Capstone Presentation

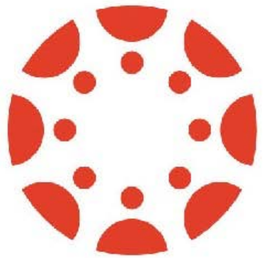
Presentations: Poster vs Talk

Capstone Presentations

- the Comic book version of your written report
  - Convey your message through mostly images
- Doesn’t need to be comprehensive (that’s what the written report is for)
  - Just present the compelling finding that you want to talk about

Poster	Talk
Valuable Skill: Most conferences require creation of poster	Higher Profile
Great way to get detailed feedback More like a conversation	Potentially get your Message out to more People Potentially less feedback - not much time for questions
More Time efficient event Multiple posters at same time	Time consuming for more than one talk Fewer people may have the opportunity to attend your talk

How to make a poster



canvas

A Poster has sections

Background

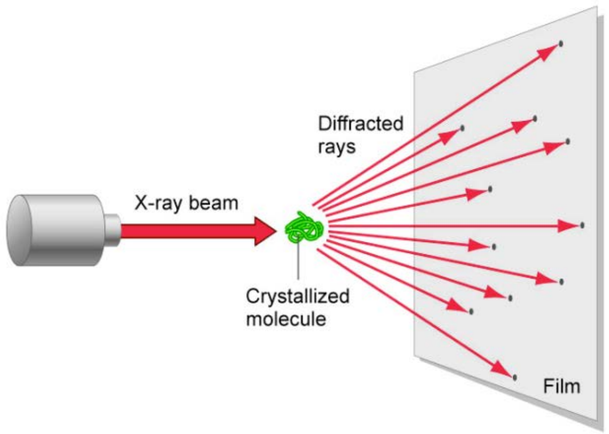
Results

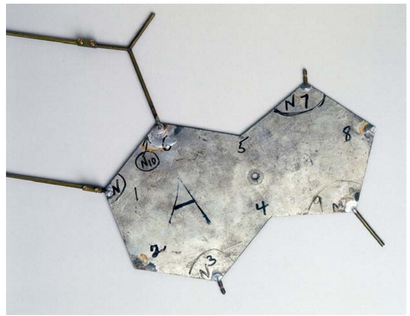
Discussion

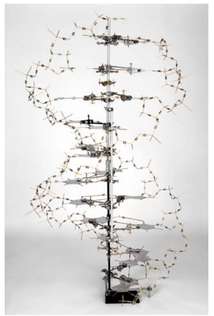
Methods

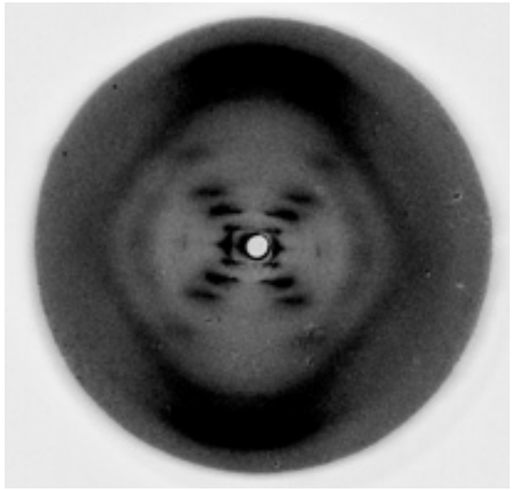
Acknowledgments

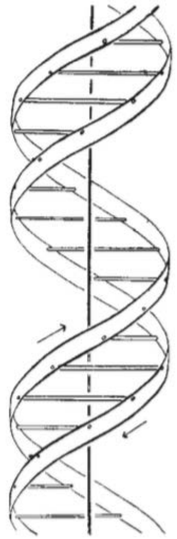
A Poster has bold graphics and images











A poster has logical flow


Calvin and Hobbes
by Watterson
ARE YOU MAKING ANY RESOLUTIONS FOR THE NEW YEAR?
NOPE! I WANT EVERYTHING TO STAY THE SAME AS IT WAS THIS YEAR.
EVERYTHING?
RIGHT. THIS YEAR WAS LOUSY, BUT AT LEAST IT'S FAMILIAR.
I HATE CHANGE! IT'S TOO DISRUPTIVE! WHEN THINGS ARE DIFFERENT, YOU HAVE TO THINK ABOUT THE CHANGE AND DEAL WITH IT! I LIKE THINGS TO STAY THE SAME, SO I CAN TAKE EVERYTHING FOR GRANTED!
BESIDES, THINGS KEEP CHANGING FOR THE WORSE! THE LONGER I LIVE, THE MORE COMPLICATED EVERYTHING GETS! I SAY LET'S STOP HERE BEFORE LIFE GETS ANY HARDER!
FROM NOW ON, NO MORE CHANGE!
I'M BORED. LET'S DO SOMETHING DIFFERENT.
SOME THINGS DON'T CHANGE.

A poster does not look like this...

PIGS IN SPACE: EFFECT OF ZERO GRAVITY AND AD LIBITUM FEEDING ON WEIGHT GAIN IN CAVIA PORCELLUS

Colin B. Purrington
6673 College Avenue, Swarthmore, PA 19081 USA

ABSTRACT:

One ignored benefit of space travel is a potential elimination of obesity, a chronic problem for a growing majority in many parts of the world. In theory, when an individual is in a condition of zero gravity, weight is eliminated. Indeed, in space one could conceivably follow ad libitum feeding and never even gain an gram, and the only side effect would be the need to upgrade one's stretchy pants("exercise pants"). But because many diet schemes start as very good theories only to be found to be rather harmful, we tested our predictions with a long-term experiment in a colony of Guinea pigs (Cavia porcellus) maintained on the International Space Station. Individuals were housed separately and given unlimited amounts of high-calorie food pellets. Fresh fruits and vegetables were not available in space so were not offered. Every 30 days, each Guinea pig was weighed. After 5 years, we found that individuals, on average, weighed nothing. In addition to weighing nothing, no weight appeared to be gained over the duration of the protocol. If space continues to be gravity-free, and we believe that assumption is sound, we believe that sending the overweight — and those at risk for overweight — to space would be a lasting cure.

INTRODUCTION:

The current obesity epidemic started in the early 1960s with the invention and proliferation of elastane and related stretchy fibers, which released wearers from the rigid constraints of clothes and permitted monthly weight gain without the need to buy new outfits. Indeed, exercise today for hundreds of million people involve only the act of wearing stretchy pants in public, presumably because the constrictive pressure forces fat molecules to adopt a more compact tertiary structure (Xavier 1965).

Luckily, at the same time that fabrics became stretchy, the race to the moon between the United States and Russia yielded a useful fact: gravity in outer space is minimal to nonexistent. When gravity is zero, objects cease to have weight. Indeed, early astronauts and cosmonauts had to secure themselves to their ships with seat belts and sticky boots. The potential application to weight loss was noted immediately, but at the time travel to space was prohibitively expensive and thus the issue was not seriously pursued. Now, however, multiple companies are developing cheap extra-orbital travel options for normal consumers, and potential travelers are also creating news ways to pay for products and services that they cannot actually afford. Together, these factors open the possibility that moving to space could cure overweight syndrome quickly and permanently for a large number of humans.

We studied this potential by following weight gain in Guinea pigs, known on Earth as fond of ad libitum feeding. Guinea pigs were long envisioned to be the "Guinea pigs" of space research, too, so they seemed like the obvious choice. Studies on humans are of course desirable, but we feel this current study will be critical in acquiring the attention of granting agencies.

MATERIALS AND METHODS:

One hundred male and one hundred female Guinea pigs (Cavia porcellus) were transported to the International Space Laboratory in 2010. Each pig was housed separately and deprived of exercise wheels and fresh fruits and vegetables for 48 months. Each month, pigs were individually weighed by duct-taping them to an electronic balance sensitive to 0.0001 grams. Back on Earth, an identical cohort was similarly maintained and weighed. Data was analyzed by statistics.

RESULTS:

Mean weight of pigs in space was 0.0000 +/- 0.0002 g. Some individuals weighed less than zero, some more, but these variations were due to reaction to the duct tape, we believe, which caused them to be alarmed push briefly against the force plate in the balance. Individuals on the Earth, the control cohort, gained about 240 g/month ($p = 0.0002$). Males and females gained a similar amount of weight on Earth (no main of effect of sex), and size at any point during the study was related to starting size (which was used as a covariate in the ANCOVA). Both Earth and space pigs developed substantial dewlaps (double chins) and were lethargic at the conclusion of the study.

CONCLUSIONS:

Our view that weight and weight gain would be zero in space was confirmed. Although we have not replicated this experiment on larger animals or primates, we are confident that our result would be mirrored in other model organisms. We are currently in the process of obtaining necessary human trial permissions, and should have our planned experiment initiated within 80 years, pending expedited review by local and Federal IRBs.

ACKNOWLEDGEMENTS:

I am grateful for generous support from the National Research Foundation, Black Hole Diet Plans, and the High Fructose Sugar Association. Transport flights were funded by SPACE-EXES, the consortium of wives divorced from insanely wealthy space-flight startups. I am also grateful for comments on early drafts by Mañana Athletic Club, Corpus Christi, USA. Finally, sincere thanks to the Cuy Foundation for generously donating animal care after the conclusion of the study.

LITERATURE CITED:

NASA. 1982. Project STS-XX: Guinea Pigs. Leaked internal memo.

Sekulić, S.R., D. D. Lukač, and N. M. Naumović. 2005. The Fetus Cannot Exercise Like An Astronaut: Gravity Loading Is Necessary For The Physiological Development During Second Half Of Pregnancy. Medical Hypotheses. 64:221-228

Xavier, M. 1965. Elastane Purchases Accelerate Weight Gain In Case-control Study. Journal of Obesity. 2:23-40.

So, What makes a good poster?

Kick Ass Posters: Pro-Tips to polish up your Scientific Presentations

Ernesto Salcedo, PhD, Modern Human Anatomy, Univ. of CO School of Medicine, Aurora, CO

1 Large Font (to read from afar).
Title should be the punchline of the poster

Keep the color scheme simple (notice there is one main color used here (in the top box)

2

Background

3 FONTS: Use sans serif type fonts (like Helvetica) for titled and serif fonts (e.g. times) for text in paragraphs

So, your master's program is making you make a poster. Now what? There are a lot posters hanging around in the hallways. Should you copy those? Or what about the person in your lab. They have poster template. Should you use that?

Yes and no. There are a lot of bad poster arounds. I see bad posters everywhere. *Some people don't even know they have bad posters.*

Instead, you should build on previous examples and/or templates, and then use our sure fire tips for success.

4

Methods

Avoid dense paragraphs. They are harder to digest. Use bullet points . Always Include graphics for the background. The graphics should illustrate or explain the background in some fashion

Software you can use:
- Powerpoint
- Keynote
- Adobe Illustrator

End Result should be a PDF

5 Replace words with images whenever possible.

6

From hot mess….

Figure 1: Example of a Terrible poster. note the excessive text, the distracting background, the chaotic organization of the sections, the illegible title.

…to hotness

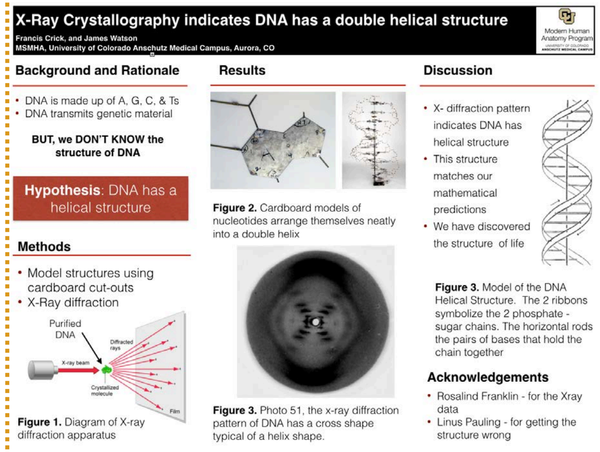


Figure 2: Example of a better poster. Note the judicious use of white space, Simple color scheme, bold graphics, bullet point text. Centered results, legible title

Carefully align elements in a column and across columns (note dotted yellow lines. Pro-tip: Match text alignment (eg left-justified) before aligning text boxes

7 Use figure legends

8 Position the main result close to or in the center of the poster

9 Use white space to separate sections (not this much, though)

Discussion

The Discussion section should summarize the results and detail the results' implications. Avoid long paragraphs. Bulleted or numbered list are more effective, like the following:

1. Punchy title with a Large Font
2. **Fonts**. Titles - sans serif, Body - serif
3. High quality, explanatory Graphics
4. Bullet points and images when possible
5. Carefully Align all elements
6. Figures and figure legends
7. Center your main result
8. Keep the color scheme simple
9. Use white space to separate sections
10. Landscape orientation (3 feet height)

Acknowledgements

- Nature Presentations: Billboard science
- Collin Purrington: Designing Conference Posters
- http://betterposters.blogspot.com
- PhD Posters

10 Use Landscape orientation (3 feet height)

1. Punchy title with a Large Font (to read from afar). Title should be the punchline of the poster
2. Keep the color scheme simple (notice there is one main color used here (in the top box)
3. Fonts. Use sans serif type fonts (like Helvetica) for titled and serif fonts (e.g. times) for text in paragraphs. Also, Don’t use paragraphs. They’re harder to consume
4. Avoid dense paragraphs Use bullet points . Always Include graphics for the background. The graphics should illustrate or explain the background in some fashion
5. Replace words with images whenever possible.
6. Carefully align elements in a column and across columns (note dotted yellow lines. Pro-tip: Match text alignment (eg left-justified) before aligning text boxes
7. Instead of dense paragraphs in the results section, detail the information pertinent to the figure in the figure legend. The figure legend should summarize the result and lists details like number of samples, etc. But Figures should mostly stand on their own
8. Position the main result close to or in the center of the poster
9. Use white space to separate sections
10. Use Landscape orientation (3 feet height)

Kick Ass Posters: Pro-Tips to polish up your Scientific Presentations

Ernesto Salcedo, PhD, Modern Human Anatomy, Univ. of CO School of Medicine, Aurora, CO

Background

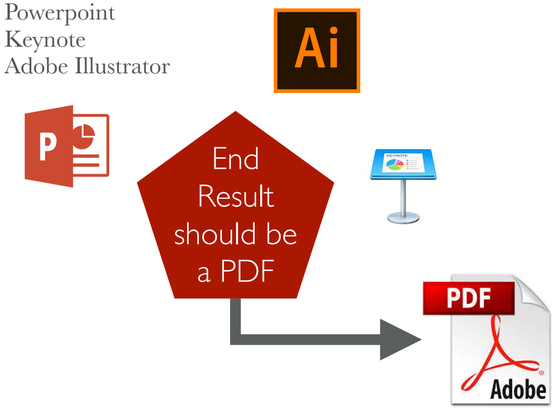
- How do you design a poster? Just copy one from the hallway?
- Your lab has a template. Can you use that?
  - Well, **Yes and no**.
  - There are a lot of bad posters around.
  - I see bad posters everywhere. *Some people don't even know they have a bad poster*

- Start with a template, and then use our sure-fire tips for success.

Your hypothesis in a box

Methods

Software you can use:
- Powerpoint
- Keynote
- Adobe Illustrator



From hot mess….

Figure 1: Example of a Terrible poster. note the excessive text, the distracting background, the chaotic organization of the sections, the illegible title.

…to hotness

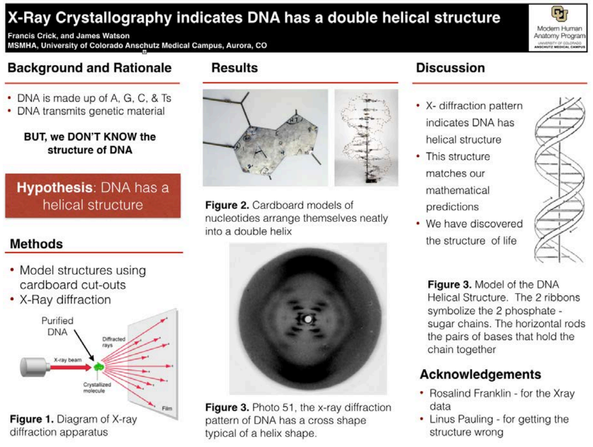


Figure 1. Diagram of X-ray diffraction apparatus

Figure 2. Cardboard models of nucleotides arrange themselves neatly into a double helix

Figure 3. Photo 51, the x-ray diffraction pattern of DNA has a cross shape typical of a helix shape.

Figure 3. Model of the DNA Helical Structure. The 2 ribbons symbolize the 2 phosphate - sugar chains. The horizontal rods the pairs of bases that hold the chain together

Figure 2: Example of a better poster. Note the judicious use of white space, Simple color scheme, bold graphics, bullet point text. Centered results, legible title

Discussion

The Discussion section should summarize the results and detail the results' implications. Avoid long paragraphs. Bulleted or numbered list are more effective, like the following:

1. Punchy title with a Large Font
2. **Fonts**. Titles - sans serif, Body - serif
3. High quality, explanatory Graphics
4. Bullet points and images when possible
5. Carefully Align all elements
6. Figures and figure legends
7. Center your main result
8. Keep the color scheme simple
9. Use white space to separate sections
10. Landscape orientation (3 feet height)

Acknowledgements

- Nature Presentations: Billboard science
- Collin Purrington: Designing Conference Posters
- http://betterposters.blogspot.com
- PhD Posters

Some More Examples

3D Interactive Foot

Educating Medical Professionals in the Interdisciplinary Assessment of Diabetic Foot Pathology

Enid Hajderi[1], Jodie Jenkinson[2], Dr. Robert Sargeant[3], Dr. James Mahoney[4], and Dr. Anne Agur[5]

1. Master of Science in Biomedical Communications, Institute of Medical Science, Faculty of Medicine, University of Toronto
2. Division of Biomedical Communications, Department of Biology, University of Toronto Mississauga
3. Division of General Internal Medicine, Department of Medicine, Faculty of Medicine, University of Toronto; St. Michael's Hospital
4. Division of Plastic Surgery & Reconstructive Surgery, Department of Surgery, Faculty of Medicine, University of Toronto; St. Michael's Hospital
5. Division of Anatomy, Department of Surgery, University of Toronto

Master of Science in Biomedical Communications
Institute of Medical Science
UNIVERSITY OF TORONTO

St. Michael's
Inspired Care.
Inspiring Science.

Background

Diabetes and its associated complications pose significant health and economic problems worldwide[1]. Diabetic foot ulcers (DFUs) and amputations are the most common complications of diabetes and precede almost 85% of all diabetes-related lower extremity amputations[1,2]. Fortunately, over 80% of DFUs can be prevented with proper care and management of the diabetic foot[3].

Despite the vast impact of this disease, the assessment and management of DFUs remain low priorities to health care providers. Current web-based resources on diabetic feet lack visual communication tools[4,5]. Given the inherently visual nature of diabetic foot pathology, the lack of visual learning tools is a major limitation. Therefore, there is a need for an innovative, comprehensible visual tool that aids medical professionals in the assessment of diabetic foot pathology.

Fig 1. The Saskatchewan Medical Association's guidelines for assessing diabetic foot pathology reveal the strong need for visual learning tools.

Goals & Objectives

This project is an online interactive module intended for use as a learning tool for Allied Health Professionals practicing and teaching in the fields of wound care, diabetes, and orthopedic surgery.

Objectives:

1. Address the lack of visuals in existing online resources through the visualization of an interactive three-dimensional (3D) model of the foot that the user can manipulate in real-time (rotate, select, hide/show structures) in order to supplement his or her knowledge and basic understanding of the foot anatomy.
2. Visualize two diagnostic tests in one-minute-long 3D animations, which will aid the user in successfully assessing and treating diabetic foot pathology in the clinical setting.

Materials & Methods

The 3D foot model anatomy was built in Maxon Cinema 4D R. 12, based on pre-existing bone and skin models, it was imported into the Unity 3D game development tool, and made interactive using JavaScript.

Fig 2. The 3D foot model consists of skeletal, nervous, venous, arterial, muscular & integumentary systems.

The two 1-minute-long 3D diagnostic test animations (monofilament test and probe-to-bone test) were created using Maxon Cinema 4D R. 12 and compiled in Adobe After Effects CS 5.5.

Fig 3. Screenshots of the 3D diagnostic test animations showing how to accurately perform a (A) monofilament test and a (B) probe-to-bone test.

The graphical user interface (GUI) housing the above content was designed in Adobe Illustrator CS5, compiled in Adobe Dreamweaver CS5, and programmed with HTML, CSS, and JavaScript.

Fig 4. A screenshot of the interactive foot anatomy overview. The user has 'turned off' the integumentary system by clicking on the visibility box next to the structure and has selected the menu item 'calcaneal tendon', thereby highlighting the calcaneal tendon in the model.

Conclusion & Discussion

This project is an original contribution to an existing body of knowledge and is predicted to yield considerable impact.

The 3D foot model will be a very valuable tool in teaching medical assessment principles, whether in the clinic or in the classroom. Moreover, it will enhance teaching in wound care and form the substrate for future educational modules intended to reach a wider audience.

The module will be successful if:

1. Learners can understand and utilize the model's interactivity.
2. Learners can effectively assess and treat diabetic foot pathology in an interdisciplinary manner.
3. Educators can use the module during talks and lectures.
4. Future authors can use the module as a prototype for other diabetic pathologies.

Dr. Robert Sargeant plans to carry out an evaluation of the module with staff and student residents at St. Michael's Hospital.

Acknowledgements

Masters Research Project Committee:

Faculty Advisor: Professor Jodie Jenkinson, BA, MScBMC
Visiting Member/Content Advisor: Robert Sargeant, MD, PhD, FRCPC
Content Advisor: James Mahoney, MD, FRCPC
Anatomy Expert: Anne Agur, BScOT, MSc, PhD

Special thanks to:

Professor Nicholas Woolridge, BFA, BScBMC, MScBMC, CMI
Professor Michael Corrin, BFA, BA, BScNsns, MScBMC
Gwun Yee Chin, BASc, MScBMC and Leslie Preddy, BSc, MScBMC

This project was generously funded by the Bickell Foundation, St. Michael's Hospital, and the Smallus Trust Student Research Scholarship Program. Pre-existing bone and skin models were provided by the Division of Biomedical Communications at the University of Toronto.

References

1. Saskatchewan Medical Association. 2008. Clinical Practice Guidelines for the Prevention and Management of Diabetes Foot Complications. (accessed April 29, 2010).
2. Reiber G.E. and W.R. Ledoux. 2002. Epidemiology of diabetic foot ulcers and amputations: evidence for prevention. In: Williams R., Herman W., Kinmonth A.L., Wareham, N.J. (eds). The evidence base for diabetes care. Chichester: Wiley.
3. Carrington, A. L., Abbott, C. A., Griffiths, J., Jackson, N., van Ross, E. R. E., and A. J. M. Boulton. (2001). A foot care program for diabetic unilateral amputees. Diabetes Care 24: 216-221.
4. Scottish Diabetes Specialist Podiatrists. 2009. Guidelines. (accessed May 23, 2010).
5. The Mayo Institute. 2010. Debridement of an Infected Diabetic Ulcer. (accessed May 10, 2010).

Slow-Wave Sleep Declines Faster in Adolescent Males than Females

Jordan Gaines, Graduate Student in Neuroscience

Jordan Gaines[1], Julio Fernandez-Mendoza[1], Alexandros N. Vgontzas[1], Duanping Liao[2], Edward O. Bixler[1]

[1]Sleep Research and Treatment Center, Department of Psychiatry, [2]Department of Public Health Sciences
The Pennsylvania State University College of Medicine, Hershey, PA, 17033

Introduction

Slow-wave sleep (SWS) (*"deep sleep"*) is involved in memory consolidation, parasympathetic ("rest and digest") functioning, and recovery after sleep deprivation.

Large, population-based studies consistently demonstrate:

1. People **lose** SWS with as they age.
2. **Men tend to have less** SWS than women of the same age.

The timing of this gender dimorphism is unclear.

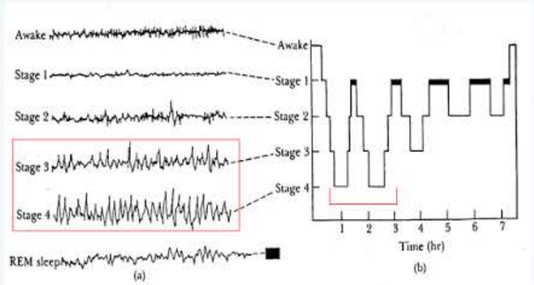


Figure 1. Representative EEG trace and hypnogram. Slow-wave sleep (highlighted in red) is characterized by high-amplitude, low-frequency delta (0.5-2.0 Hz) waves, and tends to predominate the first half of a night's sleep.

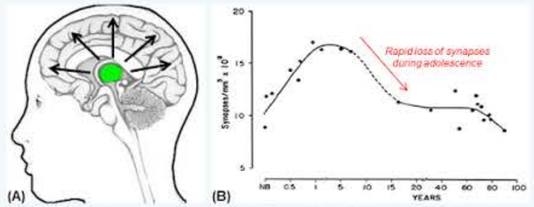


Figure 2. Why does slow-wave sleep decline with age? It's not entirely clear why, but theories exist. Slow-wave sleep is a result of burst activity in the *thalamus* (shown in green, **Fig. 2A**), which synchronizes the firing of cortical neurons. As we age and our brains develop, however, we lose connections (*synapses*) between these cortical neurons (**Fig. 2B**, from Huttenlocher, 1979). Sleep researcher Irwin Feinberg hypothesizes that losing these connections decreases the neuronal population that could oscillate in unison, thus reducing what we measure as slow-wave sleep.

Aim

Characterize slow-wave sleep in a large, cross-sectional population of adolescents.

Methods

Adolescents (n=421) from the Penn State Child Cohort

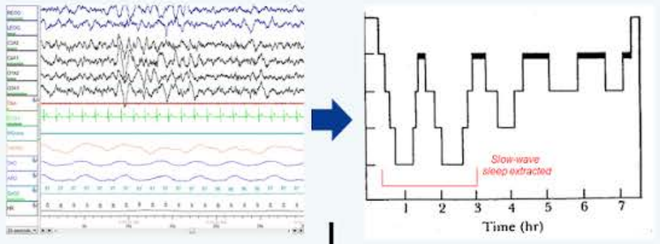
- Ages 12-23y (mean 17.0 ± 2.3y)
- 53.9% male
- 21.9% minority

↓

Polysomnographic (PSG) sleep study
(9 hours; 10pm – 7am)

↓

Sleep record scored according to current American Academy of Sleep Medicine criteria

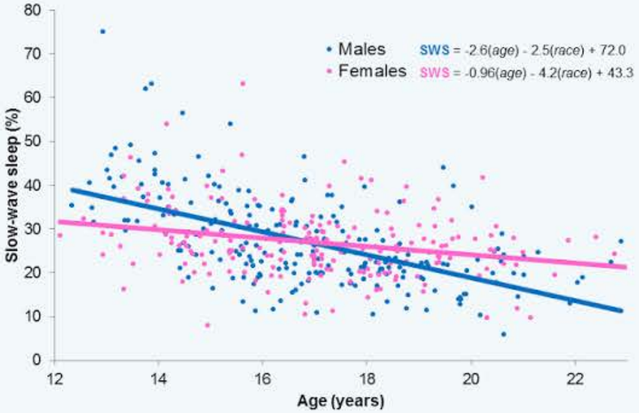


↓

Linear regression

% of slow-wave sleep *vs.* age equations generated separately for **males** and **females**, controlling for minority status

Results



Males undergo a **more rapid reduction** of SWS across adolescence:

- **Males** = -2.6% per year
- **Females** = -0.96% per year

Males and females diverge at age **17.1 years** (gender × age interaction: $p < 0.001$).

Loss of SWS is **not** accompanied by a decline in total sleep or wake time during the night.

Conclusions

Adolescent **males lose SWS faster** than females.

The gender divergence in SWS may signal the initiation of **dimorphic sleep patterns** seen in adulthood.

Changes in SWS across adolescence may shed light on underlying mechanisms of human **brain maturation**, especially those related to **mental and physical health**.

Acknowledgments

Funding: NIH R01 HL63772, R01 HL97165, UL1 RR033184, C06 RR16499

This research has been reviewed and approved for compliance with the policy of the human subjects Institutional Review Board. (IRB protocol # HY98-228-A; renewed 9 Sept 2013)

Research technicians in the Department of Psychiatry and the staff of the General Clinical Research Center (GCRC) are especially commended for their efforts.

Presenting Posters

- When presenting a poster, you should plan on a THREE minute talk, total
  - Think Elevator Pitch
  - Should be fairly memorized
  - But remember, you will be standing next to a giant cheat sheet
- There will be no set time to give your talk. Very asynchronous
- People will come up and ask you questions
  - You can ask them - do you want the short or long version?
    - The long version shouldn’t be any longer than 7 minutes

Resources you should use

canvas

How to make a Poster

Better Posters

A resource for improving poster presentations • Part of DoctorZen.net

http://betterposters.blogspot.com

Capstone Workshop Overview
Summary

- Time is ticking!
  - First Draft of Written Report Due February 28th
    - Use as a discussion piece to make sure everyone is in agreement on what needs to be finished for the Capstone Project
- Class will mostly be dedicated to working on your presentation
  - We will build our poster section by section
- Sign-up for time-slot for next time (small group sessions)