CMU CENTRAL MICHIGAN UNIVERSITY | College of Medicine

Effective Strategies for Reading and Organizing Notes in Medical Education

Strong Starts Series: Session 1

Eron Drake, Ed.D., Director of Academic Success

August 11, 2017 | CMED 2403 | 12:00 – 12:50 p.m.

http://newmanfgolfieti.wikidot.com/

Medical Education is a Marathon, Not a Sprint

Source: http://1plify.com/blog/takes-study-medicine-find/

Enhancing Reading and Retention

“All medical students would probably benefit from being taught specific strategies for reading deeply, which suggests that teaching strategies could be usefully incorporated into the beginning of medical school, perhaps as an introduction to how to succeed” (Roberts & Klamen, 2010, p. 329).

Roberts, N. K., & Klamen, D. L., (2010). The case for teaching explicit reading strategies to medical students. *Medical Education, 44*, 328-329.

SQ3R: Survey

- Think about concepts
  - What do you know?
  - What do you want to know?
- Glance at topic headings
- Skim sections
- Review images, tables, charts
- Read chapter summary
- Identify 3 – 6 “big” ideas

Adapted from “Reading Course Textbooks,” (2017). Albert Einstein College of Medicine, Office of Academic Support and Counseling. Retrieved from https://www.einstein.yu.edu/education/student-affairs/academic-support-counseling/study-methods/reading-course-textbooks.aspx

Robinson F.P. (1970). Steps in the SQ3R method. In Effective Study, 4th Ed., NY, NY: Harper and Row Publishers.

LG 3: Introduction to Immunology

Monday, Aug 7, 10 am

Parham *The Immune System* 4th Ed, Chapter 1: pages 3-4, 6, 8-12, 14-25

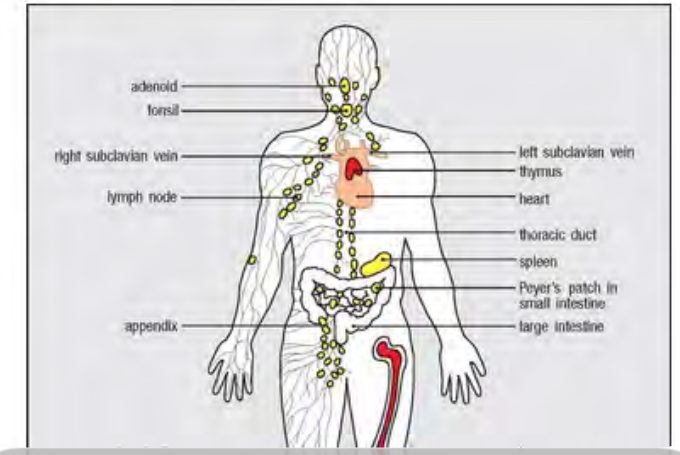
- Learning Objectives:

1. Describe the describe the defense mechanisms employed by innate immunity.
2. Describe three features that distinguish adaptive from innate immunity.
3. Describe the locations and functions of cells of the immune system.
4. Compare and contrast the activation of cells of the innate and adaptive immune systems.
5. **Describe the functions of primary and secondary lymphoid tissues.**

1-11: Most lymphocytes are present in specialized lymphoid tissues

Although doctors and immunologists usually sample and study human lymphocytes from blood samples taken from their patients and voluntary donors, the vast majority of lymphocytes are to be found in specialized tissues known as **lymphoid tissues** or **lymphoid organs**. The major lymphoid organs are bone marrow, thymus, spleen, adenoids, tonsils, appendix, lymph nodes, and Peyer's patches (**Figure 1.19**). Less organized lymphoid tissue is also found lining the extensive mucosal surfaces of the respiratory, gastrointestinal, and urogenital tracts. The lymphoid tissues are functionally divided into two types. **Primary** or **central lymphoid tissues** are where lymphocytes develop and mature to the stage at which they are able to respond to a pathogen. The bone marrow and the **thymus** are the primary lymphoid tissues; B and T lymphocytes both originate from lymphoid precursors in the bone marrow (see **Figure 1.13**), but B cells complete their maturation in the bone marrow before entering the circulation, whereas T cells leave the bone marrow at an immature stage and migrate in the blood to the thymus where they mature. Apart from the bone marrow and the thymus, all other lymphoid tissues are known as **secondary** or **peripheral lymphoid tissues**; they are the sites where mature lymphocytes become stimulated to respond to invading pathogens.

Figure 1.19: The sites of the principal lymphoid tissues within the human body.



SLO: Describe the functions of primary and secondary lymphoid tissues.

Parham, P. (2015). *The immune system*, 4th Ed., NY, NY: Taylor & Francis Group, LLC.

SQ3R: Question

- Ask:
  - What questions do I have that the chapter might answer?”
  - What questions might a faculty member ask about this content?
  - How does this content align with our SLOs?
  - When? How? Why?
  - Turn headings into questions
- Generate questions for images or other graphics
- Write down unfamiliar vocabulary and guess at meaning

SQ3R: Read

- Read one section at a time seeking to answer questions
- Search for answers to your questions
- Question or “argue” with the author(s)
- Review bolded or italicized words
- Review tables, graphs, and illustrations
- Generate additional questions

SQ3R: Recite

- Stop periodically to recall
- Look away and try to recite the answer to your questions
- Summarize key points by talking out load or writing down key phrases
- Use your own words and give examples
- Recall main headings
- Identify the important ideas of graphs, charts, or illustrations
- Summarize the overall concept or most important points
- Connect what you have just read to what you already know

SQ3R: Review

- Test your memory by asking yourself the questions you've identified
- Test yourself utilizing the relevant chapter questions
- Review your notes and answer questions (create flowcharts, label images, outline)
- Synthesize the content with information from LG, PBL, or Clinical Correlates
- Consider implications or applications
- Answer "Why is this information clinically relevant?"
- Identify remaining questions
- Revisit topics that you can't recall after testing yourself
- Create study aids to enhance review (flashcards, notes, etc.)
- Review daily

Create Notes = Study Tools

Figure 1.19: The sites of the principal lymphoid tissues within the human body.

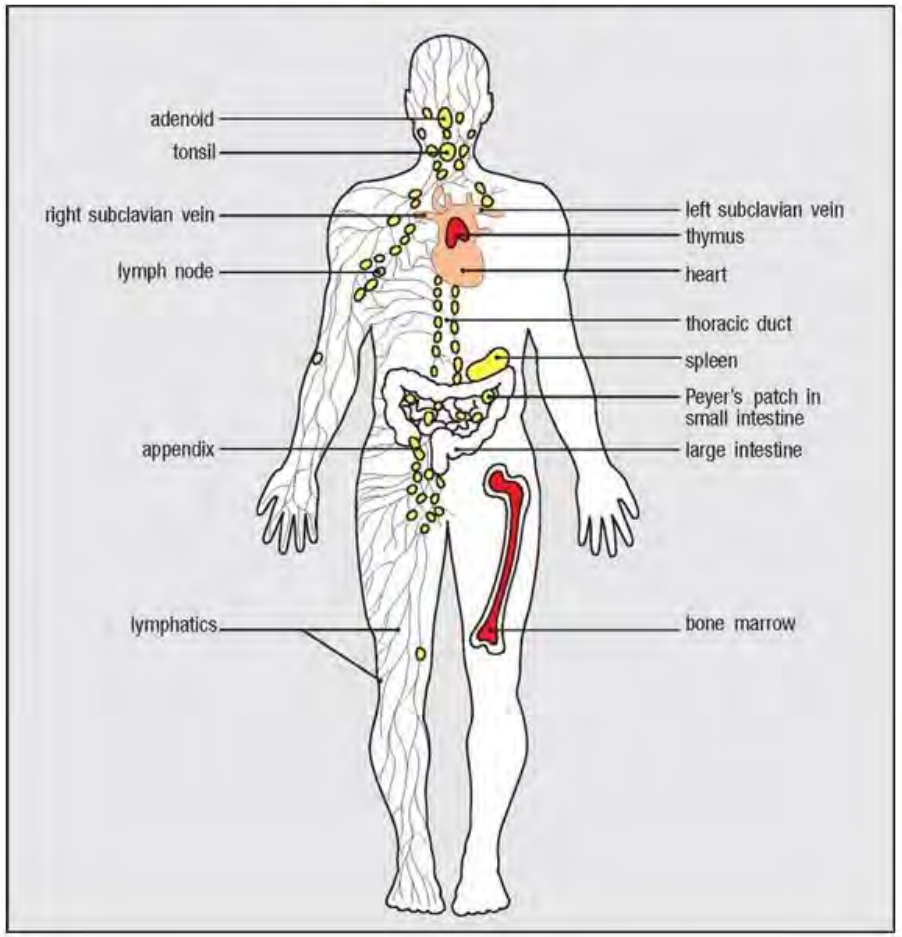
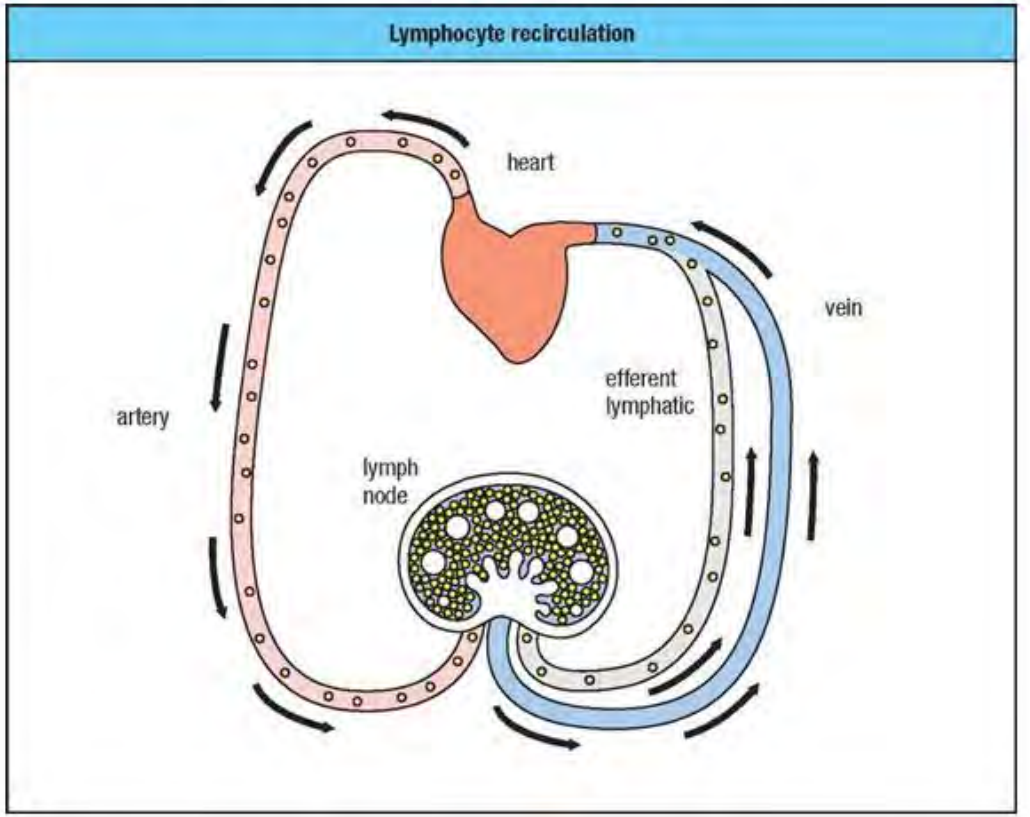


Figure 1.20: Lymphocyte recirculation.



Parham, P. (2015). *The immune system*, 4th Ed., NY, NY: Taylor & Francis Group, LLC.

Create Notes = Study Tools

Figure 1.4: Diverse microorganisms cause human disease.

Type	Disease	Pathogen	General classification*	Route of infection
Viruses	Severe acute respiratory syndrome	SARS virus	Coronaviruses	Oral/respiratory/ocular mucosa
	West Nile encephalitis	West Nile virus	Flaviviruses	Bite of an infected mosquito
	Yellow fever	Yellow fever virus	Flaviviruses	Bite of infected mosquito (*Aedes aegypti*)
	Hepatitis B	Hepatitis B virus	Hepadnaviruses	Sexual transmission; infected blood
	Chickenpox	Varicella-zoster	Herpes viruses	Oral/respiratory
	Mononucleosis	Epstein–Barr virus	Herpes viruses	Oral/respiratory
	Influenza	Influenza virus	Orthomyxoviruses	Oral/respiratory
	Measles	Measles virus	Paramyxoviruses	Oral/respiratory
	Mumps	Mumps virus	Paramyxoviruses	Oral/respiratory
	Poliomyelitis	Polio virus	Picornaviruses	Oral
	Jaundice	Hepatitis A virus	Picornaviruses	Oral
	Smallpox	Variola	Pox viruses	Oral/respiratory
	AIDS	Human immunodeficiency virus	Retroviruses	Sexual transmission, infected blood
	Rabies	Rabies virus	Rhabdoviruses	Bite of an infected animal
	Common cold	Rhinoviruses	Rhinoviruses	Nasal
	Diarrhea	Rotavirus	Rotaviruses	Oral
	Rubella	Rubella	Togaviruses	Oral/respiratory

Parham, P. (2015). *The immune system*, 4th Ed., NY, NY: Taylor & Francis Group, LLC.

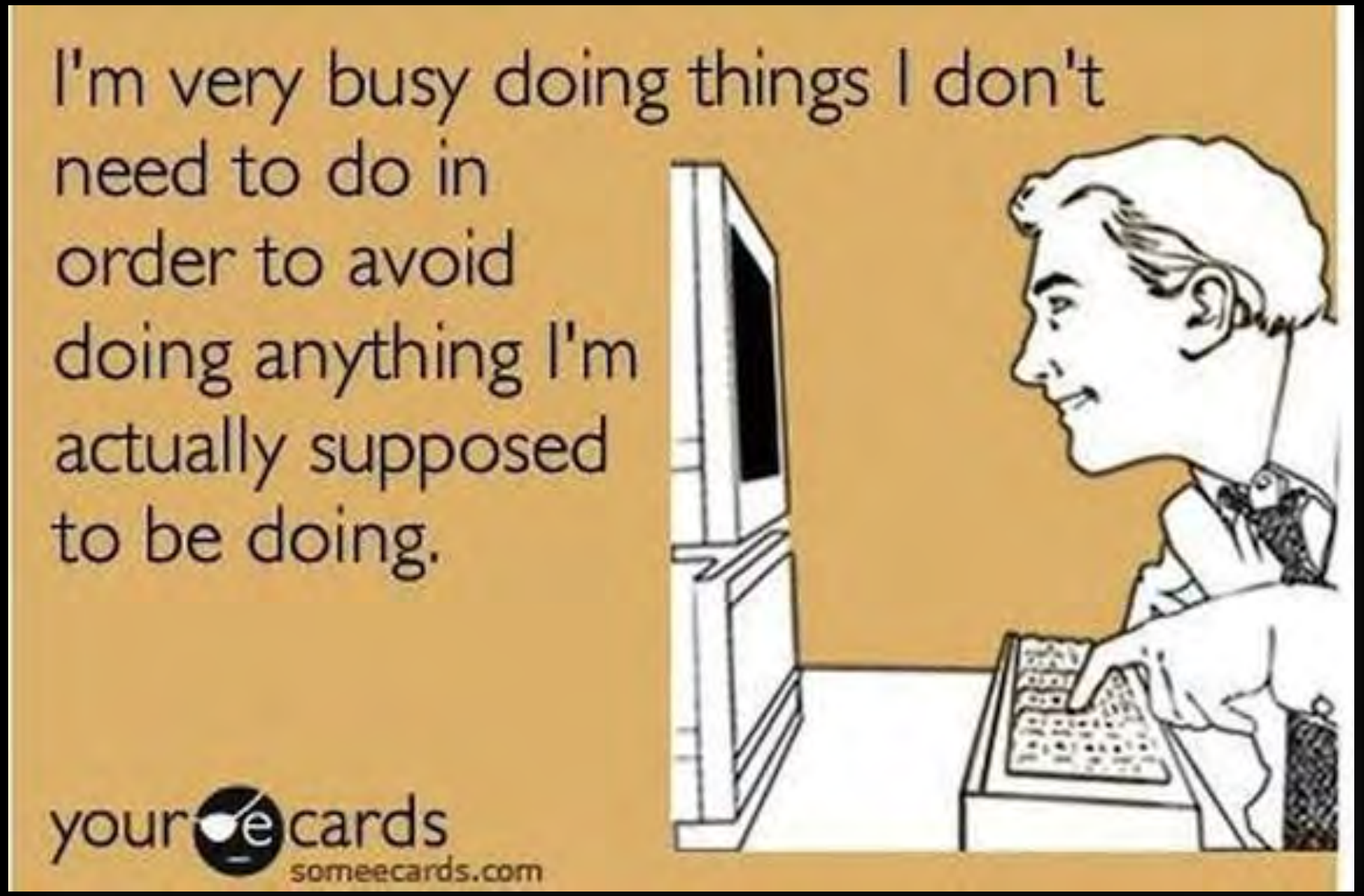
http://www.mediafactory.org.au/ai-vee-goh/category/grain-of-salt/

Increase Efficiency of Reading Time

Pomodoro Technique

1. In your daily schedule, plan for blocks of 25 – 35 minutes of focused study time (e.g., reading, researching, note making)
2. Followed by 5 minutes of relaxed or diffused time (take a short walk, get a drink, organize your papers)
3. Repeat.
4. After about 3 or 4 Pomodoro's take a longer, 20-minute or more break depending upon your natural rhythms or needs.

(Visit The Pomodoro Technique to learn more.)



http://getbuttonedup.com/2013/10/24/8-great-ways-to-stop-procrastinating/

Avoid Procrastination: Do Something (15 min)

http://www.medicaldaily.com/why-using-pen-and-paper-not-laptops-boosts-memory-writing-notes-helps-recall-concepts-ability-268770

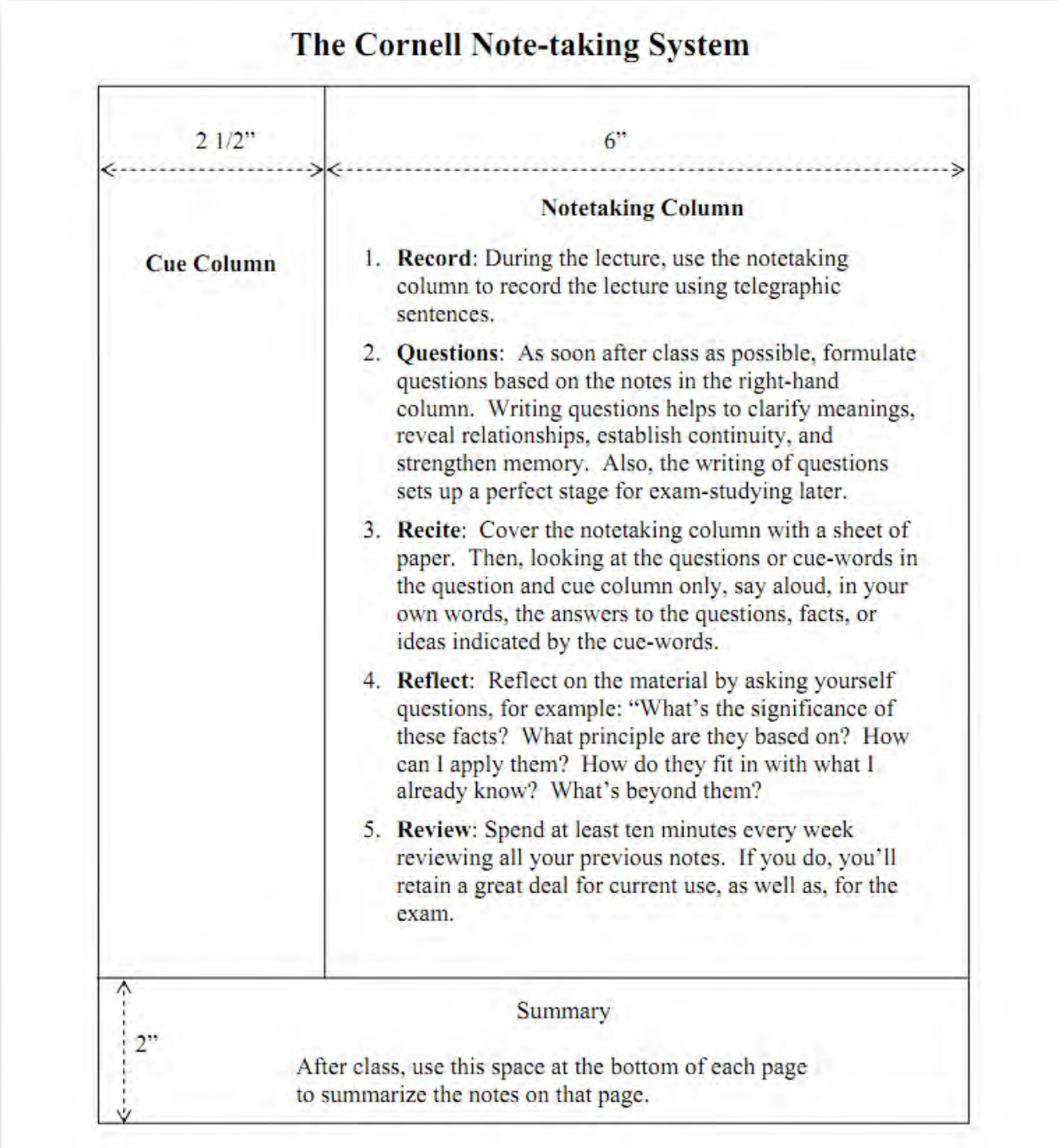
Introduction to Note Taking and Organization

“…Note-taking has been found to be as cognitively demanding as playing chess is for an expert, as both require the retrieval of knowledge, planning, and the development of solutions.”

(Piolat et al., 2005, as cited by Friedman, n.d.)

Comprehension vs Production

Cornell Note-Taking System

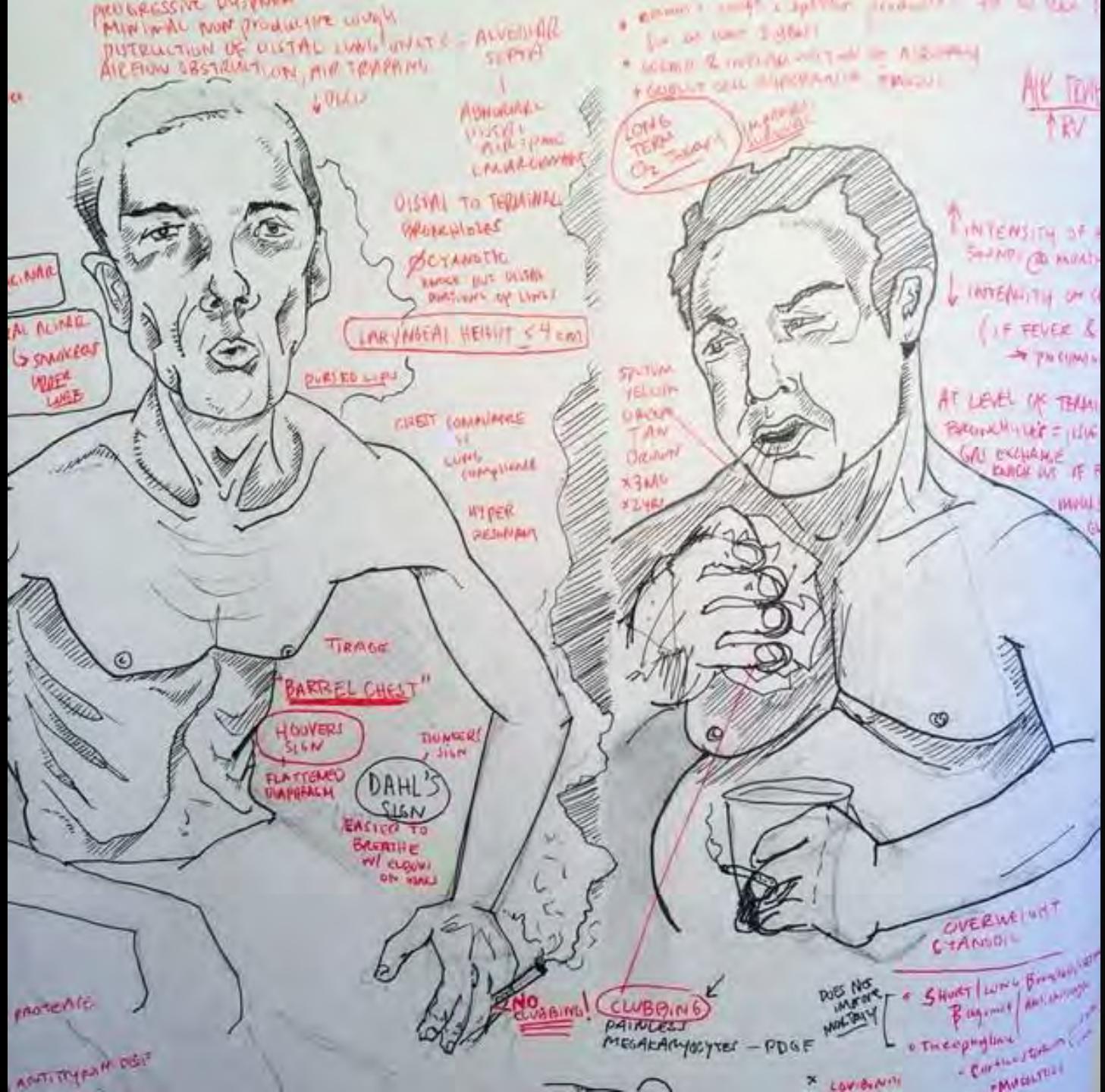


The Cornell Note-taking System

2 1/2"	6"
Cue Column	**Notetaking Column** 1. **Record**: During the lecture, use the notetaking column to record the lecture using telegraphic sentences. 2. **Questions**: As soon after class as possible, formulate questions based on the notes in the right-hand column. Writing questions helps to clarify meanings, reveal relationships, establish continuity, and strengthen memory. Also, the writing of questions sets up a perfect stage for exam-studying later. 3. **Recite**: Cover the notetaking column with a sheet of paper. Then, looking at the questions or cue-words in the question and cue column only, say aloud, in your own words, the answers to the questions, facts, or ideas indicated by the cue-words. 4. **Reflect**: Reflect on the material by asking yourself questions, for example: "What's the significance of these facts? What principle are they based on? How can I apply them? How do they fit in with what I already know? What's beyond them? 5. **Review**: Spend at least ten minutes every week reviewing all your previous notes. If you do, you'll retain a great deal for current use, as well as, for the exam.
2"	Summary After class, use this space at the bottom of each page to summarize the notes on that page.

http://lsc.cornell.edu/LSC_Resources/cornellsystem.pdf

Organization of Notes



https://www.buzzfeed.com/hjoneslawrence/med-student-transforms-his-study-guides-into-incredible-comi?utm_term=.jimykpPeMB#.fpzVm3plYB

Note-Checking with a Peer

Instructions:

1. Select one LG lecture or PBL case.
2. Compare your notes with a partner.
3. Identify the “big ideas”
4. Check notes for omissions and accuracy.
5. Add details to your notes.
6. Identify remaining questions.

Creating a Visual Representation of Week 1

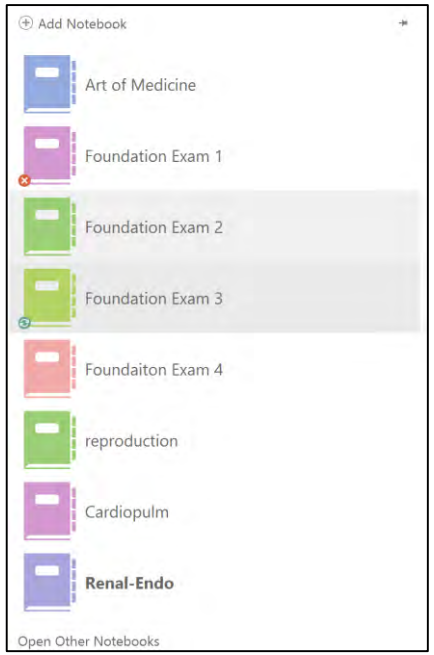
Student Samples

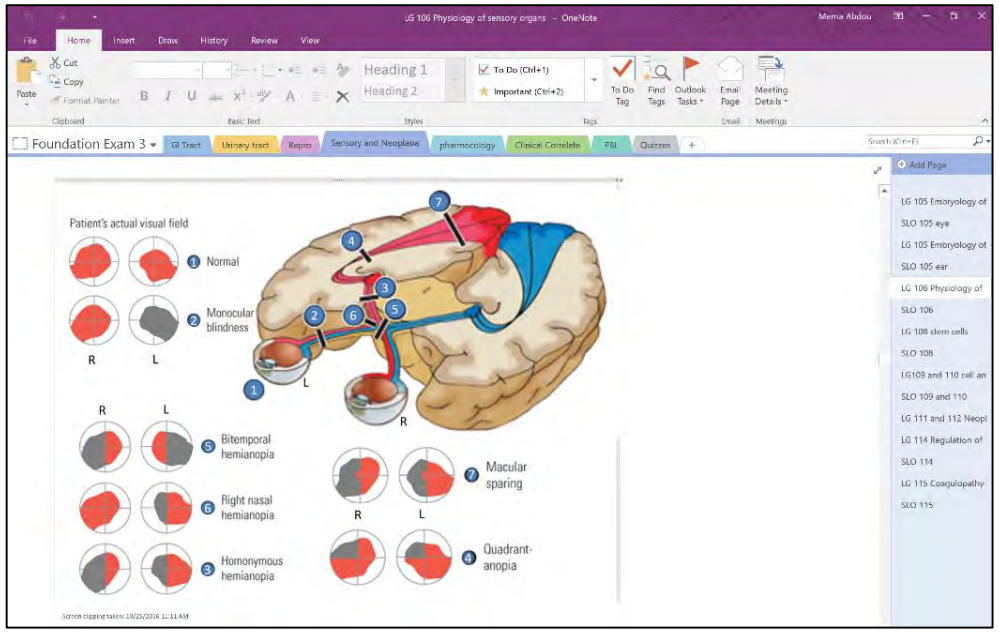
Binder

Paul Zeller

- Created handwritten notes from lecture and PBL.
- Review SLOs.

OneNote





Merna Abdou

- Separated lectures (by exam)
- Created sections on topics
- Created subpage for SLOs (answered SLOs, added notes, images
- Tagged questions or important facts

OneNote

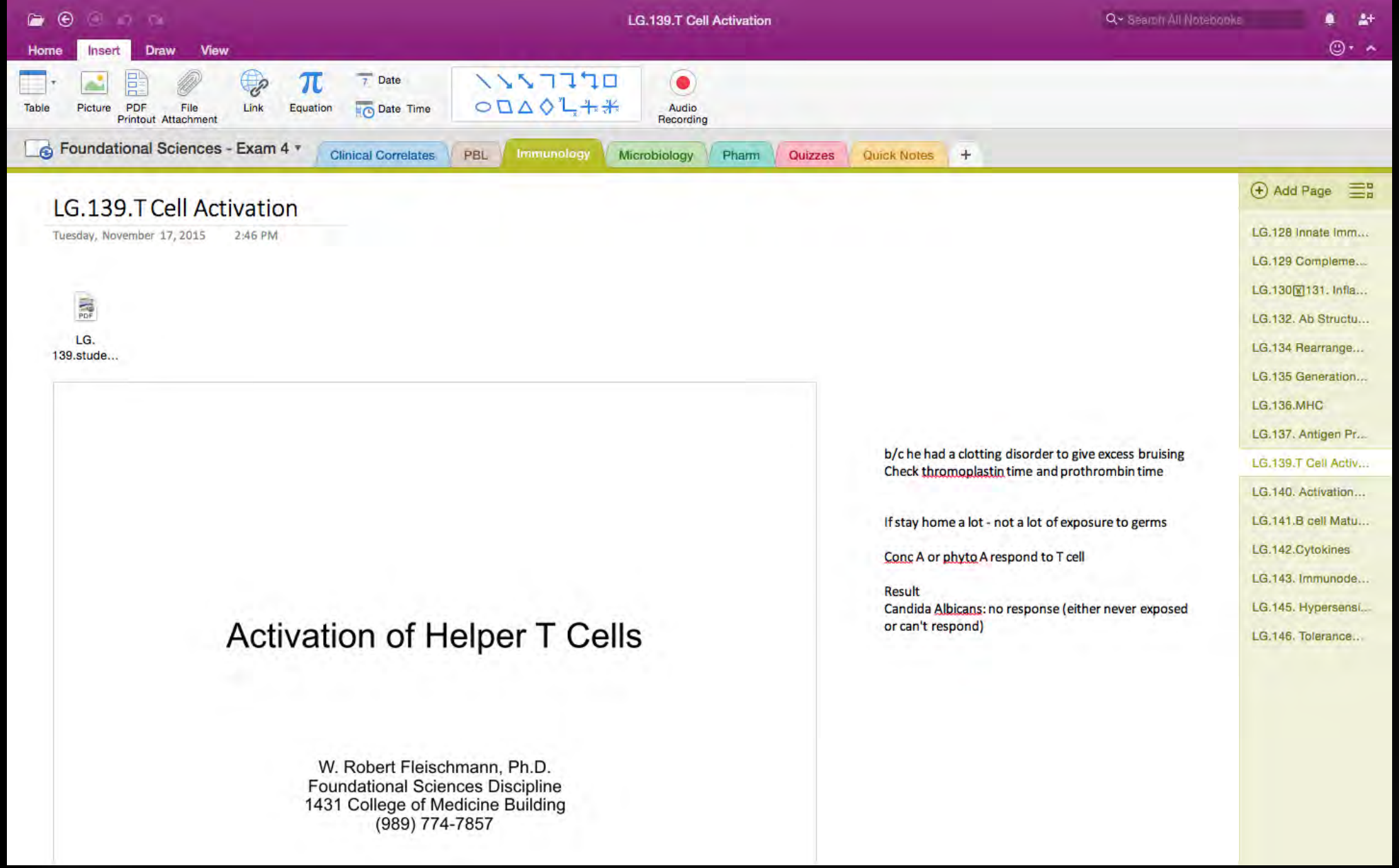
Selected SLOs from LG6 in Repro/HD

1. **Describe the phases (Fig. 2-14, ~p. 30, Moore) & list the sequence of key events involved in fertilization.**
   Fertilization occurs when after the sperm has traversed through the corona radiata through use of the acrosomal reaction and made it through the zona pellucida.
   - Sperm needs to be capacitated in order to properly carry out this function

   Once one sperm gets through the zona pellucida, the membranes of the egg and the sperm fuse, triggering blocks and changes to prevent polyspermy.
   - At this point, the egg has already resumed meiosis II and is ready for the pronuclei to fuse. The pronuclei fuse and the zygote is created

Natalie Lopes

- Reviewed SLOs with roommates prior to lecture
- Answer SLOs by writing on whiteboard
- Review lecture and cases and answer SLOs the same day
- Create mind maps to review



Terace Thomas, M2

Notebook > Course > Curricular Activity

Foundational Sciences > Immunology > Large Group T Cell Activation (with key concepts)

Terace Thomas, M2

LG 22 Ascending & Descending Tracts

Search All Notebooks

Home | Insert | Draw | View

Table | Picture | PDF Printout | File Attachment | Link | Equation | Date | Date Time | Audio Recording

Organ Systems | Repro | Cardiopulm | Renal_Endo | Neuro_BS | GI | Musk_Derm | Hem_Onco | +

LG 22 Ascending & Descending Tracts

Sunday, September 11, 2016 10:50 PM

2016 NEURO, L...

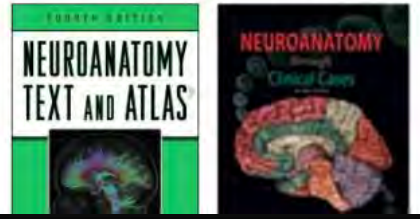
CMU CENTRAL MICHIGAN UNIVERSITY | college of Medicine

Neuroscience Course 2016

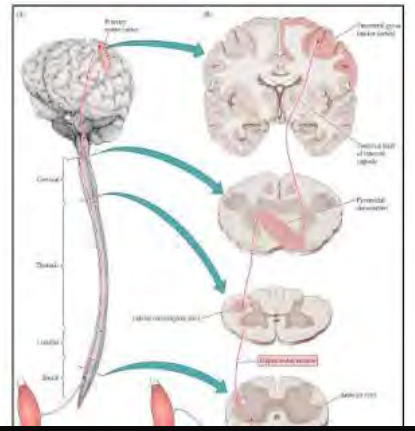
Anatomy of the Main Ascending & Descending Tracts of the Spinal Cord & Brain

(Motor & Sensory Pathways)

"NTA" "NCC"



M2s, Lg. Grp # 21 & 22
Weds., 9/7/16, 1-3 pm
Mark DeSantis, MD

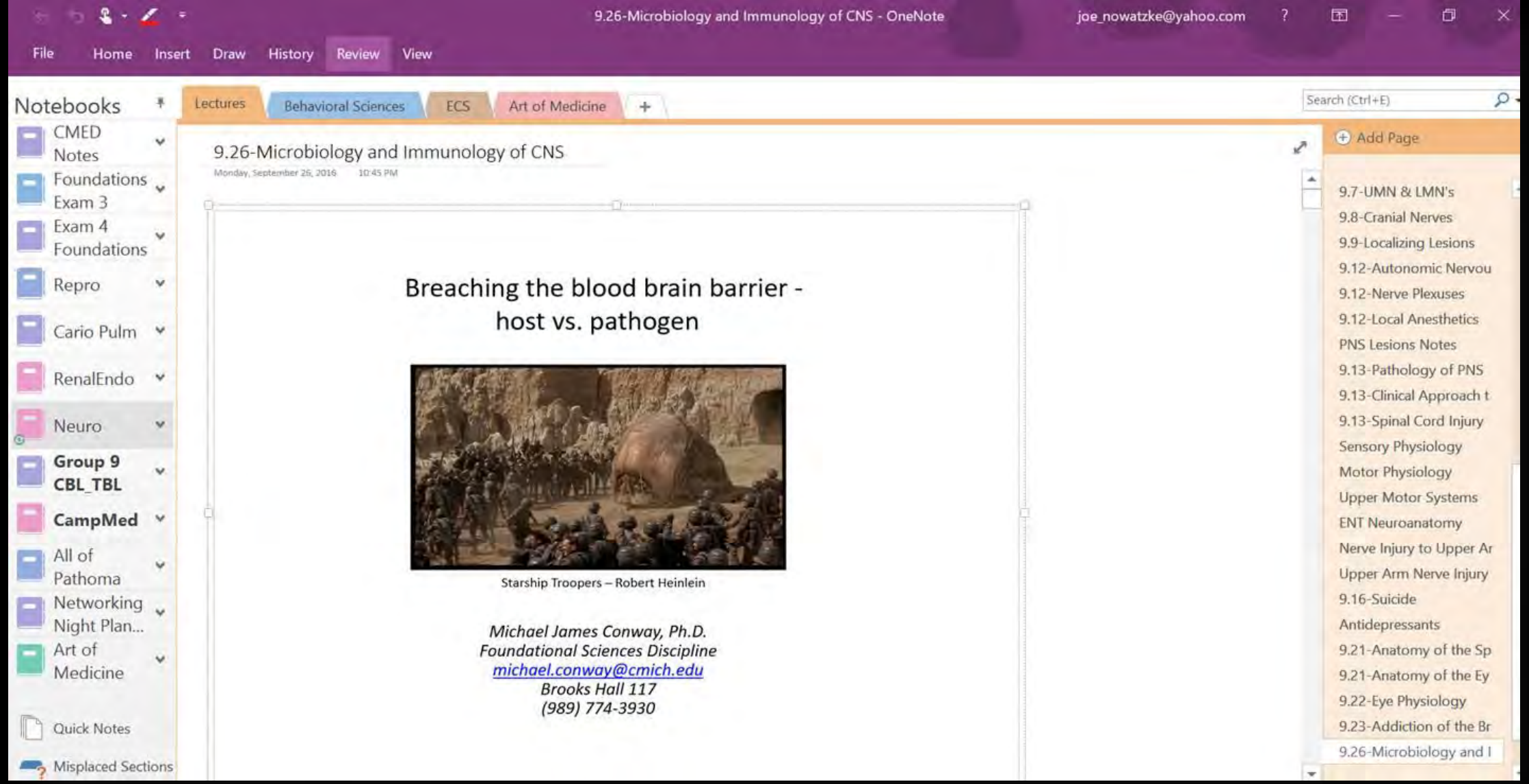


Add Page

LG 10 Clinical Meth...
LG 11 Diencephalo...
LG 12 Spinal Cord...
LG 13 Psychologic...
LG 14 Movement Di...
LG 15 Alteration of...
LG 16 Neurocogniti...
LG 17 NMJ Disorders
LG 18 Antiseizure P...
LG 19 Human Sexu...
LG 20 Somatoform...
LG 21 CNS vs PNS...
LG 22 Ascending &...
LG 23 Motor Neuro...
LG 24 Cranial Nerv...
LG 25 Approach to...
LG 26 ANS
LG 27 Nerve Plexuses
LG 28 Local Anesth...
LG 29 Pathology of...
LG 30 Clinical Appr...
LG 31 Spinal Cord...
LG 32 Anxiety, Dep...

Notebook > Course > Curricular Activity

Organ Systems > Neuro > Large Group Tracts



Joseph Nowatzke, M2

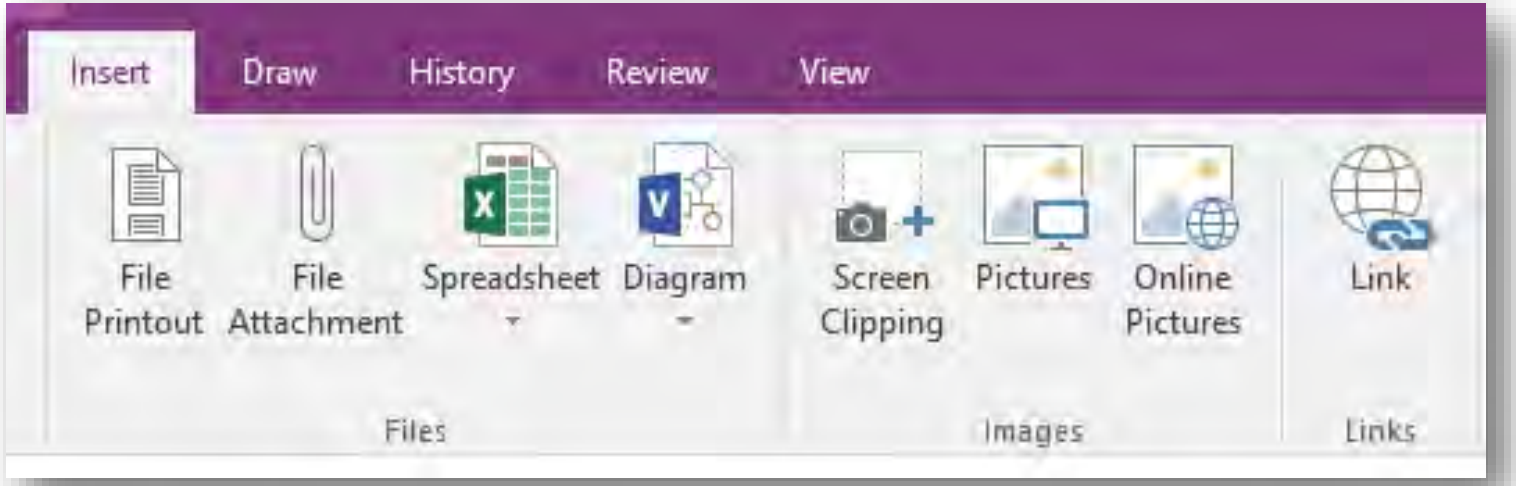
Notebook > Curricular Activity > Session Notes

Neuro > Lecture > Microbiology and Immunology

OneNote Tips

Adding PPTs, PDFs, Notes into OneNote

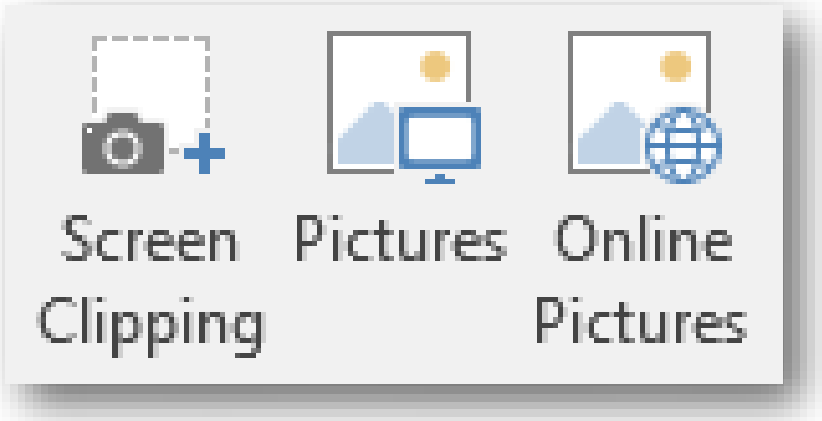
- File Attachment
- Insert File Printout
  - Automatic File Attachment
  - Under 10 pages – 1 OneNote Page
  - Over 10 pages – 1 Page Per OneNote Page



(Kip Ferguson, 2016)

Elaborating, Adding Details, Making Connections

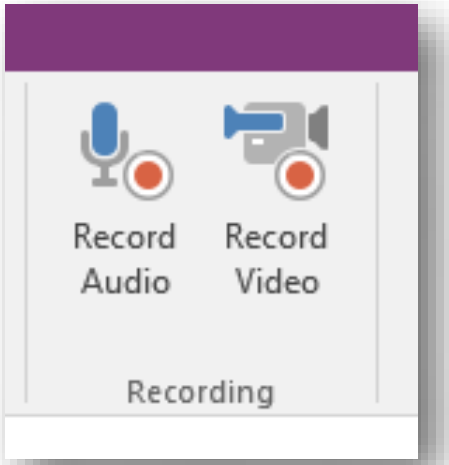
- Pictures



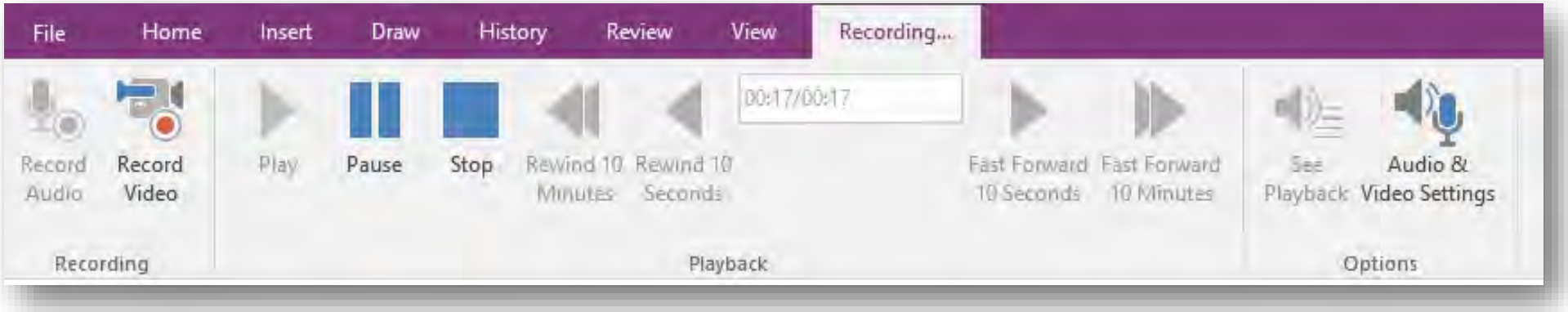
- Drawing Tools

(Kip Ferguson, 2016)

Utilizing Audio and Video

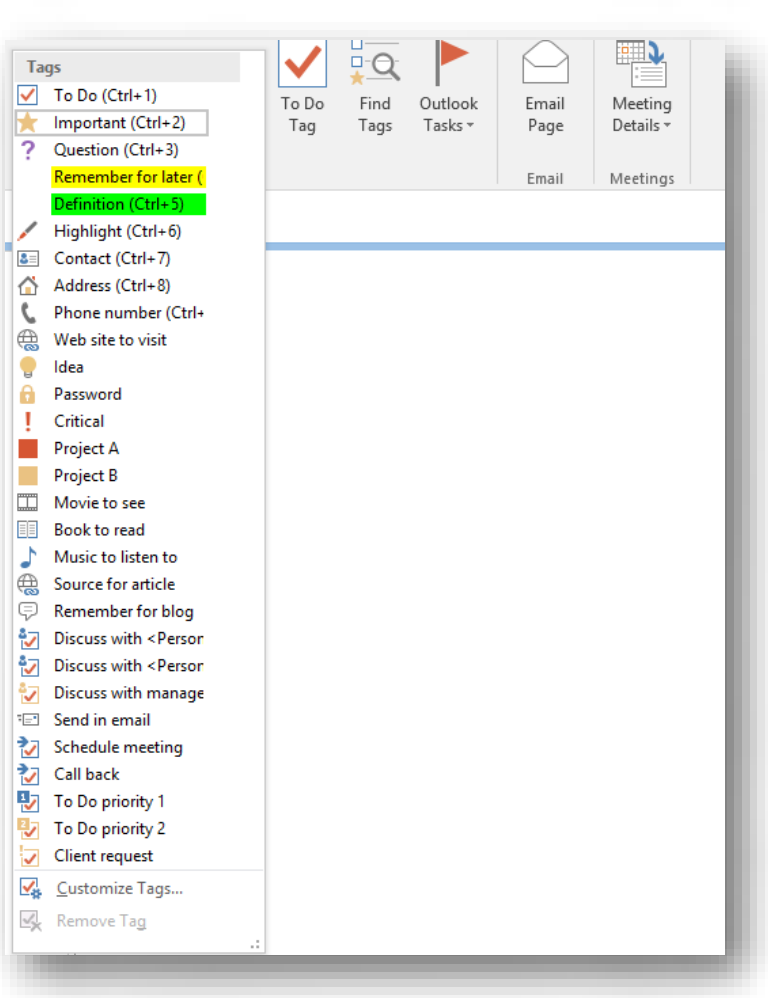


- Audio and Video Sync to Notes
- Allows the ability to focus on Key Points



(Kip Ferguson, 2016)

Tag Concepts or Questions



Additional Note Organization Options

- Growly Notes (Mac)
- Evernote (used as an alternative to OneNote)
- Penultimate (digital handwriting for iPad, can use with Evernote)
- Turbo Scan (scan multipage documents to store as PDFs or JPEGs)
- Google Drive (Note: NOT HIPAA compliant, no patient information)
- Dropbox (Note: NOT HIPAA compliant, no patient information)
- Notebook
- Three-ring binder

(Kip Ferguson, 2016)

More About Organizing Notes and Note Making …

- Organizing Notes in Medical School and Residency (This blog, by medical students at Baylor College of Medicine, overviews various apps used to help organize notes, effective tools in apps (e.g., find), and offer tips for studying using notes.)
- How to Use One Note (This guide, developed by Heather de Anda, a medical student at the University of Texas Health Science Center, provides detailed instructions for creating notebooks, using sections and pages, importing course content, creating "to-do" lists, and more.)
- This Med Student Makes Comics to Help Him Study (BuzzFeed article about Mike Natter, MD candidate at Jefferson Medical College at Thomas Jefferson University)
- Clinical Sketchnotes (33 Charts article by Dr. Bryan Vartabedian about the opportunities to use sketchnotes in the clinic.)

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