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

based on a presentation at the
2005 Pew Foundation meeting by

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Department of Biological Sciences
Stanford University

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

What do you want from a talk?

Before planning your talk think about its purpose, the audience you will be talking to, and the setting.

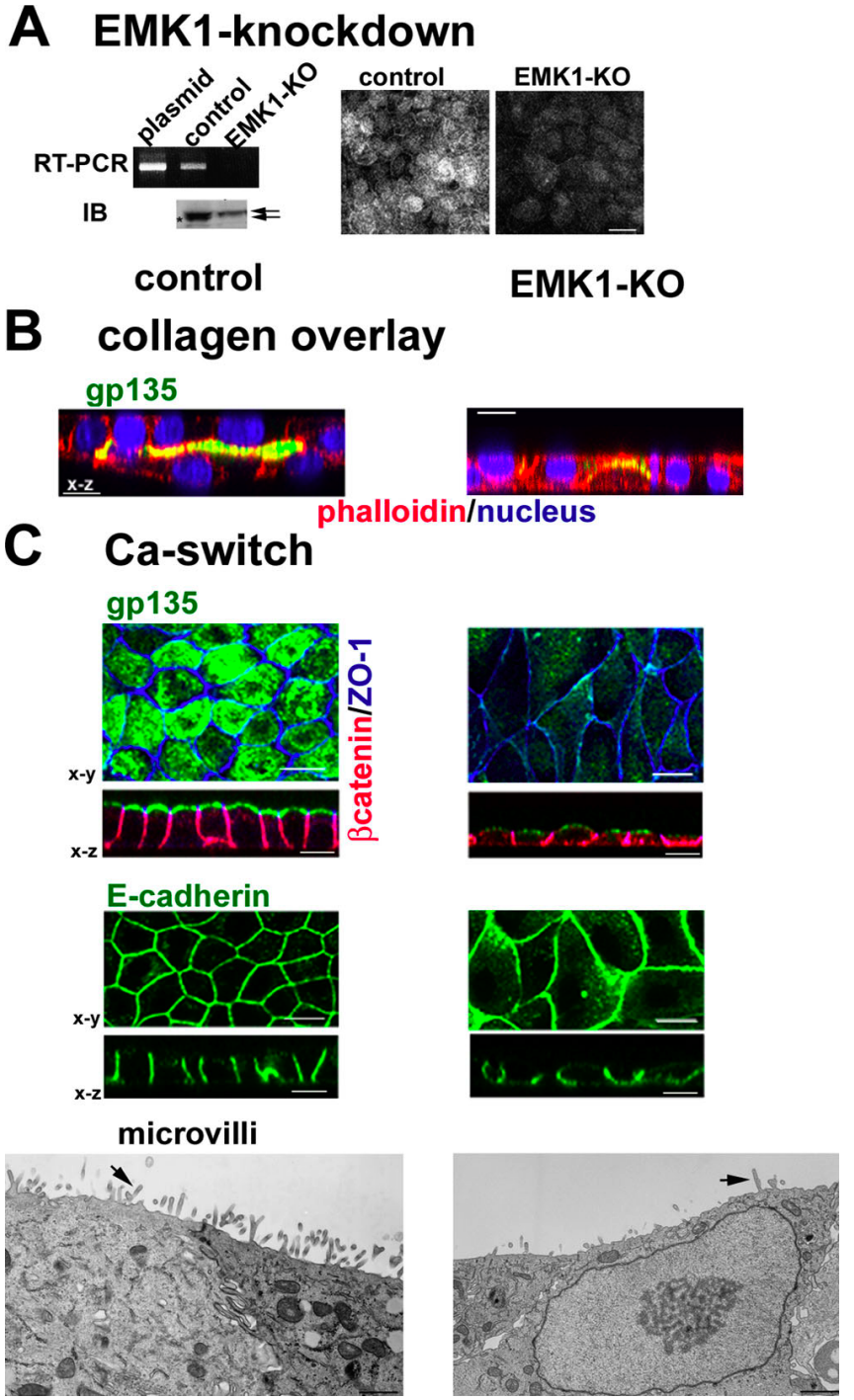
Don't assume the audience will all be experts.

Never underestimate your audience!

Check on the time that has been allotted to you.

How big is the room?

What do you think of the following slide?



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.

Of course, it is far to confusing and a clear take-home message does not come across !

This presentation will take you through a strategy for presenting the data in a clear and logical way.

Powerpoint basics:
1. What font to use

Use a Sans Serif font:

This font is Arial.

This font is Comic Sans.

This font is Papyrus.

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 really good in **boldface**:

Arial vs. **Arial bold**

Comic Sans vs. **Comic Sans bold**

Papyrus vs. Papryus 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

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 significant fraction of the human population is red-green colorblind.

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:

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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

Keep the layout and style as consistent as possible

Every slide should have a heading.

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

Powerpoint basics:
3. Layout

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:

You can do this using the “Slide show” - “animations” -”custom” - option

- Point 1
- Point 2
- Point 3

Powerpoint basics:
3. Layout

Avoid sublists!

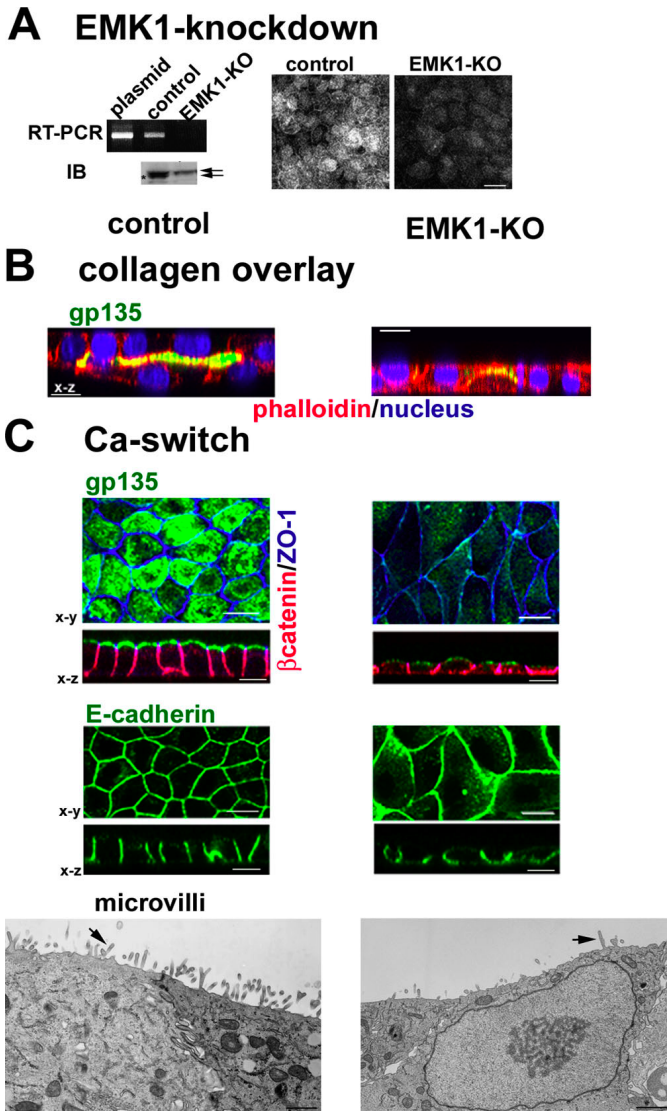
- Item 1
  - Item 1a
  - Item 1b
  - Item 1c
- Item 2
  - Item 2a
  - Item 2b
- Item 3

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

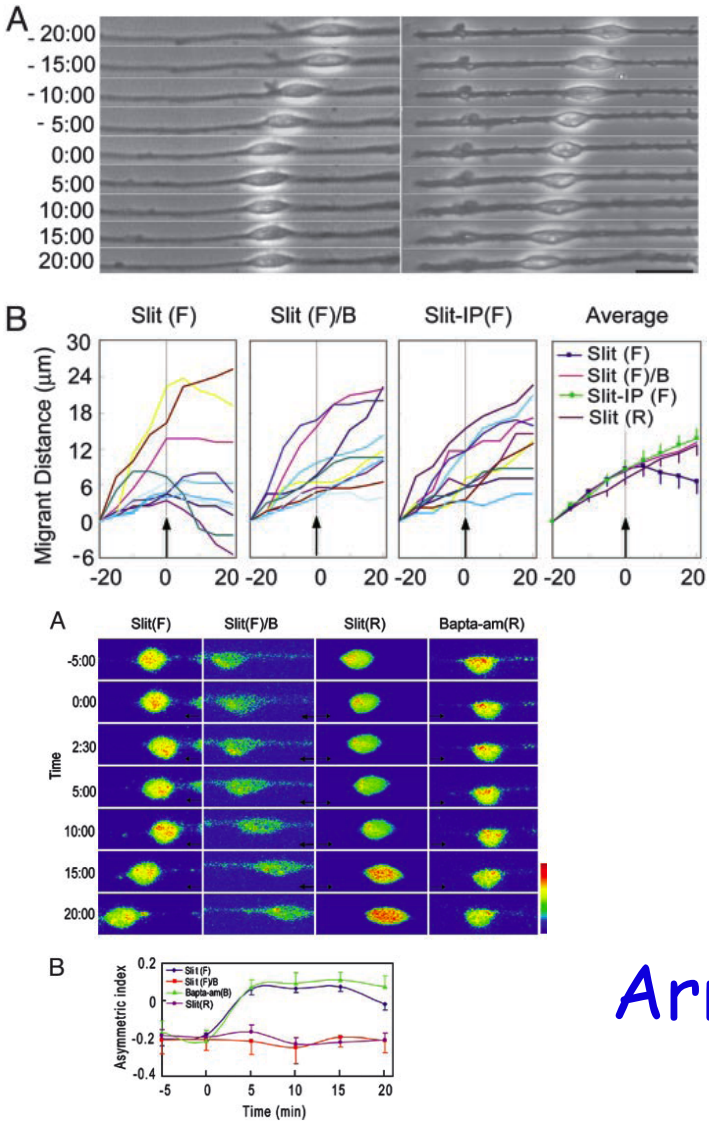
Try your best to include a
simple image on every slide.

Powerpoint basics:
4. Style

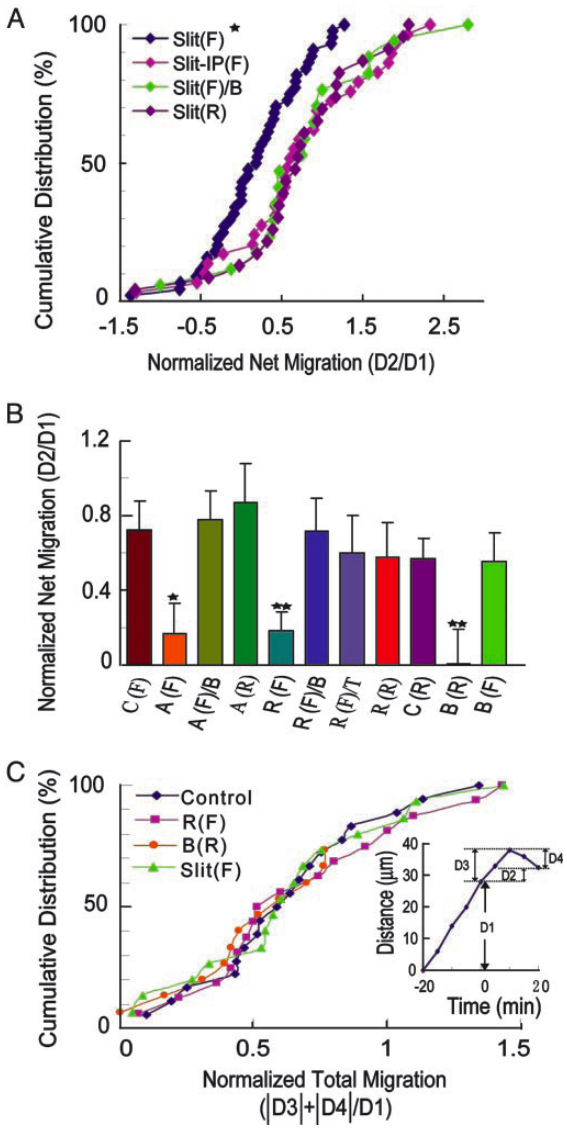
Limit the number of items on each slide.

Each slide should make just one or two points!

Powerpoint basics:
4. Style



Arrrgh!

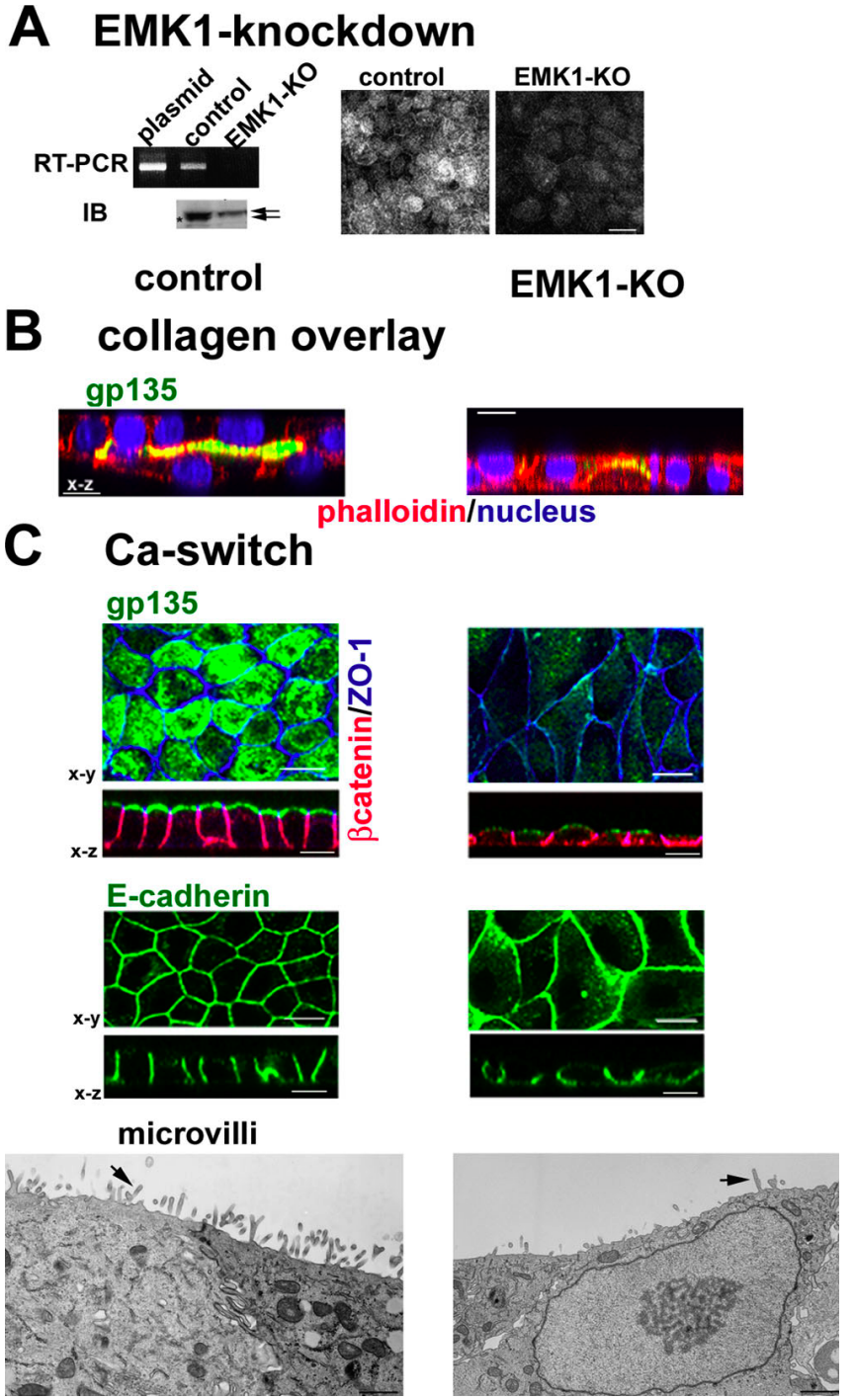


Powerpoint basics:
4. Style

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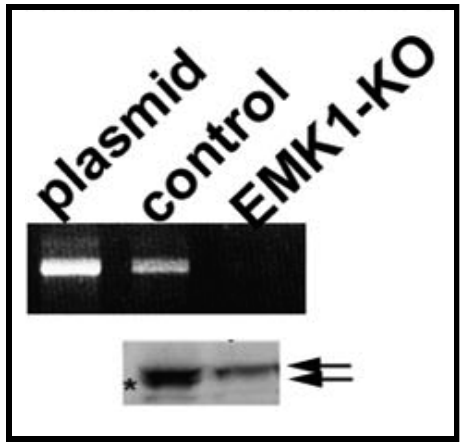
Let's break down the previous slide into its minimum essential components

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

RT-PCR

Western



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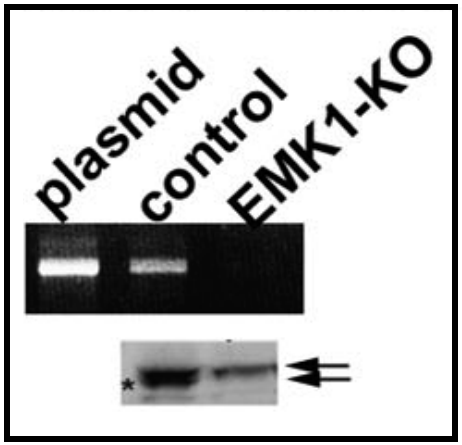
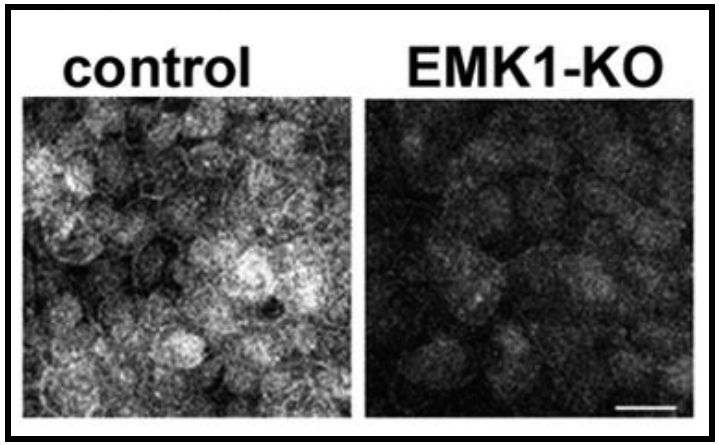
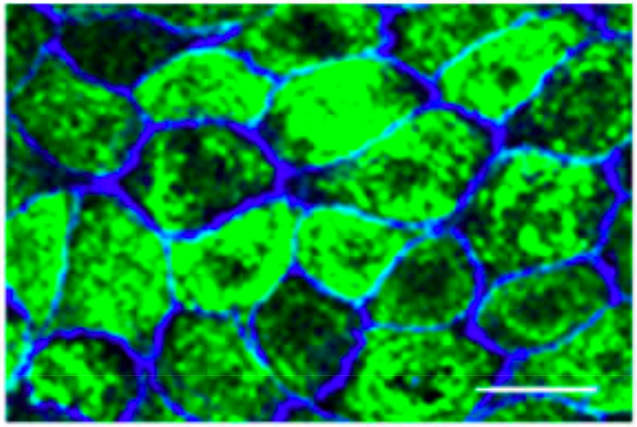




MDCK cells

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

MDCK cells



← Surface view from lumen

gp135 β-catenin ZO-1

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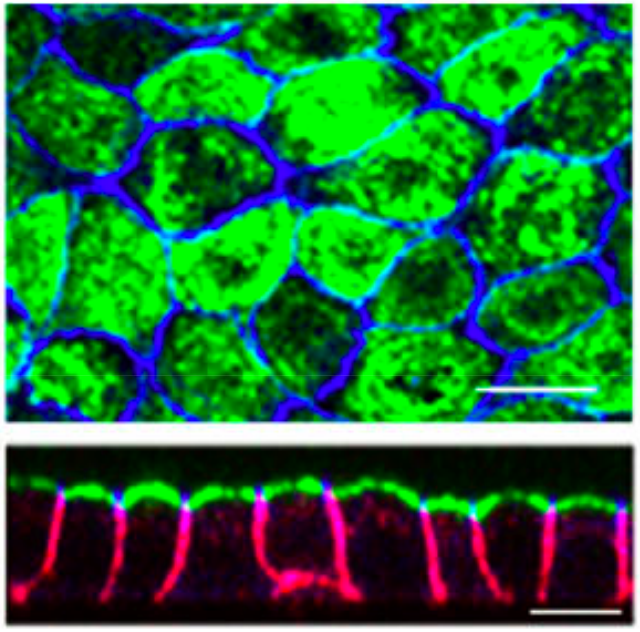


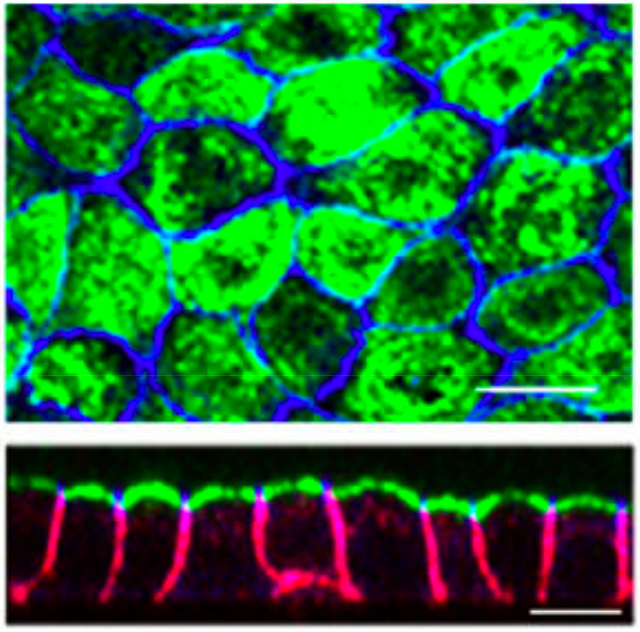
← Surface view from lumen

← Side view of lumen

gp135 β-catenin ZO-1

Lumen formation is blocked in EMK1 knockdown cells

MDCK cells



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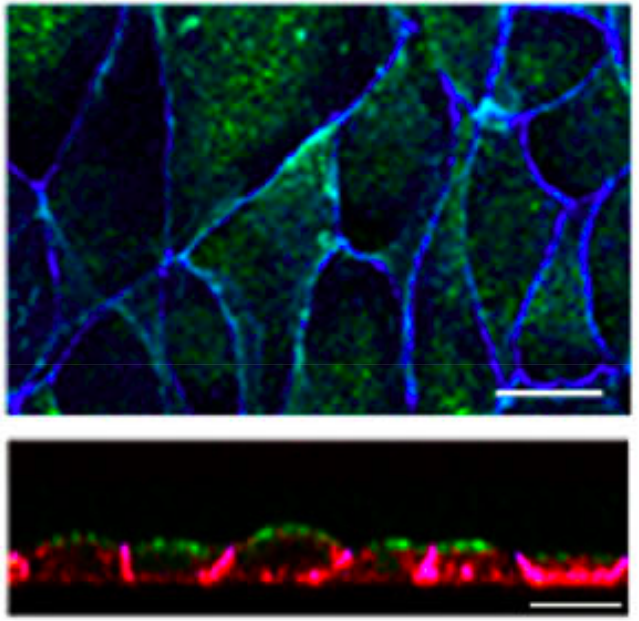
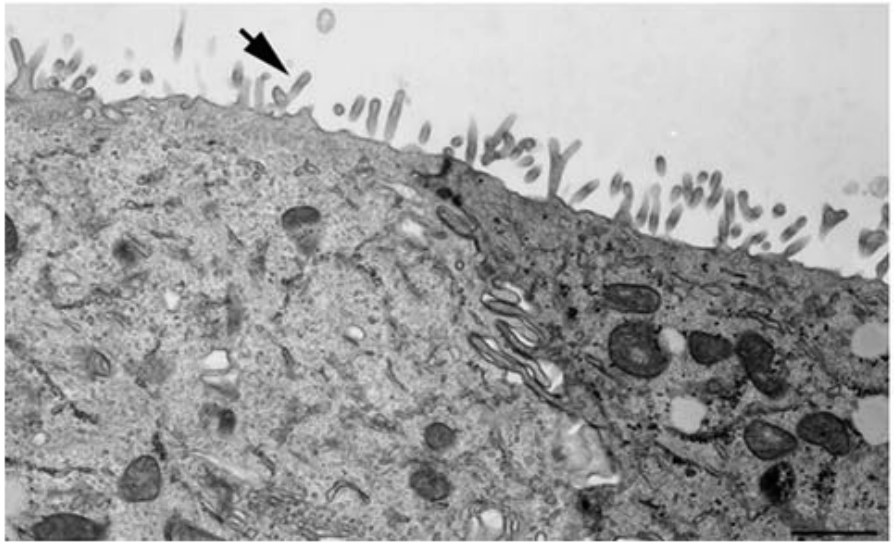


gp135 β-catenin ZO-1

EMK1 knockdown cells also fail to form microvilli

MDCK cells



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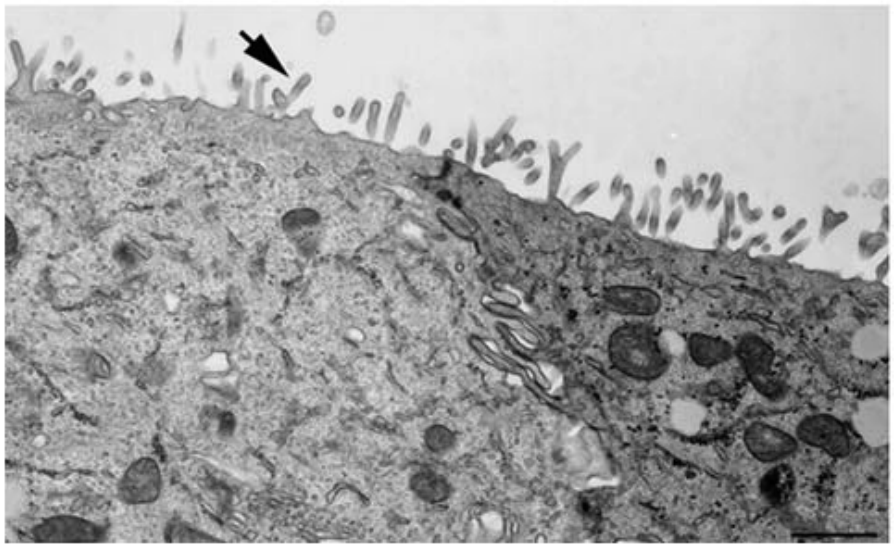
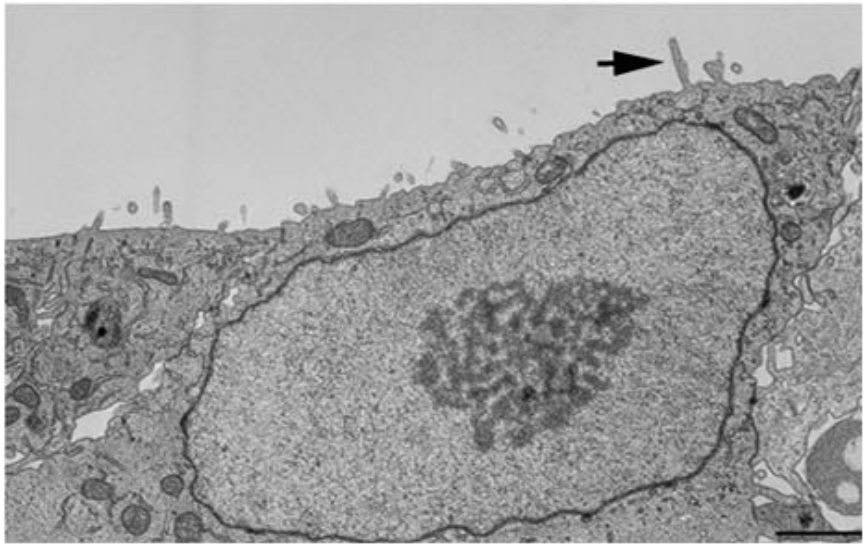


EMK1 knockdown



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

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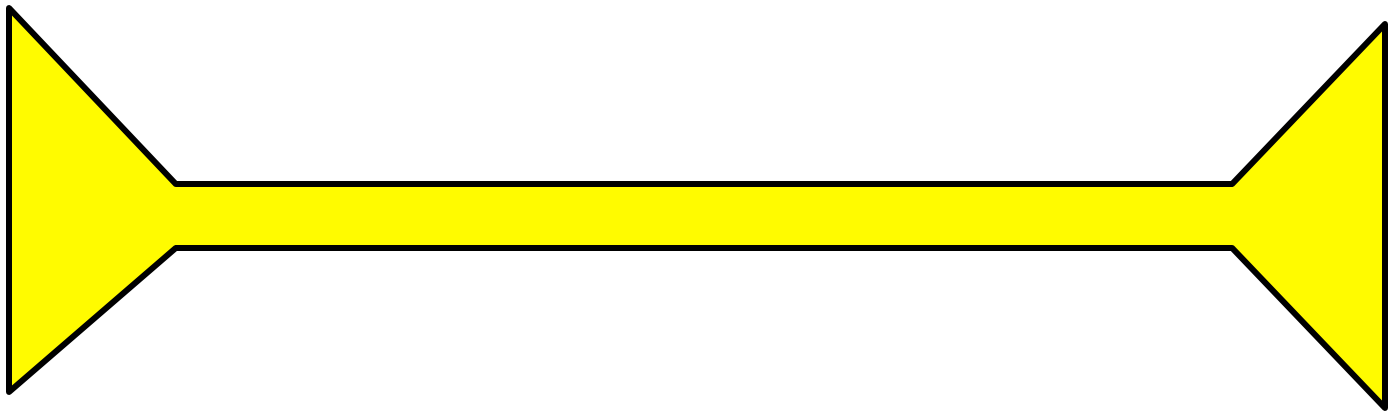

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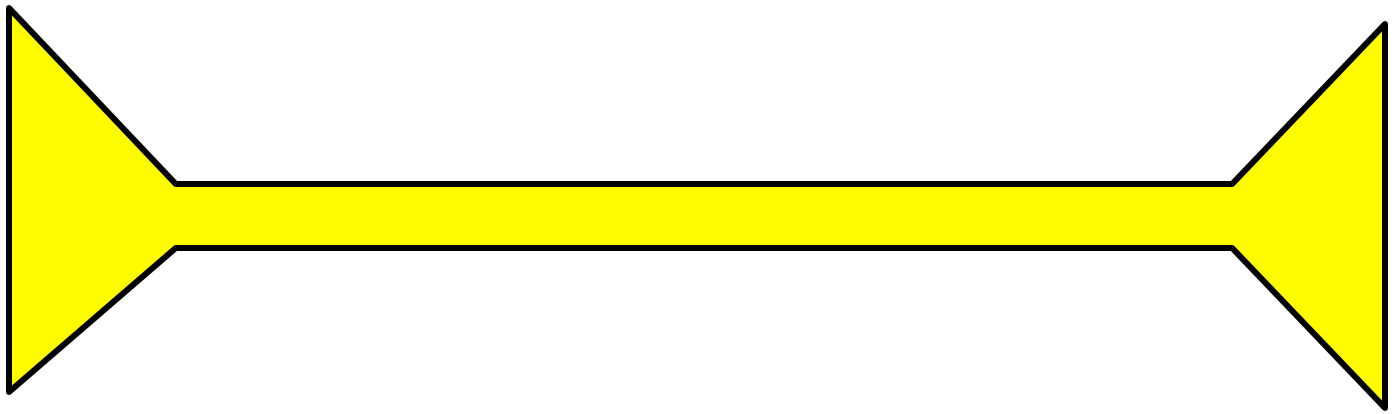

Start with the biggest questions
and get progressively more specific

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.

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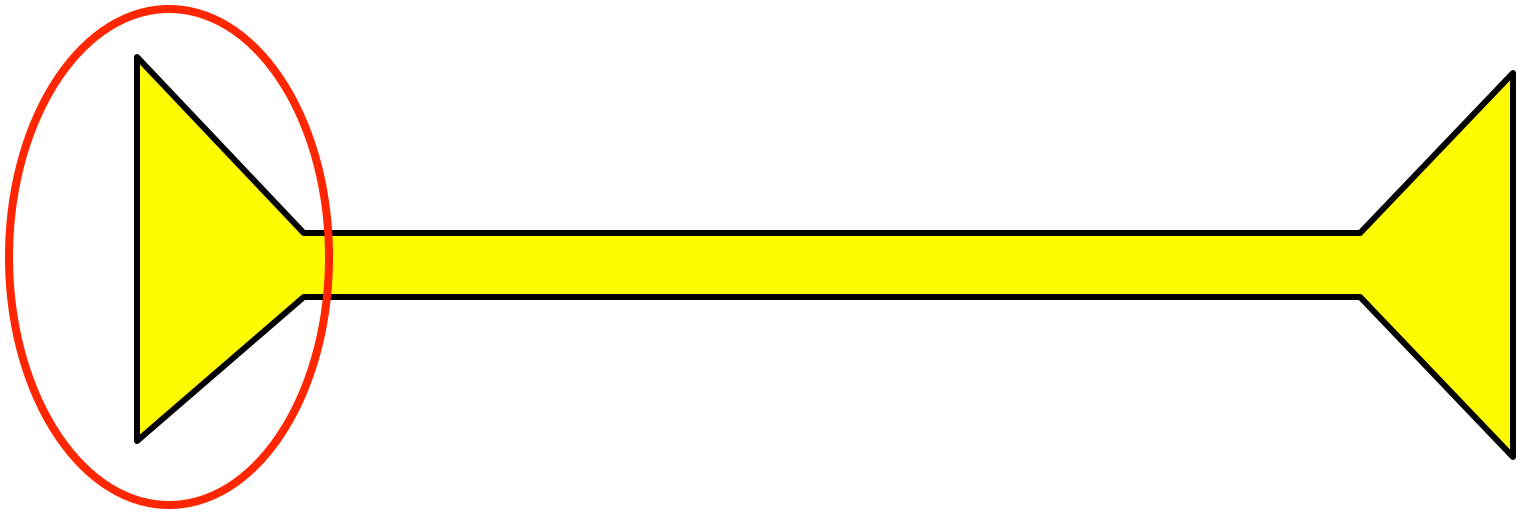
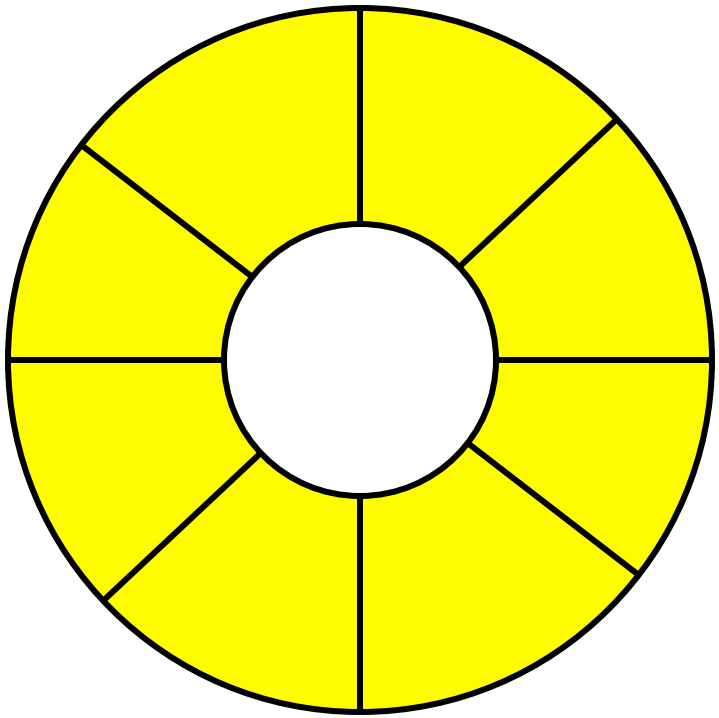


Now we' ll build an introduction and a home slide that puts the previous data into context.

Our bodies are full of tubes



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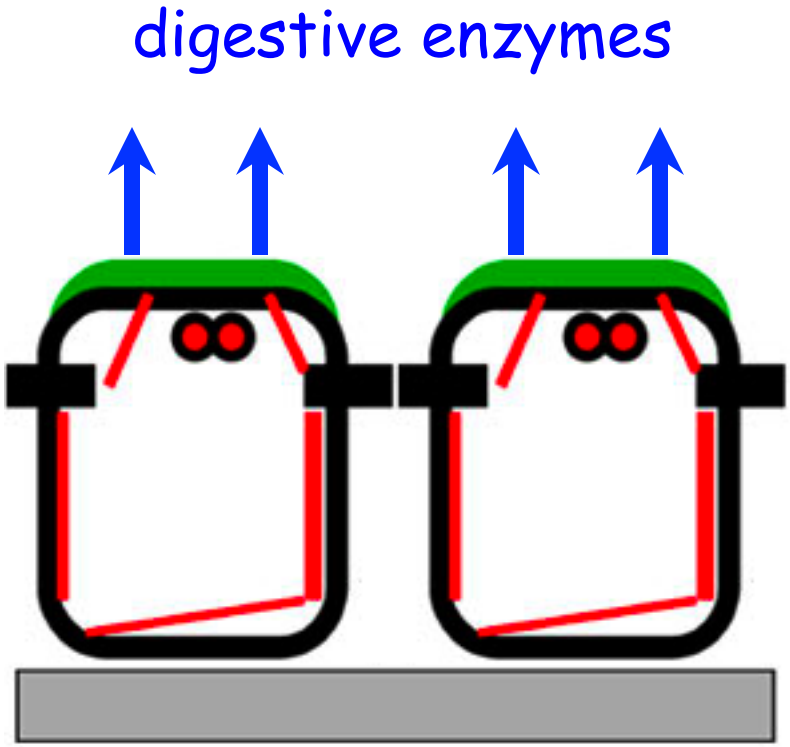
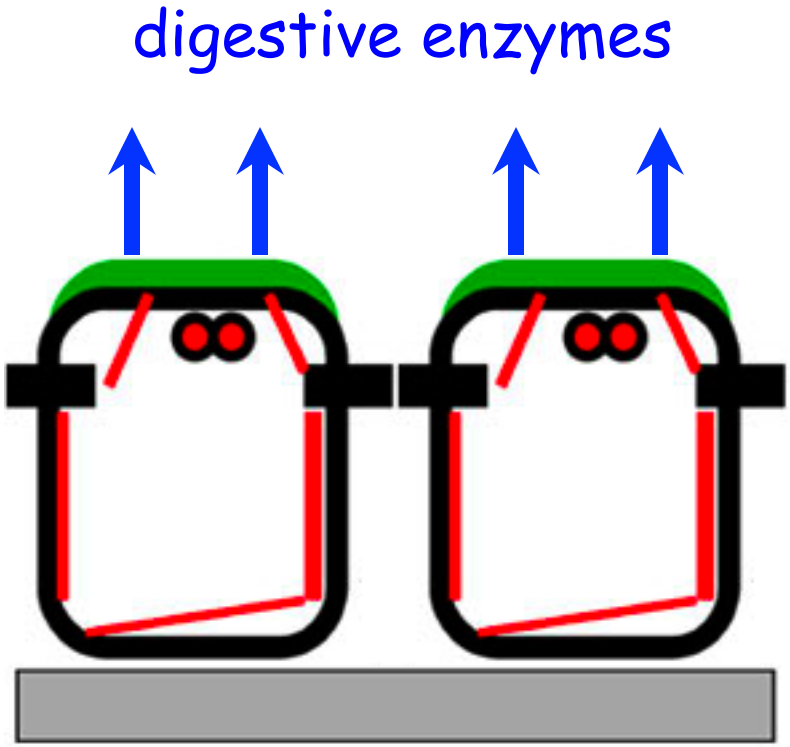
Intestine:

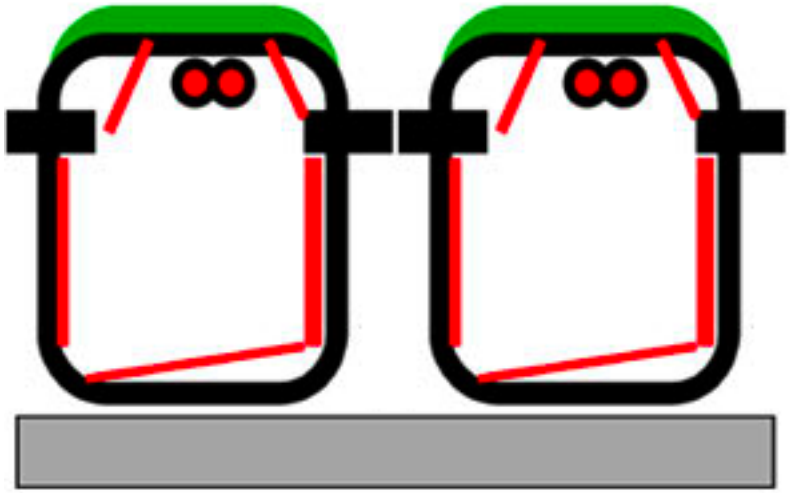


How do cells become polarized and form a lumen?

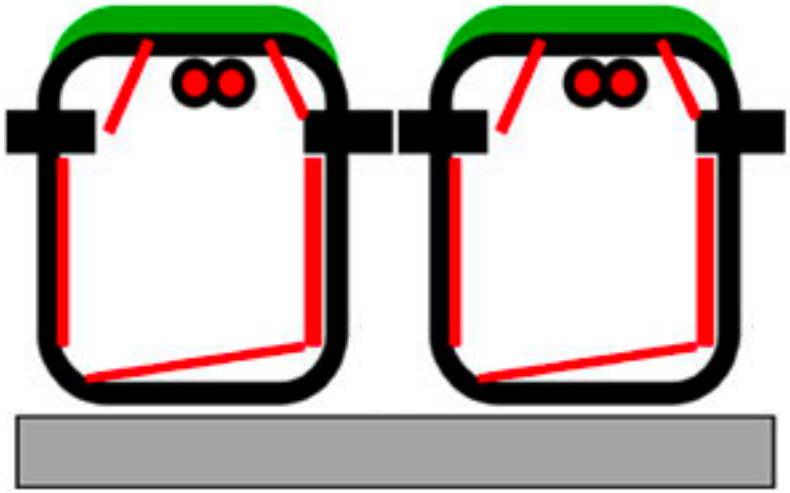
Intestine:



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



MDCK cells are highly polarized



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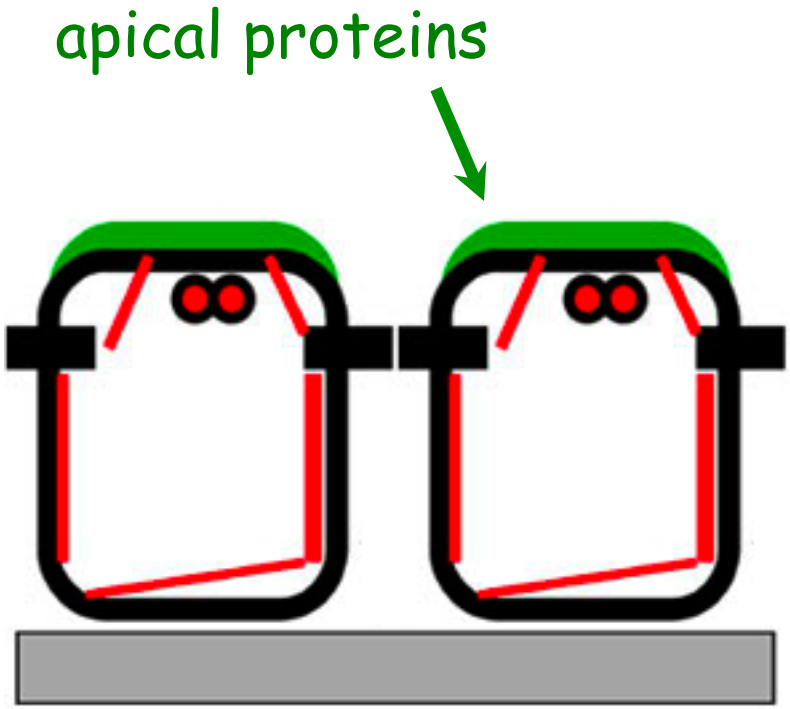

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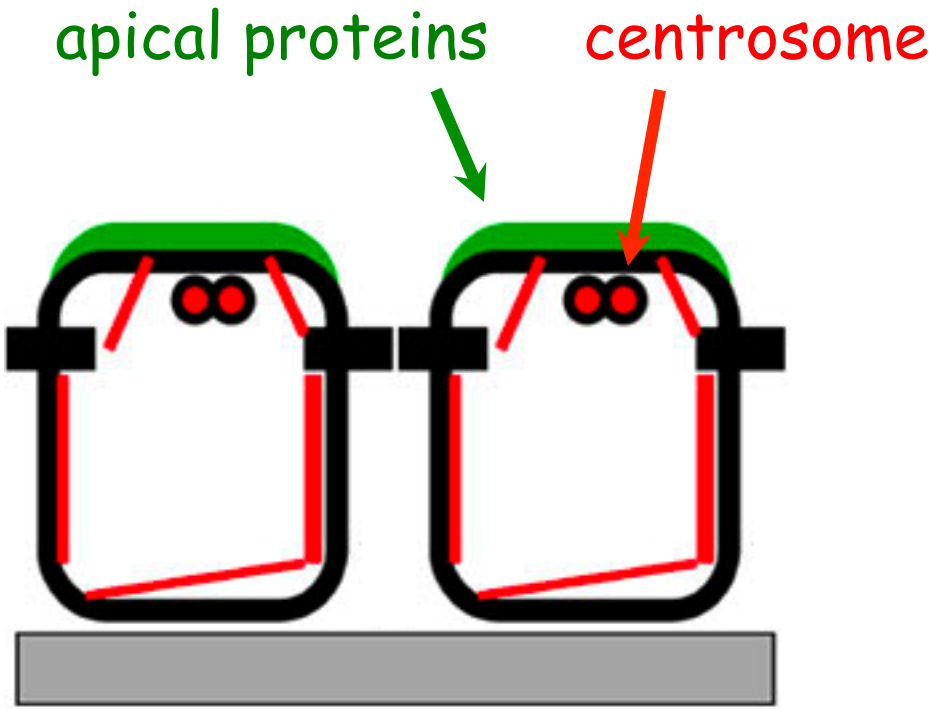

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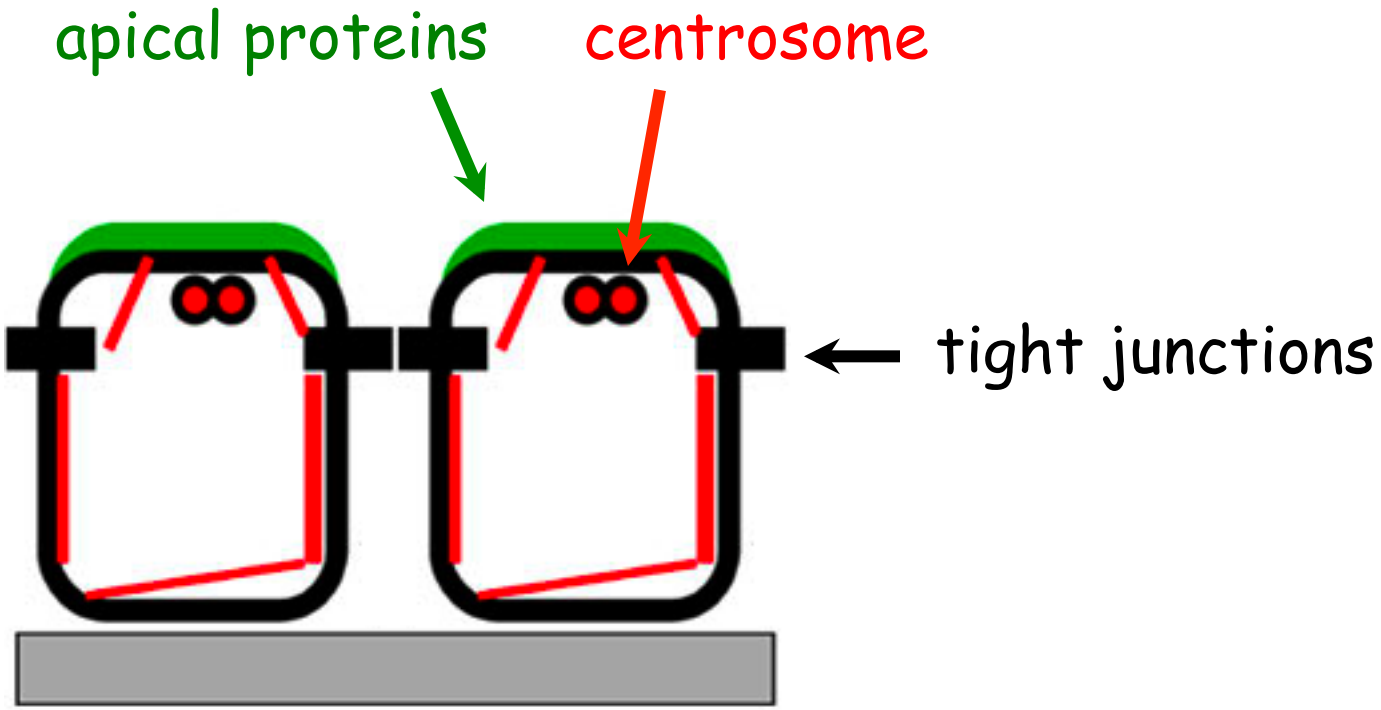

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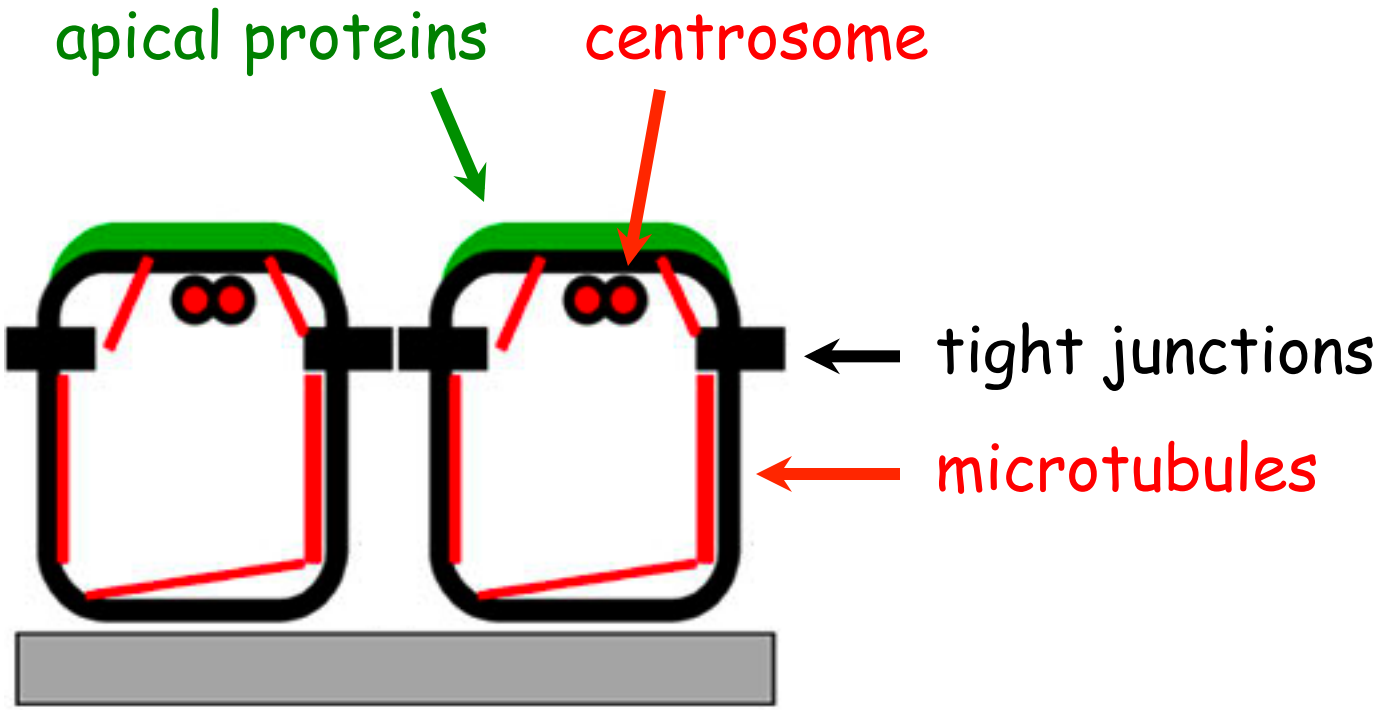

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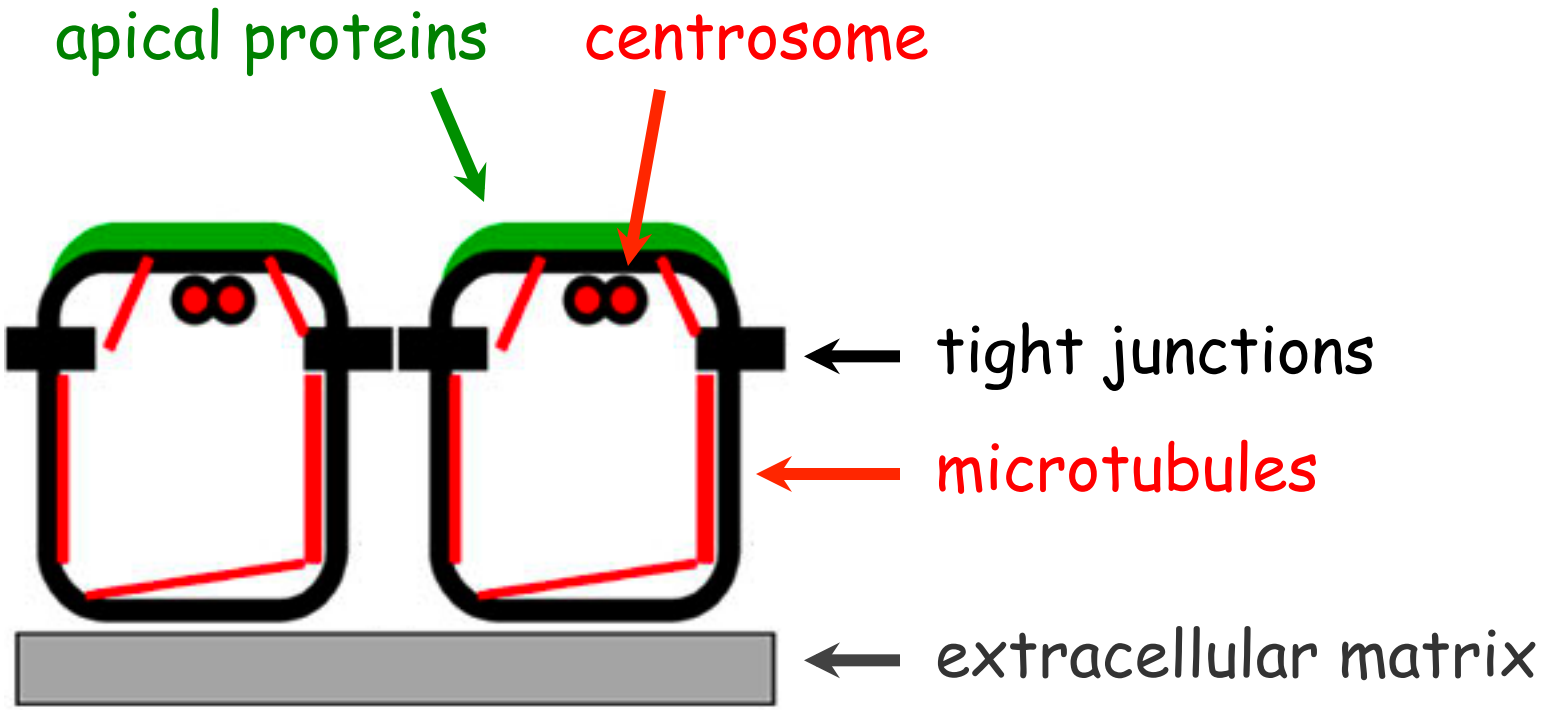
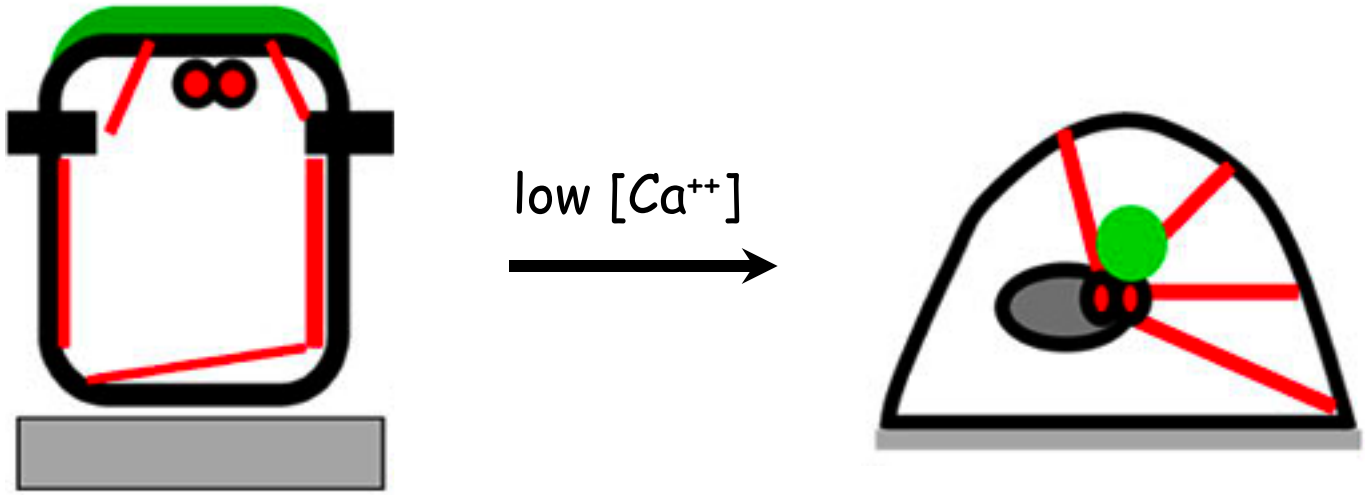
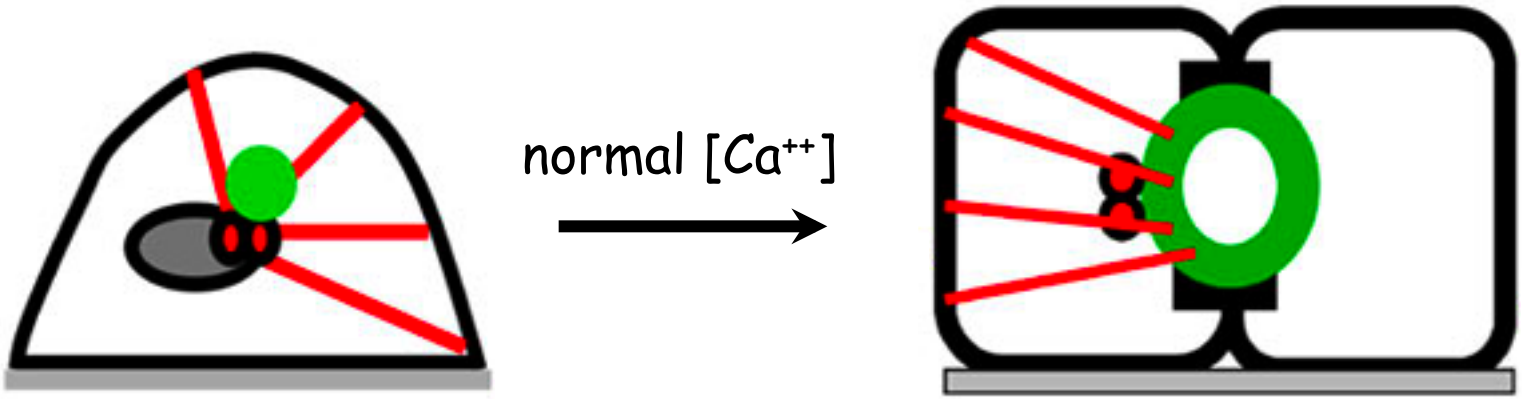


MDCK cells lose their polarity in low [Ca^{++}]



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



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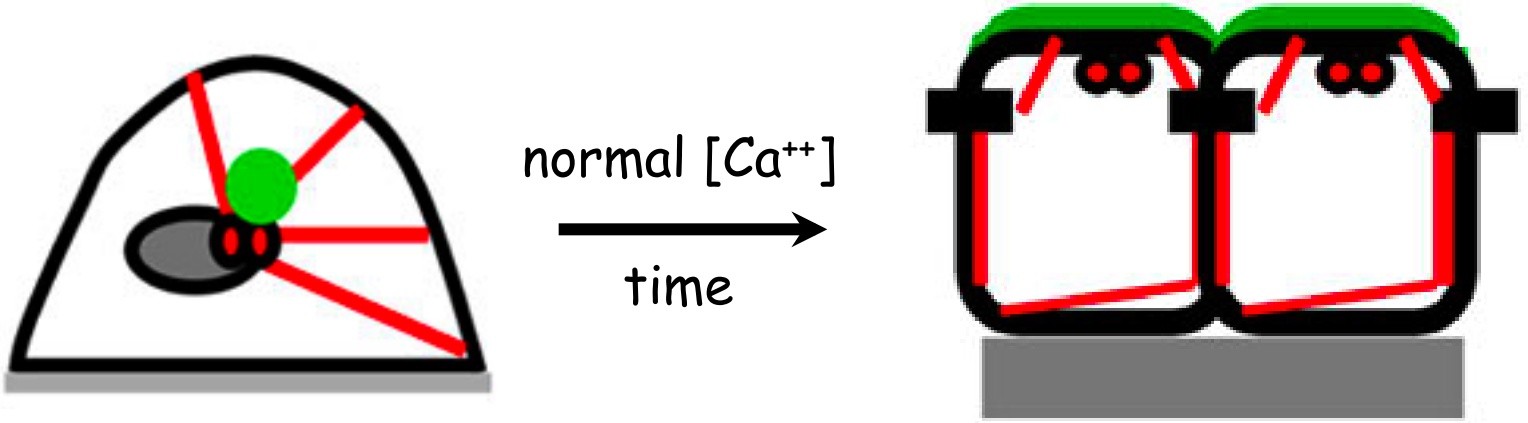
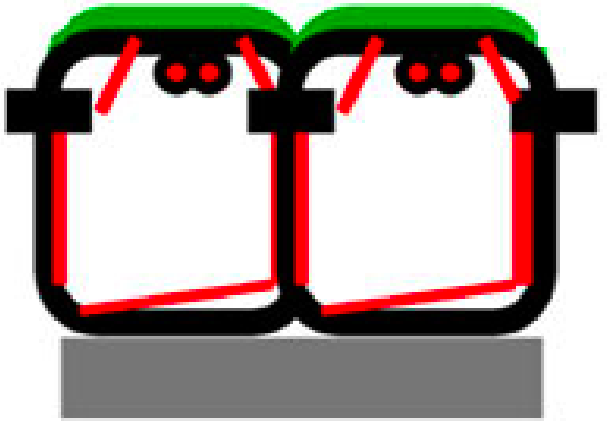


Questions addressed today:



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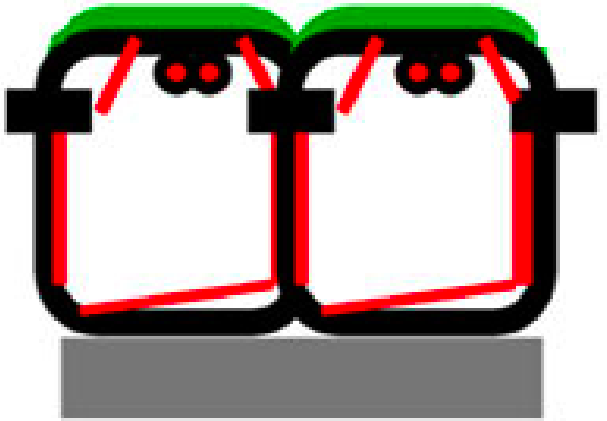
- What molecular mechanisms regulate cell polarization?



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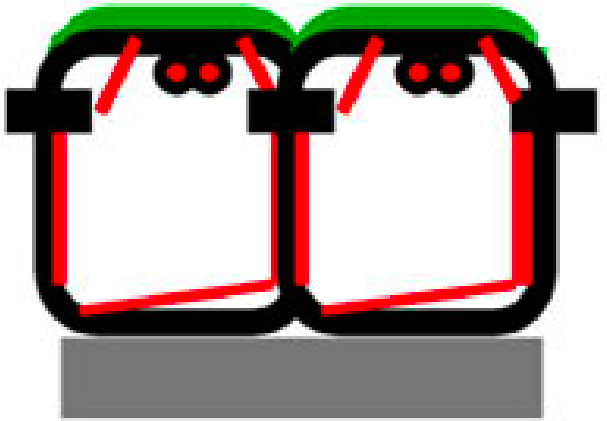

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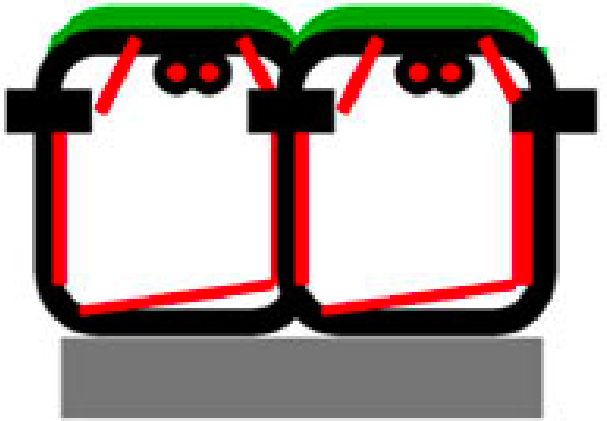
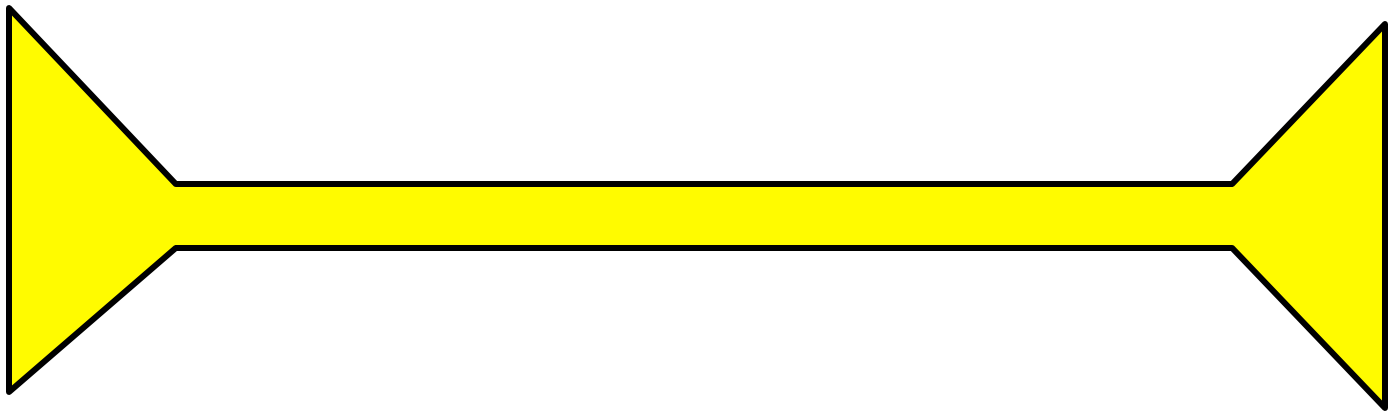
- How do different tissues form different types of tubes?

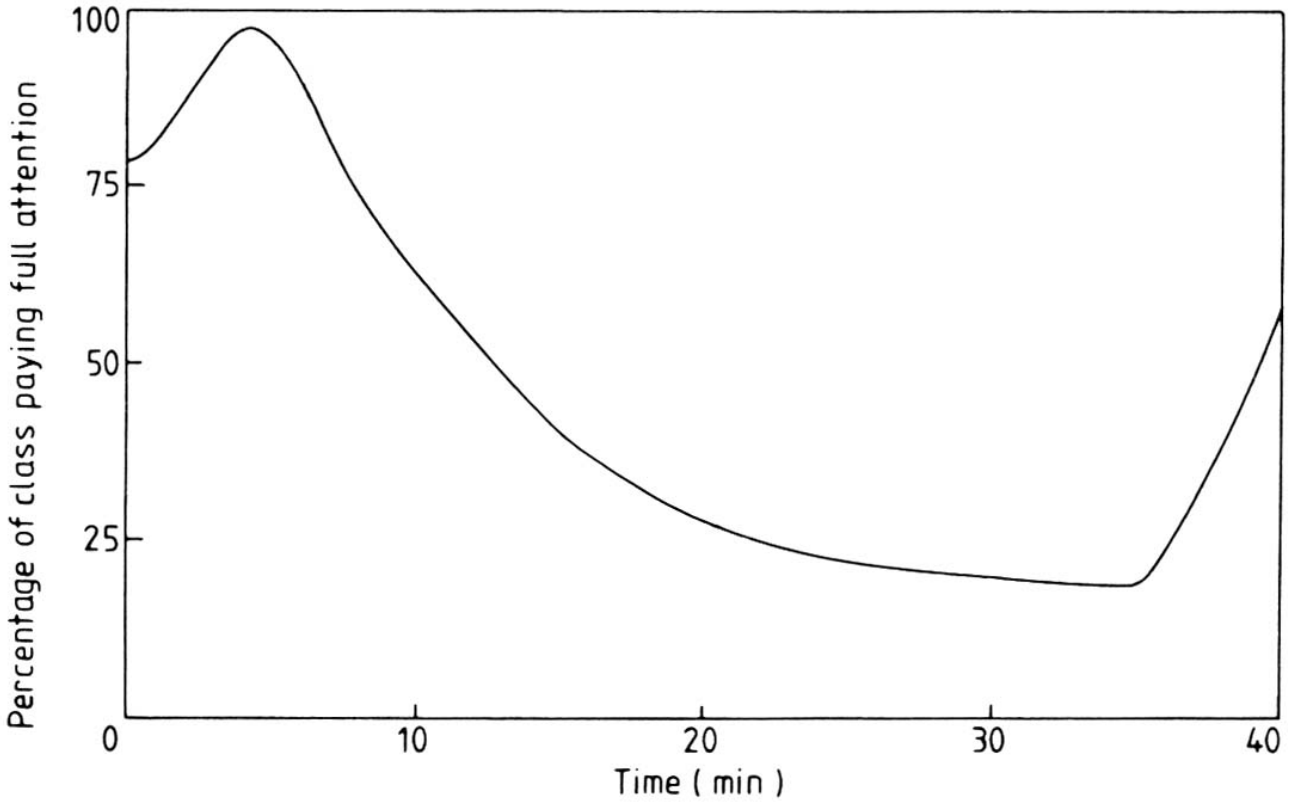


The structure of a good talk: start broad, get specific, and end broad

The middle is the meat of the talk…



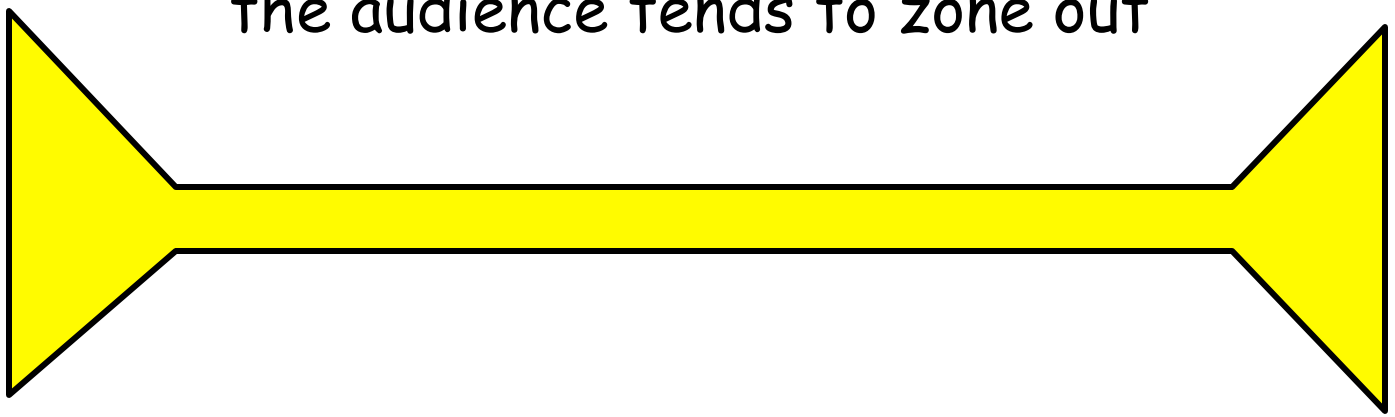
…but talks are delivered to audiences with limited attention spans



Audience attention curve

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

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



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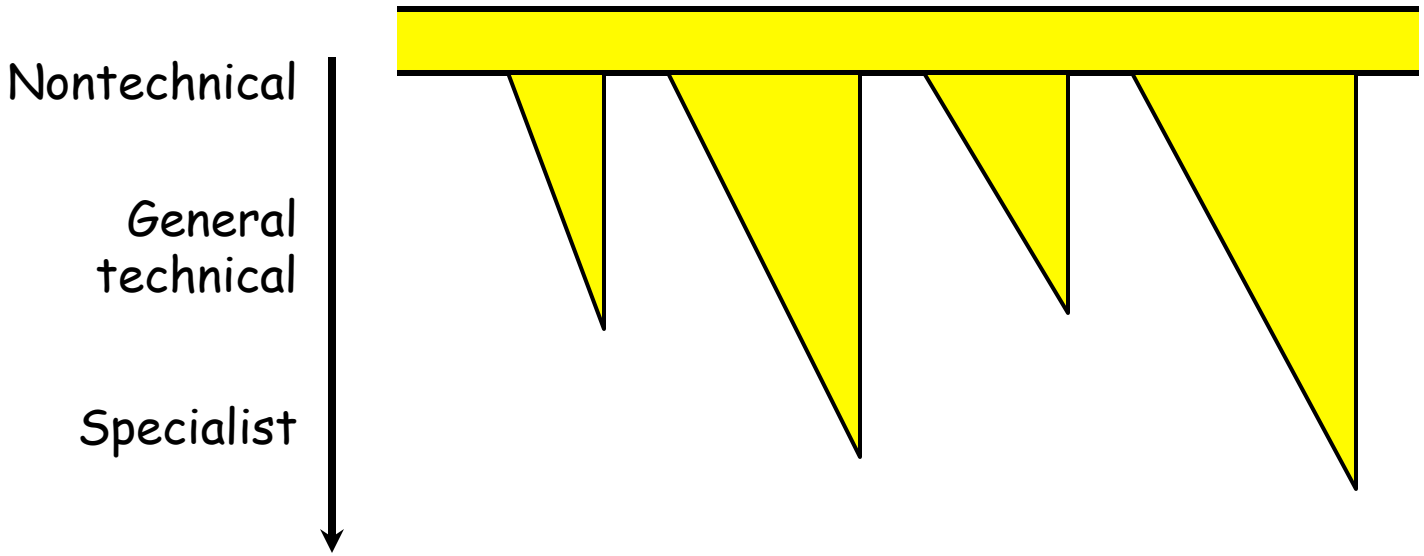

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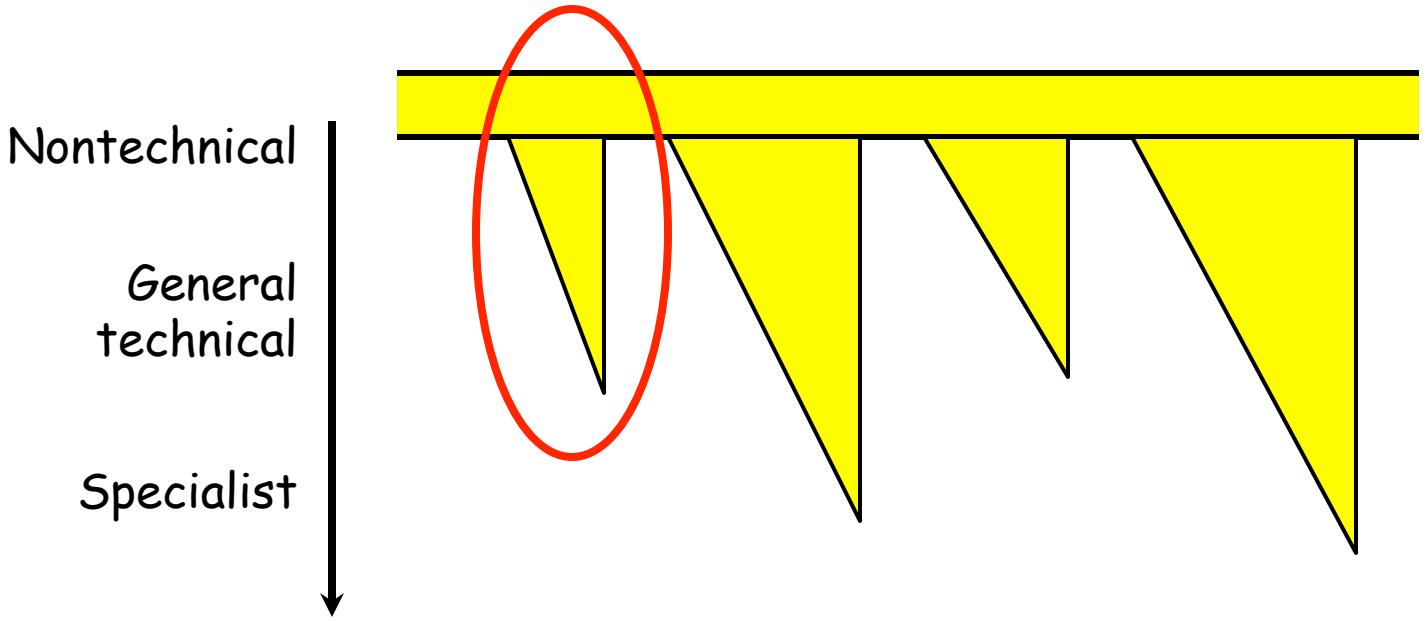
Let's review "episode 1" (which we've already designed) and add a home slide



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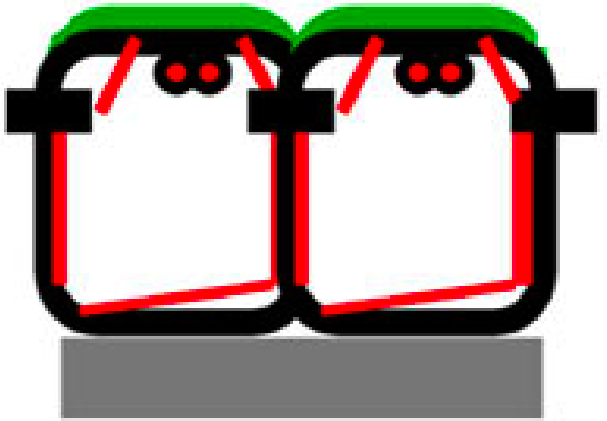
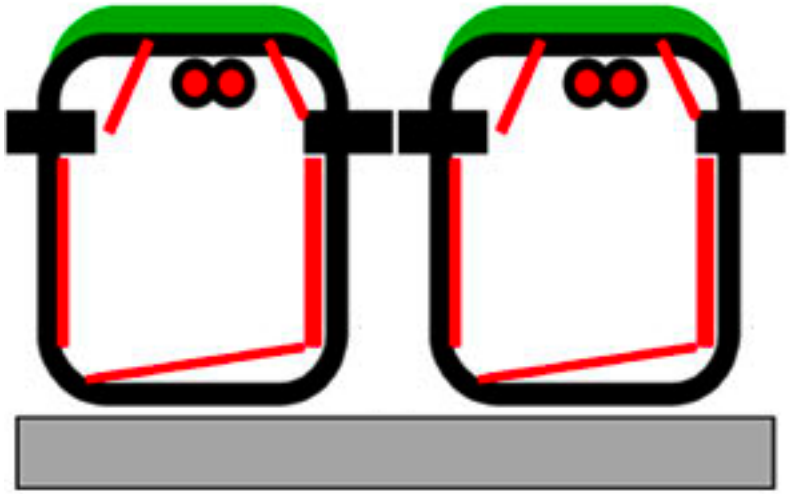


EMK1 (also known as Par1) is a serine-threonine kinase that is essential for cell polarity



EMK1 localizes to tight junctions

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

RT-PCR

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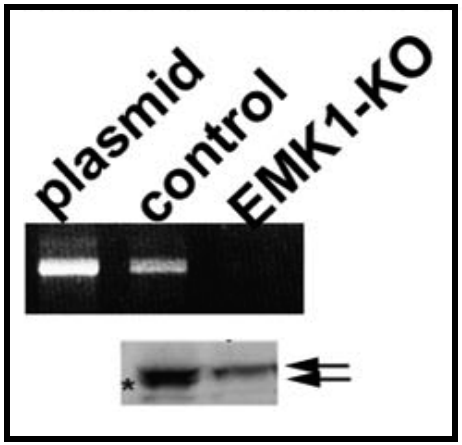
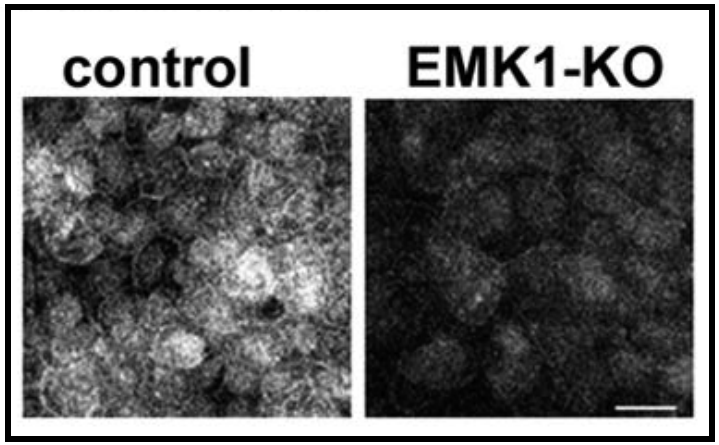
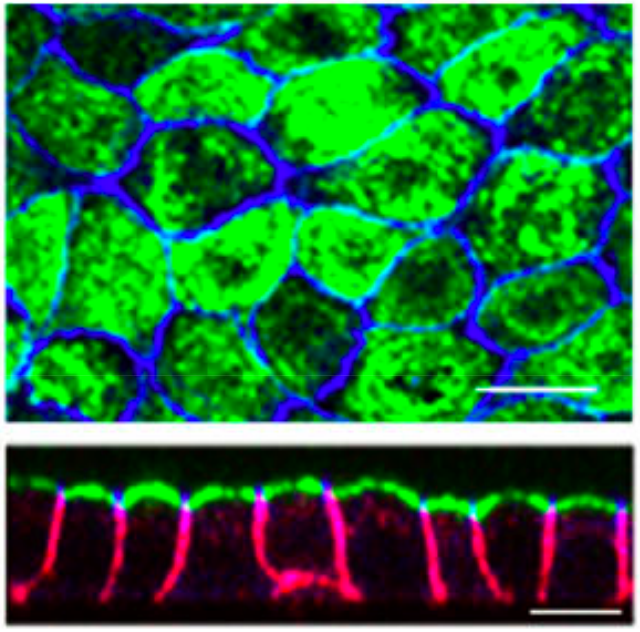




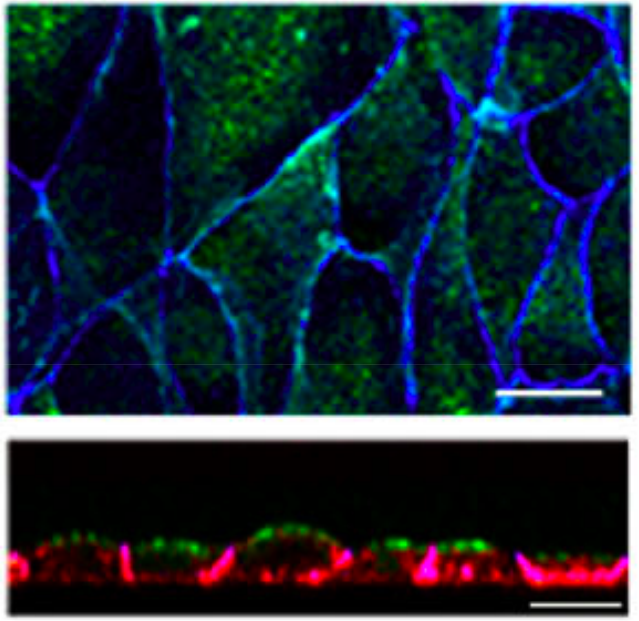
MDCK cells

Lumen formation is blocked in EMK1 knockdown cells

MDCK cells



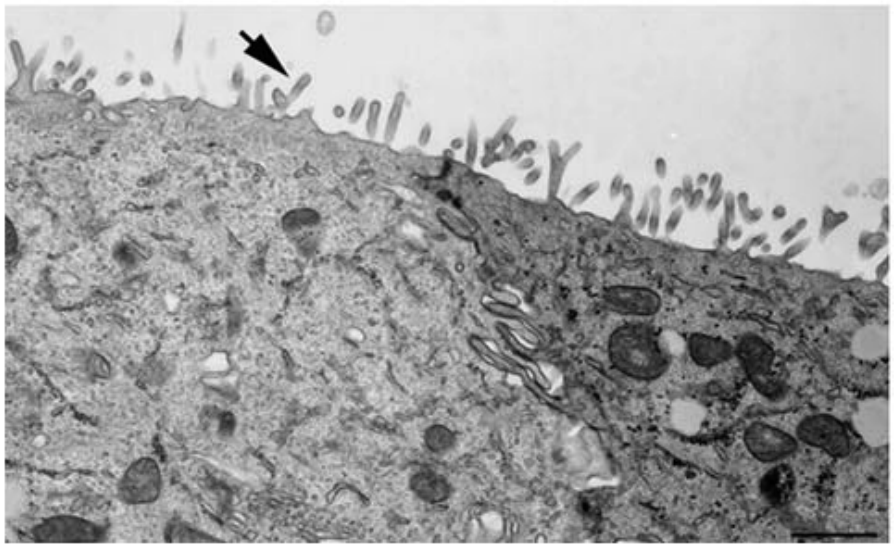
EMK1 knockdown



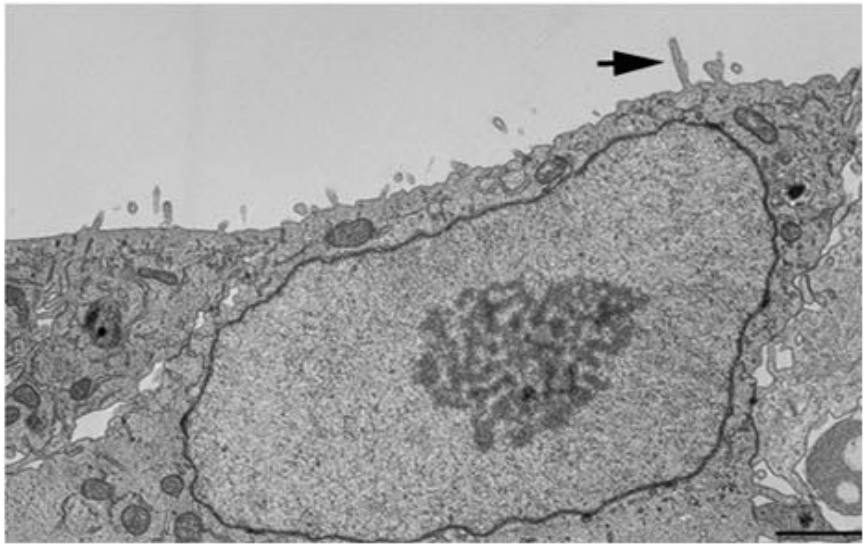
gp135 β-catenin ZO-1

EMK1 knockdown cells also fail to form microvilli

MDCK cells

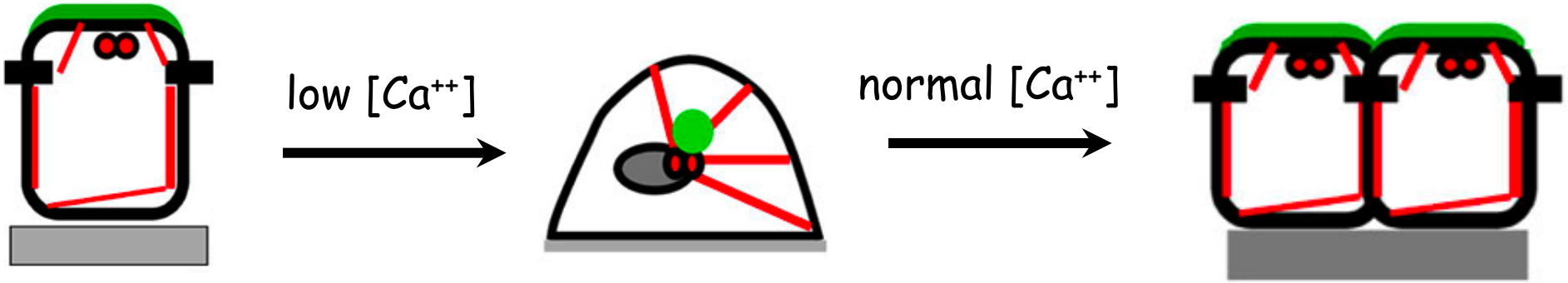


EMK1 knockdown



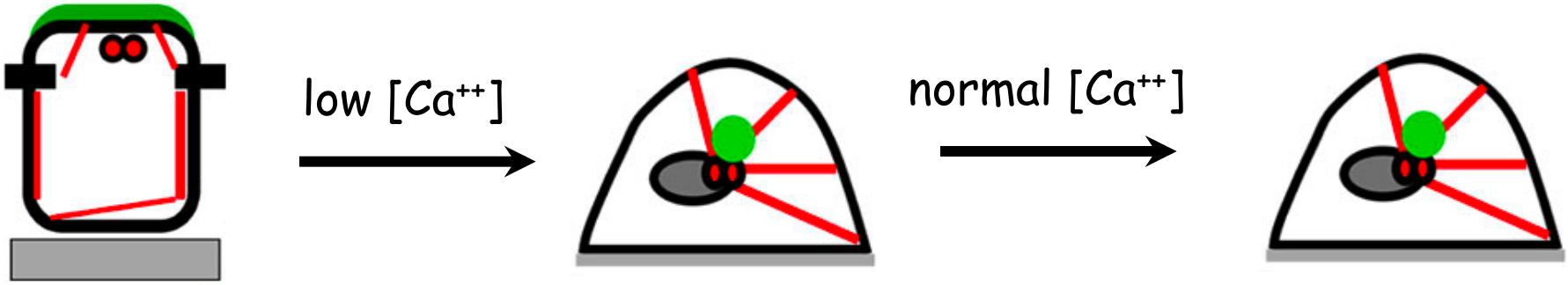
EMK1 is required for cell polarization

Normal MDCK cells:

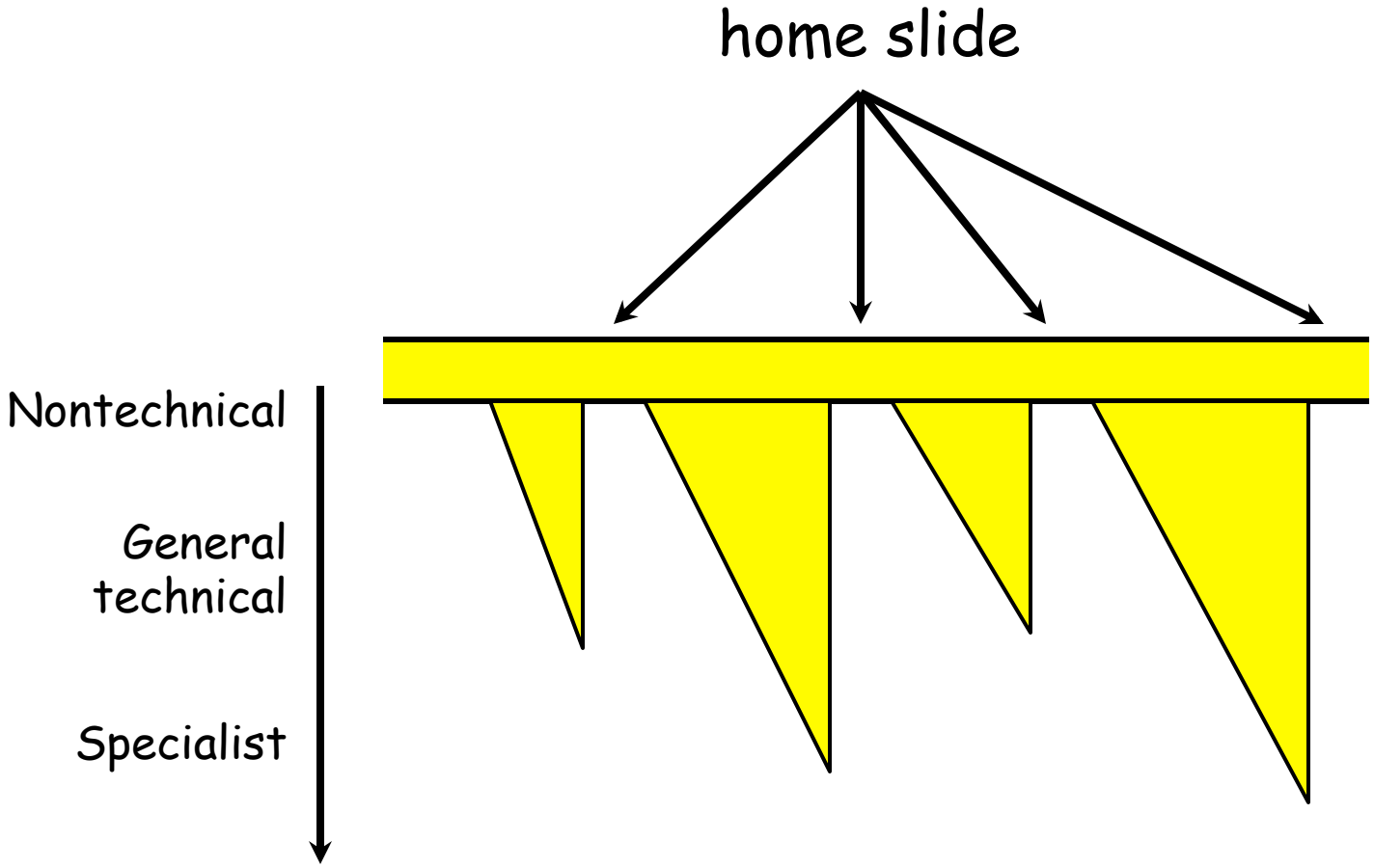


EMK1 is required for cell polarization

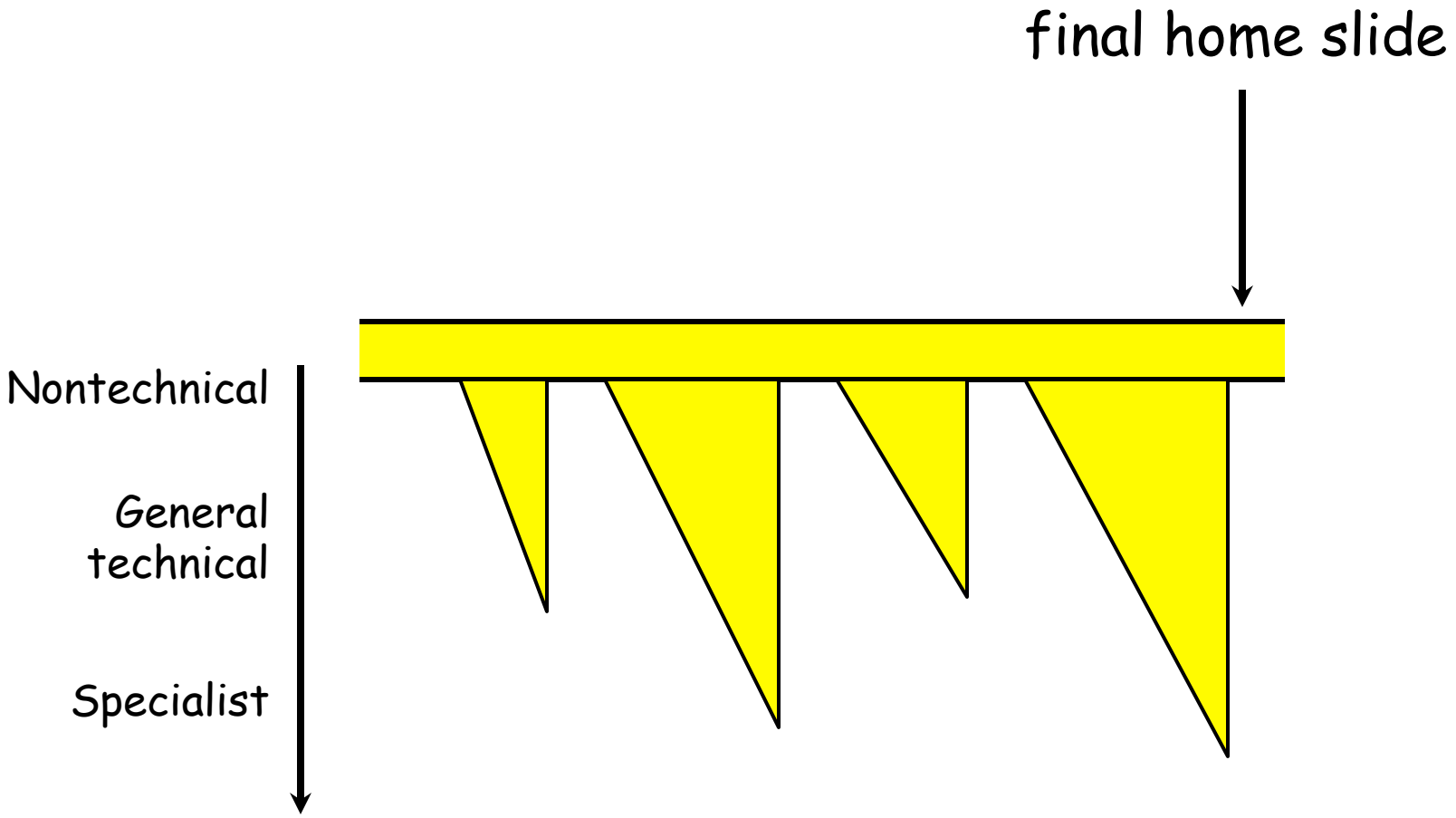
EMK1 knockdown cells:



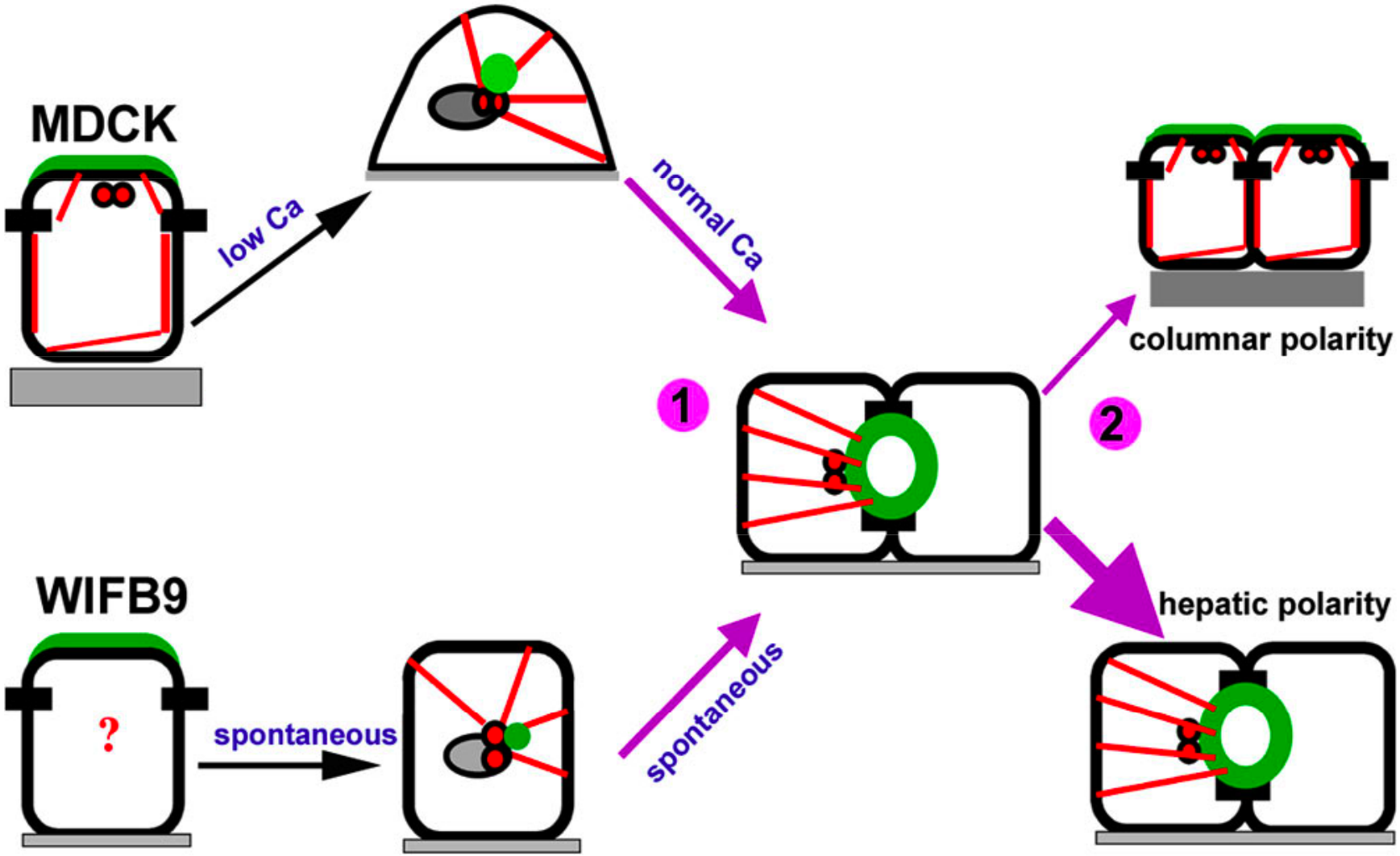
Use your home slide repeatedly to build a theme over time and enable the audience to catch up



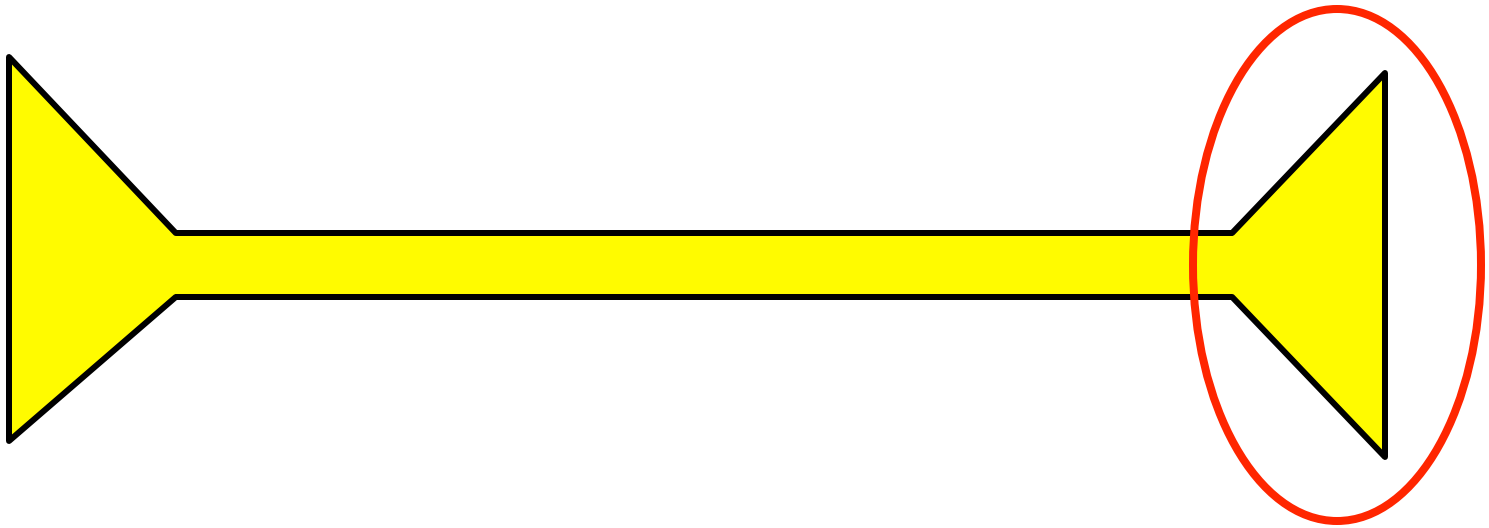
Over the course of the talk, you can progressively build a fairly complex model



EMK1 regulates microtubules and cell polarity in two steps

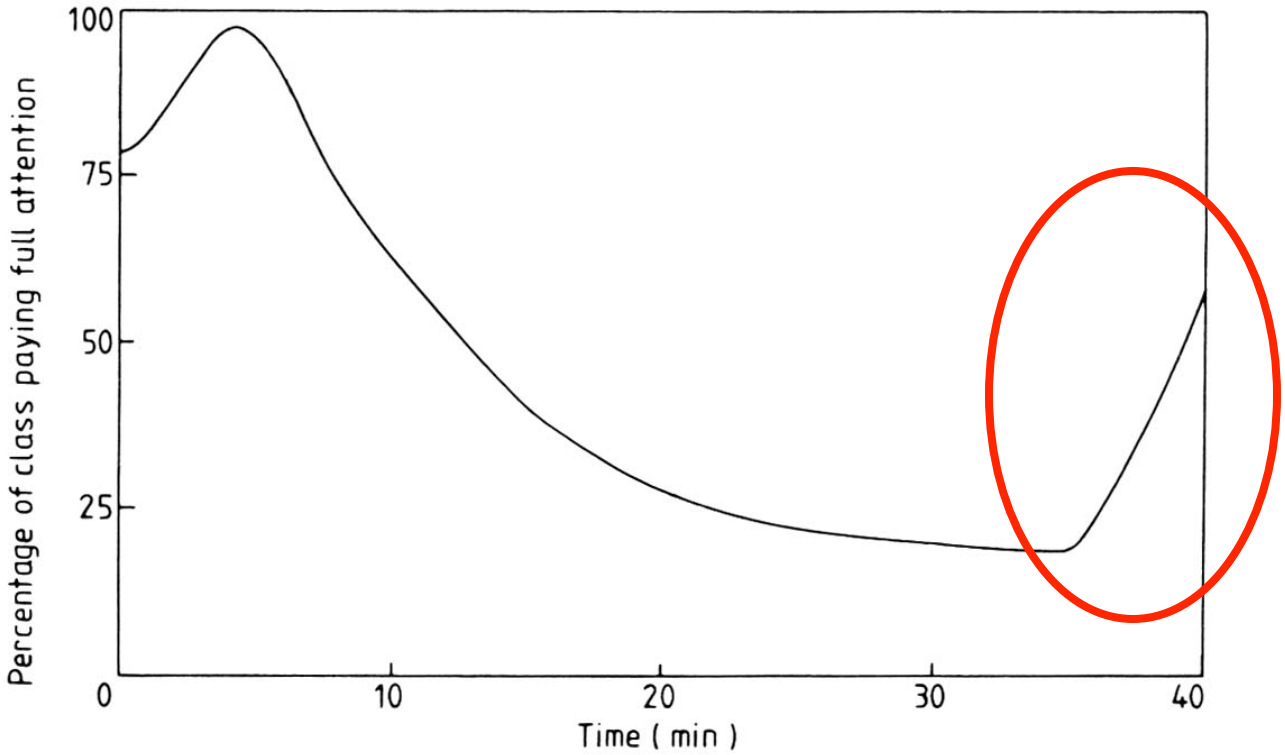


The structure of a good talk: start broad, get specific, and end broad



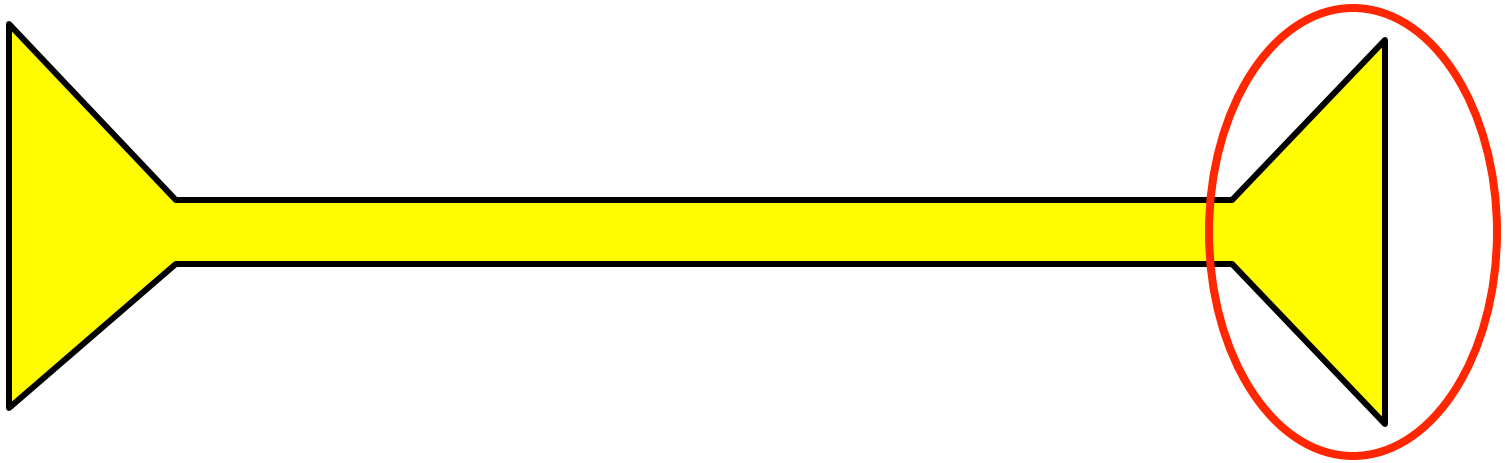
Focus now on conclusions

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



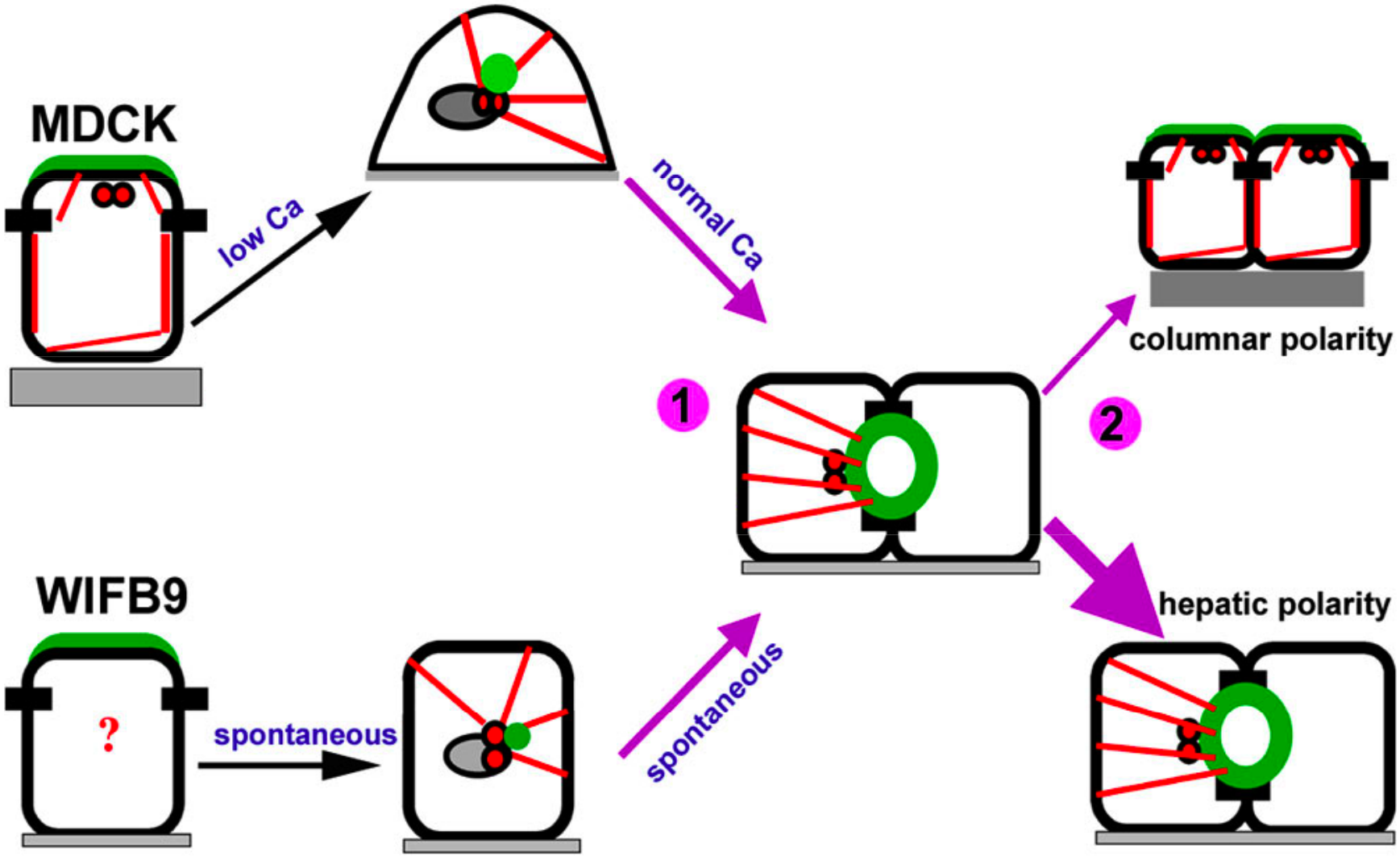
Audience attention curve

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



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

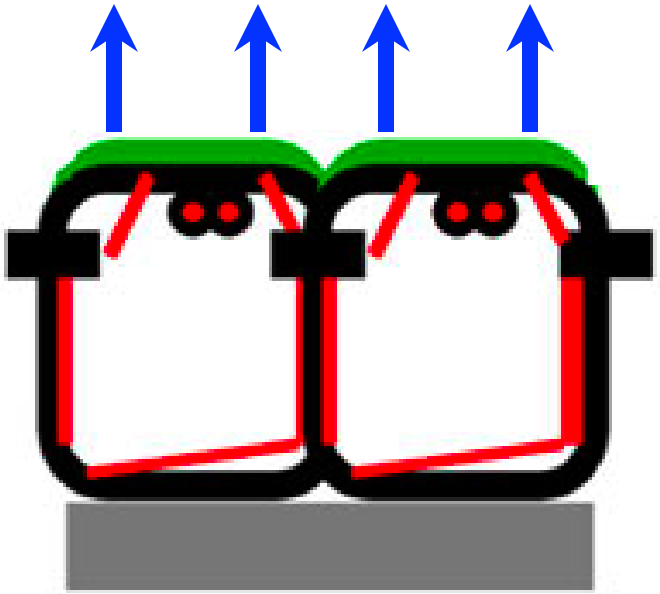
EMK1 regulates microtubules and cell polarity in two steps



EMK1 can regulate the type of lumen formed by epithelial cells

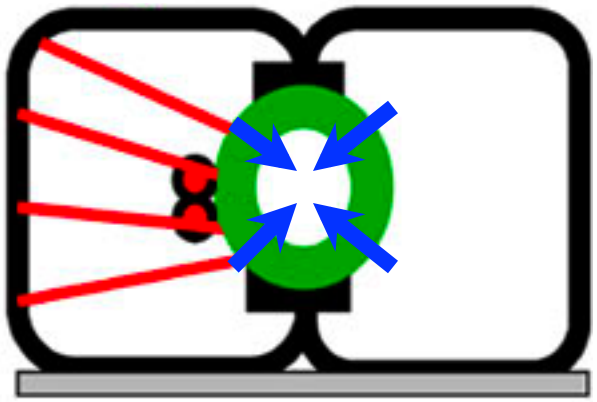
Intestine:

digestive enzymes



Liver:

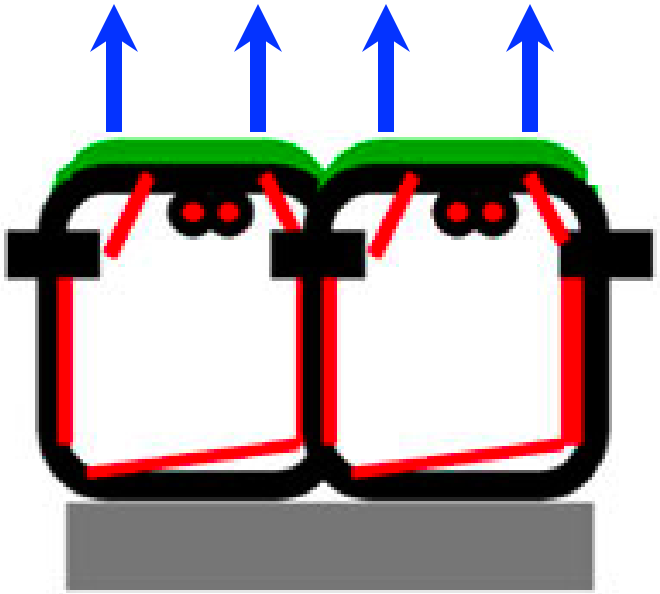
bile



This enables the body to make many different types of tubes in different organs

Intestine:

digestive enzymes



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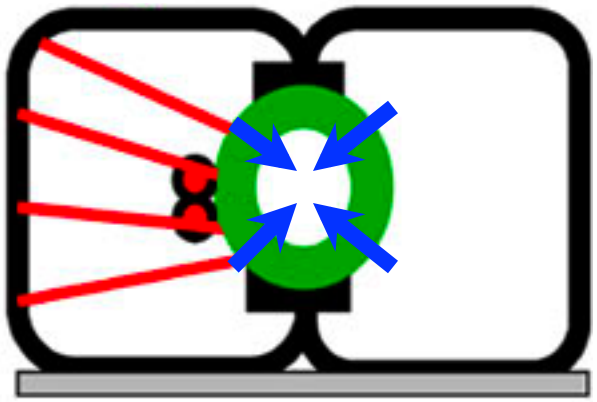
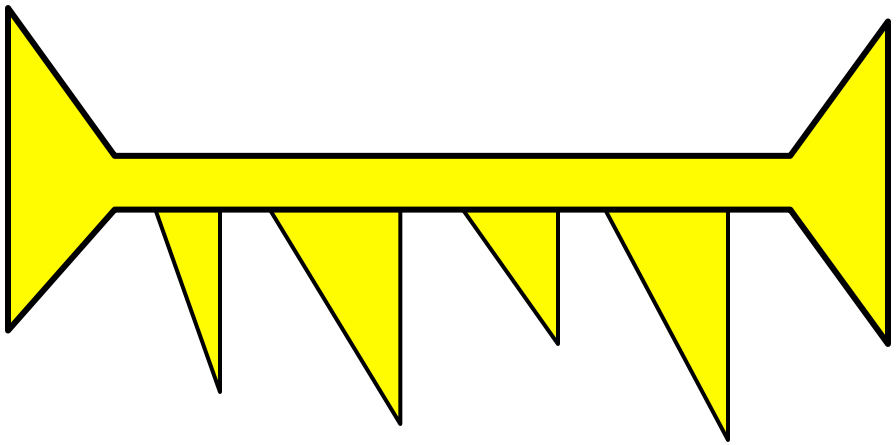
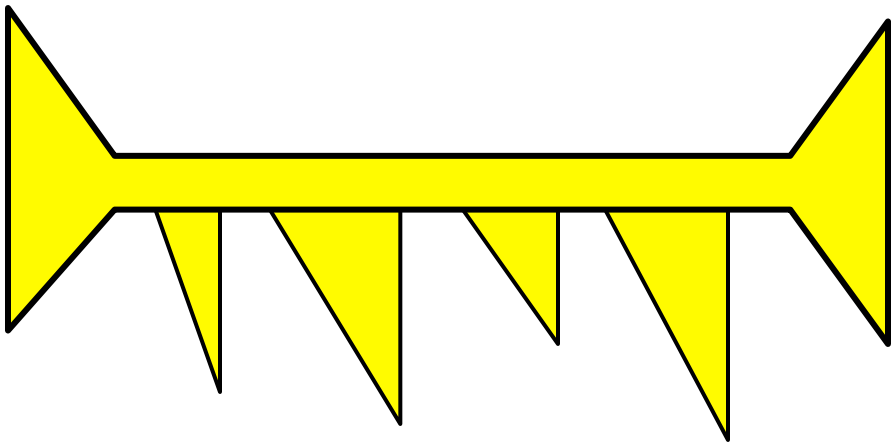


Organizing a great talk

- Be smart about Powerpoint

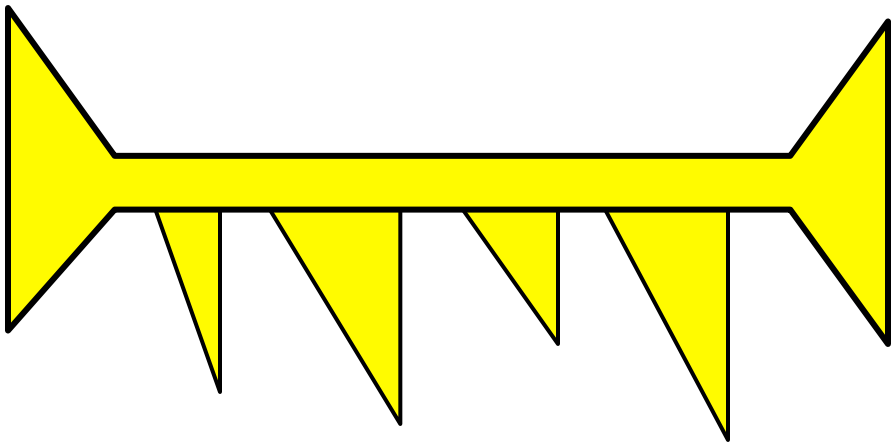


Organizing a great talk



- Be smart about Powerpoint
- Your introduction should start broad then get specific

Organizing a great talk



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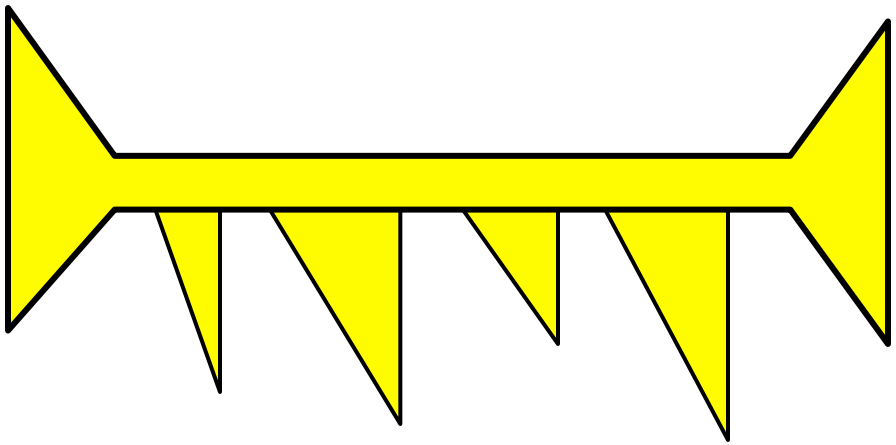
Organizing a great talk



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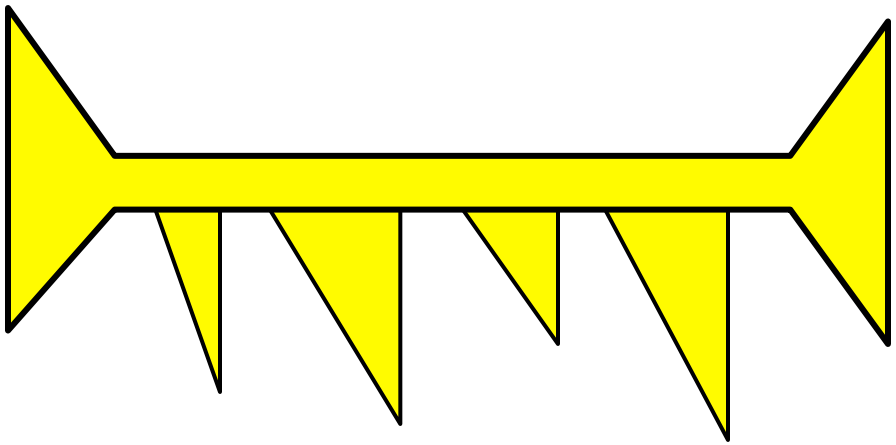
- Think of your talk as consisting of episodes
- Use a home slide to make transitions effectively

Organizing a great talk



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

There is more to giving a good talk than showing good slides

Do face the audience and make eye contact
Do be enthusiastic and vary the tone of your voice,

Don't pace up and down but also don't stand rigid!
Don't wave your pointer all over the slide
Don't take lots of drinks- it is distracting and unprofessional

There is more to giving a good talk than showing good slides

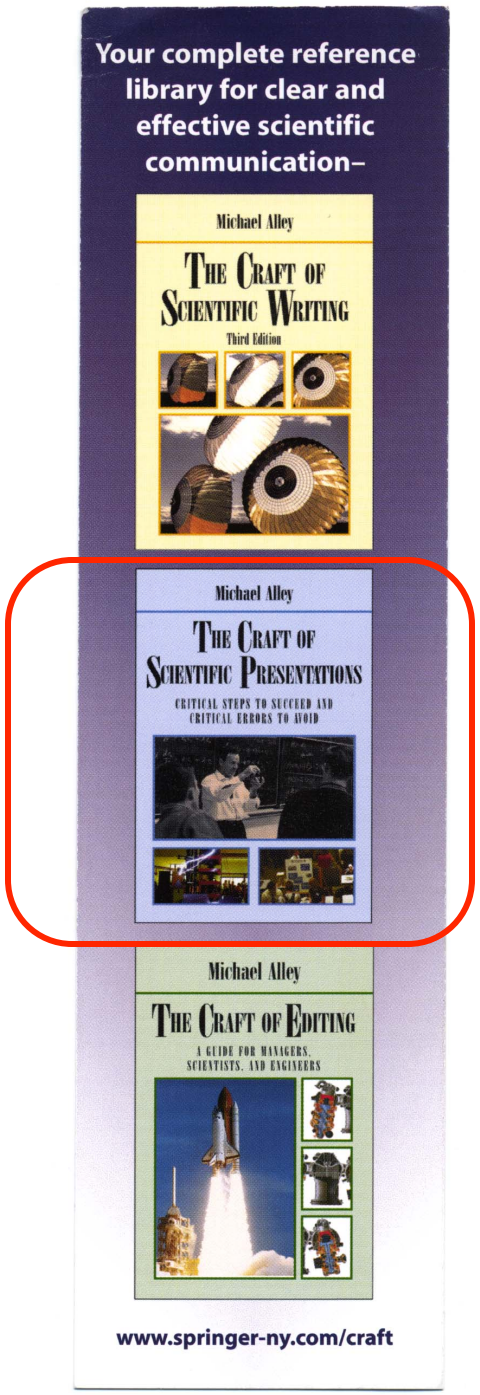
Do practice beforehand, preferably using a video camera and timer

Do ask your friends (and family) for feedback

Don't use too many gimmicks

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

CONTENT	CLARITY AND ORGANIZATION
Conveys new information Poses an interesting question Conveys how people in other fields think Describes important ideas Novel discovery	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	**EXPERTISE**
Keeps me awake Varies voice Conveys enthusiasm Doesn't stay in one place Friendly and approachable	Credible Inspires trust and confidence Answers questions clearly



A great resource is

The Craft of Scientific Presentations

by Michael Alley