MBioS 579 Orientation

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Some materials in this lecture are from
Dr. Shawn Mullen (NIH) with permission

Required to enroll to present your seminars

- Participate – no enrollment for 1st semester
- **1st seminar** – to present next semester
- **2nd seminar** – to present your research 3rd yr Fall semester (right before oral defense of your 2nd proposal)
- **3rd seminar** – mostly before final semester, before your PhD final defense

5. Dates of Seminars _____ _____ _____

6. Seminar attendance (estimate the percentage) ☐ 0% ☐ 25% ☐ 50% ☐ 75% ☐ 100%

- You are required to present public seminar for your PhD final defense – so no requirement to enroll.

Your responsibility this semester

- Need to attend all seminars (Annual review) – sign-in
- Grad students present their research
- 20 min + 5 min Q&A
- At the end of seminar, you will critique
  - Science (rationale, experiment, hypothesis, etc)
  - Presentation style,
  - Things you like about that presentation,
  - Things to be improved

Your responsibility next semester

- You enroll to present
- 20 min + 5 min Q&A
- Select a paper
  - Not older than a few years
  - Your interest
  - Related to research in the lab you are rotating
  - Related to research in your thesis home

Choose a "good" paper

- Ask your PI, post-doc, grad students in the lab
- Rationale
- Journals that are relevant in your field
- Impact factor
- # of citations

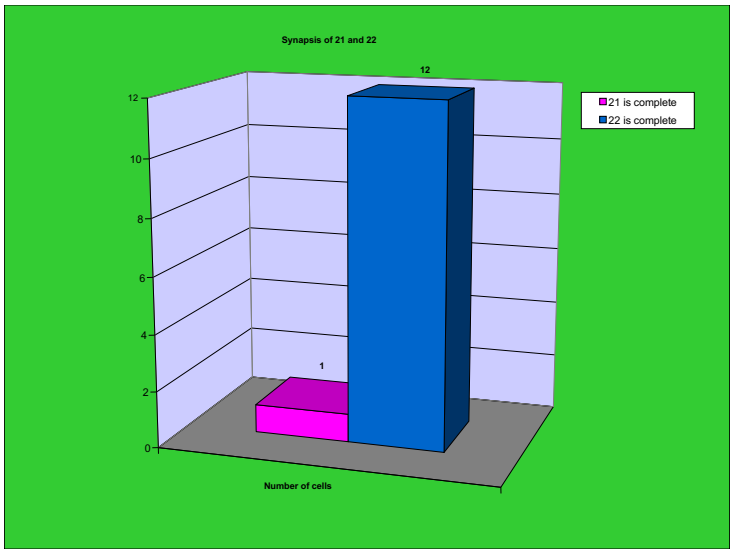
Microgrooves and fluid flows provide preferential passageways for sperm over pathogen Tritrichomonas foetus
…, DG Hickman, RO Gilbert, SS **Suarez**… - Proceedings of the …, 2015 - National Acad Sciences
Abstract Successful mammalian reproduction requires that sperm migrate through a long and convoluted female reproductive tract before reaching oocytes. For many years, fertility studies have focused on biochemical and physiological requirements of sperm. Here we
Cited by 17 Related articles All 6 versions Web of Science: 12 Cite Save More

Mammalian sperm interactions with the female reproductive tract
SS **Suarez** - Cell and tissue research, 2016 - Springer
Abstract The mammalian female reproductive tract interacts with sperm in various ways in order to facilitate sperm migration to the egg while impeding migrations of pathogens into the tract, to keep sperm alive during the time between mating and ovulation, and to select
Cited by 34 Related articles All 10 versions Web of Science: 22 Cite Save More

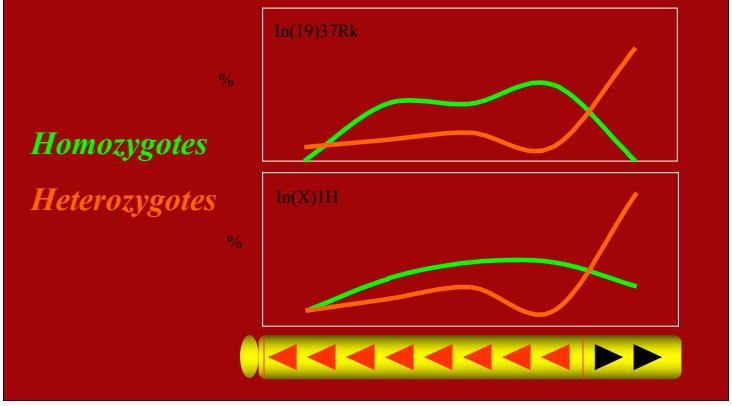
DOs and DON'Ts

Trisomy 14 sample family

LOCUS	PROBAND	FATHER	MOTHER	MAT/PAT	R/N
Centromere					
D14S742	ABC	AC	BC		N
MYH7	ABC	AB	AC		N
D14S581	AAB	AB	AB		-
D14S615	ABC	AC	BC		N
D14S49	AAB	AB	AC		R
D14S1432	ACC	AB	AC	MAT	R
D14S587	ABC	BB	AC	MAT	N
D14S1429	BCC	AC	BC		N
D14S588	ABB	BB	AB		N
D14S43	ABC	AA	BC	MAT	N
D14S1433	ABC	AB	BC		N
D14S617	ABB	BC	AB		N
D14S611	AAB	AA	AB		N
D14S1426	BCD	AB	CD	MAT	N
D14S1007	ABC	AC	BC		N

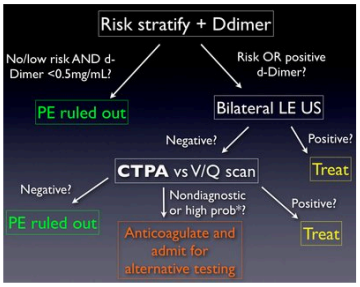


Single distal exchanges are increased in In(19)37Rk and In(X)1H heterozygotes

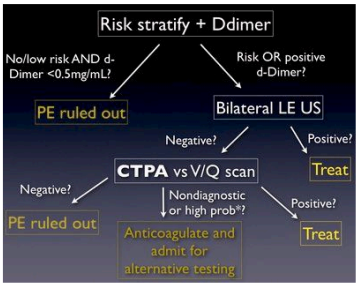


Color blindness

Original Image



Deuteranope Simulation



https://designformeded.com/2013/04/01/color-blindness-and-presentations/

Easy to read

Hard to read

Hurts to read

http://www.kmeverson.org/academic-poster-design.html

What about muscle contraction???

Muscle Contraction

Red background – color blind people cannot see this

- A specialized endplasmic reticulum called the sarcoplasmic reticulum (SR) surrounds each myofibril, following the sarcomeric pattern while maintaining an association with the the t-tubules.
- The SR acts as a calcium storage reservoir for the facilitation of muscle contraction through the release of calcium through the calcium release channel.
- The brain sends an electrical signal along the muscle sheath and down the T-Tubule. This signal initiates calcium release.
- The binding of calcium within the myofilament arrangement allows for binding between the myofilaments resulting in the sliding of the filaments which is known as contraction.
- For relaxation, calcium is removed via the sarcoplasmic reticulum's calcium pump causing the myofilaments to move to their original positions resulting in the relaxation of the muscle

Need some white space please!!

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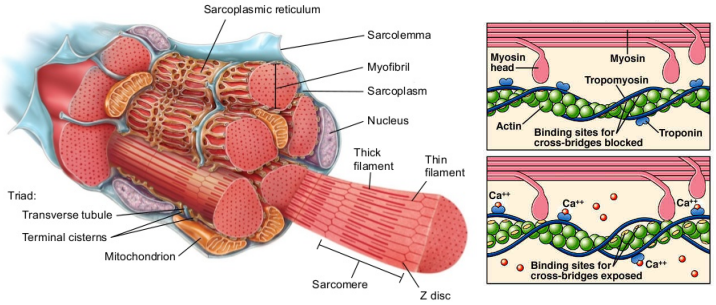
Muscle contraction is facilitated by Ca^{2+}

More declarative statement



Source: Pearson Physiology and Anatomy 2014

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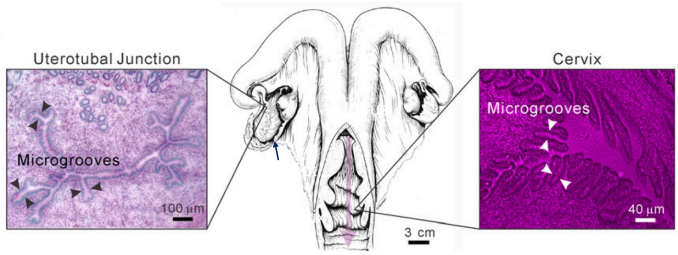
Sperm migration through microgroove



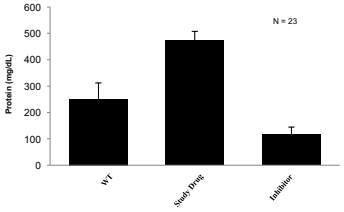
Tung *et al* 2015 *PNAS* 112:5431.

Sperm migration through microgroove

- Sperm migrate through the female reproductive tract
  - entering cervix,
  - swim against a gentle fluid flow,
  - pass through the uterus into the oviduct.
- Microgrooves line the inner surfaces of the cervix.

Biochemical Analysis

Title doesn't tell anything, just tell them what it is



Too small, and too much methods

- 50 uM of study drug with 40 min incubation at 34°C
- Gel electrophoresis
- Western blot analysis
- Study drug increases protein expression as opposed to wild type

This is not a lab meeting!

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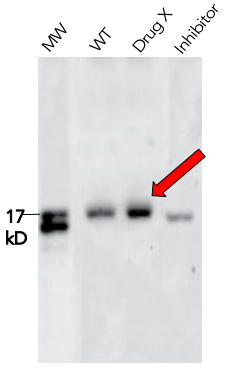
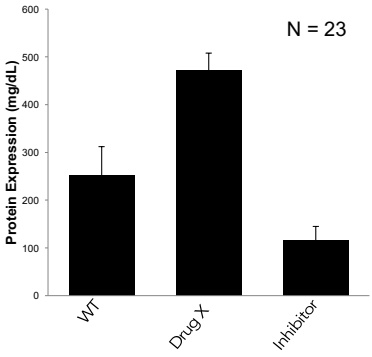
Drug X stimulates protein expression in liver cells



Qualitative Example



Quantitative Example

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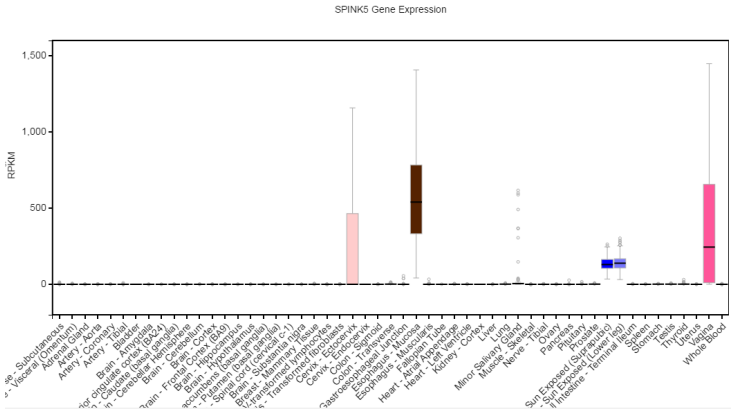
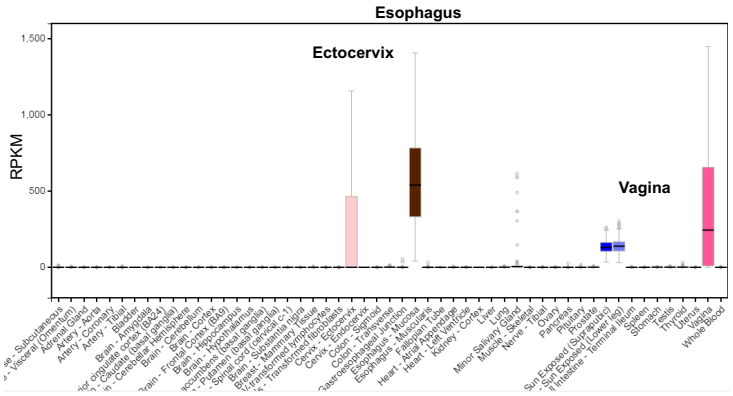
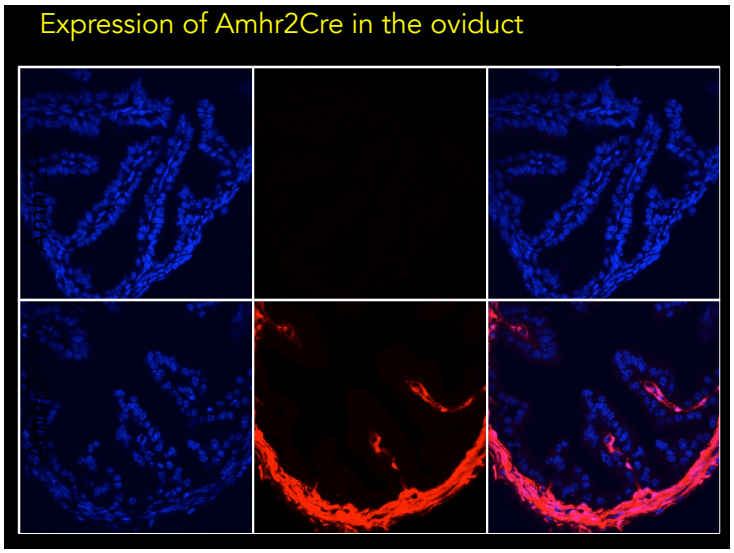


SPINK5 Gene expression in different human tissues



RPKM: Reads Per Kilobase of transcript per Million mapped reads

Expression of Amhr2Cre in the oviduct

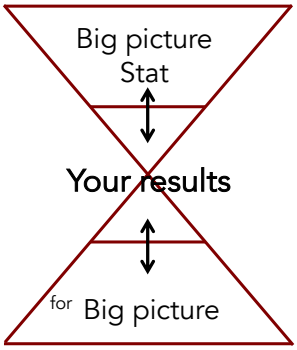


The Basics

- Do your homework
- Engage us – tell us a story
  - What's your take home message?
  - Enthusiasm is contagious
  - Does this help my audience understand my message?
- Don't "snow"

Stories have…

- Beginning
  - Need to pull you in.
  - This is extremely critical.
  - Why should we care?
- Middle
- End
  - Audience are waiting the finale



Fit into the big pictures that you set up.
Influence on our knowledge base.

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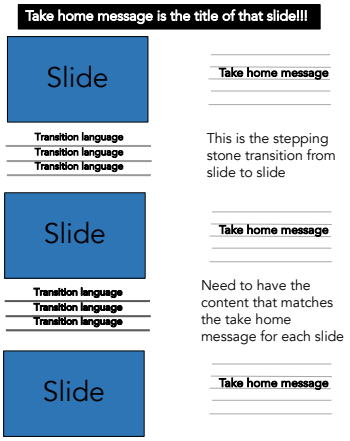
Blocking your talk



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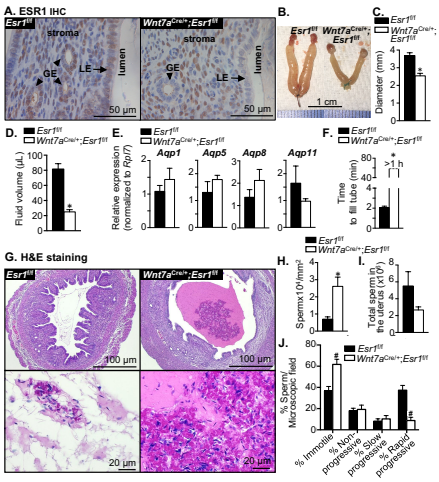
Tips

- No need to show every data



- Focus on "Key" data/information
- If you're not going to talk about it – don't show it
- This is toooo much!

What to do if you are nervous:

- Practice your talk many times
- Smooth transition between slides
- Laser pointer?!?
- Know your material, read literatures - intro of that paper – go through references
- Prepare for questions

Before you present:

- Practice in front of your peers
- Get feedback to improve
- Practice! Practice! Practice!