# Data management

- Encompasses interrelated concepts
  - Policy (lab, department, institutional, national levels)
  - Organization (file names and folder structures)
  - Documentation (putting data in context for others)
  - Storage and Backup

# What are your problem areas?

- Losing samples, data, or documentation
- Particular project type
- Particular lab person or type
- Shared equipment
- Labeling
- Storage
- File type preservation
- Paper vs electronic continuity

# Map your work (or lab)

- Map out how you are currently organizing your data
  - What are your projects
  - Know your workflow
  - Know your behaviors

# What are your projects

- Currently active
  - Main project vs side projects
- Pilot
- Collaborations
- Clean-up/follow-up
- Grant preparation
- Future

# Identify workflow for each project

- What types of experiments/assays are done
- What supporting documentation is generated
- What format
- By whom
- Where is it stored
- How is it stored
- Who needs it
- How long does it need to be kept

# Behavioral aspects

- How long does it take to find a specific item?
- How long does it take you to document your research?
- How often do you get behind?
- How long does it take to catch up?
- How long do you think it should take?
- Are you willing to spend more time on documentation? How much?

# What are your problem areas?

- Losing samples, data, or documentation
- Particular project type
- Particular lab person or type
- Shared equipment
- Labeling
- Storage
- File type preservation
- Paper vs electronic continuity

# Make decisions

- What data problem has the highest priority
- What type of data management needs to be addressed
  - policy
  - organization
  - documentation
  - storage
- Plan implementation

# Data management

- Policy (lab, department, institutional, national levels)
- Organization (file names and folder structures)
- Documentation (putting data in context for others)
- Storage and backup

# Policy – issues to address

- How organization, documentation, and storage are handled
- Expectations
- Ownership of the data
- Training
- Responsibilities
- External obligations

# Data management

- Policy (lab, department, institutional, national levels)
- Organization (file names and folder structures)
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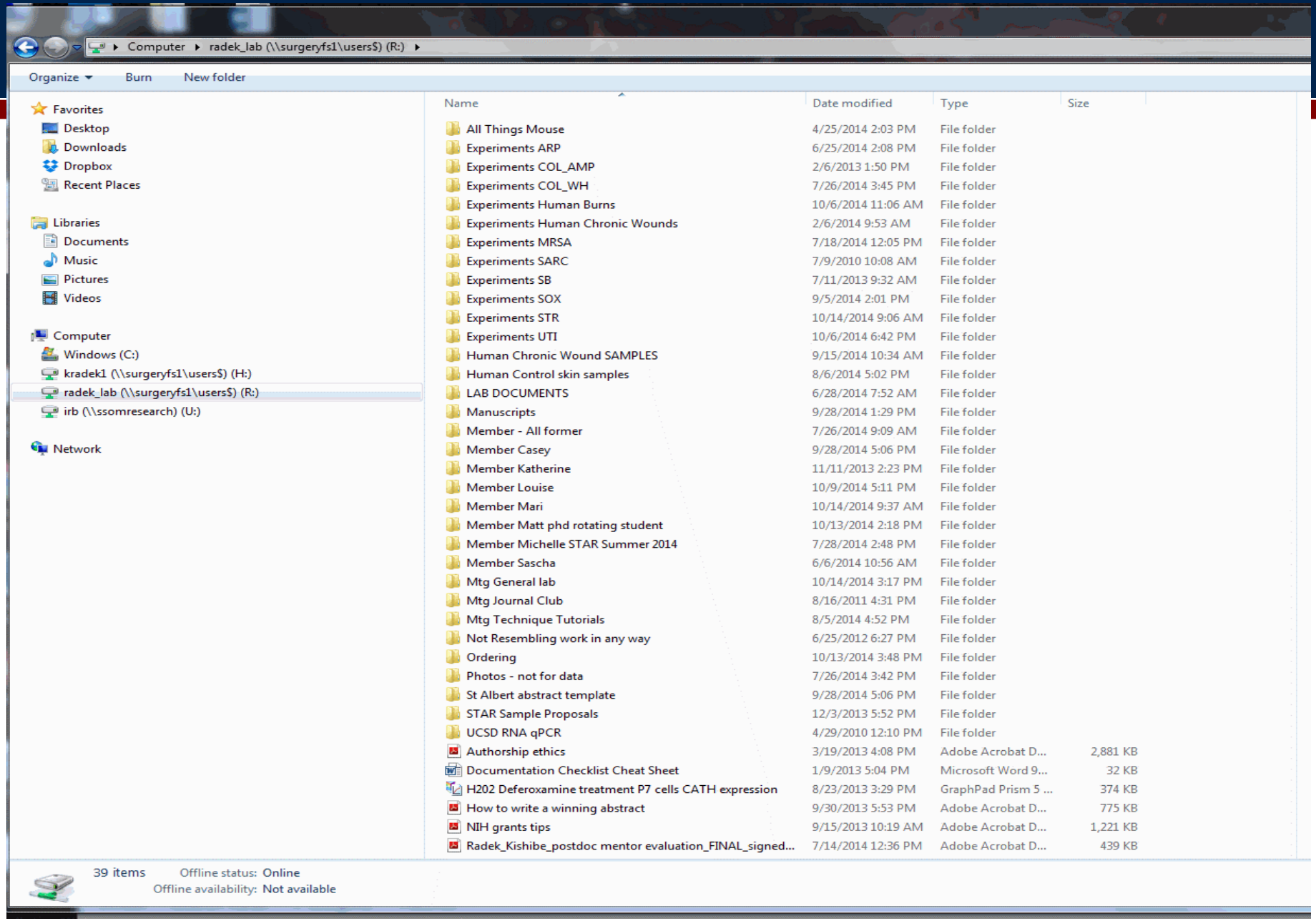
- Storage and backup

# Organization

- Folders should have structure
  - Group by concept
    - Create standardized file naming conventions
    - Manipulate names to get them in the order that is most useful

- Refer to your lab map to determine how folder organization makes sense to you

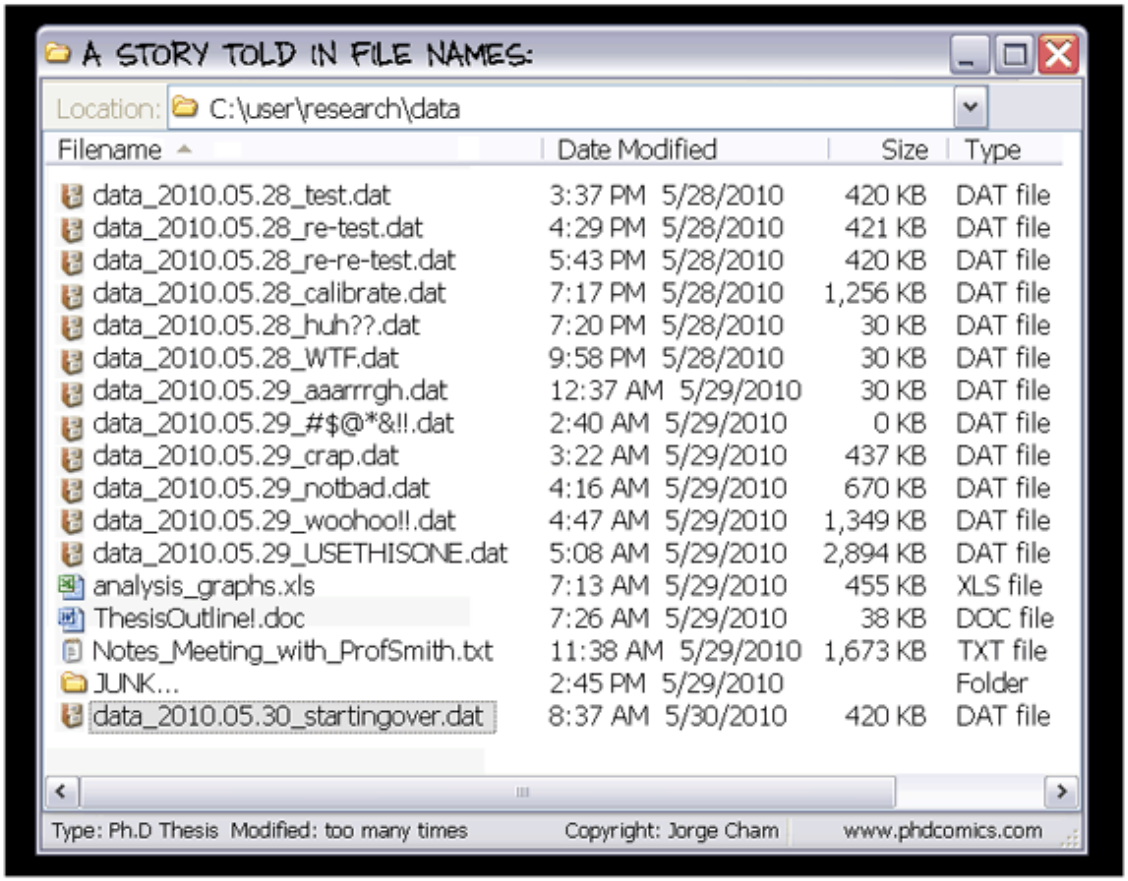
# Top level


Computer ▸ radek_lab (\\surgeryfs1\users$) (R:) ▸
Organize
Burn
New folder
Favorites
Desktop
Downloads
Dropbox
Recent Places
Libraries
Documents
Music
Pictures
Videos
Computer
Windows (C:)
kradek1 (\\surgeryfs1\users$) (H:)
radek_lab (\\surgeryfs1\users$) (R:)
irb (\\ssomresearch) (U:)
Network
Name
Date modified
Type
Size
All Things Mouse 4/25/2014 2:03 PM File folder
Experiments ARP 6/25/2014 2:08 PM File folder
Experiments COL_AMP 2/6/2013 1:50 PM File folder
Experiments COL_WH 7/26/2014 3:45 PM File folder
Experiments Human Burns 10/6/2014 11:06 AM File folder
Experiments Human Chronic Wounds 2/6/2014 9:53 AM File folder
Experiments MRSA 7/18/2014 12:05 PM File folder
Experiments SARC 7/9/2010 10:08 AM File folder
Experiments SB 7/11/2013 9:32 AM File folder
Experiments SOX 9/5/2014 2:01 PM File folder
Experiments STR 10/14/2014 9:06 AM File folder
Experiments UTI 10/6/2014 6:42 PM File folder
Human Chronic Wound SAMPLES 9/15/2014 10:34 AM File folder
Human Control skin samples 8/6/2014 5:02 PM File folder
LAB DOCUMENTS 6/28/2014 7:52 AM File folder
Manuscripts 9/28/2014 1:29 PM File folder
Member - All former 7/26/2014 9:09 AM File folder
Member Casey 9/28/2014 5:06 PM File folder
Member Katherine 11/11/2013 2:23 PM File folder
Member Louise 10/9/2014 5:11 PM File folder
Member Mari 10/14/2014 9:37 AM File folder
Member Matt phd rotating student 10/13/2014 2:18 PM File folder
Member Michelle STAR Summer 2014 7/28/2014 2:48 PM File folder
Member Sascha 6/6/2014 10:56 AM File folder
Mtg General lab 10/14/2014 3:17 PM File folder
Mtg Journal Club 8/16/2011 4:31 PM File folder
Mtg Technique Tutorials 8/5/2014 4:52 PM File folder
Not Resembling work in any way 6/25/2012 6:27 PM File folder
Ordering 10/13/2014 3:48 PM File folder
Photos - not for data 7/26/2014 3:42 PM File folder
St Albert abstract template 9/28/2014 5:06 PM File folder
STAR Sample Proposals 12/3/2013 5:52 PM File folder
UCSD RNA qPCR 4/29/2010 12:10 PM File folder
Authorship ethics 3/19/2013 4:08 PM Adobe Acrobat D... 2,881 KB
Documentation Checklist Cheat Sheet 1/9/2013 5:04 PM Microsoft Word 9... 32 KB
H202 Deferoxamine treatment P7 cells CATH expression 8/23/2013 3:29 PM GraphPad Prism 5 ... 374 KB
How to write a winning abstract 9/30/2013 5:53 PM Adobe Acrobat D... 775 KB
NIH grants tips 9/15/2013 10:19 AM Adobe Acrobat D... 1,221 KB
Radek_Kishibe_postdoc mentor evaluation_FINAL_signed... 7/14/2014 12:36 PM Adobe Acrobat D... 439 KB
39 items
Offline status: Online
Offline availability: Not available

# Documentation

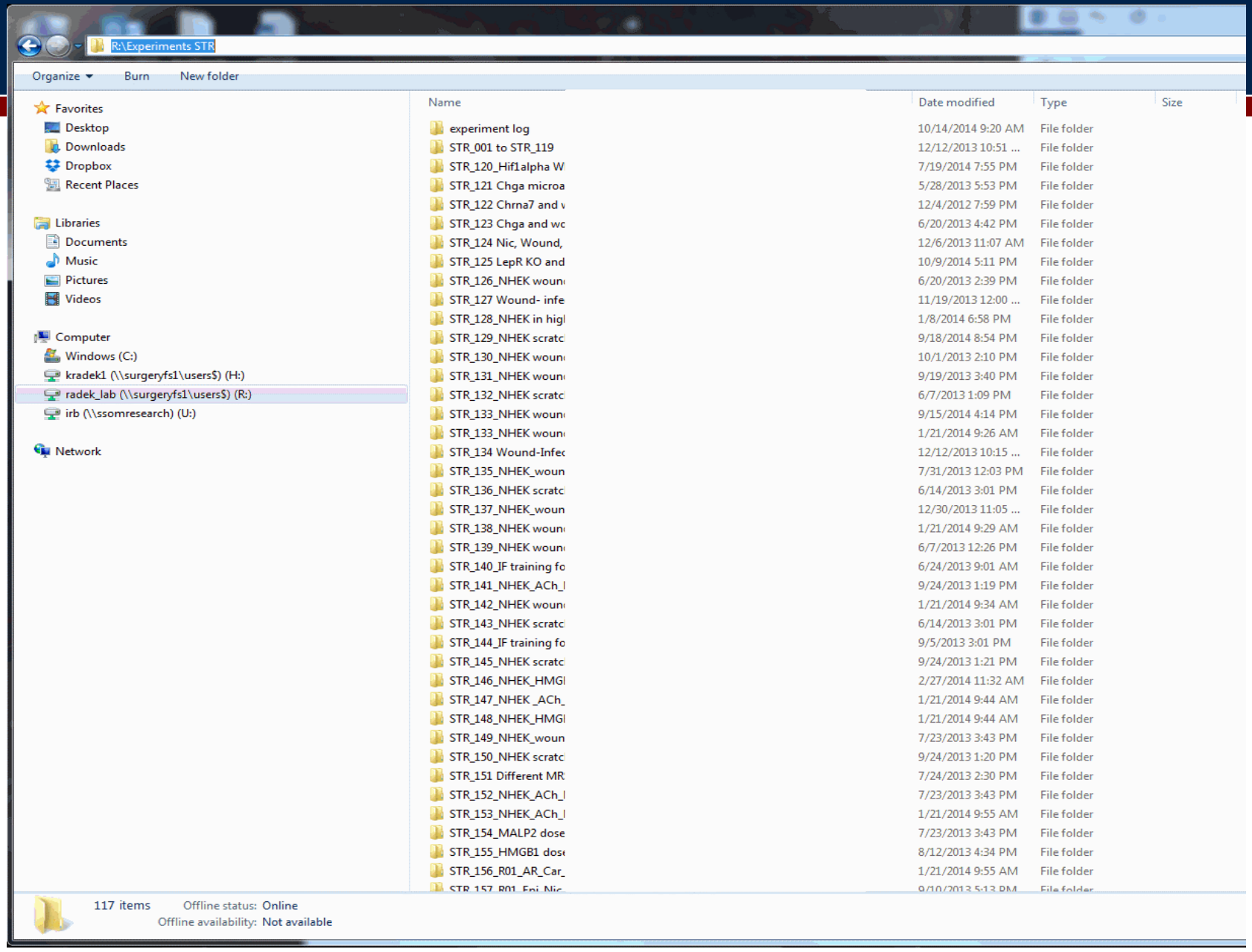
- Create unique IDs or codes for experiments

# Look Familiar?

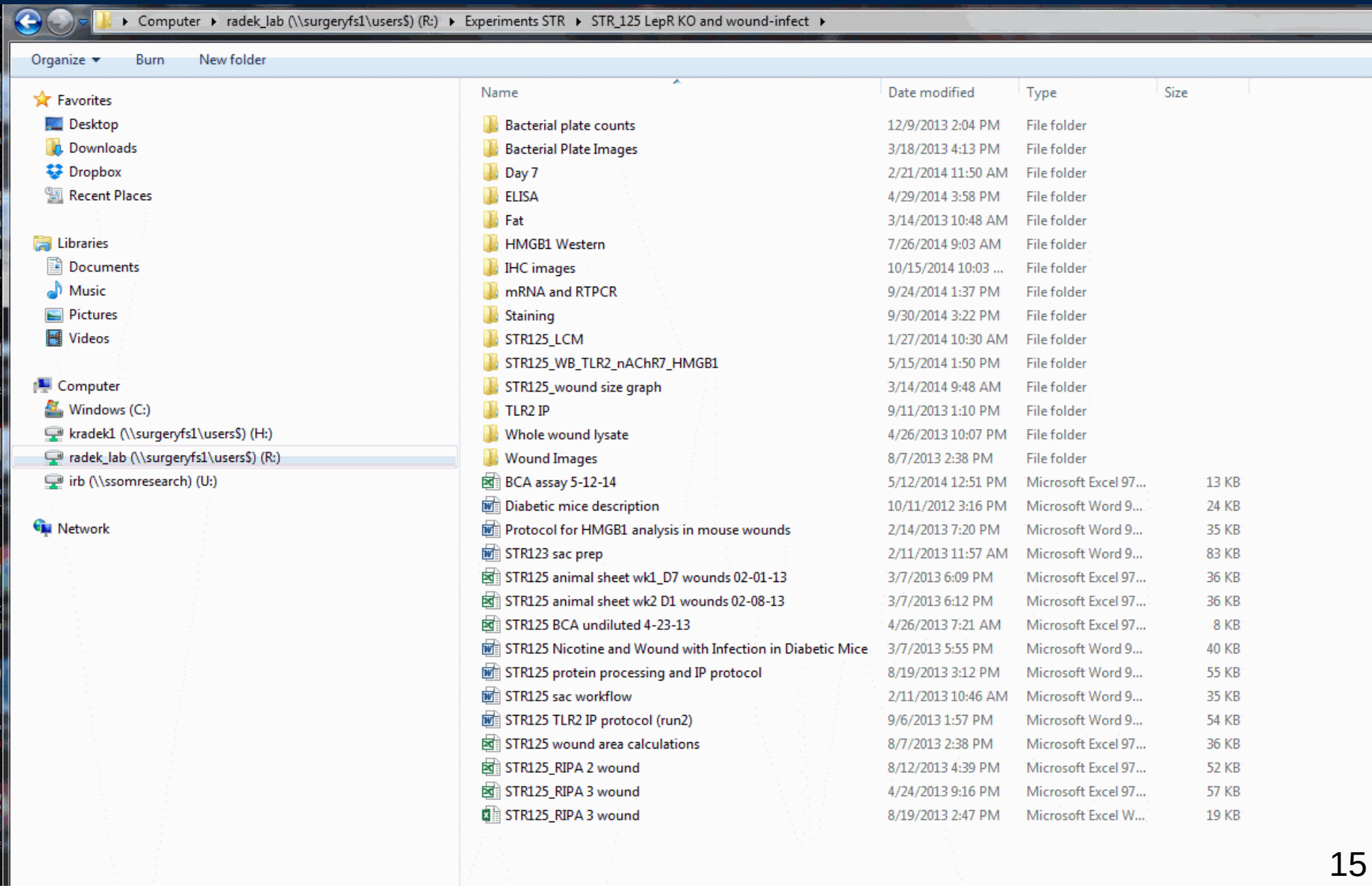



"Piled Higher and Deeper" by Jorge Cham www.phdcomics.com

# Experiment folder



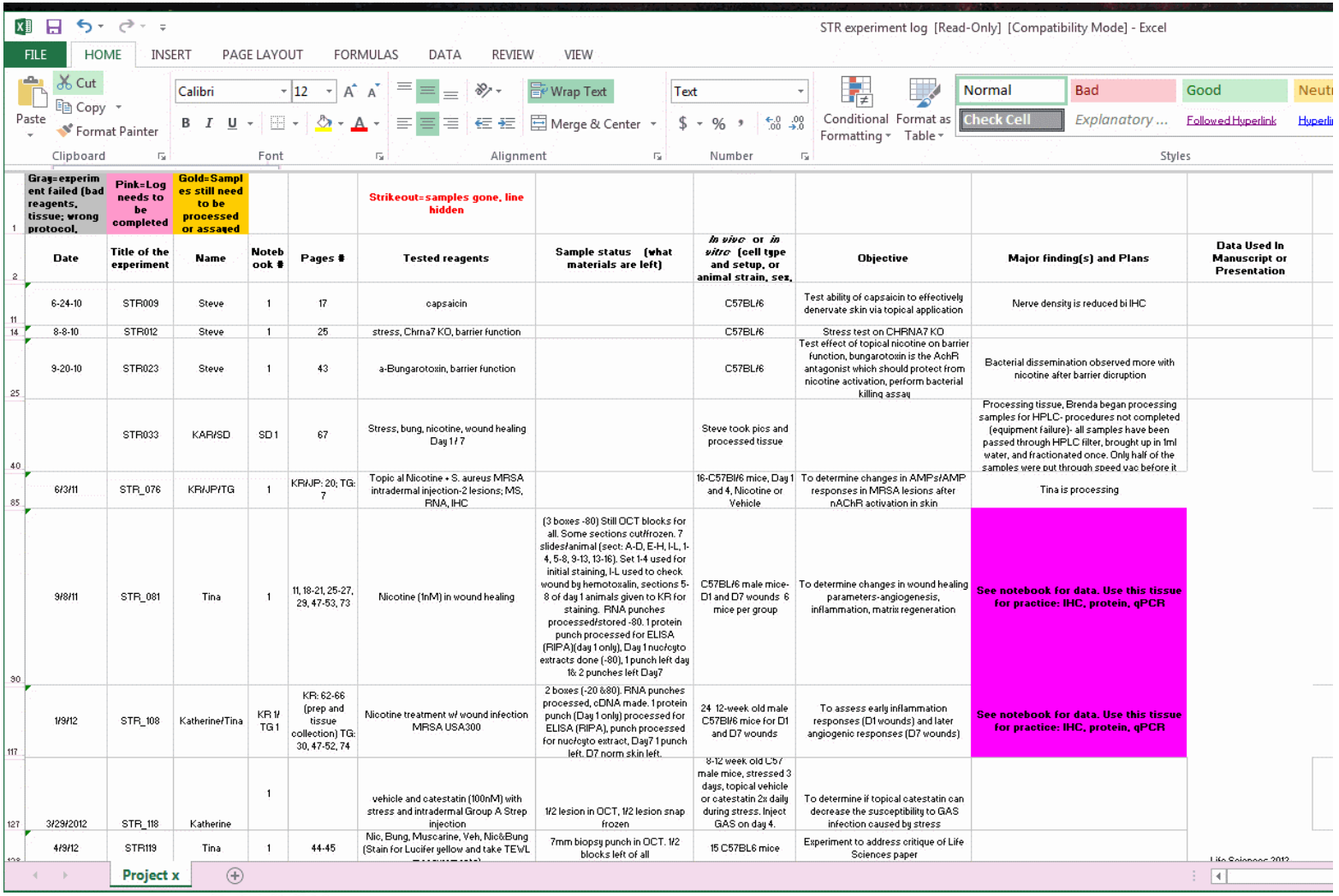
# Experiment data



# Documentation

- Create indexes and table of contents to make finding data easier

# index sheet for expt type



STR experiment log [Read-Only] [Compatibility Mode] - Excel

Gray=experiment failed (bad reagents, tissue; wrong protocol. | Pink=Log needs to be completed | Gold=Samples still need to be processed or assayed | Strikeout=samples gone, line hidden

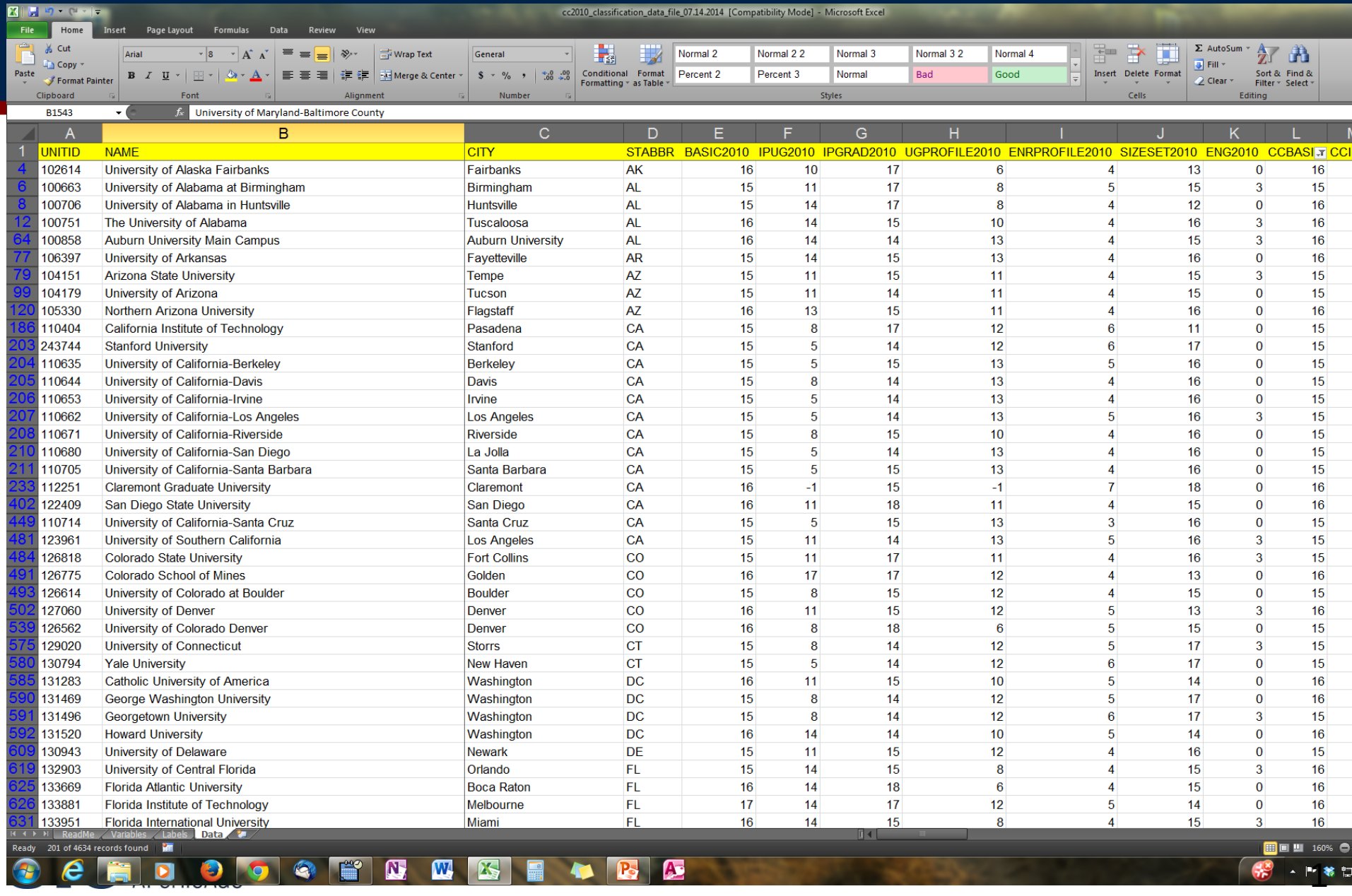
| Date | Title of the experiment | Name | Notebook # | Pages # | Tested reagents | Sample status (what materials are left) | *In vivo* or *in vitro* (cell type and setup, or animal strain, sex, | Objective | Major finding(s) and Plans | Data Used In Manuscript or Presentation |
|---|---|---|---|---|---|---|---|---|---|---|
| 6-24-10 | STR009 | Steve | 1 | 17 | capsaicin | | C57BL/6 | Test ability of capsaicin to effectively denervate skin via topical application | Nerve density is reduced bi IHC | |
| 8-8-10 | STR012 | Steve | 1 | 25 | stress, Chrna7 KO, barrier function | | C57BL/6 | Stress test on CHRNA7 KO | | |
| 9-20-10 | STR023 | Steve | 1 | 43 | a-Bungarotoxin, barrier function | | C57BL/6 | Test effect of topical nicotine on barrier function, bungarotoxin is the AchR antagonist which should protect from nicotine activation, perform bacterial killing assay | Bacterial dissemination observed more with nicotine after barrier dicruption | |
| | STR033 | KAR/SD | SD1 | 67 | Stress, bung, nicotine, wound healing Day 1 / 7 | | Steve took pics and processed tissue | | Processing tissue, Brenda began processing samples for HPLC- procedures not completed (equipment failure)- all samples have been passed through HPLC filter, brought up in 1ml water, and fractionated once. Only half of the samples were put through speed vac before it | |
| 6/3/11 | STR_076 | KR/JP/TG | 1 | KR/JP: 20; TG: 7 | Topic al Nicotine + S. aureus MRSA intradermal injection-2 lesions; MS, RNA, IHC | | 16-C57Bl/6 mice, Day 1 and 4, Nicotine or Vehicle | To determine changes in AMPs/AMP responses in MRSA lesions after nAChR activation in skin | Tina is processing | |
| 9/8/11 | STR_081 | Tina | 1 | 11, 18-21, 25-27, 29, 47-53, 73 | Nicotine (1nM) in wound healing | (3 boxes -80) Still OCT blocks for all. Some sections cut/frozen. 7 slides/animal (sect: A-D, E-H, I-L, 1-4, 5-8, 9-13, 13-16). Set 1-4 used for initial staining, I-L used to check wound by hemotoxalin, sections 5-8 of day 1 animals given to KR for staining. RNA punches processed/stored -80. 1 protein punch processed for ELISA (RIPA)(day 1 only), Day 1 nuc/cyto extracts done (-80), 1 punch left day 1& 2 punches left Day7 | C57BL/6 male mice-D1 and D7 wounds 6 mice per group | To determine changes in wound healing parameters-angiogenesis, inflammation, matrix regeneration | **See notebook for data. Use this tissue for practice: IHC, protein, qPCR** | |
| 1/9/12 | STR_108 | Katherine/Tina | KR 1/ TG 1 | KR: 62-66 (prep and tissue collection) TG: 30, 47-52, 74 | Nicotine treatment w/ wound infection MRSA USA300 | 2 boxes (-20 &80). RNA punches processed, cDNA made. 1 protein punch (Day 1 only) processed for ELISA (RIPA), punch processed for nuc/cyto extract, Day7 1 punch left. D7 norm skin left. | 24 12-week old male C57Bl/6 mice for D1 and D7 wounds | To assess early inflammation responses (D1 wounds) and later angiogenic responses (D7 wounds) | **See notebook for data. Use this tissue for practice: IHC, protein, qPCR** | |
| 3/29/2012 | STR_118 | Katherine | 1 | | vehicle and catestatin (100nM) with stress and intradermal Group A Strep injection | 1/2 lesion in OCT, 1/2 lesion snap frozen | 8-12 week old C57 male mice, stressed 3 days, topical vehicle or catestatin 2x daily during stress. Inject GAS on day 4. | To determine if topical catestatin can decrease the susceptibility to GAS infection caused by stress | | |
| 4/9/12 | STR119 | Tina | 1 | 44-45 | Nic, Bung, Muscarine, Veh, Nic&Bung (Stain for Lucifer yellow and take TEWL | 7mm biopsy punch in OCT. 1/2 blocks left of all | 15 C57BL6 mice | Experiment to address critique of Life Sciences paper | | Life Sciences 2012 |

Project x

# Documentation

- Always explain abbreviations
  - Leave a key for column headings, acronyms, etc
  - Use software that creates documentation and integrates it into the file
    - Colectica
    - DataUp

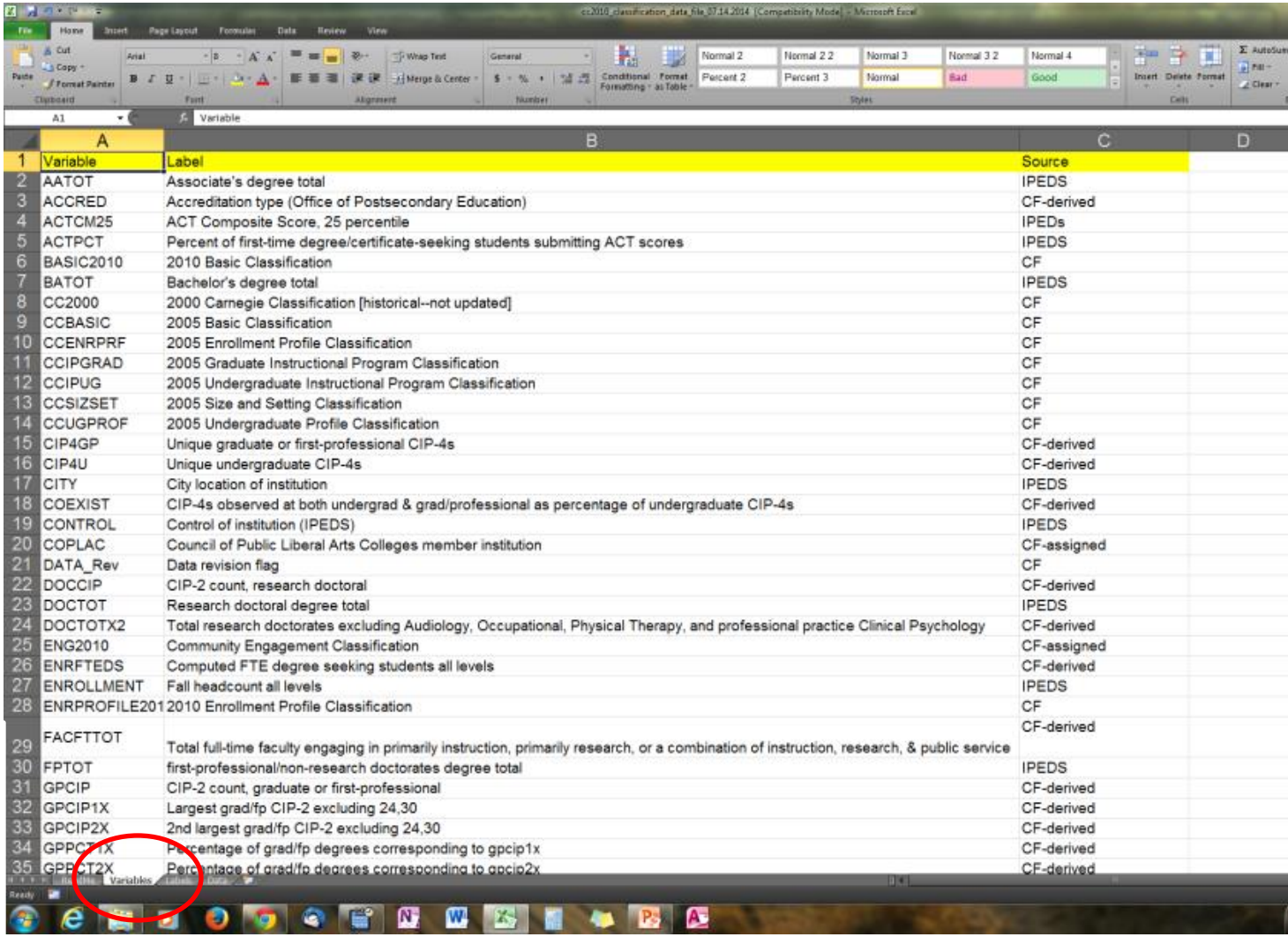
# Abbreviations - data




| | A | B | C | D | E | F | G | H | I | J | K | L |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | UNITID | NAME | CITY | STABBR | BASIC2010 | IPUG2010 | IPGRAD2010 | UGPROFILE2010 | ENRPROFILE2010 | SIZESET2010 | ENG2010 | CCBASI |
| 4 | 102614 | University of Alaska Fairbanks | Fairbanks | AK | 16 | 10 | 17 | 6 | 4 | 13 | 0 | 16 |
| 6 | 100663 | University of Alabama at Birmingham | Birmingham | AL | 15 | 11 | 17 | 8 | 5 | 15 | 3 | 15 |
| 8 | 100706 | University of Alabama in Huntsville | Huntsville | AL | 15 | 14 | 17 | 8 | 4 | 12 | 0 | 16 |
| 12 | 100751 | The University of Alabama | Tuscaloosa | AL | 16 | 14 | 15 | 10 | 4 | 16 | 3 | 16 |
| 64 | 100858 | Auburn University Main Campus | Auburn University | AL | 16 | 14 | 14 | 13 | 4 | 15 | 3 | 16 |
| 77 | 106397 | University of Arkansas | Fayetteville | AR | 15 | 14 | 15 | 13 | 4 | 16 | 0 | 16 |
| 79 | 104151 | Arizona State University | Tempe | AZ | 15 | 11 | 15 | 11 | 4 | 15 | 3 | 15 |
| 99 | 104179 | University of Arizona | Tucson | AZ | 15 | 11 | 14 | 11 | 4 | 15 | 0 | 15 |
| 120 | 105330 | Northern Arizona University | Flagstaff | AZ | 16 | 13 | 15 | 11 | 4 | 16 | 0 | 16 |
| 186 | 110404 | California Institute of Technology | Pasadena | CA | 15 | 8 | 17 | 12 | 6 | 11 | 0 | 15 |
| 203 | 243744 | Stanford University | Stanford | CA | 15 | 5 | 14 | 12 | 6 | 17 | 0 | 15 |
| 204 | 110635 | University of California-Berkeley | Berkeley | CA | 15 | 5 | 15 | 13 | 5 | 16 | 0 | 15 |
| 205 | 110644 | University of California-Davis | Davis | CA | 15 | 8 | 14 | 13 | 4 | 16 | 0 | 15 |
| 206 | 110653 | University of California-Irvine | Irvine | CA | 15 | 5 | 14 | 13 | 4 | 16 | 0 | 15 |
| 207 | 110662 | University of California-Los Angeles | Los Angeles | CA | 15 | 5 | 14 | 13 | 5 | 16 | 3 | 15 |
| 208 | 110671 | University of California-Riverside | Riverside | CA | 15 | 8 | 15 | 10 | 4 | 16 | 0 | 15 |
| 210 | 110680 | University of California-San Diego | La Jolla | CA | 15 | 5 | 14 | 13 | 4 | 16 | 0 | 15 |
| 211 | 110705 | University of California-Santa Barbara | Santa Barbara | CA | 15 | 5 | 15 | 13 | 4 | 16 | 0 | 15 |
| 233 | 112251 | Claremont Graduate University | Claremont | CA | 16 | -1 | 15 | -1 | 7 | 18 | 0 | 16 |
| 402 | 122409 | San Diego State University | San Diego | CA | 16 | 11 | 18 | 11 | 4 | 15 | 0 | 16 |
| 449 | 110714 | University of California-Santa Cruz | Santa Cruz | CA | 15 | 5 | 15 | 13 | 3 | 16 | 0 | 15 |
| 481 | 123961 | University of Southern California | Los Angeles | CA | 15 | 11 | 14 | 13 | 5 | 16 | 3 | 15 |
| 484 | 126818 | Colorado State University | Fort Collins | CO | 15 | 11 | 17 | 11 | 4 | 16 | 3 | 15 |
| 491 | 126775 | Colorado School of Mines | Golden | CO | 16 | 17 | 17 | 12 | 4 | 13 | 0 | 16 |
| 493 | 126614 | University of Colorado at Boulder | Boulder | CO | 15 | 8 | 15 | 12 | 4 | 15 | 0 | 15 |
| 502 | 127060 | University of Denver | Denver | CO | 16 | 11 | 15 | 12 | 5 | 13 | 3 | 16 |
| 539 | 126562 | University of Colorado Denver | Denver | CO | 16 | 8 | 18 | 6 | 5 | 15 | 0 | 15 |
| 575 | 129020 | University of Connecticut | Storrs | CT | 15 | 8 | 14 | 12 | 5 | 17 | 3 | 15 |
| 580 | 130794 | Yale University | New Haven | CT | 15 | 5 | 14 | 12 | 6 | 17 | 0 | 15 |
| 585 | 131283 | Catholic University of America | Washington | DC | 16 | 11 | 15 | 10 | 5 | 14 | 0 | 16 |
| 590 | 131469 | George Washington University | Washington | DC | 15 | 8 | 14 | 12 | 5 | 17 | 0 | 16 |
| 591 | 131496 | Georgetown University | Washington | DC | 15 | 8 | 14 | 12 | 6 | 17 | 3 | 15 |
| 592 | 131520 | Howard University | Washington | DC | 16 | 14 | 14 | 10 | 5 | 14 | 0 | 16 |
| 609 | 130943 | University of Delaware | Newark | DE | 15 | 11 | 15 | 12 | 4 | 16 | 0 | 15 |
| 619 | 132903 | University of Central Florida | Orlando | FL | 15 | 14 | 15 | 8 | 4 | 15 | 3 | 16 |
| 625 | 133669 | Florida Atlantic University | Boca Raton | FL | 16 | 14 | 18 | 6 | 4 | 15 | 0 | 16 |
| 626 | 133881 | Florida Institute of Technology | Melbourne | FL | 17 | 14 | 17 | 12 | 5 | 14 | 0 | 16 |
| 631 | 133951 | Florida International University | Miami | FL | 16 | 14 | 15 | 8 | 4 | 15 | 3 | 16 |

# Abbreviations – documented

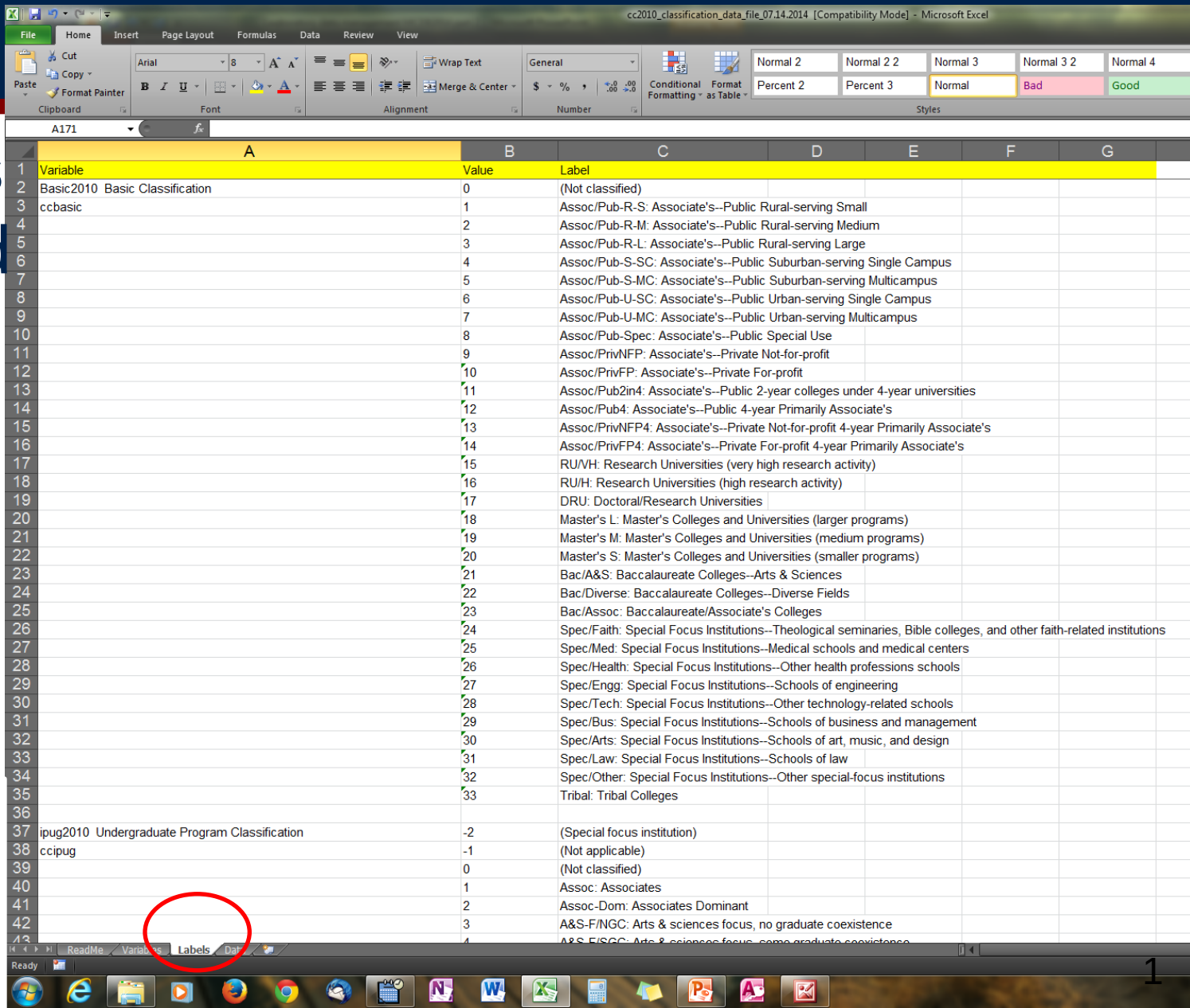
- Columns explained



| | A | B | C | D |
|---|---|---|---|---|
| 1 | Variable | Label | Source | |
| 2 | AATOT | Associate's degree total | IPEDS | |
| 3 | ACCRED | Accreditation type (Office of Postsecondary Education) | CF-derived | |
| 4 | ACTCM25 | ACT Composite Score, 25 percentile | IPEDs | |
| 5 | ACTPCT | Percent of first-time degree/certificate-seeking students submitting ACT scores | IPEDS | |
| 6 | BASIC2010 | 2010 Basic Classification | CF | |
| 7 | BATOT | Bachelor's degree total | IPEDS | |
| 8 | CC2000 | 2000 Carnegie Classification [historical--not updated] | CF | |
| 9 | CCBASIC | 2005 Basic Classification | CF | |
| 10 | CCENRPRF | 2005 Enrollment Profile Classification | CF | |
| 11 | CCIPGRAD | 2005 Graduate Instructional Program Classification | CF | |
| 12 | CCIPUG | 2005 Undergraduate Instructional Program Classification | CF | |
| 13 | CCSIZSET | 2005 Size and Setting Classification | CF | |
| 14 | CCUGPROF | 2005 Undergraduate Profile Classification | CF | |
| 15 | CIP4GP | Unique graduate or first-professional CIP-4s | CF-derived | |
| 16 | CIP4U | Unique undergraduate CIP-4s | CF-derived | |
| 17 | CITY | City location of institution | IPEDS | |
| 18 | COEXIST | CIP-4s observed at both undergrad & grad/professional as percentage of undergraduate CIP-4s | CF-derived | |
| 19 | CONTROL | Control of institution (IPEDS) | IPEDS | |
| 20 | COPLAC | Council of Public Liberal Arts Colleges member institution | CF-assigned | |
| 21 | DATA_Rev | Data revision flag | CF | |
| 22 | DOCCIP | CIP-2 count, research doctoral | CF-derived | |
| 23 | DOCTOT | Research doctoral degree total | IPEDS | |
| 24 | DOCTOTX2 | Total research doctorates excluding Audiology, Occupational, Physical Therapy, and professional practice Clinical Psychology | CF-derived | |
| 25 | ENG2010 | Community Engagement Classification | CF-assigned | |
| 26 | ENRFTEDS | Computed FTE degree seeking students all levels | CF-derived | |
| 27 | ENROLLMENT | Fall headcount all levels | IPEDS | |
| 28 | ENRPROFILE201 | 2010 Enrollment Profile Classification | CF | |
| 29 | FACFTTOT | Total full-time faculty engaging in primarily instruction, primarily research, or a combination of instruction, research, & public service | CF-derived | |
| 30 | FPTOT | first-professional/non-research doctorates degree total | IPEDS | |
| 31 | GPCIP | CIP-2 count, graduate or first-professional | CF-derived | |
| 32 | GPCIP1X | Largest grad/fp CIP-2 excluding 24,30 | CF-derived | |
| 33 | GPCIP2X | 2nd largest grad/fp CIP-2 excluding 24,30 | CF-derived | |
| 34 | GPPCT1X | Percentage of grad/fp degrees corresponding to gpcip1x | CF-derived | |
| 35 | GPPCT2X | Percentage of grad/fp degrees corresponding to gpcip2x | CF-derived | |

# Abbreviations - documented

- Variables explained



cc2010_classification_data_file_07.14.2014 [Compatibility Mode] - Microsoft Excel

| | A | B | C |
|---|---|---|---|
| 1 | Variable | Value | Label |
| 2 | Basic2010 Basic Classification | 0 | (Not classified) |
| 3 | ccbasic | 1 | Assoc/Pub-R-S: Associate's--Public Rural-serving Small |
| 4 | | 2 | Assoc/Pub-R-M: Associate's--Public Rural-serving Medium |
| 5 | | 3 | Assoc/Pub-R-L: Associate's--Public Rural-serving Large |
| 6 | | 4 | Assoc/Pub-S-SC: Associate's--Public Suburban-serving Single Campus |
| 7 | | 5 | Assoc/Pub-S-MC: Associate's--Public Suburban-serving Multicampus |
| 8 | | 6 | Assoc/Pub-U-SC: Associate's--Public Urban-serving Single Campus |
| 9 | | 7 | Assoc/Pub-U-MC: Associate's--Public Urban-serving Multicampus |
| 10 | | 8 | Assoc/Pub-Spec: Associate's--Public Special Use |
| 11 | | 9 | Assoc/PrivNFP: Associate's--Private Not-for-profit |
| 12 | | 10 | Assoc/PrivFP: Associate's--Private For-profit |
| 13 | | 11 | Assoc/Pub2in4: Associate's--Public 2-year colleges under 4-year universities |
| 14 | | 12 | Assoc/Pub4: Associate's--Public 4-year Primarily Associate's |
| 15 | | 13 | Assoc/PrivNFP4: Associate's--Private Not-for-profit 4-year Primarily Associate's |
| 16 | | 14 | Assoc/PrivFP4: Associate's--Private For-profit 4-year Primarily Associate's |
| 17 | | 15 | RU/VH: Research Universities (very high research activity) |
| 18 | | 16 | RU/H: Research Universities (high research activity) |
| 19 | | 17 | DRU: Doctoral/Research Universities |
| 20 | | 18 | Master's L: Master's Colleges and Universities (larger programs) |
| 21 | | 19 | Master's M: Master's Colleges and Universities (medium programs) |
| 22 | | 20 | Master's S: Master's Colleges and Universities (smaller programs) |
| 23 | | 21 | Bac/A&S: Baccalaureate Colleges--Arts & Sciences |
| 24 | | 22 | Bac/Diverse: Baccalaureate Colleges--Diverse Fields |
| 25 | | 23 | Bac/Assoc: Baccalaureate/Associate's Colleges |
| 26 | | 24 | Spec/Faith: Special Focus Institutions--Theological seminaries, Bible colleges, and other faith-related institutions |
| 27 | | 25 | Spec/Med: Special Focus Institutions--Medical schools and medical centers |
| 28 | | 26 | Spec/Health: Special Focus Institutions--Other health professions schools |
| 29 | | 27 | Spec/Engg: Special Focus Institutions--Schools of engineering |
| 30 | | 28 | Spec/Tech: Special Focus Institutions--Other technology-related schools |
| 31 | | 29 | Spec/Bus: Special Focus Institutions--Schools of business and management |
| 32 | | 30 | Spec/Arts: Special Focus Institutions--Schools of art, music, and design |
| 33 | | 31 | Spec/Law: Special Focus Institutions--Schools of law |
| 34 | | 32 | Spec/Other: Special Focus Institutions--Other special-focus institutions |
| 35 | | 33 | Tribal: Tribal Colleges |
| 36 | | | |
| 37 | ipug2010 Undergraduate Program Classification | -2 | (Special focus institution) |
| 38 | ccipug | -1 | (Not applicable) |
| 39 | | 0 | (Not classified) |
| 40 | | 1 | Assoc: Associates |
| 41 | | 2 | Assoc-Dom: Associates Dominant |
| 42 | | 3 | A&S-F/NGC: Arts & sciences focus, no graduate coexistence |

# Data management

- Policy (lab, department, institutional, national levels)
- Organization (file names and folder structures)
- Documentation (putting data in context for others)
- Storage and backup

# Storage

- Rule of 3
  - 3 copies
  - 2 different formats
  - 1 off-site
- Use a single location with backup whenever possible
- Avoid keeping data only on laptops, external drives

# Preservation

- Avoid proprietary formats
  - Use formats know for stability, multiple software platforms, no compression, no embedded scripts/files, open documentation.

| Format | File extension |
|---|---|
| Documents | .txt .pdf |
| Images | .tiff .jpg |
| Audio | .wav .aif .aiff |
| Video | .avi .mj2 .mjp2 |

  - https://repositories.lib.utexas.edu/recommended_file_formats

# Implementation

- Obstacles
- Strategies

# Implementation obstacles

- Too much volume
- Decision fatigue
- Staff buy-in
- Inadequate staff skills

# Strategies – too much volume

- Phased rollout
  - Map out what you want to accomplish and when
  - Revisit the map regularly and renegotiate as needed
- Low hanging fruit
  - What can be done easily, right now
- Take advantage of disruption
  - Workflow isn’t established yet. Create it with data management in place

# Strategies – decision fatigue

- Streamline where ever possible
  - Templates
    - Ideally in a central location
  - Checklists
- Be clear, but realistic, on expectations
- Make time

# Checklist example

Documentation Checklist Cheat Sheet

Pre Experiment:

- ☐ Claim experiment number on log sheet (as a courtesy, also change white board) and pre-fill what is known.
- ☐ Create experiment folder
- ☐ Create animal sheet (as a courtesy, change the # on white board for non-colony animals)
  - Record IACUC# and LU# on animal sheet. These will be given to you. DO NOT MAKE THEM UP OR GO BY CAGE CARD.

And/Or

- ☐ Create experiment outline (Word or Excel), can also refer to std template and file annotations specific to that experiment #

Experiment:

- ☐ Label all tubes/storage boxes with experiment # and date
- ☐ Label tubes with animal # and/or treatment
- ☐ Log out aliquot # in aliquot sheet
- ☐ Label all electronic files with expt# and date

Post-Experiment (typically ongoing):

- ☐ Update log sheet
  - Storage location of samples
  - Processing status of samples
  - Notebook page #s
  - Results
- ☐ File all data to R: drive and notebook.
  - Verify copies are identical between notebook and drive.
  - Label all image files to correspond to experiment # (as applicable: experiment #, magnification, date, animal or sample, staining , treatments, etc), stored in separate image folder
- ☐ Turn in animal cards with date of sac noted
- ☐ Log all reagents to reorder
- ☐ Experiment write up

# Strategies – staff buy in

- Get everyone involved. Inclusiveness supports accountability and buy-in
  - Ask everyone contribute to the answer
- Incentives (friendly competition, freebies/gifts)

# Strategies – staff skills

- Provide training
  - Don't: *"You will keep your lab notebook up to date"*
  - Do: *"This is how we do documentation. You are expected to document this way."*
  - Do: Give an expectation of how long it takes to do documentation (10-20% minimum)
  - Do: Have a training session that includes all aspects of data management, with examples
- Internal accountability
  - (give someone authority to follow up and insist on completeness, and back them up.)

# Summary

- Data management
  - Policy
  - Organization
  - Documentation
  - Storage/Preservation
- Implementation
  - Obstacles
  - Strategies

# Librarian support

- Walk through mapping process
- Training on data management practices
- Lab or individual consult to help assess data management need
- Assist in designing organization and documentation strategies
- Assist in finding repositories and complying with NSF/NIH requirements