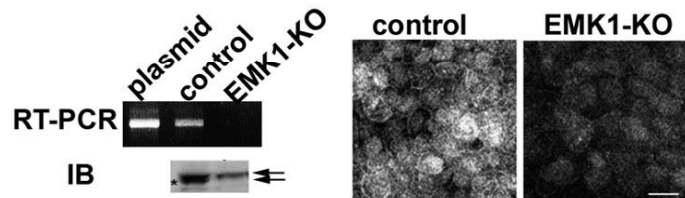
- Collagen overlay assay: cells cultured 24 h on collagen I before being overlaid with additional collagen on the apical surface, analyzed 24 h later. Note the lack of lumen in EMK1-KO cultures.

- Ca switch: control or EMK1-KO cells were plated in low Ca medium 24 h upon transfection with pSUPER or pSUPER-KO. After 12 h, cultures were switched to normal medium for 24 h. Transmission EM of cells sectioned perpendicular to the substratum shows lack of microvilli in EMK1-KO cells.

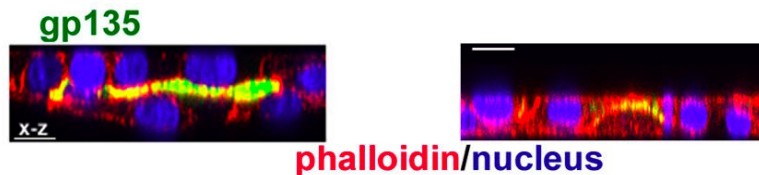
Is this better?

Emk1 knockdown inhibits lumen formation in MDCK cells

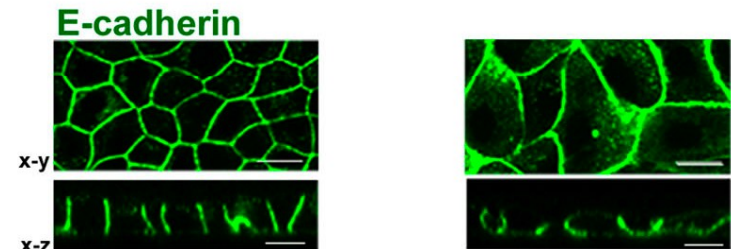
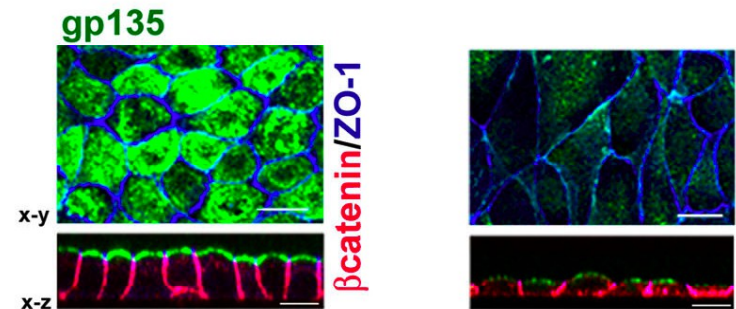
A EMK1-knockdown



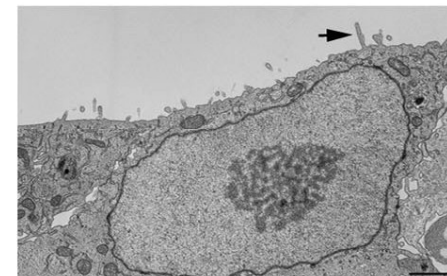
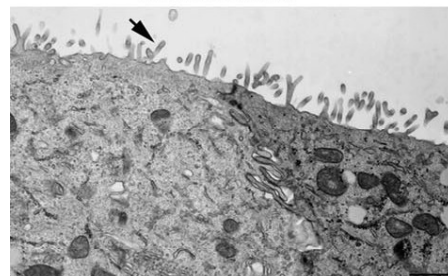
B collagen overlay



C Ca-switch



microvilli



Not much.

Powerpoint basics:

Powerpoint basics:

1. What font to use

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Use a Sans Serif font:

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Use a Sans Serif font:

This font is Arial.

This font is Comic Sans.

This font is Trebuchet.

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Serif fonts take longer to read...

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Serif fonts take longer to read...

This font is Times New Roman.

This font is Courier.

This font is Didot.

Powerpoint basics:

1. What font to use

Some fonts look super in **boldface**:

Powerpoint basics:

1. What font to use

Some fonts look super in **boldface**:

Arial vs. **Arial bold**

Comic Sans vs. **Comic Sans bold**

Trebuchet vs. **Trebuchet bold**

Powerpoint basics:

1. What font to use

Type size should be 18 points or larger:

18 point

20 point

24 point

28 point

36 point

* References can be in 14 point font

Powerpoint basics:

1. What font to use

AVOID USING ALL CAPITAL LETTERS
BECAUSE IT'S REALLY HARD TO READ!

Powerpoint basics:

2. Color

Powerpoint basics:

2. Color

Dark letters against a light background work.

Powerpoint basics:

2. Color

Light letters against a dark background also work.

Powerpoint basics:

2. Color

Many experts feel that a dark blue or black background works best for talks in a large room.

Powerpoint basics:

2. Color

Dark letters against a light background are best for smaller rooms and for teaching.

Powerpoint basics:

2. Color

Avoid red-green combinations because a large fraction of the human population is red-green colorblind.

Lots of people can't read this –
and even if they could, it makes your eyes hurt.

Powerpoint basics:

2. Color

Other color combinations can be equally bad.

Other color combinations can be equally bad!

Powerpoint basics:

2. Color

View your slides in grayscale to ensure that there is adequate color contrast in each slide.

Other color combinations can be equally bad!

Powerpoint basics:

3. Layout

Powerpoint basics:

3. Layout

Every slide should have a heading.

Sentences are preferred if it's possible to make a statement.

Powerpoint basics:

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Limit text blocks to no more than two lines each.

Powerpoint basics:

3. Layout

The reason for limiting text blocks to two lines is that when the text block goes on and on forever, people in the audience are going to have to make a huge effort to read the text, which will preclude them from paying attention to what you are saying. Every time you lose their focus, your presentation suffers!

Powerpoint basics:

3. Layout

Lists should contain no more than 3 items:

- Item 1
- Item 2
- Item 3

Powerpoint basics:

3. Layout

It is often effective to “unveil” your list one by one:

- Item 1
- Item 2
- Item 3

Powerpoint basics:

3. Layout

Avoid sublists!

- Item 1
 - Item 1a
 - Item 1b
 - Item 1c
- Item 2
 - Item 2a
 - Item 2b
- Item 3

Powerpoint basics:

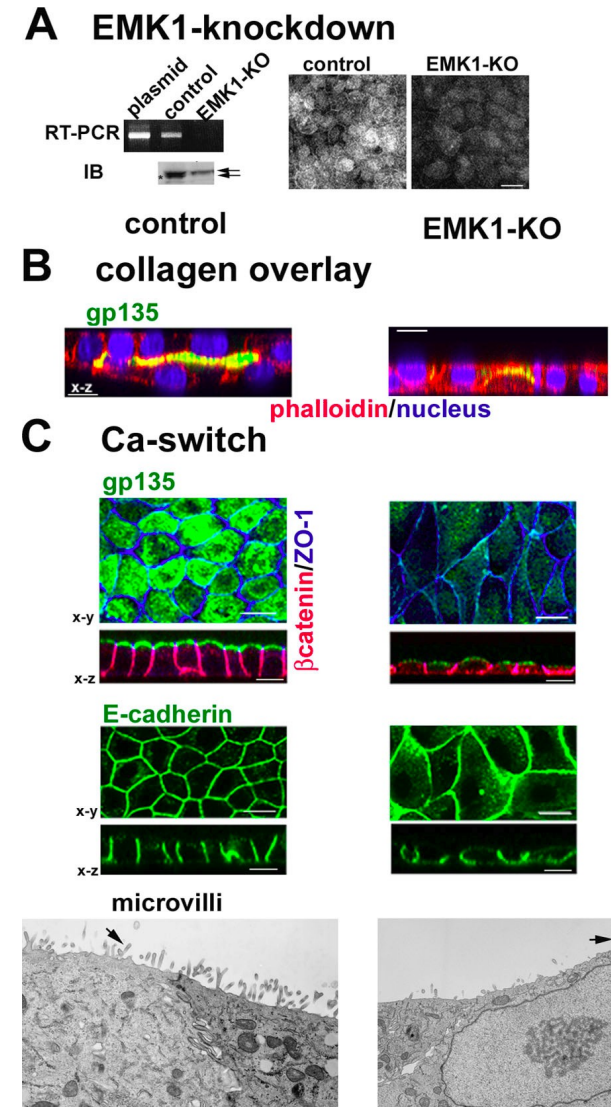
3. Layout

Be generous with empty space.

Powerpoint basics:

3. Layout

If you try to cram too much into a slide, and place things too close to the sides, they can get cut off if you're using a poor projector. In any case, the slide looks all cluttered and junky.



Powerpoint basics:

4. Style

Powerpoint basics:

4. Style

Try your best to include a simple image on every slide.

Powerpoint basics:

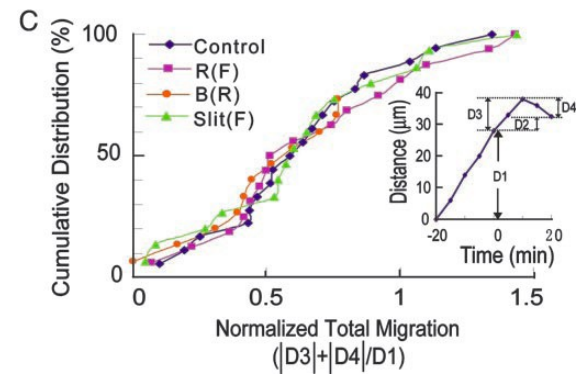
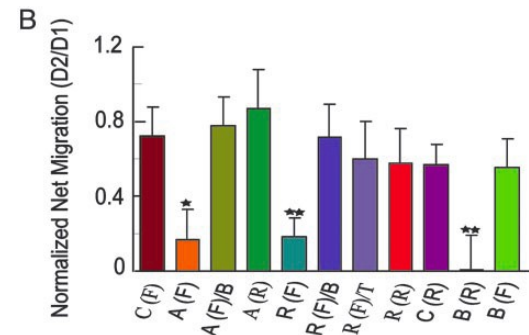
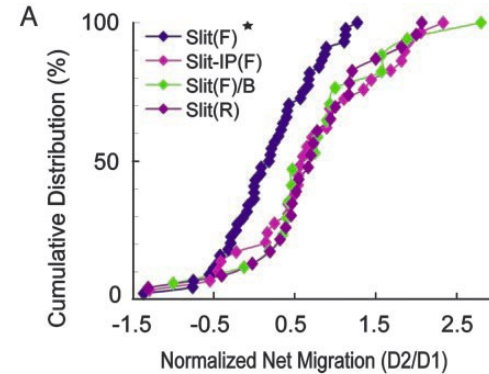
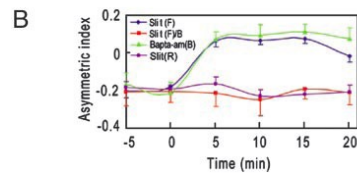
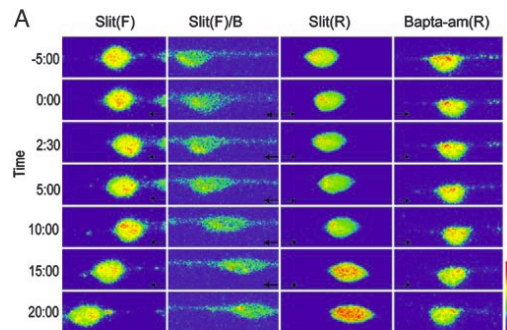
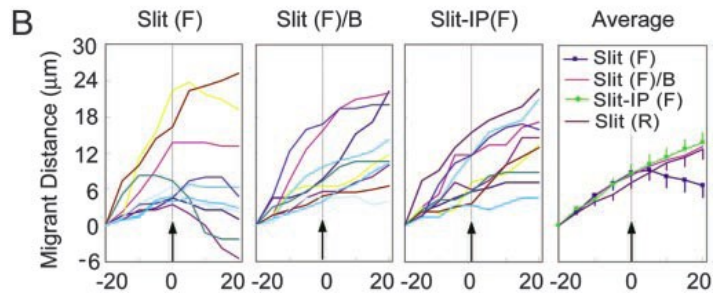
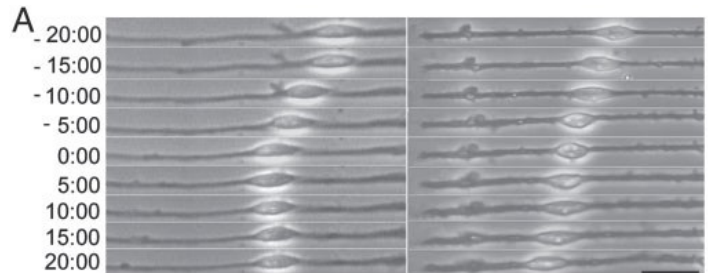
4. Style

Limit the number of items on each slide.

Each slide should make just one or two points!

Powerpoint basics:

4. Style



This is just
too much.
Arrrrgh!

Powerpoint basics:

4. Style

Here is a simple rule for showing figures and images:

If you're not going to take the time
to explain it, get rid of it.

Powerpoint basics:

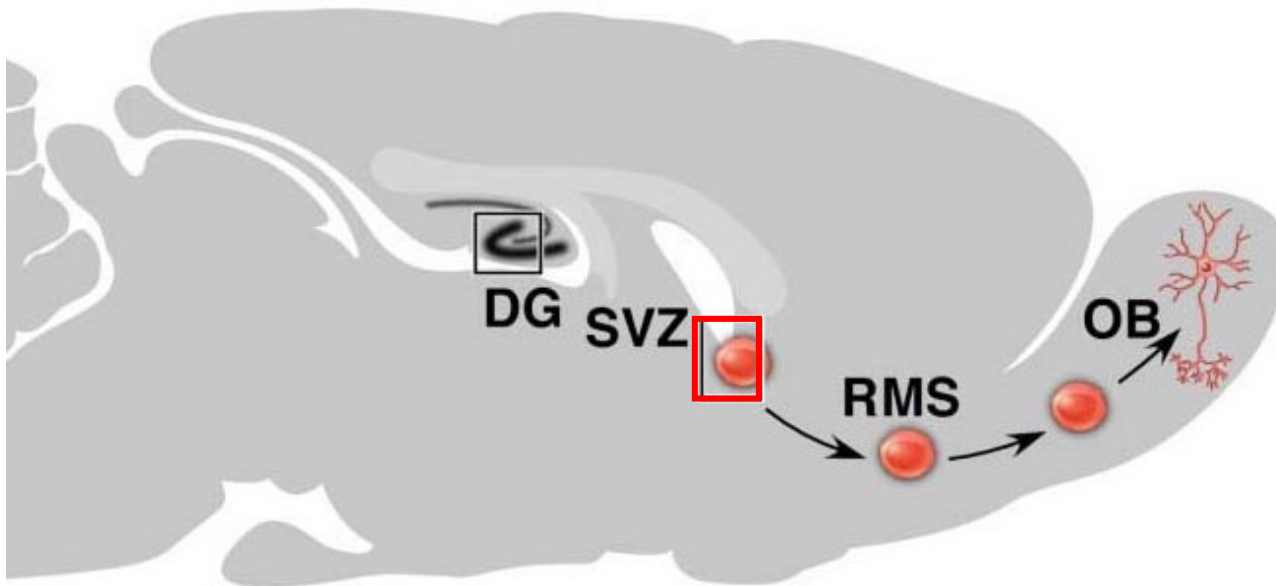
4. Style

Avoid fancy transitions between slides
unless you have a good reason.

Powerpoint basics:

4. Style

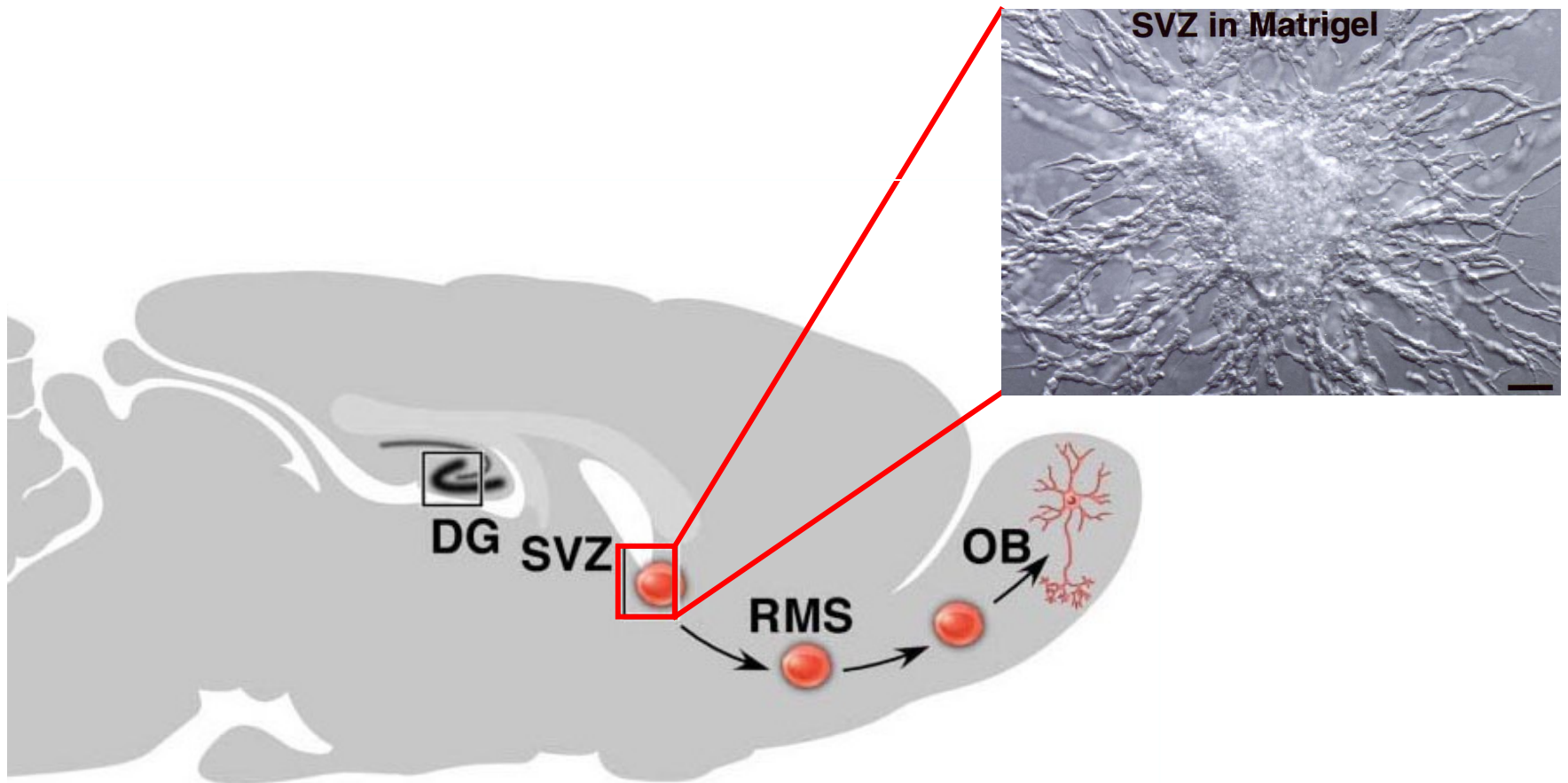
Here is a sensible use of a "wipe" transition:



Powerpoint basics:

4. Style

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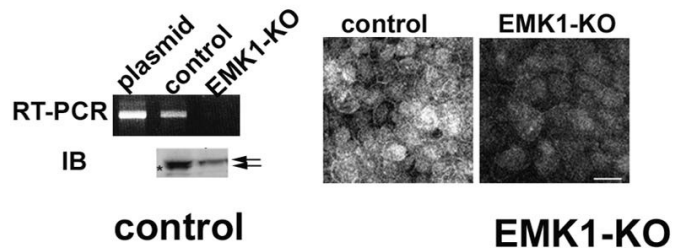
4. Style

Don't try to show too many slides.

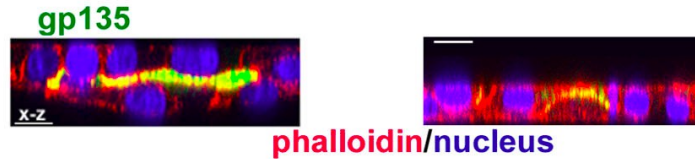
Often, less is more.

It's very easy to use Powerpoint really badly

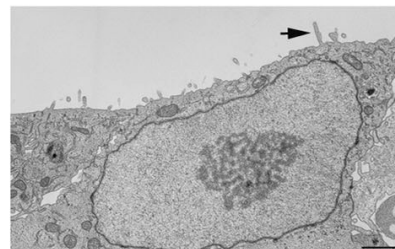
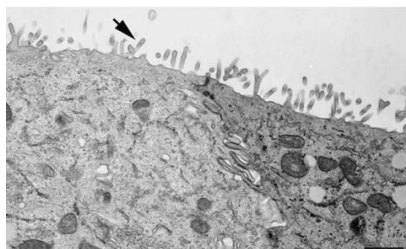
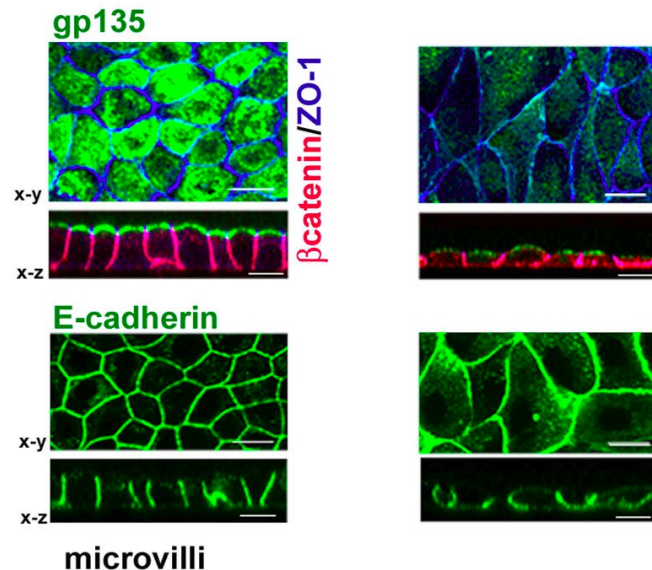
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B collagen overlay



C Ca-switch



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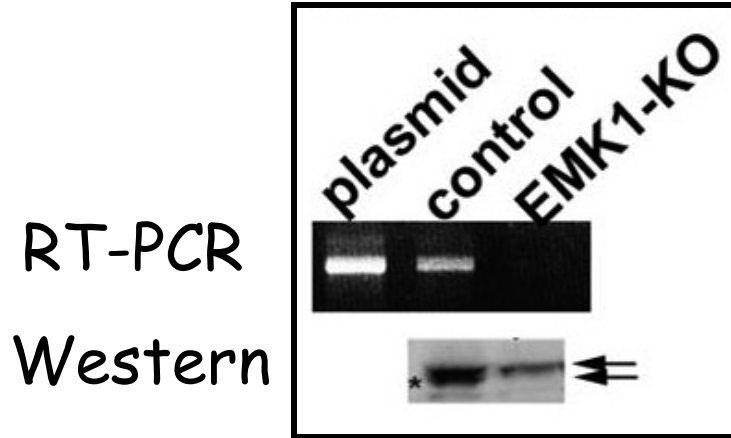
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to use Powerpoint well

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Let's break down the previous slide
into its minimum essential components

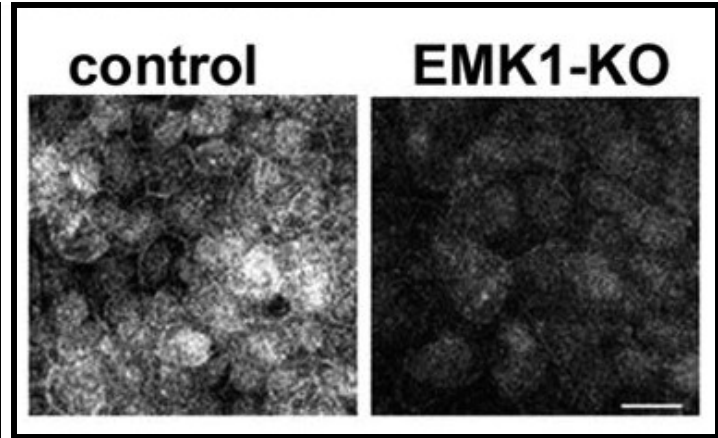
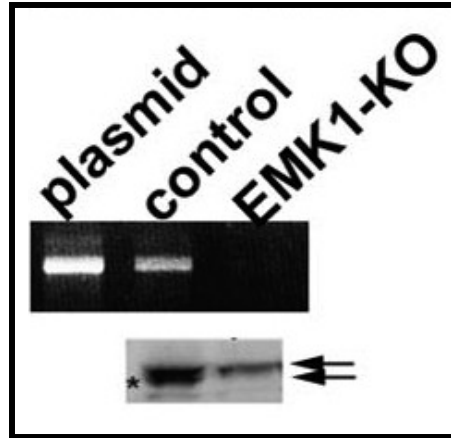
EMK1 / Par1 can be knocked down in MDCK (kidney) cells using siRNA methods



EMK1 / Par1 can be knocked down in MDCK (kidney) cells using siRNA methods

RT-PCR

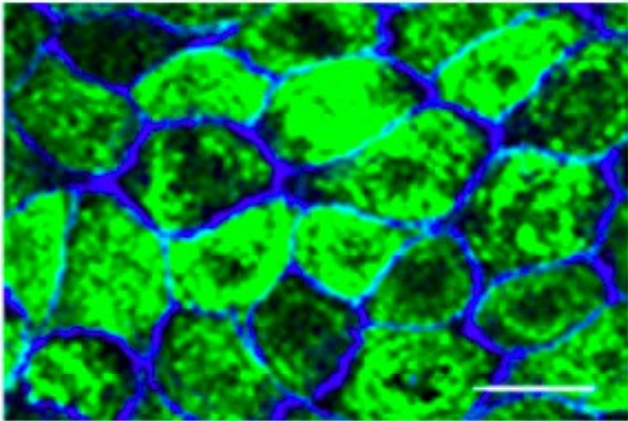
Western



MDCK cells

MDCK cells form a lumen following a change in extracellular $[Ca^{++}]$

MDCK cells

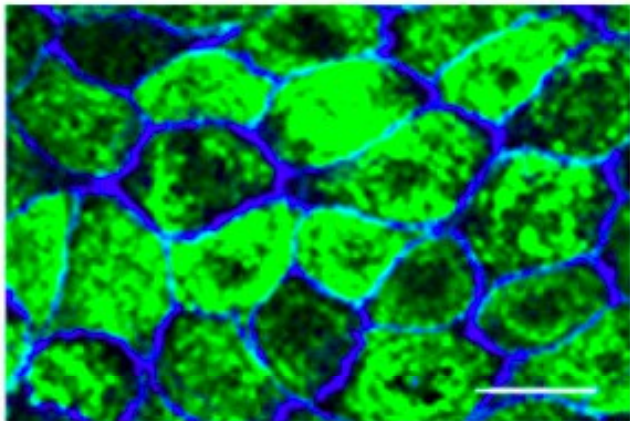


← Surface view from lumen

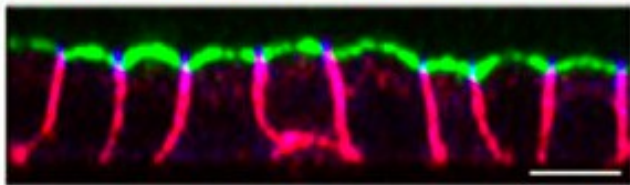
gp135 ! -catenin ZO-1

MDCK cells form a lumen following a change in extracellular $[Ca^{++}]$

MDCK cells



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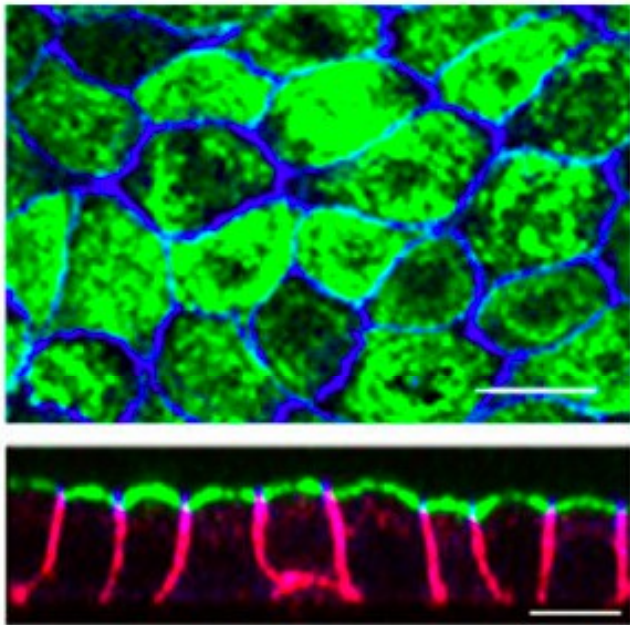


← Side view of lumen

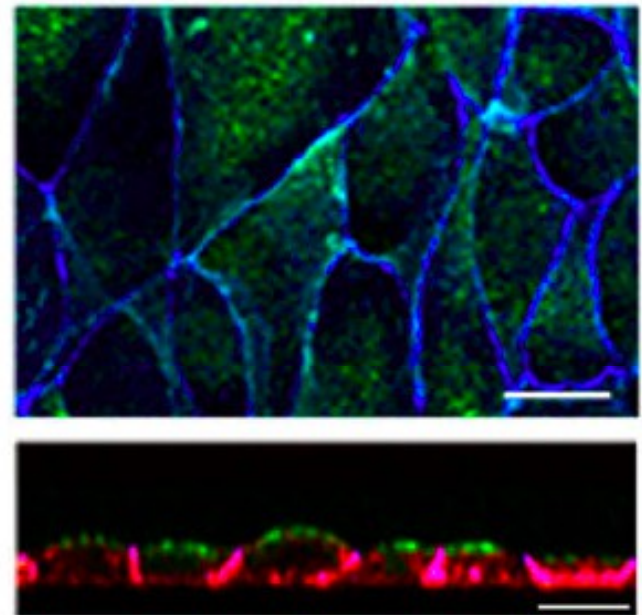
gp135 ! -catenin ZO-1

Lumen formation is blocked in EMK1 knockdown cells

MDCK cells



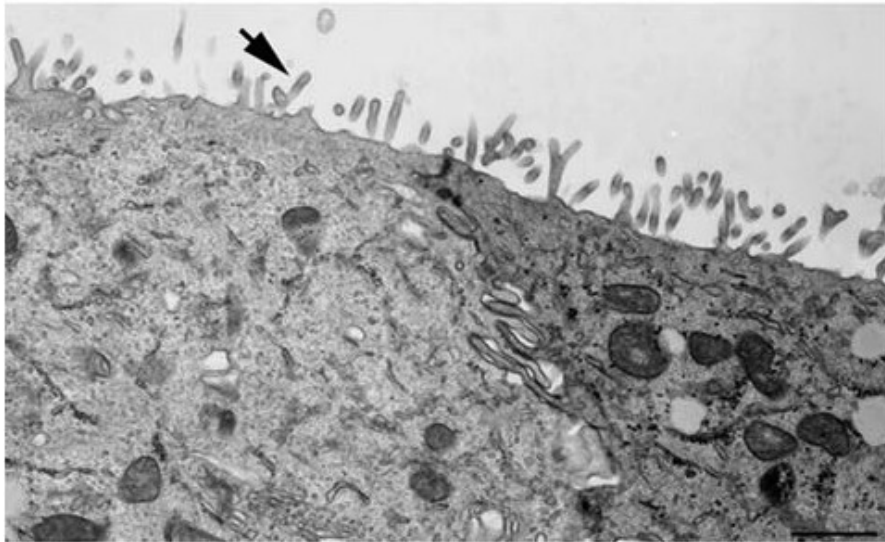
EMK1 knockdown



gp135 ! -catenin ZO-1

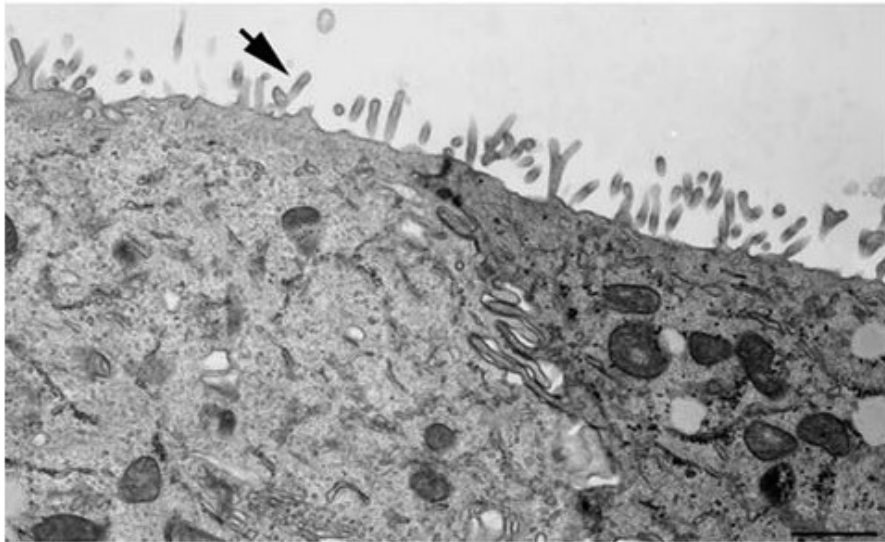
EMK1 knockdown cells also fail to form microvilli

MDCK cells

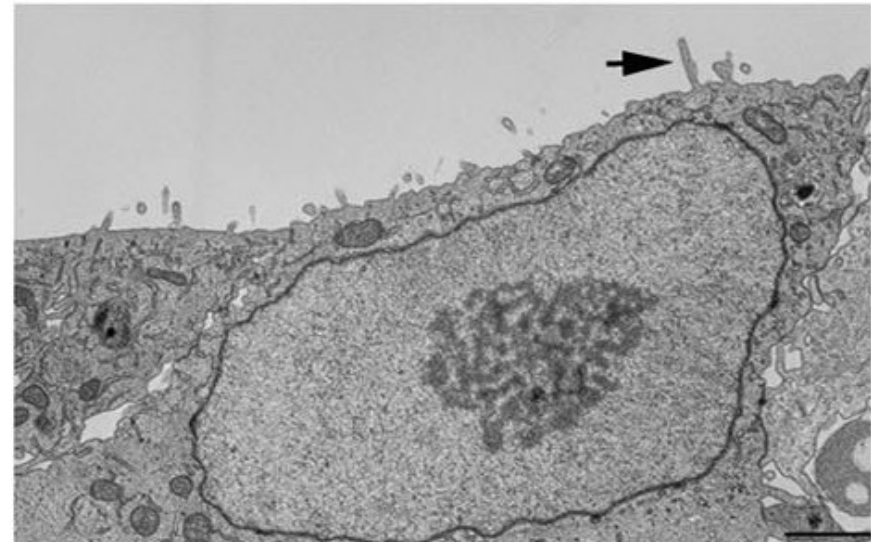


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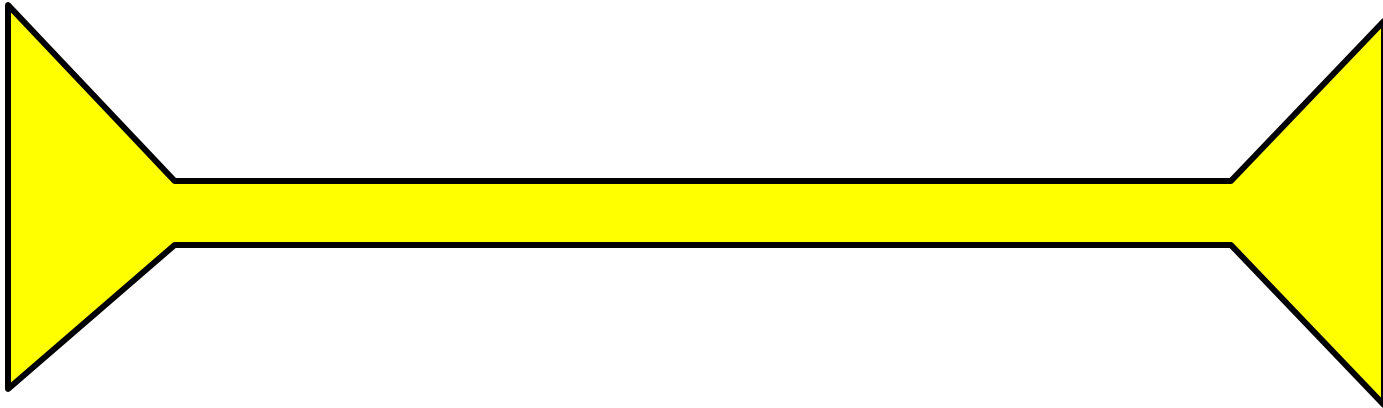
MDCK cells



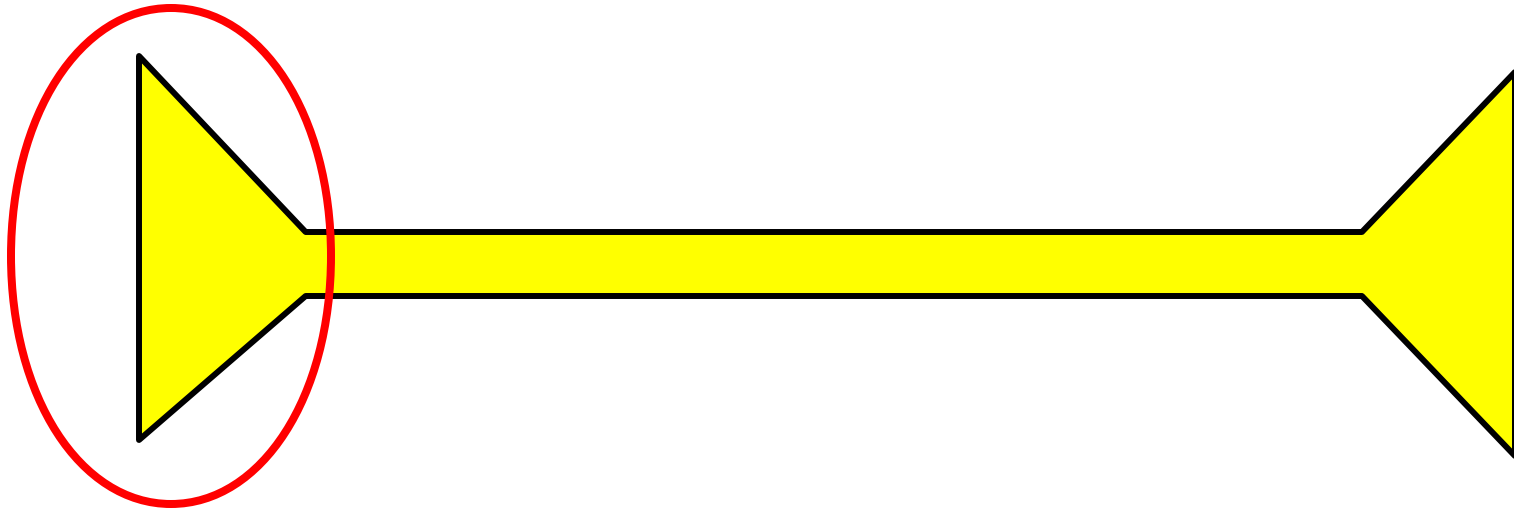
EMK1 knockdown



The structure of a good talk: start broad,
get specific, and end broad



The structure of a good talk: start broad, get specific, and end broad

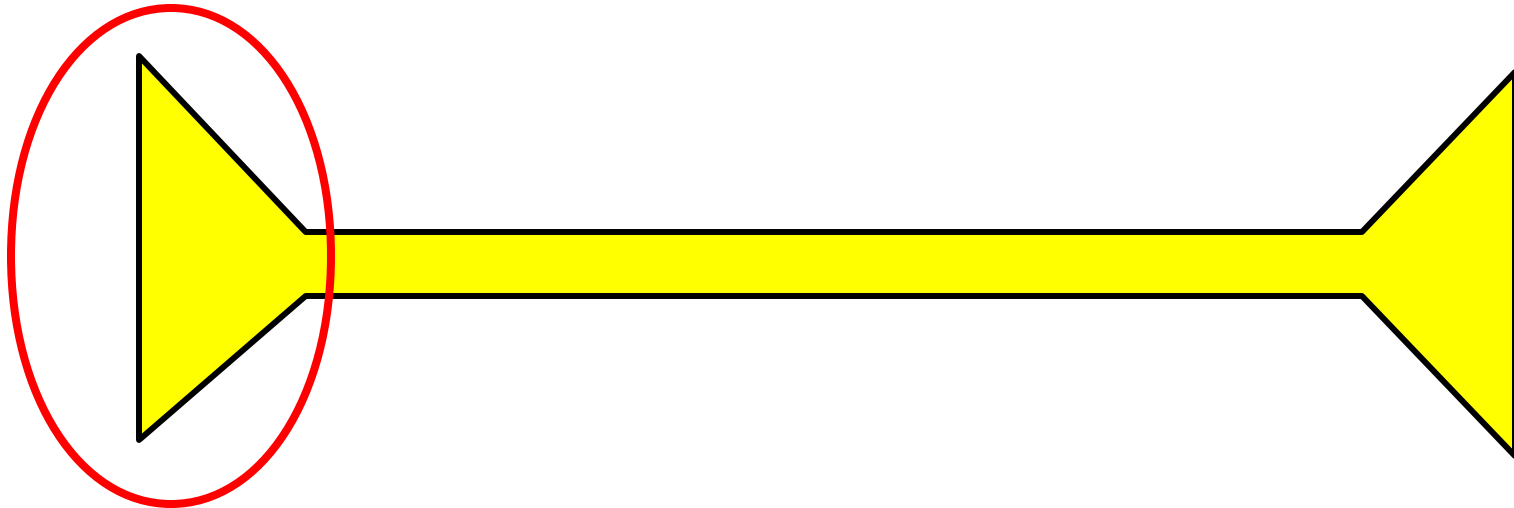


Start with the biggest questions
and get progressively more specific

A powerful tool in a talk is a “home slide”

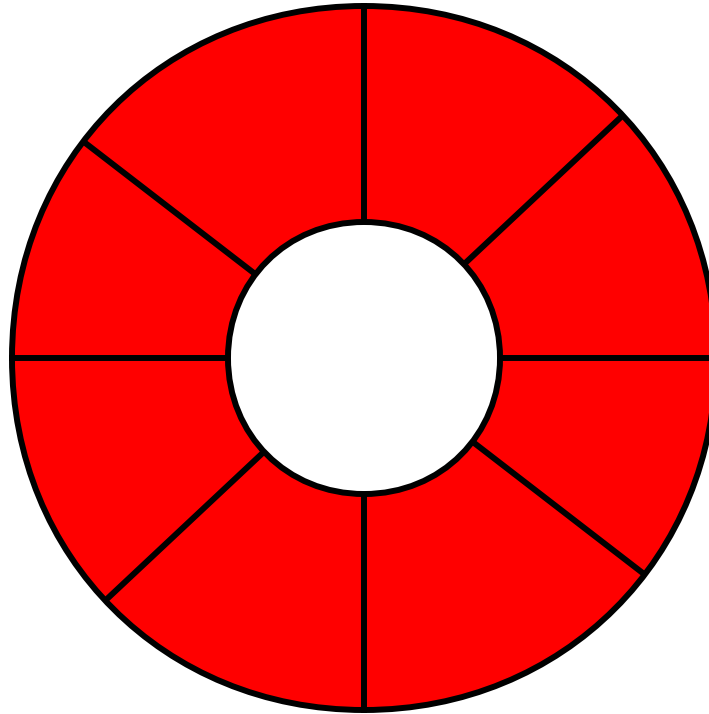
Design and introduce a “home slide” that you’ll come back to at each major transition in your talk.

A powerful tool in a talk is a “home slide”



Now we'll build an introduction and a home slide that puts the previous data into context.

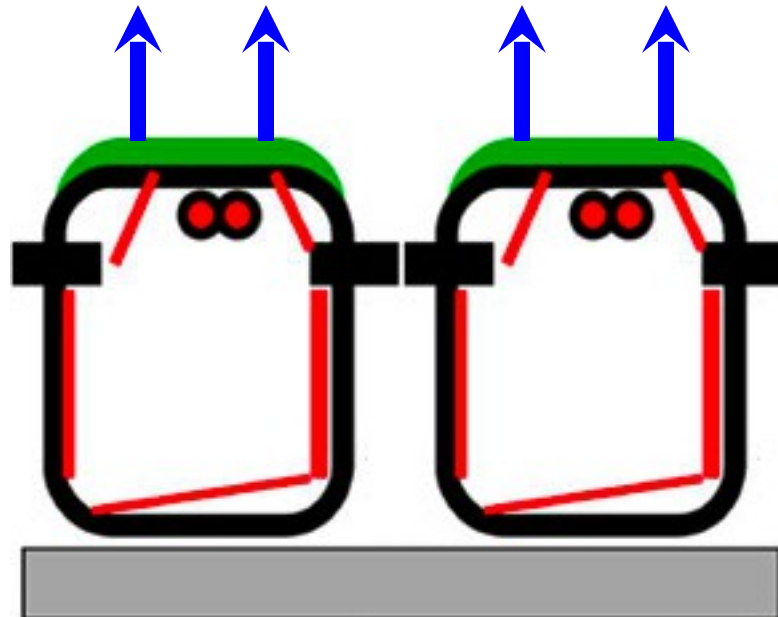
Our bodies are full of tubes



Our bodies are full of tubes

Intestine

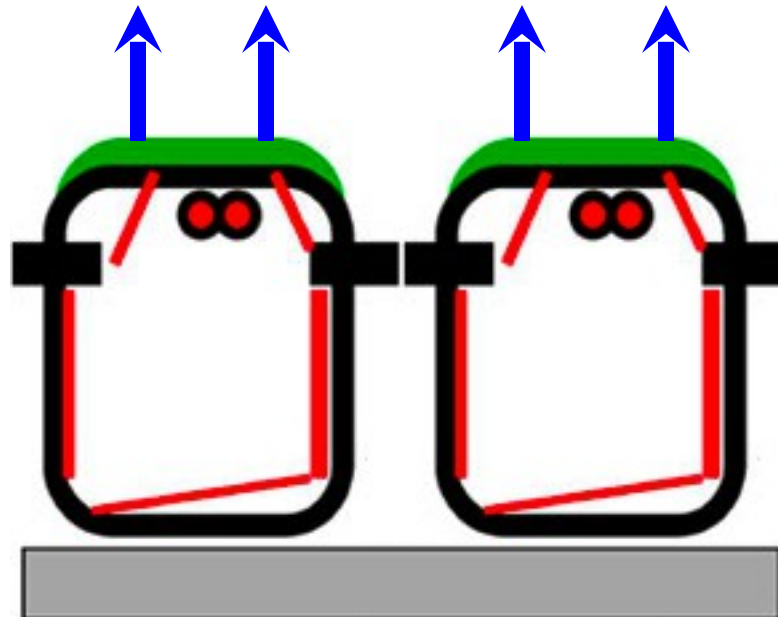
digestive enzymes



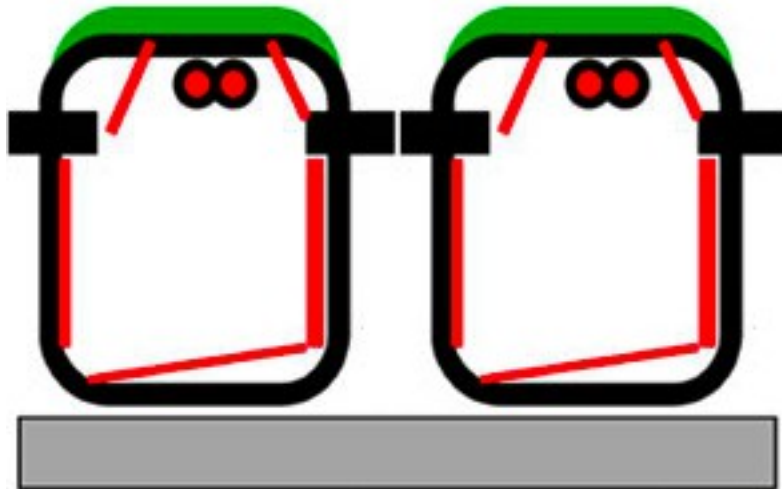
How do cells become polarized and form a lumen?

Intestine

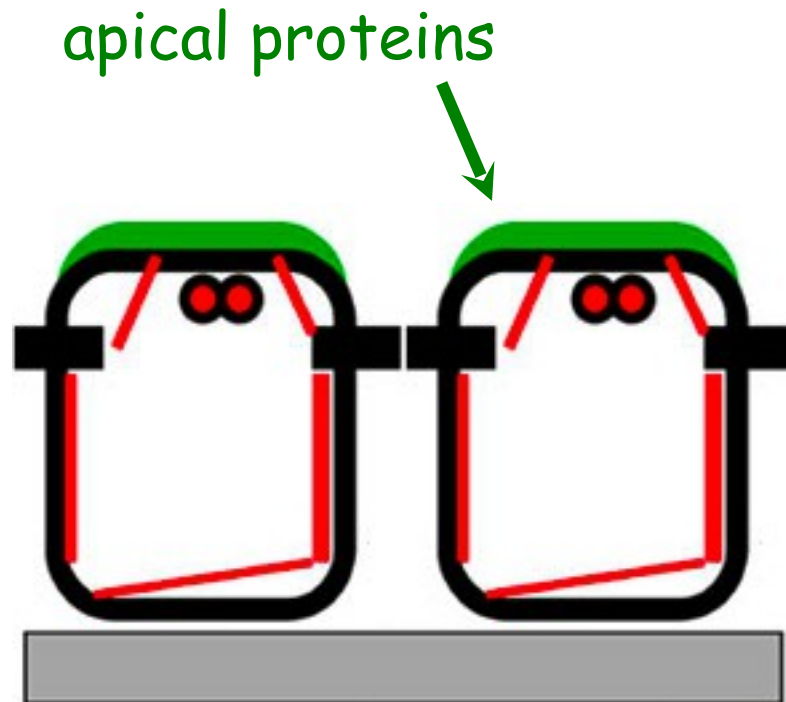
digestive enzymes



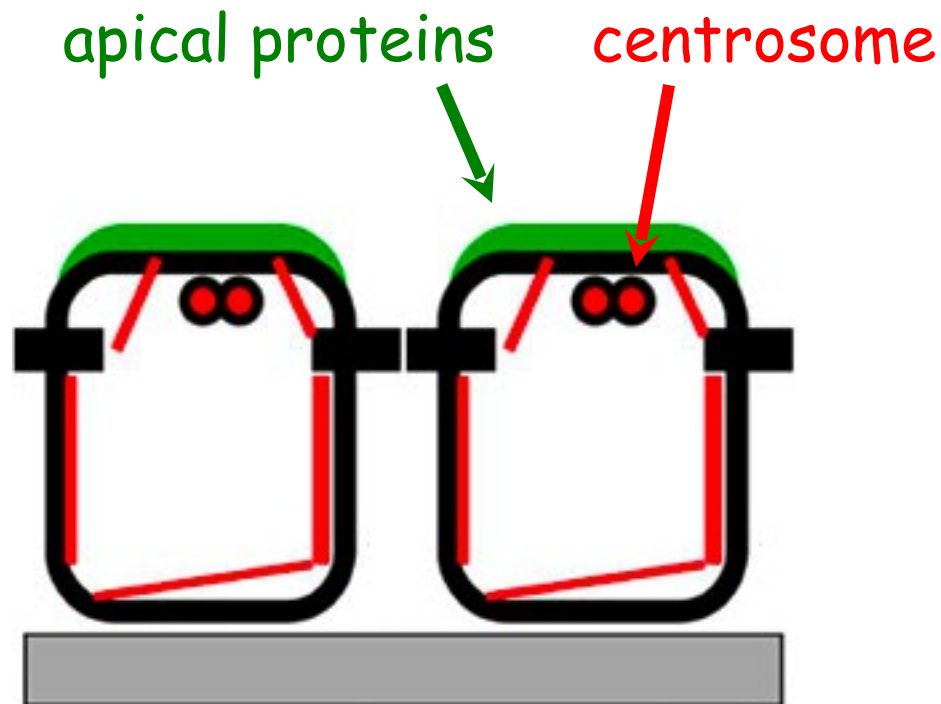
MDCK cells are a model system for a polarized cell type (from the kidney)



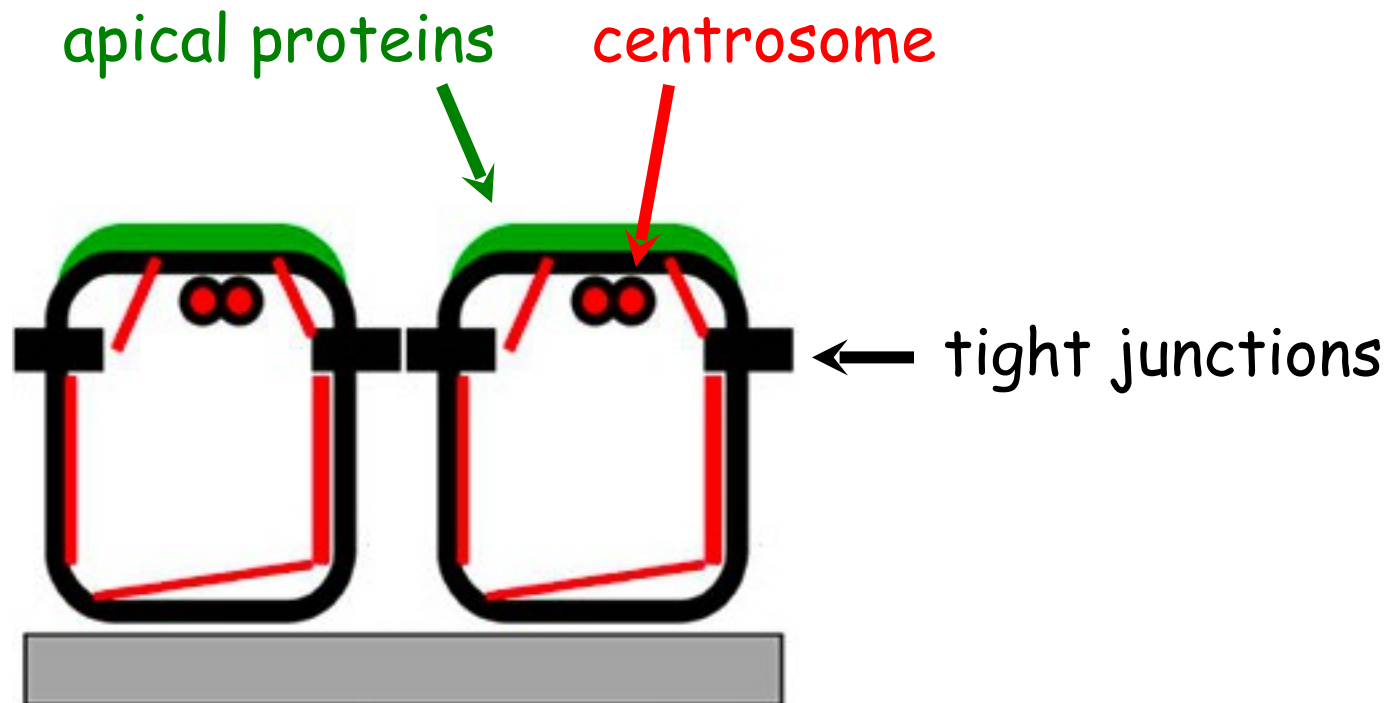
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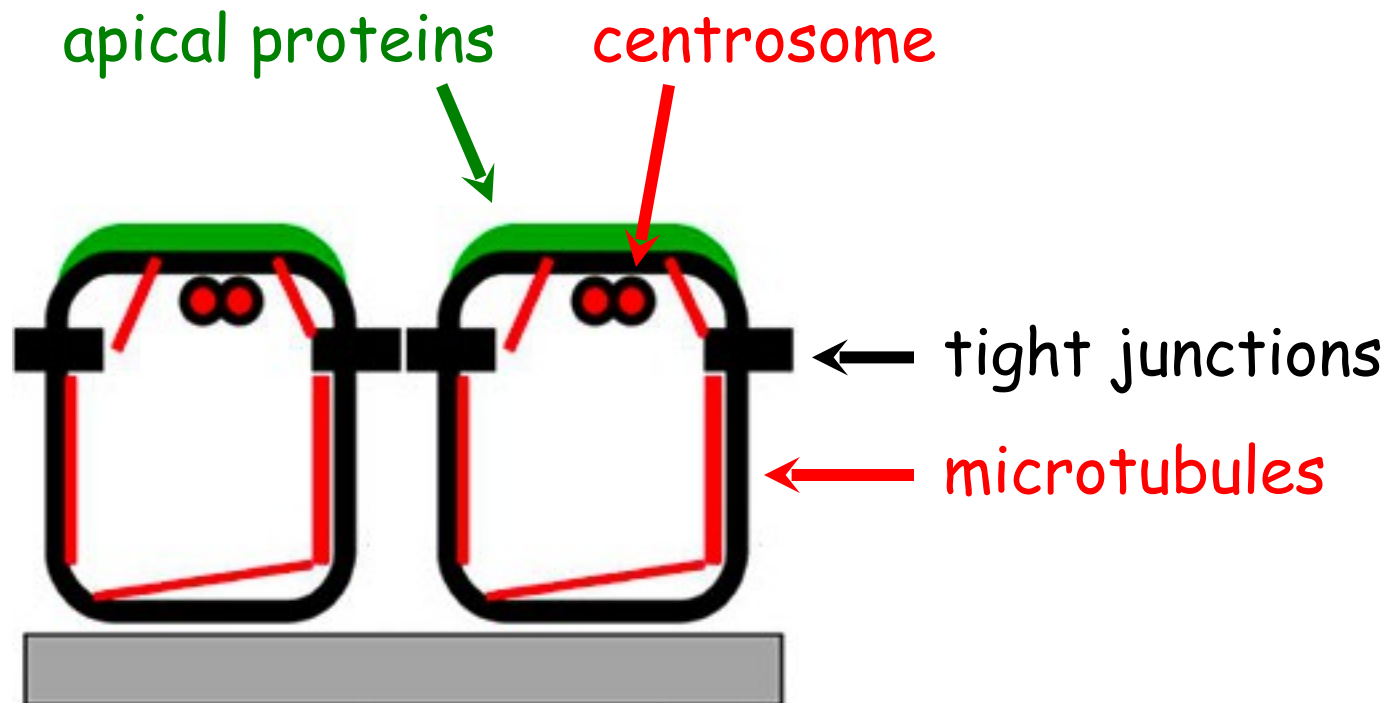
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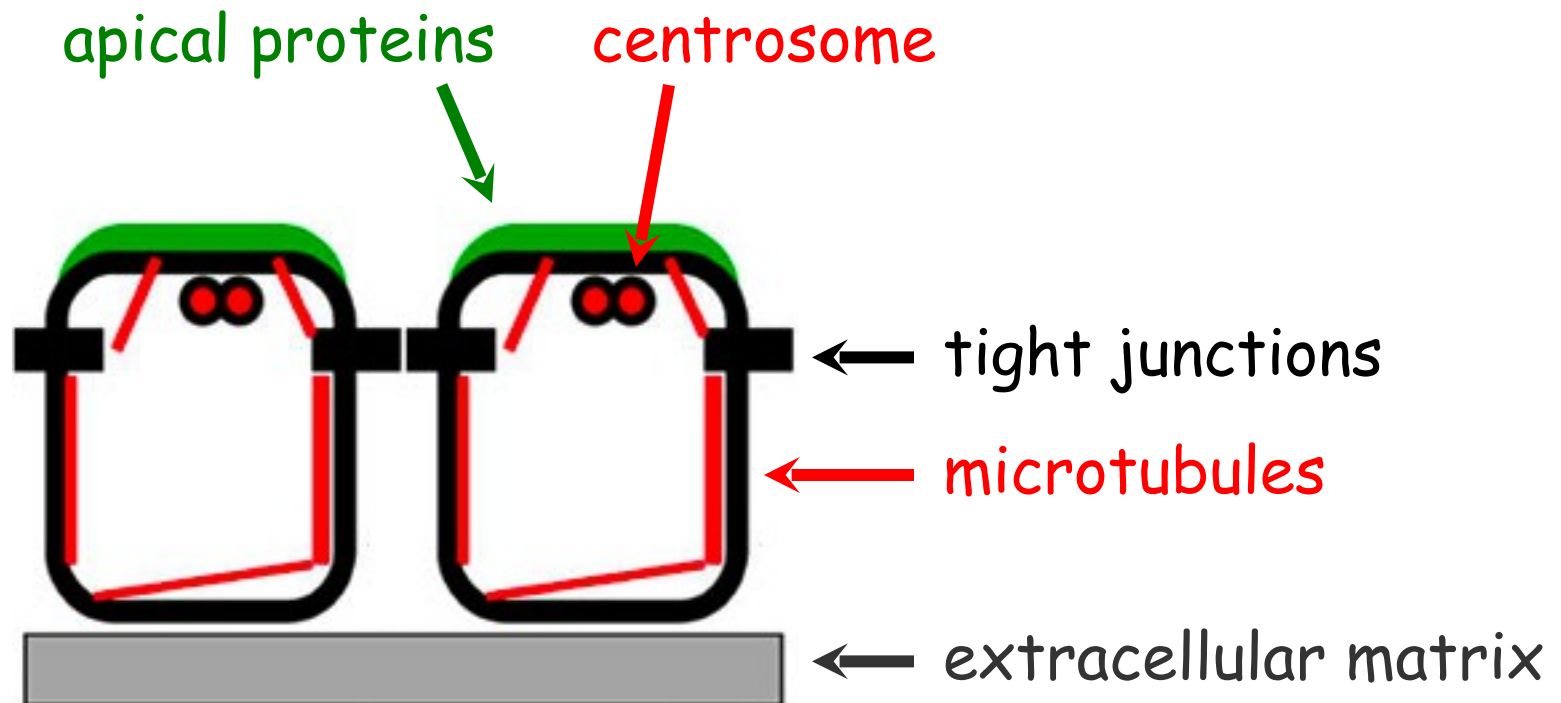
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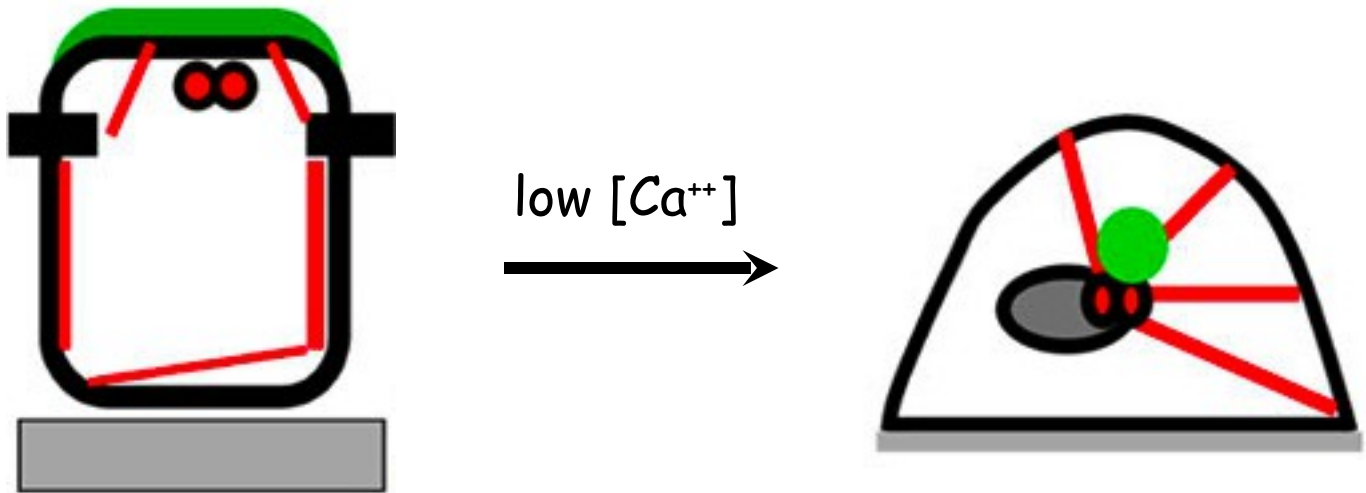
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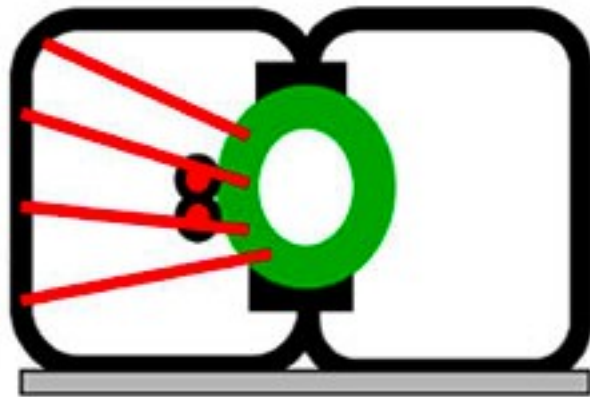
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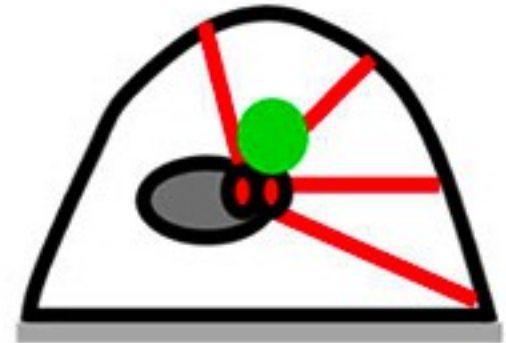
MDCK cells lose their polarity in low $[Ca^{++}]$



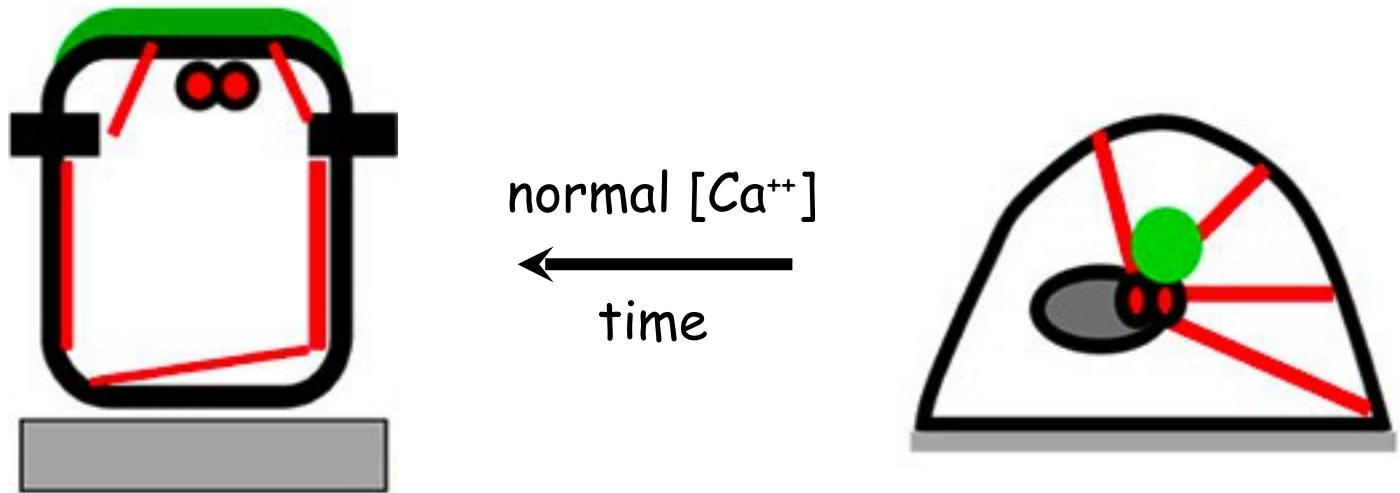
MDCK cells regain their polarity in normal $[Ca^{++}]$ and reform a lumen



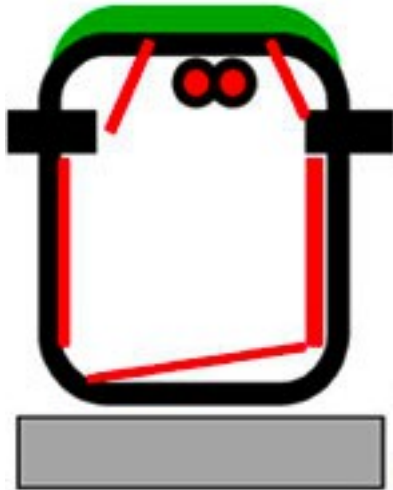
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MDCK cells regain their polarity in normal $[Ca^{++}]$ and reform a lumen



EMK1 (also known as Par1) is a serine-threonine kinase that regulates polarity in many cells

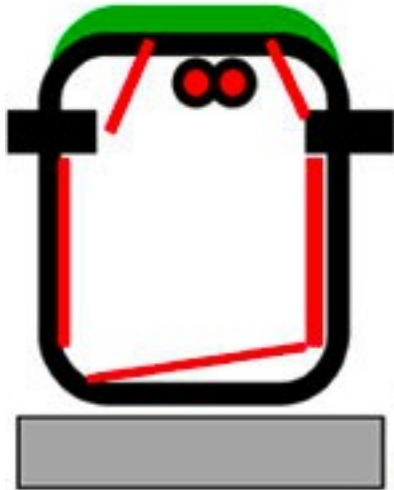


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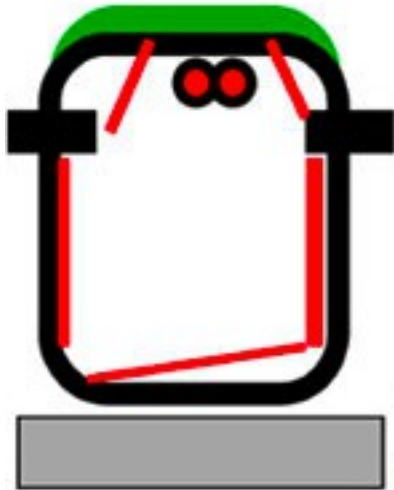


← EMK1 localizes to tight junctions in MDCK cells

Questions addressed today:

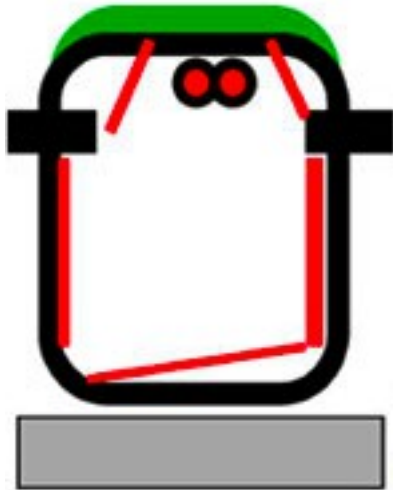


Questions addressed today:



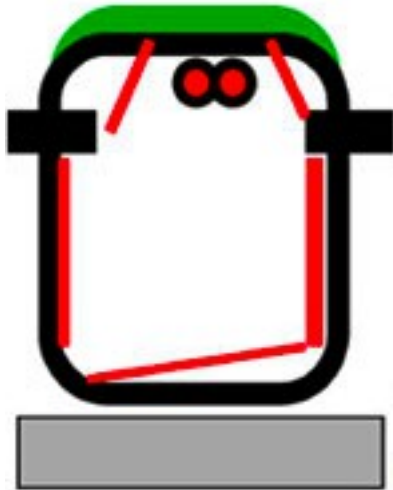
- Is the kinase EMK1 essential for polarizing kidney cells?

Questions addressed today:



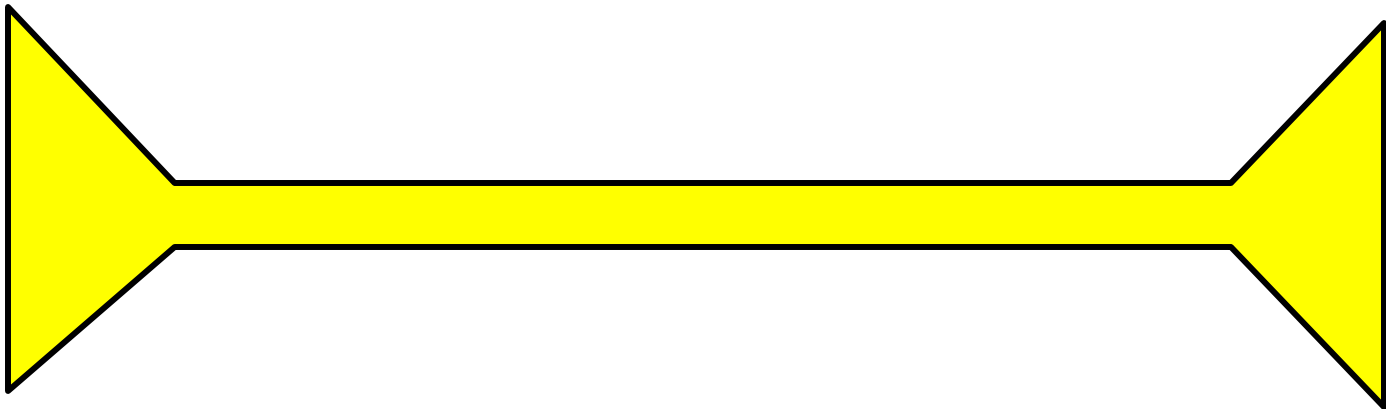
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- Is EMK1 important for lumen formation?

Questions addressed today:

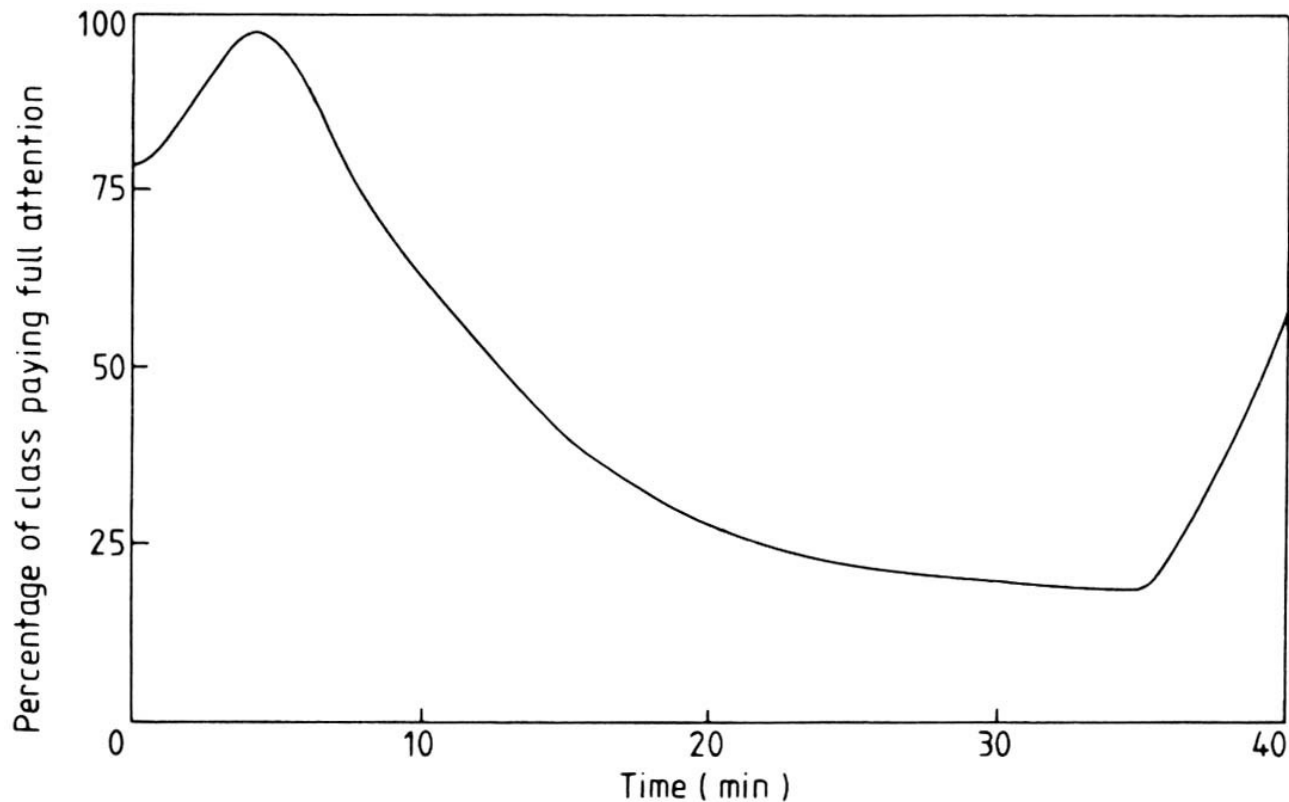


- Is the kinase EMK1 essential for polarizing kidney cells?
- Is EMK1 important for lumen formation?
- How do different tissues form different types of tubes?

The middle is the meat of the talk...



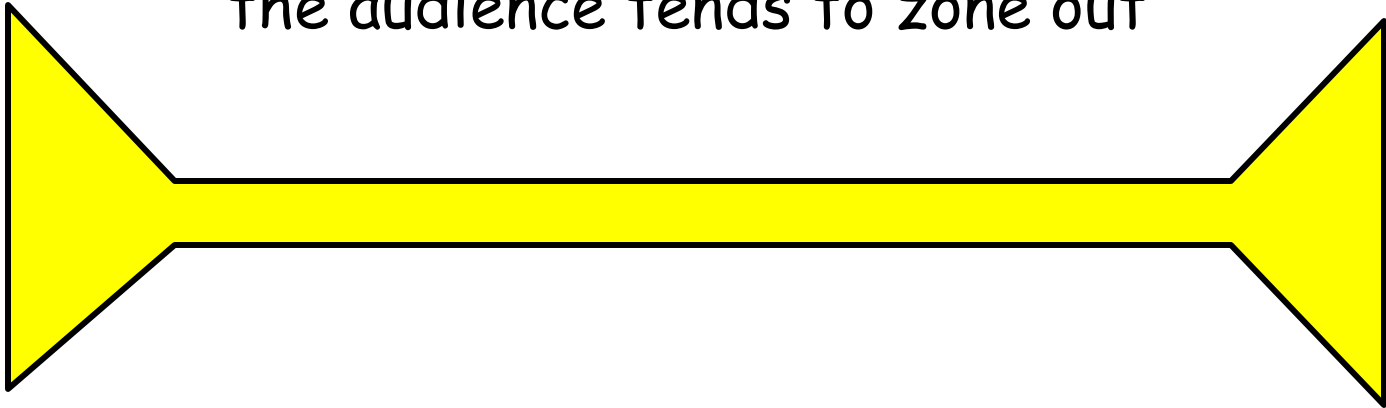
...but talks are delivered to audiences
with limited attention spans



Audience attention curve

The middle is the meat of the talk

The middle is also the time at which
the audience tends to zone out



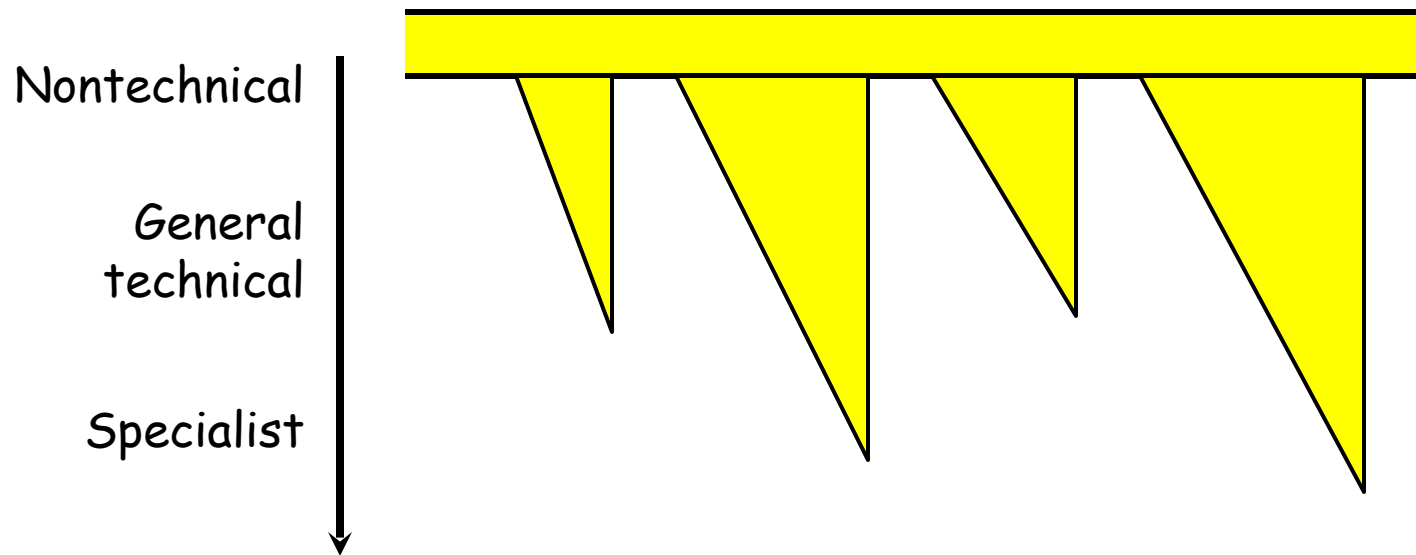
Enabling the audience to tune back in

After going into depth, come back to
your home slide to make transitions



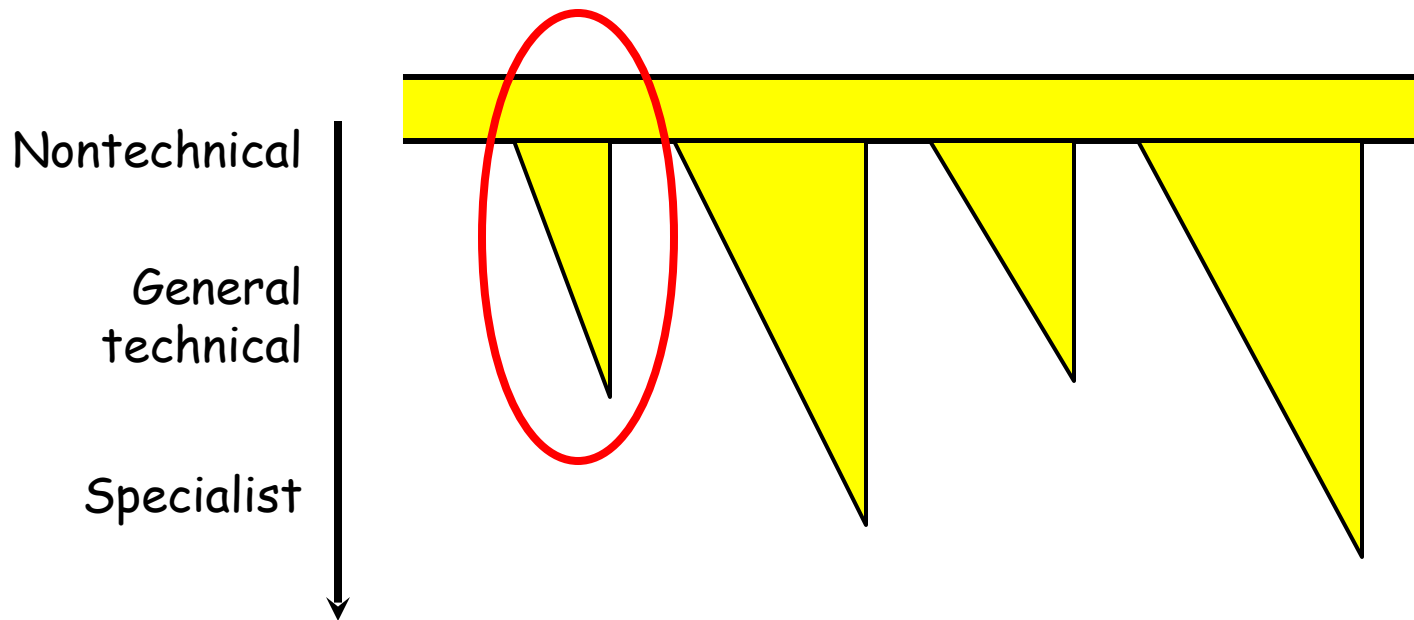
Enabling the audience to tune back in

After going into depth, come back to your home slide to make transitions

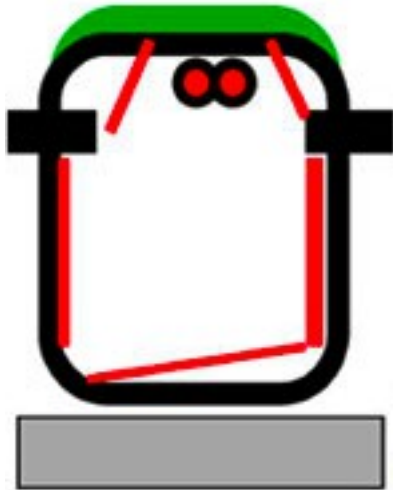


Enabling the audience to tune back in

Let's review "episode 1" (which we've already designed) and add a home slide



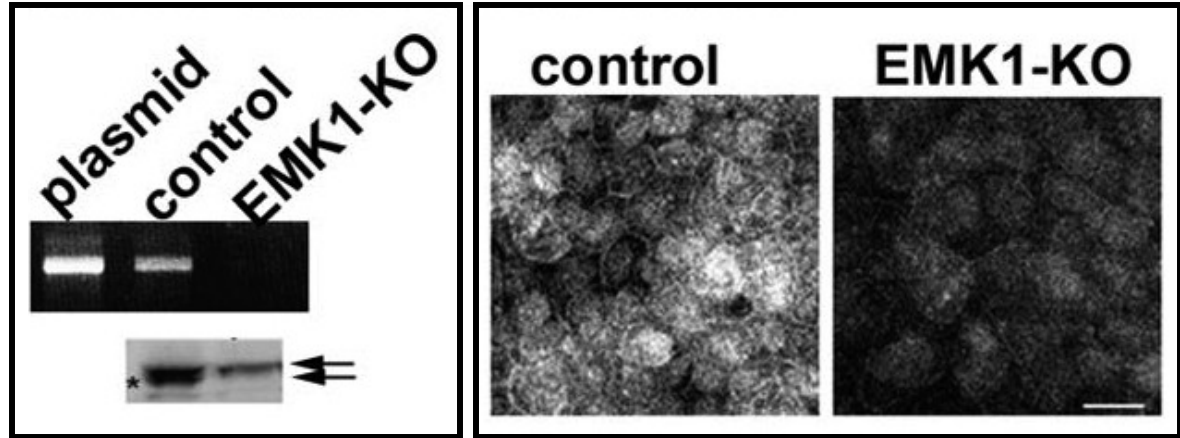
Questions addressed today:



- Is the kinase EMK1 essential for polarizing kidney cells?
- Is EMK1 important for lumen formation?
- How do different tissues form different types of tubes?

EMK1 / Par1 can be knocked down in MDCK (kidney) cells using siRNA methods

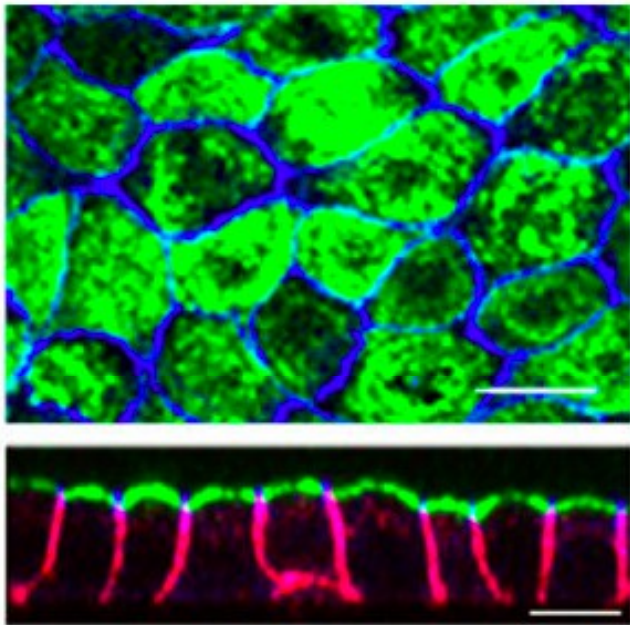
RT-PCR
Western



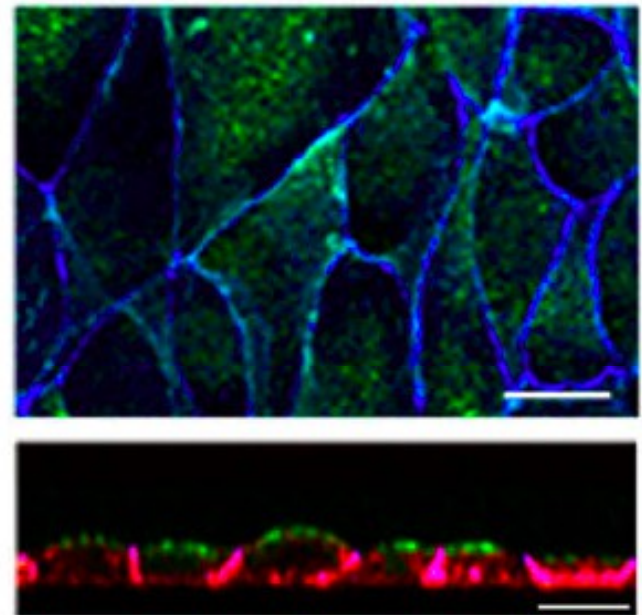
MDCK cells

Lumen formation is blocked in EMK1 knockdown cells

MDCK cells



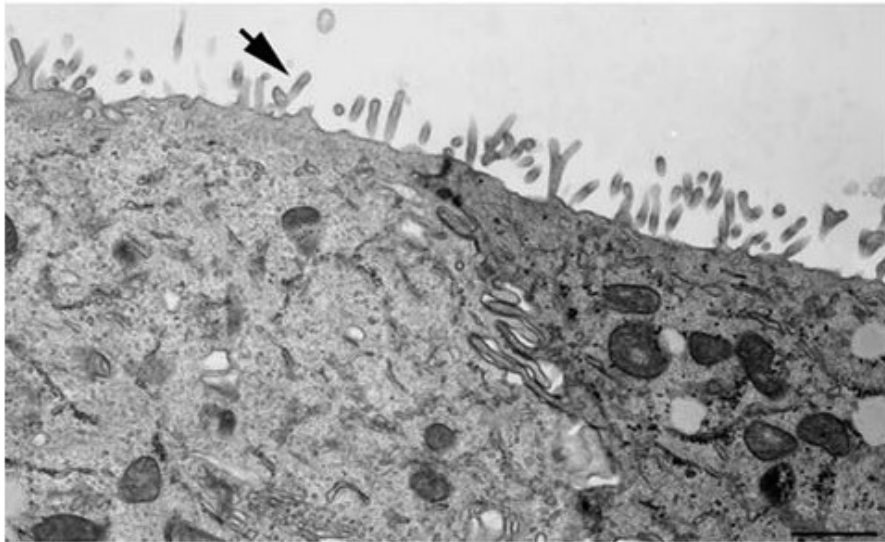
EMK1 knockdown



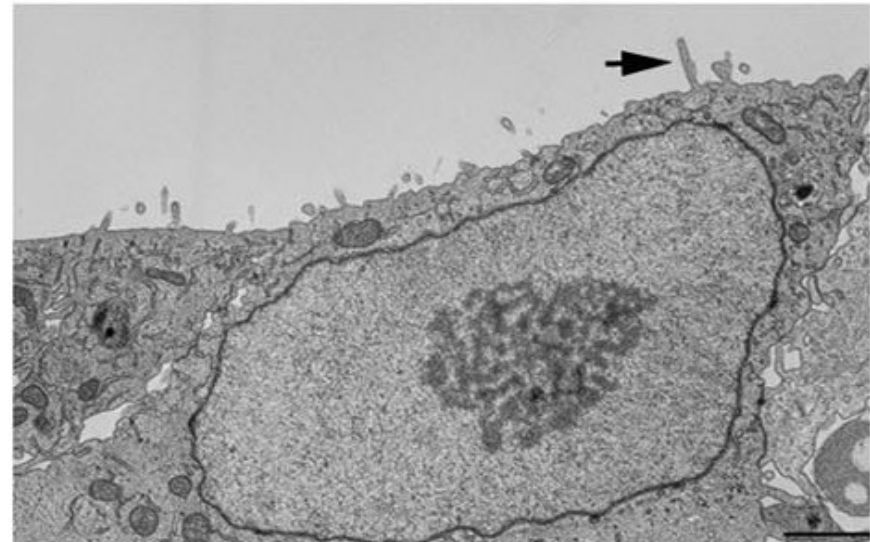
gp135 ! -catenin ZO-1

EMK1 knockdown cells also fail to form microvilli

MDCK cells

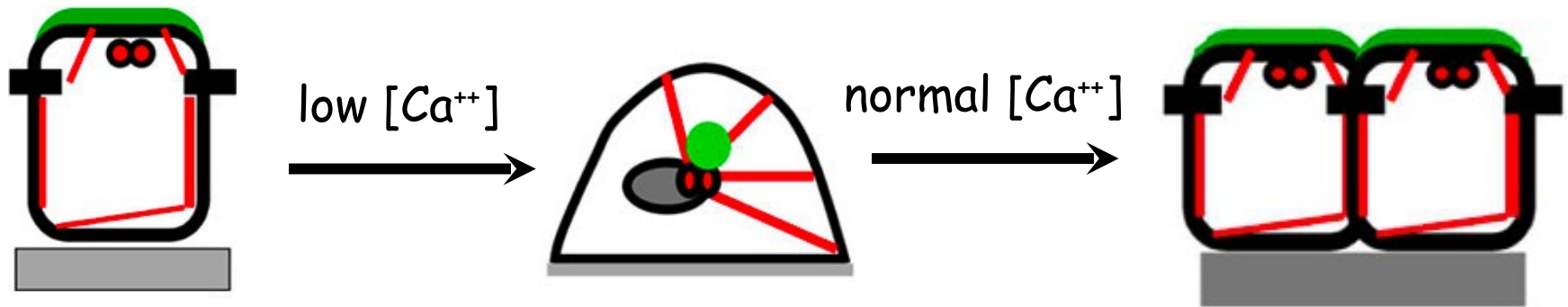


EMK1 knockdown



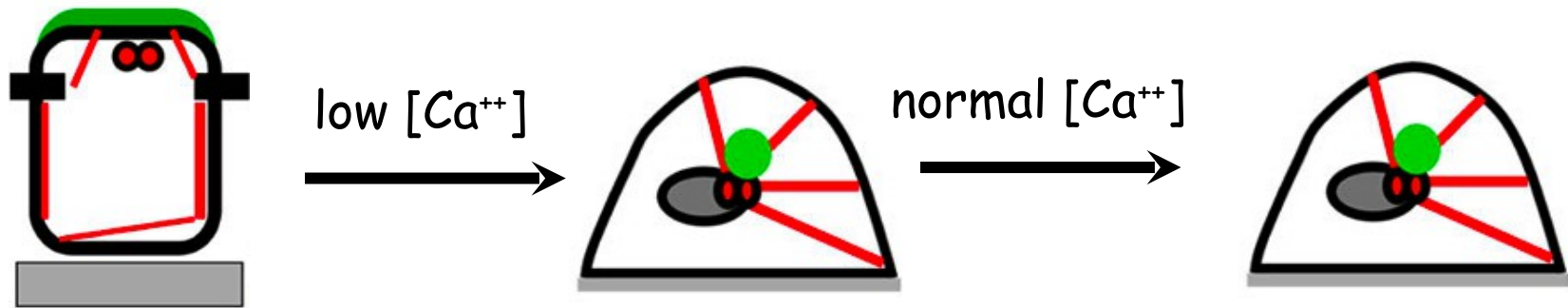
EMK1 is required for cell polarization

Normal MDCK cells:

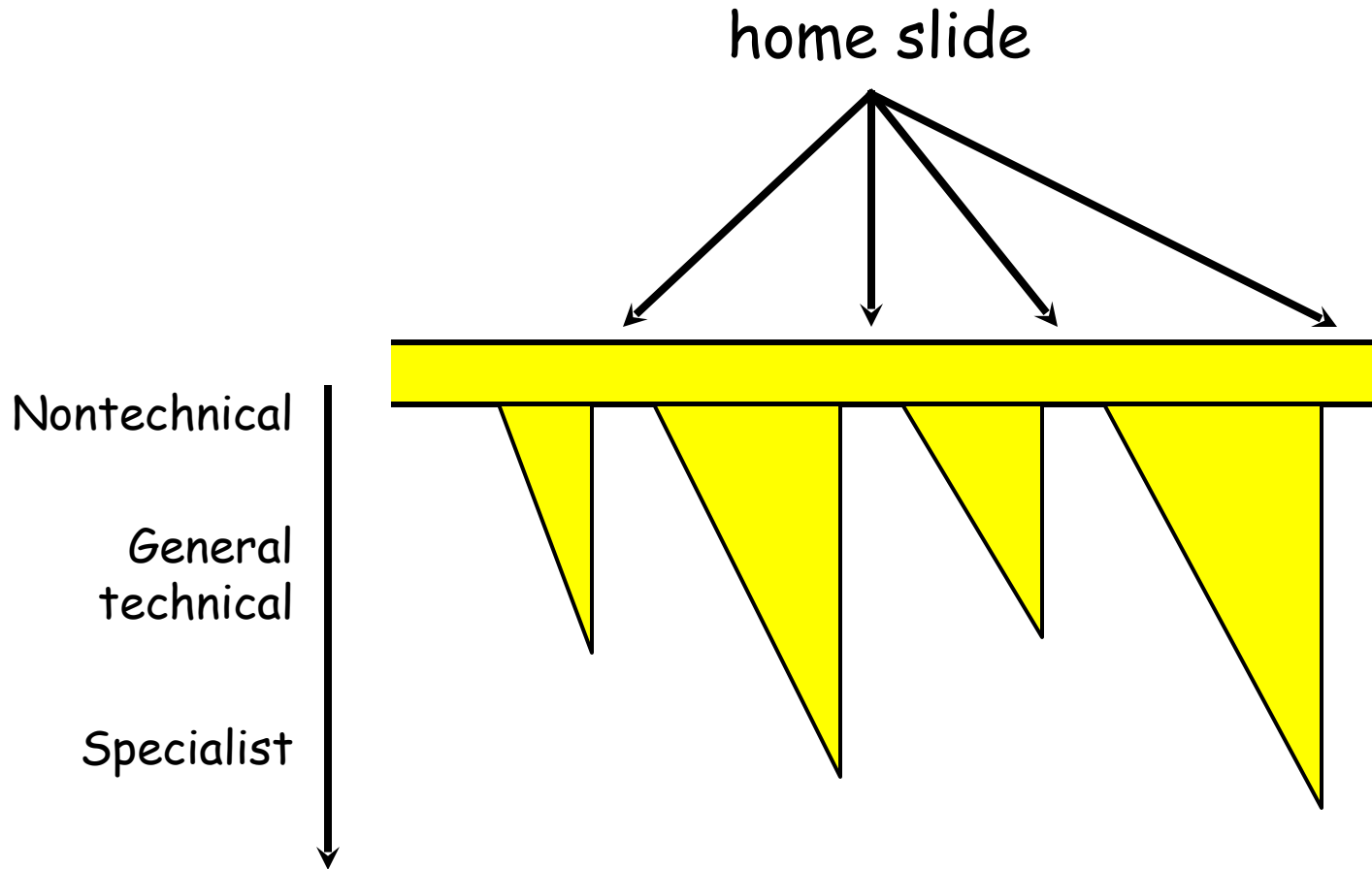


EMK1 is required for cell polarization

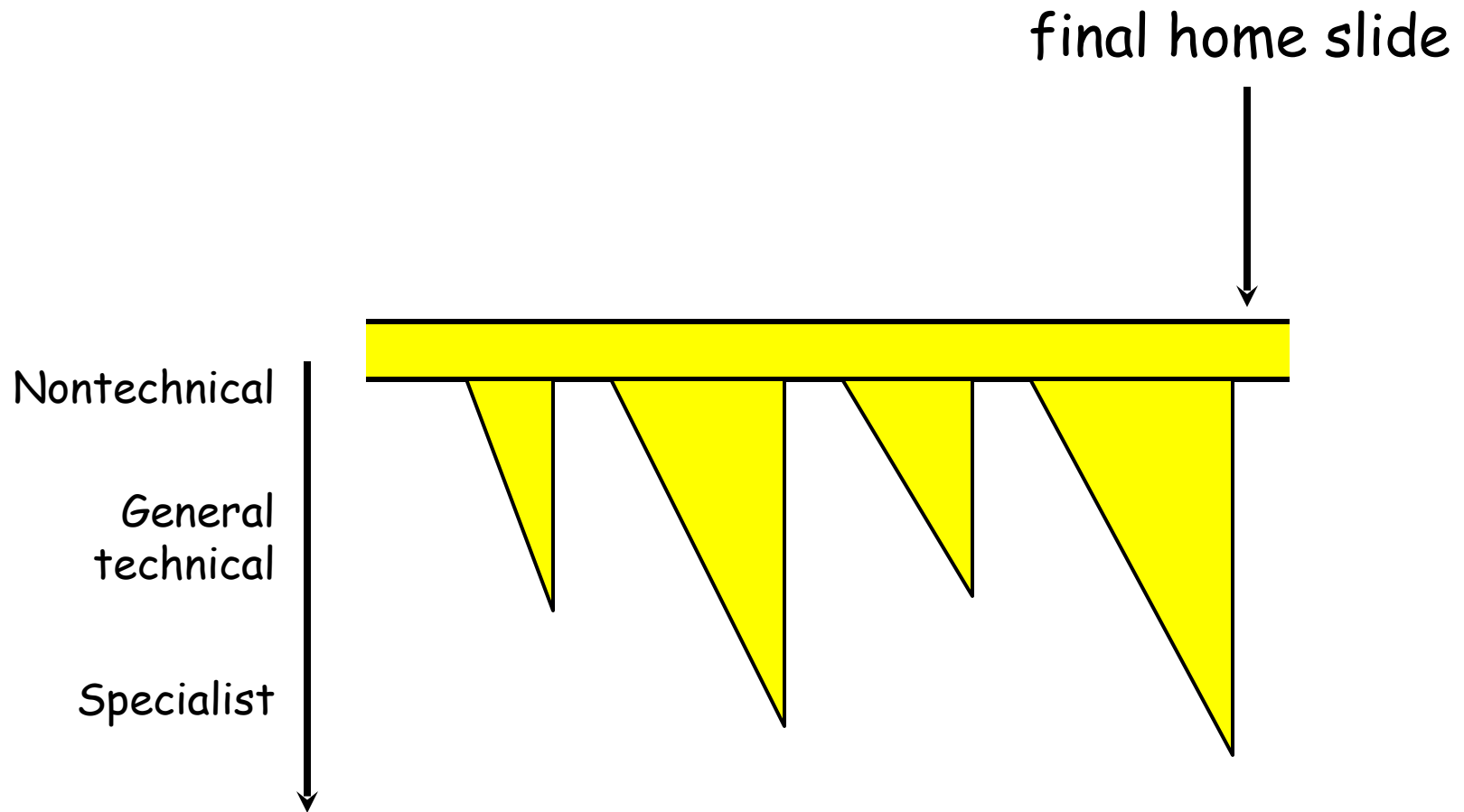
EMK1 knockdown cells:



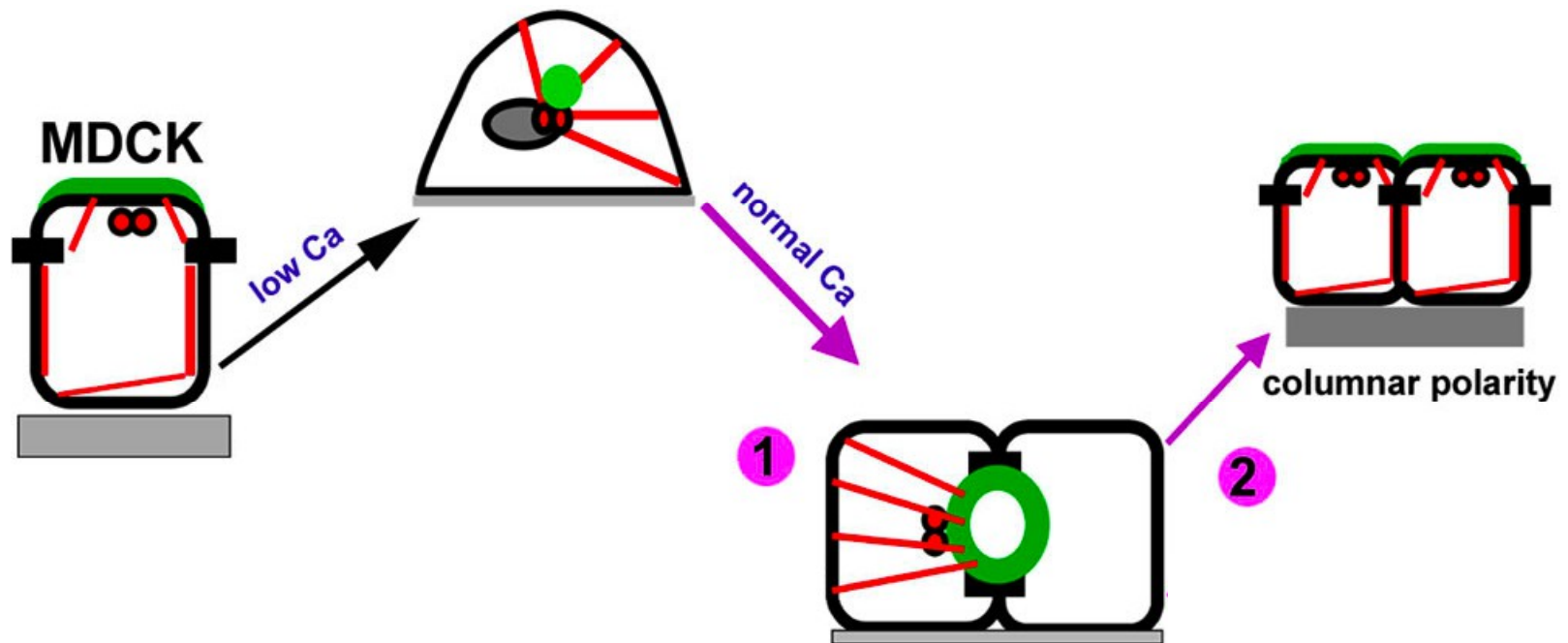
Use your home slide repeatedly to build a theme over time and enable the audience to catch up



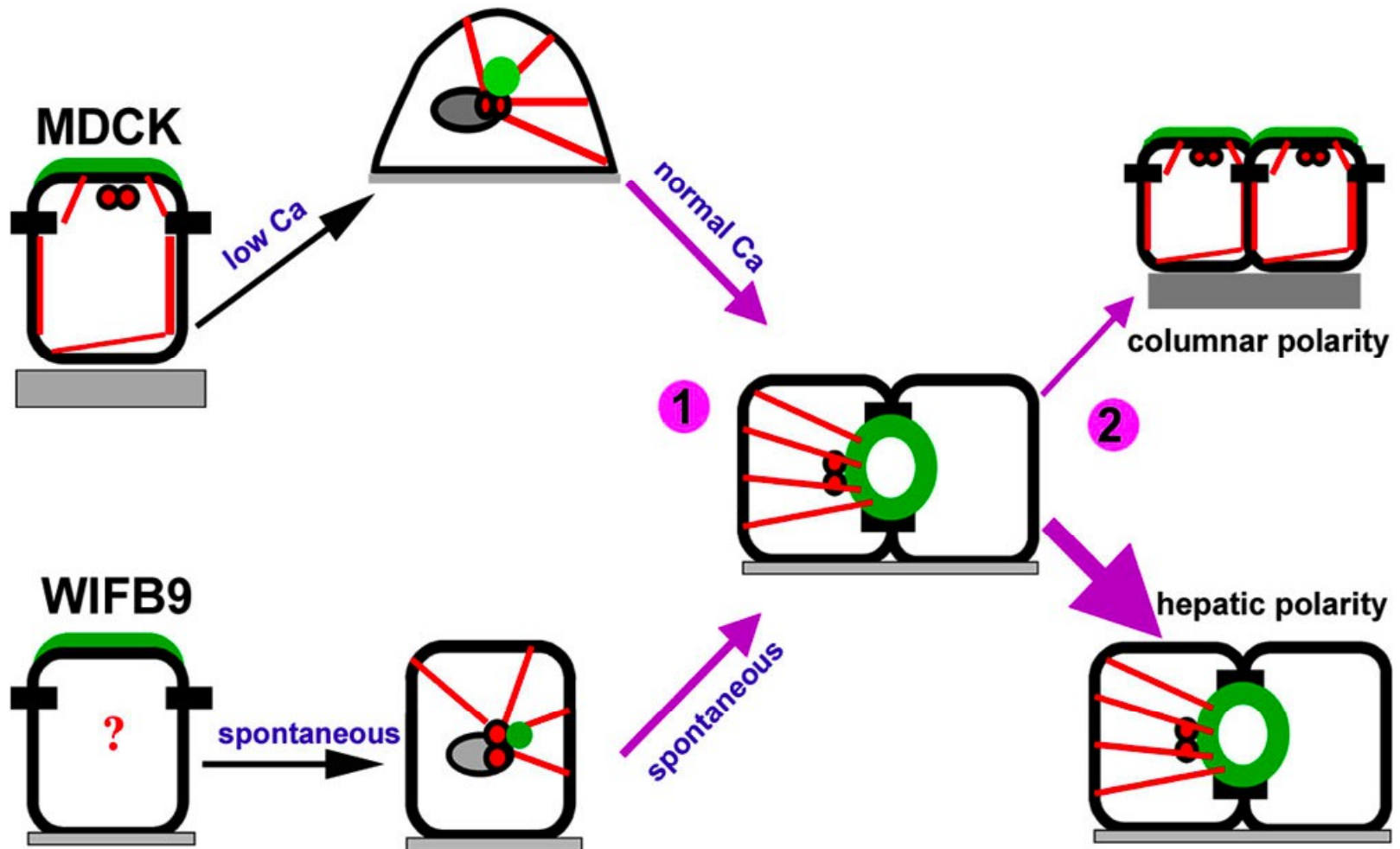
Over the course of the talk, you can progressively build a fairly complex model



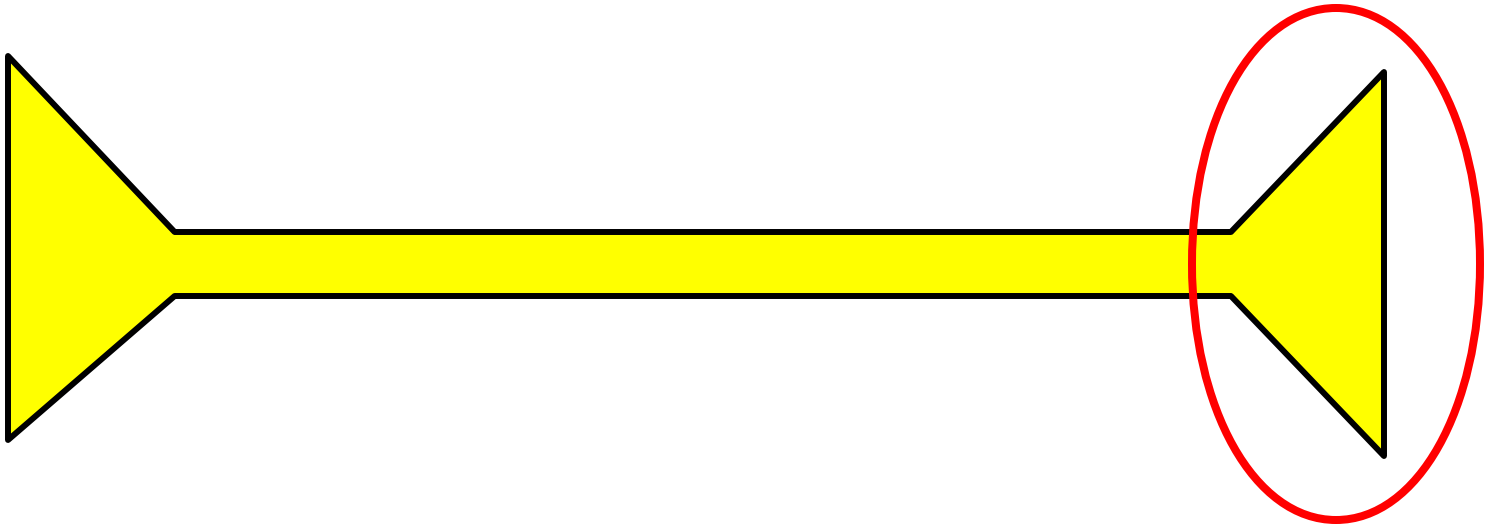
EMK1 regulates microtubules and cell polarity in two steps



Increasing the level of EMK1 can alter the type of lumen formed in step 2

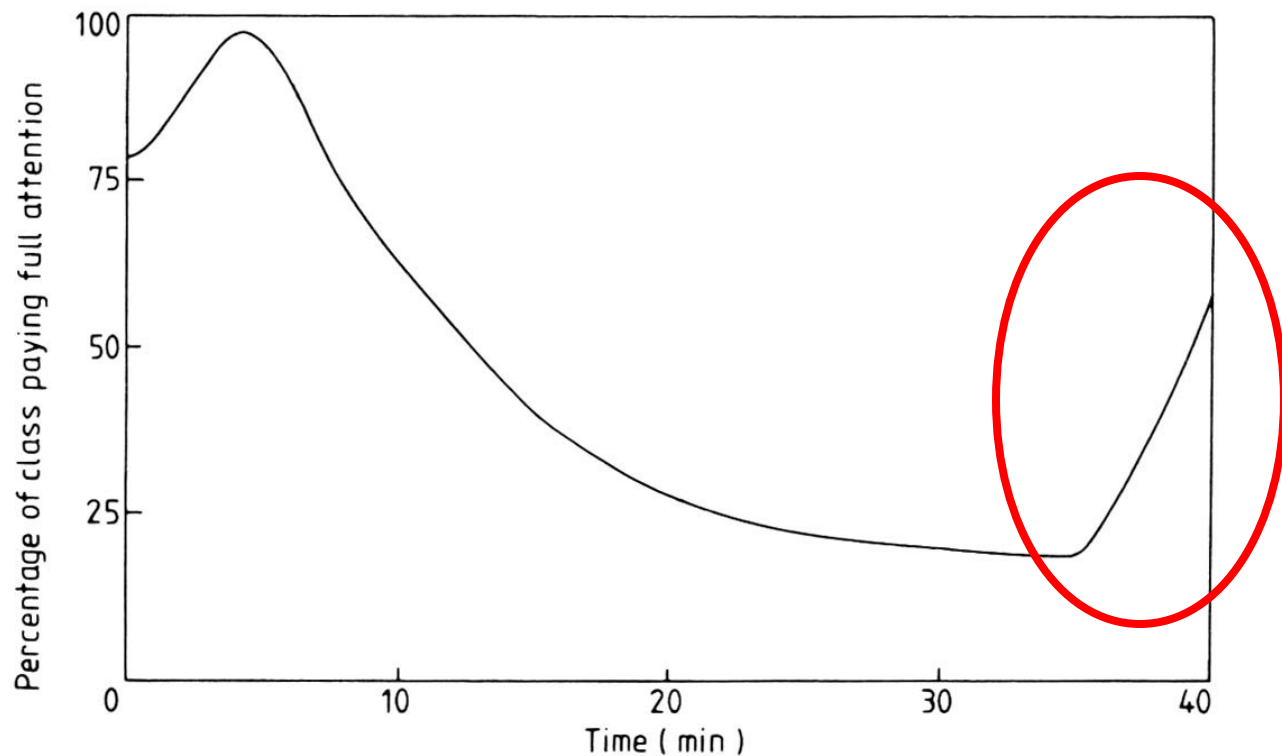


The structure of a good talk: start broad,
get specific, and end broad



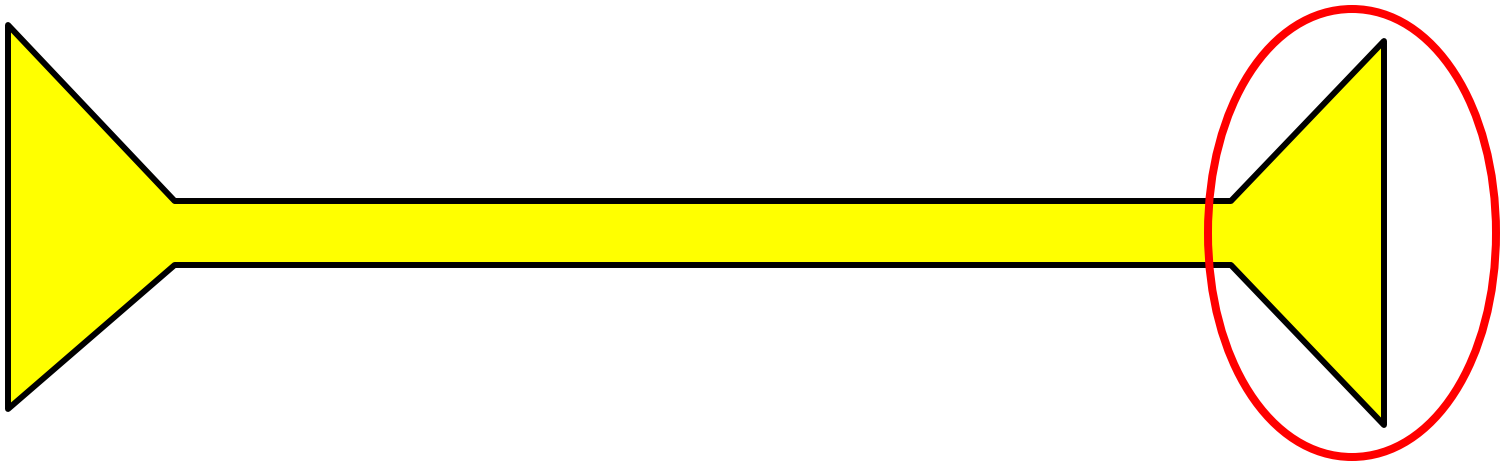
Focus now on conclusions

Audience attention increases as you signal the end of the talk - so avoid false endings!

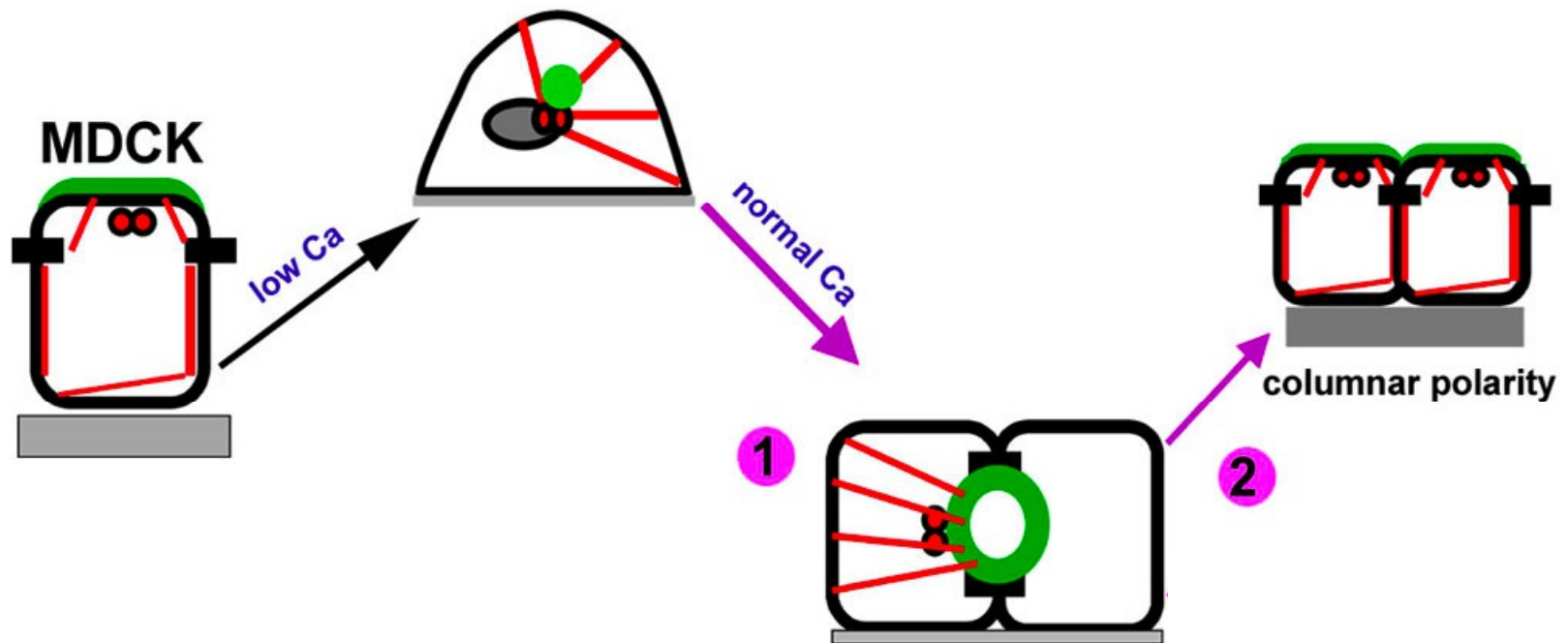


Audience attention curve

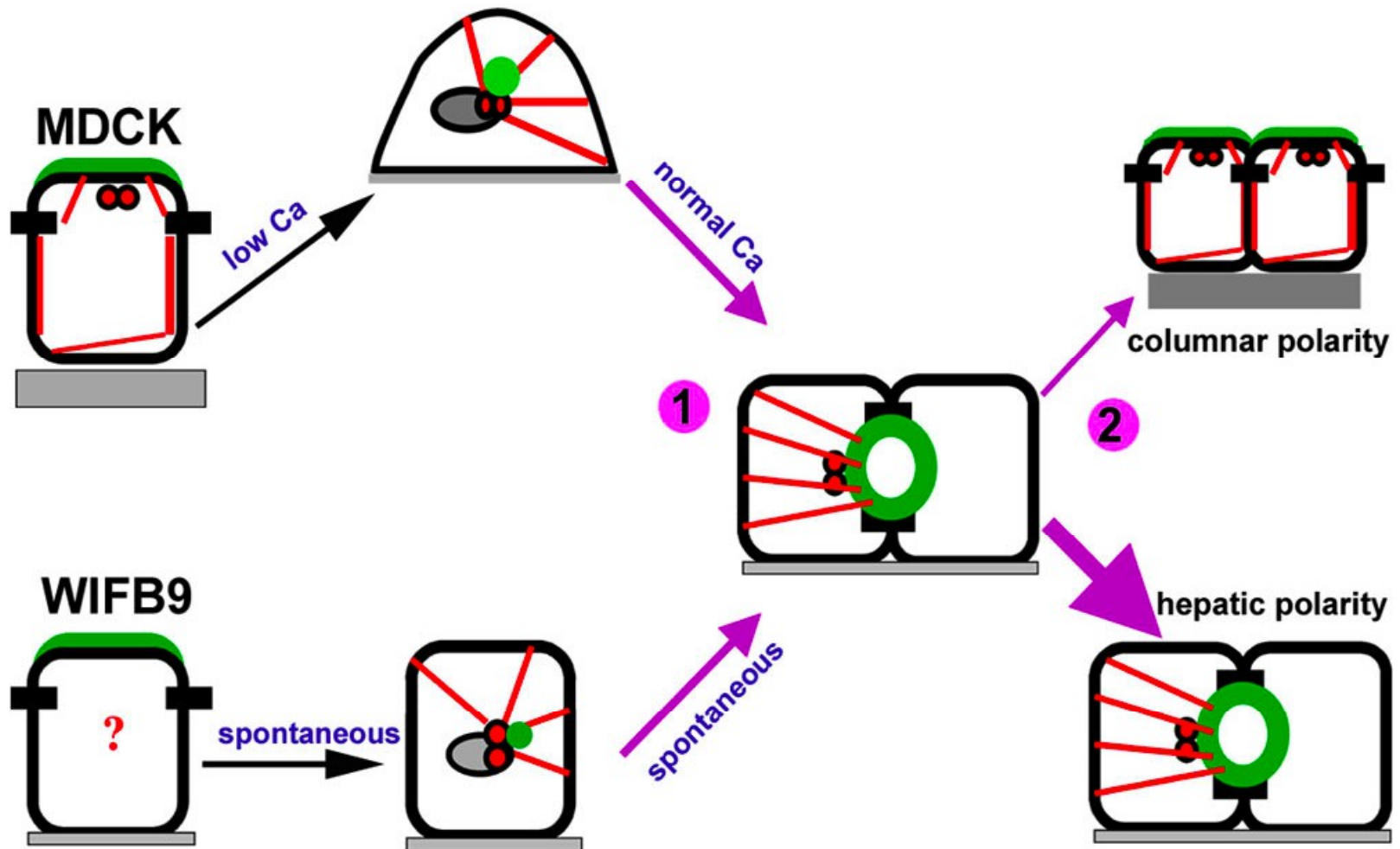
End with the most specific conclusions then
build back out to the “big picture”



EMK1 regulates microtubules and cell polarity in two steps

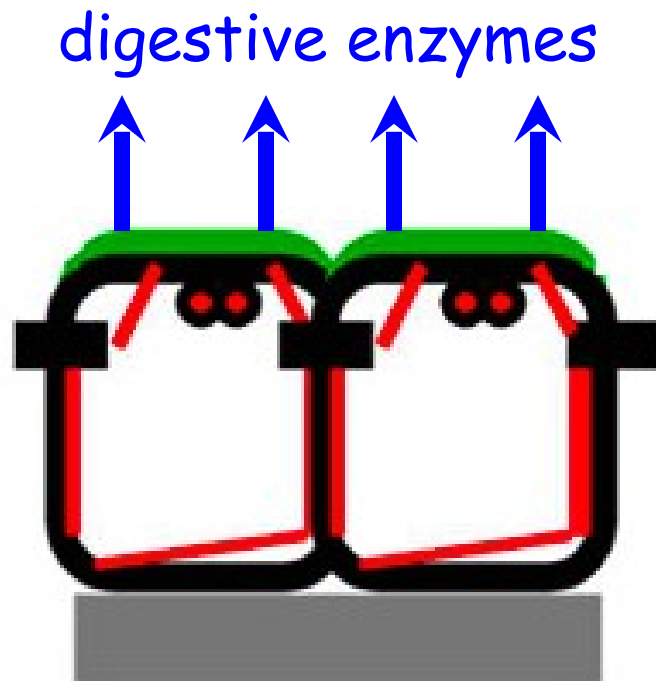


Increasing the level of EMK1 can alter the type of lumen formed in step 2

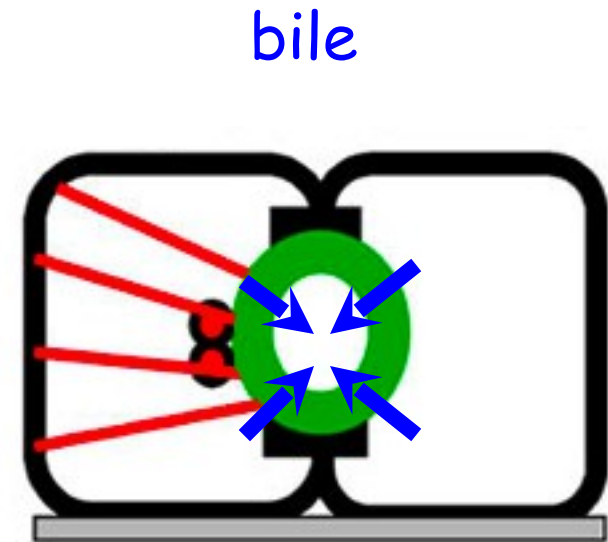


The type of lumen formed by epithelial cells varies among different tissues

Intestine

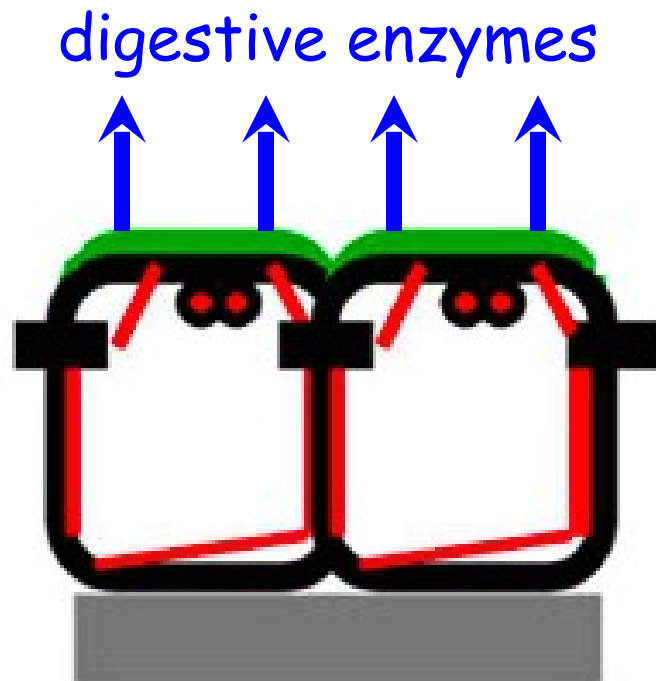


Liver

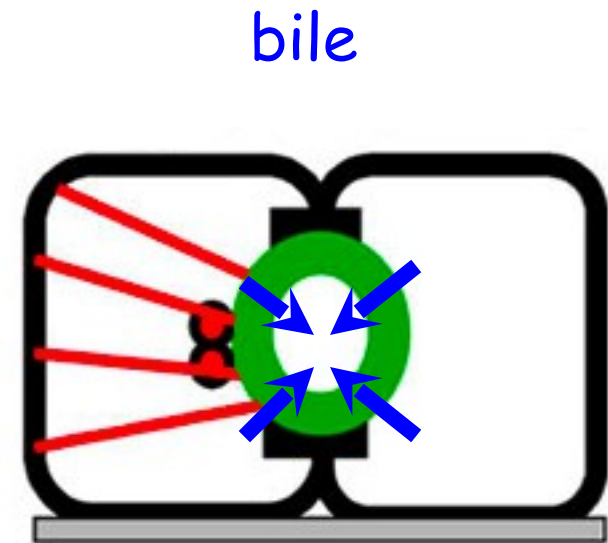


EMK1 may enable cells to make different types of tubes in different organs

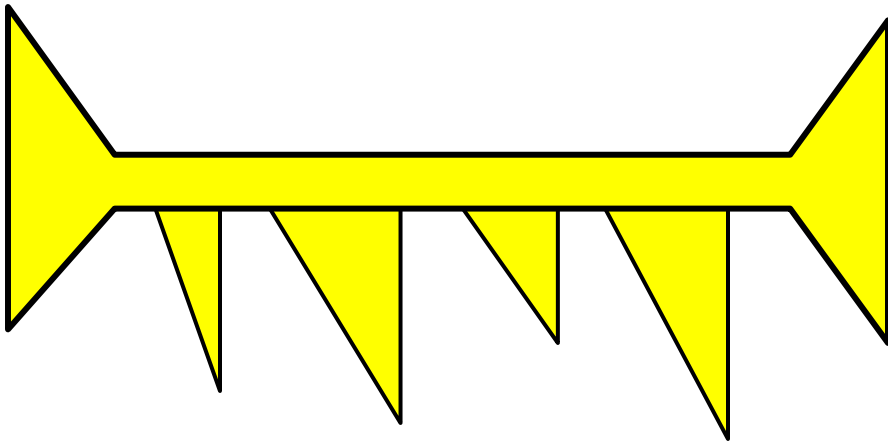
Intestine



Liver

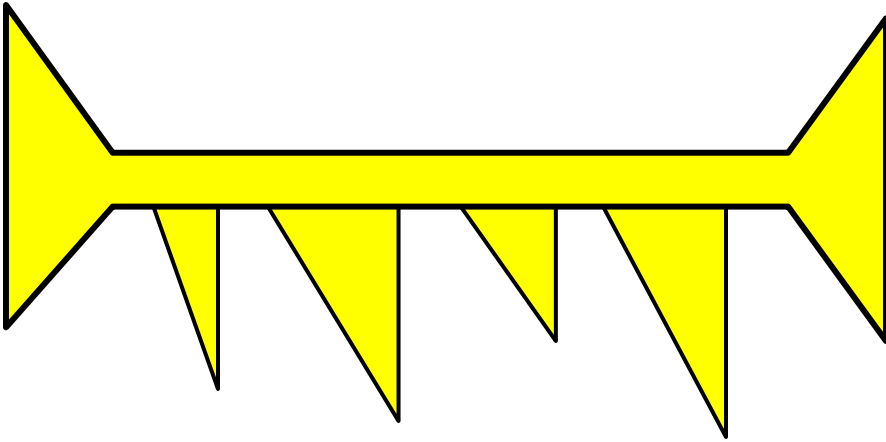


Organizing a great talk



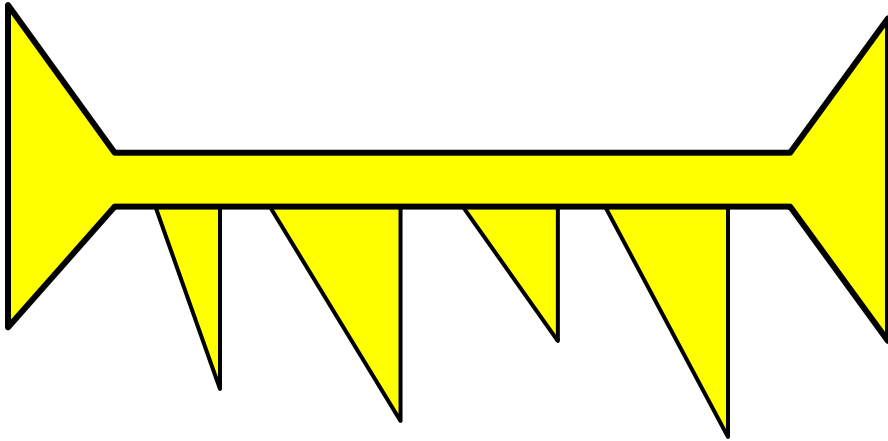
Organizing a great talk

- Be smart about Powerpoint

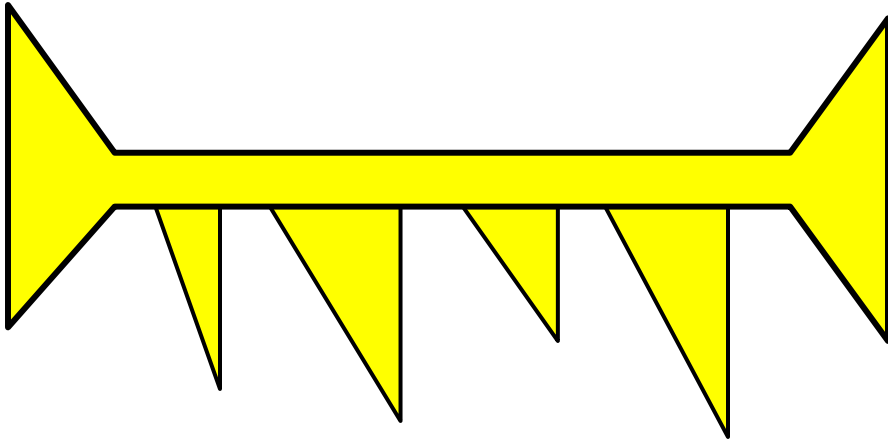


Organizing a great talk

- Be smart about Powerpoint
- Introductions should start broad then get specific

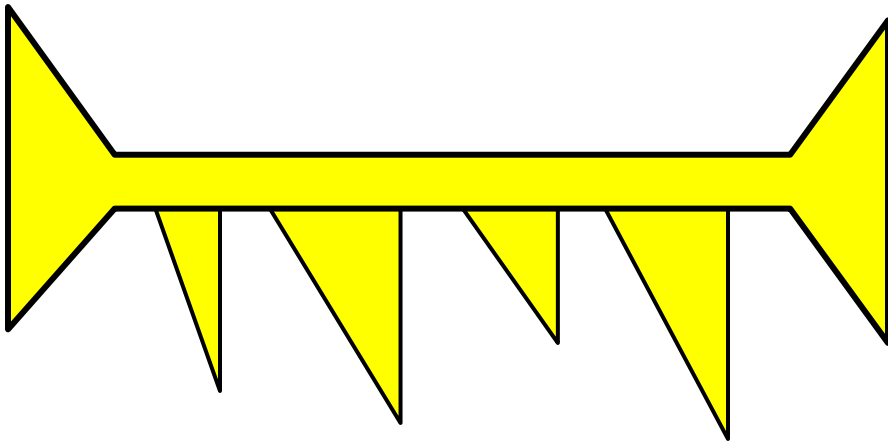


Organizing a great talk



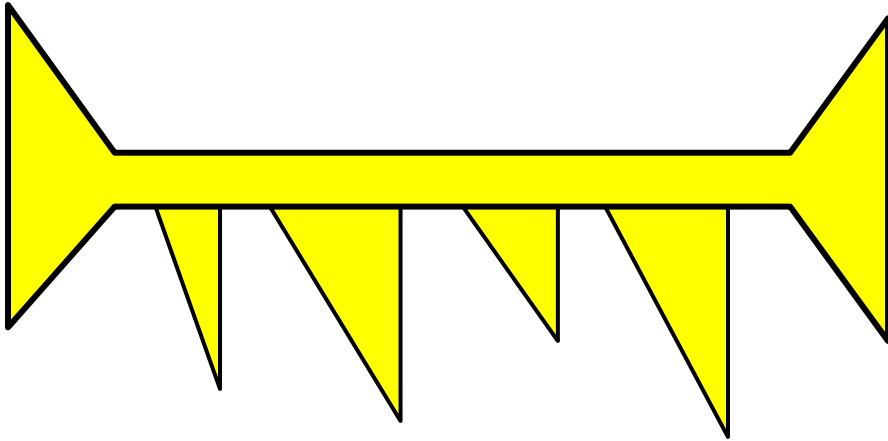
- Be smart about Powerpoint
- Introductions should start broad then get specific
- Think of your talk as consisting of episodes

Organizing a great talk



- Be smart about Powerpoint
- Introductions should start broad then get specific
- Think of your talk as consisting of episodes
- Use a home slide to make transitions effectively

Organizing a great talk



- Be smart about Powerpoint
- Introductions should start broad then get specific
- Think of your talk as consisting of episodes
- Use a home slide to make transitions effectively
- Conclusions should start with specifics but end broadly

Is this all you need to know
to give a great talk?

Is this all you need to know to give a great talk?

CONTENT

- Conveys new information
- Poses an interesting question
- Conveys how people in other fields think
- Describes important ideas
- Novel discovery

CLARITY AND ORGANIZATION

- Understandable
- Avoids jargon
- Uses clear and simple visual aids
- Well organized
- Enables me to catch up if I space out
- Doesn't run over time

STYLE AND DELIVERY

- Keeps me awake
- Varies voice
- Conveys enthusiasm
- Doesn't stay in one place
- Friendly and approachable

EXPERTISE

- Credible
- Inspires trust and confidence
- Answers questions clearly

No, but it's a good first step!

CONTENT

Conveys new information
Poses an interesting question
Conveys how people in other fields think
Describes important ideas
Novel discovery

CLARITY AND ORGANIZATION

Understandable
Avoids jargon
Uses clear and simple visual aids
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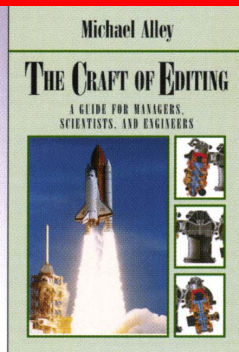
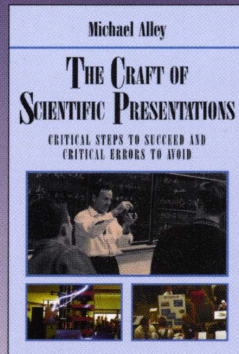
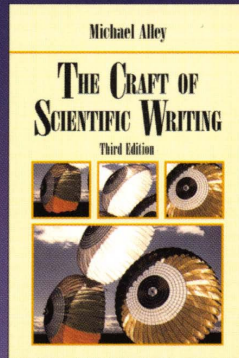
STYLE AND DELIVERY

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EXPERTISE

Credible
Inspires trust and confidence
Answers questions clearly

Your complete reference
library for clear and
effective scientific
communication—



www.springer-ny.com/craft

A great resource for
additional information is:

The Craft of Scientific Presentations

by Michael Alley