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)
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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)
- **Documentation** (putting data in context for others)
- 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	Name	Date modified	Туре	Size
🧮 Desktop	퉬 All Things Mouse	4/25/2014 2:03 PM	File folder	
🐌 Downloads	Experiments ARP	6/25/2014 2:08 PM	File folder	
😌 Dropbox	Experiments COL_AMP	2/6/2013 1:50 PM	File folder	
🕮 Recent Places	Experiments COL_WH	7/26/2014 3:45 PM	File folder	
	퉬 Experiments Human Burns	10/6/2014 11:06 AM	File folder	
📄 Libraries	퉬 Experiments Human Chronic Wounds	2/6/2014 9:53 AM	File folder	
Documents	퉬 Experiments MRSA	7/18/2014 12:05 PM	File folder	
👌 Music	Experiments SARC	7/9/2010 10:08 AM	File folder	
E Pictures	퉬 Experiments SB	7/11/2013 9:32 AM	File folder	
📑 Videos	Experiments SOX	9/5/2014 2:01 PM	File folder	
	🐌 Experiments STR	10/14/2014 9:06 AM	File folder	
👰 Computer	🕌 Experiments UTI	10/6/2014 6:42 PM	File folder	
🏭 Windows (C:)	Human Chronic Wound SAMPLES	9/15/2014 10:34 AM	File folder	
🚅 kradek1 (\\surgeryfs1\users\$) (H:)	🐌 Human Control skin samples	8/6/2014 5:02 PM	File folder	
🖵 radek_lab (\\surgeryfs1\users\$) (R:)	LAB DOCUMENTS	6/28/2014 7:52 AM	File folder	
🖵 irb (\\ssomresearch) (U:)	퉬 Manuscripts	9/28/2014 1:29 PM	File folder	
	퉬 Member - All former	7/26/2014 9:09 AM	File folder	
🙀 Network	퉬 Member Casey	9/28/2014 5:06 PM	File folder	
	퉬 Member Katherine	11/11/2013 2:23 PM	File folder	
	퉬 Member Louise	10/9/2014 5:11 PM	File folder	
	퉬 Member Mari	10/14/2014 9:37 AM	File folder	
	Member Matt phd rotating student	10/13/2014 2:18 PM	File folder	
	퉬 Member Michelle STAR Summer 2014	7/28/2014 2:48 PM	File folder	
	퉬 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	
	July 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	
	JE 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



Documentation

Create unique IDs or codes for experiments



Look Familiar?

A STORY TOLD IN FILE NAMES	:		
Location: 😂 C:\user\research\data			~
Filename 🔺	Date Modified	Size	Туре
🚦 data_2010.05.28_test.dat	3:37 PM 5/28/2010	420 KB	DAT file
🚦 data_2010.05.28_re-test.dat	4:29 PM 5/28/2010	421 KB	DAT file
🚦 data_2010.05.28_re-re-test.dat	5:43 PM 5/28/2010	420 KB	DAT file
🚦 data_2010.05.28_calibrate.dat	7:17 PM 5/28/2010	1,256 KB	DAT file
🔋 🔞 data_2010.05.28_huh??.dat	7:20 PM 5/28/2010	30 KB	DAT file
🚦 data_2010.05.28_WTF.dat	9:58 PM 5/28/2010	30 KB	DAT file
🚦 data_2010.05.29_aaarrrgh.dat	12:37 AM 5/29/2010	30 KB	DAT file
🔋 data_2010.05.29_#\$@*&!!.dat	2:40 AM 5/29/2010	0 KB	DAT file
🔋 🔞 data_2010.05.29_crap.dat	3:22 AM 5/29/2010	437 KB	DAT file
🚦 data_2010.05.29_notbad.dat	4:16 AM 5/29/2010	670 KB	DAT file
🚦 data_2010.05.29_woohoo!!.dat	4:47 AM 5/29/2010	1,349 KB	DAT file
🚦 data_2010.05.29_USETHISONE.dat	5:08 AM 5/29/2010	2,894 KB	DAT file
🕙 analysis_graphs.xls	7:13 AM 5/29/2010	455 KB	XLS file
ThesisOutline!.doc	7:26 AM 5/29/2010	38 KB	DOC file
Notes_Meeting_with_ProfSmith.txt	11:38 AM 5/29/2010	1,673 KB	TXT file
DUNK	2:45 PM 5/29/2010		Folder
🖁 data_2010.05.30_startingover.dat	8:37 AM 5/30/2010	420 KB	DAT file
٠			>
Type: Ph.D Thesis Modified: too many times	Copyright: Jorge Cham	www.phdo	omics.com 🦽

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



Experiment folder

R:\Experiments STR		
Organize 🔻 Burn New folder		
🔆 Favorites	Name	Date modified Type Size
🧮 Desktop	鷆 experiment log	10/14/2014 9:20 AM File folder
🗽 Downloads	STR_001 to STR_119	12/12/2013 10:51 File folder
😌 Dropbox	퉳 STR_120_Hif1alpha W	7/19/2014 7:55 PM File folder
🖳 Recent Places	퉳 STR_121 Chga microa	5/28/2013 5:53 PM File folder
	STR_122 Chrna7 and v	12/4/2012 7:59 PM File folder
🥞 Libraries	STR_123 Chga and wc	6/20/2013 4:42 PM File folder
Documents	Jacob STR_124 Nic, Wound,	12/6/2013 11:07 AM File folder
👌 Music	STR_125 LepR KO and	10/9/2014 5:11 PM File folder
Pictures	Jacobs STR_126_NHEK wound	6/20/2013 2:39 PM File folder
📑 Videos	STR_127 Wound- infe	11/19/2013 12:00 File folder
	STR_128_NHEK in higl	1/8/2014 6:58 PM File folder
Normal Computer	STR_129_NHEK scratcl	9/18/2014 8:54 PM File folder
🕌 Windows (C:)	STR_130_NHEK wound	10/1/2013 2:10 PM File folder
🚽 kradek1 (\\surgeryfs1\users\$) (H:)	STR_131_NHEK wound	9/19/2013 3:40 PM File folder
🚽 radek_lab (\\surgeryfs1\users\$) (R:)	BTR_132_NHEK scratc	6/7/2013 1:09 PM File folder
🕎 irb (\\ssomresearch) (U:)	STR_133_NHEK wound	9/15/2014 4:14 PM File folder
	STR_133_NHEK wound	1/21/2014 9:26 AM File folder
🗣 Network	STR_134 Wound-Infec	12/12/2013 10:15 File folder
	STR_135_NHEK_woun	7/31/2013 12:03 PM File folder
	STR_136_NHEK scratci	6/14/2013 3:01 PM File folder
	STR_137_NHEK_woun	12/30/2013 11:05 File folder
	STR_138_NHEK wound	1/21/2014 9:29 AM File folder
	STR_139_NHEK wound	6/7/2013 12:26 PM File folder
	STR_140_IF training fo	6/24/2013 9:01 AM File folder
	STR_141_NHEK_ACh_I	9/24/2013 1:19 PM File folder
	STR_142_NHEK wound	1/21/2014 9:34 AM File folder
	STR_143_NHEK scratci	6/14/2013 3:01 PM File folder
	STR_144_IF training fo	9/5/2013 3:01 PM File folder
	STR_145_NHEK scratci	9/24/2013 1:21 PM File folder
	STR_146_NHEK_HMGI	2/27/2014 11:32 AM File folder
	STR_147_NHEK_ACh_	1/21/2014 9:44 AM File folder
	STR_148_NHEK_HMGI	1/21/2014 9:44 AM File folder
	B STR_149_NHEK_woun	7/23/2013 3:43 PM File folder
	STR_150_NHEK scratcl	9/24/2013 1:20 PM File folder
	STR_151 Different MR	7/24/2013 2:30 PM File folder
	STR_152_NHEK_ACh_I	7/23/2013 3:43 PM File folder
	STR_153_NHEK_ACh_I	1/21/2014 9:55 AM File folder
	STR_154_MALP2 dose	7/23/2013 3:43 PM File folder
	STR_155_HMGB1 dose	8/12/2013 4:34 PM File folder
	STR_156_R01_AR_Car_	1/21/2014 9:55 AM File folder
Res.	STR 157 R01 Eni Nic	0/10/2012 5-12 DM File folder

Experiment data

)= 👃 🕨 Computer 🕨 radek_lab (\\surgeryfs1\users\$) (R:) 🔸 Experiments STR 🕨 STR_125 LepR KO and wound-infect 🕨

Organize 🔻 Burn New folder				
🔆 Favorites	Name	Date modified	Туре	Size
🧮 Desktop	🐌 Bacterial plate counts	12/9/2013 2:04 PM	File folder	
🐌 Downloads	Bacterial Plate Images	3/18/2013 4:13 PM	File folder	
😌 Dropbox	Day 7	2/21/2014 11:50 AM	File folder	
📃 Recent Places	ELISA	4/29/2014 3:58 PM	File folder	
	🕌 Fat	3/14/2013 10:48 AM	File folder	
🕽 Libraries	📕 HMGB1 Western	7/26/2014 9:03 AM	File folder	
Documents	📕 IHC images	10/15/2014 10:03	File folder	
👌 Music	퉬 mRNA and RTPCR	9/24/2014 1:37 PM	File folder	
E Pictures	퉬 Staining	9/30/2014 3:22 PM	File folder	
📕 Videos	I STR125_LCM	1/27/2014 10:30 AM	File folder	
	STR125_WB_TLR2_nAChR7_HMGB1	5/15/2014 1:50 PM	File folder	
🖳 Computer	퉬 STR125_wound size graph	3/14/2014 9:48 AM	File folder	
🏭 Windows (C:)	🐌 TLR2 IP	9/11/2013 1:10 PM	File folder	
🚅 kradek1 (\\surgeryfs1\users\$) (H:)	퉬 Whole wound lysate	4/26/2013 10:07 PM	File folder	
🚽 radek_lab (\\surgeryfs1\users\$) (R:)	퉬 Wound Images	8/7/2013 2:38 PM	File folder	
🖵 irb (\\ssomresearch) (U:)	BCA assay 5-12-14	5/12/2014 12:51 PM	Microsoft Excel 97	13 KB
	Diabetic mice description	10/11/2012 3:16 PM	Microsoft Word 9	24 KB
🗣 Network	Protocol for HMGB1 analysis in mouse wounds	2/14/2013 7:20 PM	Microsoft Word 9	35 KB
	🖬 STR123 sac prep	2/11/2013 11:57 AM	Microsoft Word 9	83 KB
	🖬 STR125 animal sheet wk1_D7 wounds 02-01-13	3/7/2013 6:09 PM	Microsoft Excel 97	36 KB
	🗃 STR125 animal sheet wk2 D1 wounds 02-08-13	3/7/2013 6:12 PM	Microsoft Excel 97	36 KB
	🖬 STR125 BCA undiluted 4-23-13	4/26/2013 7:21 AM	Microsoft Excel 97	8 KB
	🐨 STR125 Nicotine and Wound with Infection in Diabetic Mice	3/7/2013 5:55 PM	Microsoft Word 9	40 KB
	🖬 STR125 protein processing and IP protocol	8/19/2013 3:12 PM	Microsoft Word 9	55 KB
	STR125 sac workflow	2/11/2013 10:46 AM	Microsoft Word 9	35 KB
	🐨 STR125 TLR2 IP protocol (run2)	9/6/2013 1:57 PM	Microsoft Word 9	54 KB
	STR125 wound area calculations	8/7/2013 2:38 PM	Microsoft Excel 97	36 KB
	STR125_RIPA 2 wound	8/12/2013 4:39 PM	Microsoft Excel 97	52 KB
	STR125_RIPA 3 wound	4/24/2013 9:16 PM	Microsoft Excel 97	57 KB
	STR125_RIPA 3 wound	8/19/2013 2:47 PM	Microsoft Excel W	19 KB

Documentation

 Create indexes and table of contents to make finding data easier



index sheet for expt type

E HO	C ² → ∓ ME INS	ERT PAG	E LAYO	UT FOR	MULAS DATA REVIEW	VIEW		STR experiment log [Read	-Only] [Compatibility Mode] - Excel	
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ay=experim t failed (bad agents, ssue; wrong otocol,	Pink=Log needs to be completed	Gold=Sampl es still need to be processed or assayed			Strikeout=samples gone, line hidden					
Date	Title of the experiment	Name	Noteb ook #	Pages #	Tested reagents	Sample status (what materials are left)	<i>In vivo</i> or <i>in</i> <i>vitro</i> (cell type and setup, or animal strain, se z ,	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 9-20-10	STR012 STR023	Steve Steve	1	25 43	stress, Chrna7 KD, barrier function a-Bungarotoxin, barrier function		C57BL/6 C57BL/6	Stress test on CHRNA7 KO Test effect of topical nicotine on barrie function, bungarotowin 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	SD 1	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 fml water, and fractionated once. Only half of the samples were out 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-C57BI/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 (InM) in wound healing	(3 boxes -80) Still OCT blocks for all. Some sections out/frozen. 7 sidles/animal. (sect. A.D., E.H. L. 1 4, 56, 9-13, 13-16). Set 1-4 uzed for initial staining. I-L used to check wound bg hemotoxalin, sections 5- 8 of dag 1 animals given to (R1 for staining, RIA punches processed/stored-80. 1 protein punch processed for ELISA (RIPA)(dag 1 only). Dag 1 nuc/etyo extracts done (-80), 1 punch lef dag 16.2 punches left Dag7	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 17 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). FINA punches processed, cDNA made. 1 protein punch (Day 1 only) processed for ELISA (RIPA), punch processed for nucleyto extract, Day7 1 punch left. D7 norm skin left.	24 12-week old male C57BI/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 Ub7 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 Seieneer 2012

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

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		NAME						UGPROFILE2010				
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_			Birmingham	AL	15		17	8	5	15		
	100706	University of Alabama in Huntsville	Huntsville	AL	15		17	-	4	12	-	
_	100751	The University of Alabama	Tuscaloosa	AL	16		15	10	4	16		
	100858		Auburn University	AL	16		14	13	4	15		
_		University of Arkansas	Fayetteville	AR	15		15	13	4	16		
	104151	Arizona State University	Tempe	AZ	15		15	11	4	15		
120	104179	University of Arizona	Tucson	AZ	15		14	11	4	15		
120	105330	Northern Arizona University	Flagstaff	AZ	16		15 17	11	4	16		
	110404	California Institute of Technology	Pasadena Stanford	CA	15		14	12 12	6	11	-	
	243744	Stanford University			15				5		-	
204	110635 110644	University of California-Berkeley University of California-Davis	Berkeley	CA	15		15 14	13 13	5	16		
205	110644		Davis	CA			14	13	4			
-		University of California-Irvine	Irvine	CA	15		14	13	4	16		
	110662	University of California-Los Angeles	Los Angeles	CA				13	5	16		
	110671	University of California-Riverside	Riverside	CA	15		15 14	10	4	16	-	
	110680	University of California-San Diego	La Jolla Santa Barbara	CA	15		14		4	16	-	
			Santa Barbara	CA	16		15	-1	4	18		
	112251	Claremont Graduate University	Claremont	CA	16		15	-1	4	15		
	122409 110714	San Diego State University	San Diego Santa Cruz	CA	15		15	11	3	16		
445	123961	University of California-Santa Cruz		CA	15		15	13	5	16	-	
401	125901	University of Southern California	Los Angeles	CO	15		14	13	5	16		
101	126775	Colorado State University Colorado School of Mines	Fort Collins Golden	CO	10		17	11	4	13	-	
491				CO			17	12	4	15		
502	126614 127060	University of Colorado at Boulder	Boulder Denver	CO	15		15	12	4	13		
530	126562	University of Denver		CO	16		13	6	5	15		
575	120302	University of Colorado Denver University of Connecticut	Denver Storrs	СТ	15		14	12	5	17		
580	130794		New Haven	CT	15		14	12	5	17		
585	130794	Yale University Catholic University of Amorica		DC	10		14	12	5	14		
500	131283	Catholic University of America	Washington	DC	15		15	10	5 5	17		
501	131469	George Washington University Georgetown University	Washington	DC	15		14	12	5 6	17	-	
	131496		Washington	DC	10		14	12	5	14		
600	131520	Howard University University of Delaware	Washington Newark	DC	15		14	10	5			
610				FL	15		15	8	4	15		
625	132903	University of Central Florida	Orlando Roca Paton	FL	10		15	6	4	15		
626	133881	Florida Atlantic University	Boca Raton	FL	10		17	12	4	14		
631	133951	Florida Institute of Technology Florida International University	Melbourne	FL	16		17	12	5	12		
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Abbreviations – documented

Columns explained

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Variable	Label	Source						
AATOT	Associate's degree total	IPEDS						
ACCRED	Accreditation type (Office of Postsecondary Education)	CF-derived						
ACTCM25	ACT Composite Score, 25 percentile	IPEDs						
ACTPCT	Percent of first-time degree/certificate-seeking students submitting ACT scores	IPEDS						
BASIC2010	2010 Basic Classification	CF						
BATOT	Bachelor's degree total	IPEDS						
CC2000	2000 Carnegie Classification [historical-not updated]	CF						
CCBASIC	2005 Basic Classification	CF						
CCENRPRF	2005 Enrollment Profile Classification	CF						
CCIPGRAD	2005 Graduate Instructional Program Classification	CF						
CCIPUG	2005 Undergraduate Instructional Program Classification	CF						
CCSIZSET	2005 Size and Setting Classification	CF						
CCUGPROF	2005 Undergraduate Profile Classification CF							
CIP4GP	Unique graduate or first-professional CIP-4s CF-derived							
CIP4U	Unique undergraduate CIP-4s CF-derived							
CITY	City location of institution IPEDS							
COEXIST	CIP-4s observed at both undergrad & grad/professional as percentage of undergraduate CIP-4s CF-derived							
CONTROL	Control of institution (IPEDS) IPEDS							
COPLAC	Council of Public Liberal Arts Colleges member institution CF-assigned							
DATA Rev	Data revision flag	CF						
DOCCIP	CIP-2 count, research doctoral	CF-derived						
DOCTOT	Research doctoral degree total	IPEDS						
DOCTOTX2	Total research doctorates excluding Audiology, Occupational, Physical Therapy, and professional practice Clinical Psychology	CF-derived	L					
ENG2010	Community Engagement Classification	CF-assigne	d					
ENRFTEDS	Computed FTE degree seeking students all levels	CF-derived						
ENROLLMENT	Fall headcount all levels	IPEDS						
ENRPROFILE201	2010 Enrollment Profile Classification	CF						
EACETTOT		CF-derived						
FACETTOT	Total full-time faculty engaging in primarily instruction, primarily research, or a combination of instruction, research, & public service							
FPTOT	first-professional/non-research doctorates degree total	IPEDS						
GPCIP	CIP-2 count, graduate or first-professional	CF-derived						
GPCIP1X	Largest grad/fp CIP-2 excluding 24,30 CF-derived							
GPCIP2X	2nd largest grad/fp CIP-2 excluding 24,30	CF-derived						
GPPCTIX	Pacentage of grad/fp degrees corresponding to gpcip1x	CF-derived	1					
GPPCT2X	Percentage of grad/fp degrees corresponding to apcip2x	CF-derived						
Variables								

Abbreviations - documented

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cc2010 classification data file 07.14.2014 [Compatibility Mode] - Microsoft Excel Insert Page Layout Formulas Data Review View Home 👗 Cut <. Normal 2 Normal 3 2 📑 Wrap Text Normal 2 2 Normal 3 Normal 4 General 🖹 Сору Paste Conditional Format Percent 2 Bad Percent 3 Normal Good BIU· < > Herge & Center \$ - % , .00 🔮 Format Painte Formatting * as Table Clipboard Number Styles A171 Variables Α /ariable Label Value Basic2010 Basic Classification 0 (Not classified) explained ccbasic Assoc/Pub-R-S: Associate's--Public Rural-serving Small 2 Assoc/Pub-R-M: Associate's -- Public Rural-serving Medium 3 Assoc/Pub-R-L: Associate's--Public Rural-serving Large Assoc/Pub-S-SC: Associate's--Public Suburban-serving Single Campus 4 5 Assoc/Pub-S-MC: Associate's--Public Suburban-serving Multicampus Assoc/Pub-U-SC: Associate's--Public Urban-serving Single Campus 6 7 Assoc/Pub-U-MC: Associate's--Public Urban-serving Multicampus 8 Assoc/Pub-Spec: Associate's--Public Special Use 9 Assoc/PrivNFP: Associate's--Private Not-for-profit 12 10 Assoc/PrivFP: Associate's--Private For-profit 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 13 Assoc/PrivNFP4: Associate's--Private Not-for-profit 4-year Primarily Associate's 14 Assoc/PrivFP4: Associate's--Private For-profit 4-year Primarily Associate's 15 RU/VH: Research Universities (very high research activity) 18 16 RU/H: Research Universities (high research activity) 19 17 DRU: Doctoral/Research Universities 18 Master's L: Master's Colleges and Universities (larger programs) 19 Master's M: Master's Colleges and Universities (medium programs) 20 Master's S: Master's Colleges and Universities (smaller programs) 21 Bac/A&S: Baccalaureate Colleges -- Arts & Sciences 24 25 26 27 22 Bac/Diverse: Baccalaureate Colleges--Diverse Fields 23 Bac/Assoc: Baccalaureate/Associate's Colleges 24 Spec/Faith: Special Focus Institutions--Theological seminaries, Bible colleges, and other faith-related institutions 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 28 Spec/Tech: Special Focus Institutions--Other technology-related schools 29 Spec/Bus: Special Focus Institutions -- Schools of business and management 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 36 37 33 Tribal: Tribal Colleges ipug2010 Undergraduate Program Classification -2 (Special focus institution) 38 39 40 41 42 -1 ccipug (Not applicable) 0 (Not classified) 1 Assoc: Associates 2 Assoc-Dom: Associates Dominant 3 A&S-F/NGC: Arts & sciences focus, no graduate coexistence 13 A&S E/SGC: Arts & ecioneos for Labels 11 A I Ready •

Data management

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





- 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 <u>all</u> 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
 - O Results
- □ File all data to R: drive <u>and</u> 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

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Strategies – staff buy in

- Get everyone involved. Inclusiveness supports accountability and buy-in
 - Ask everyone contribute to the answer
- Incentives (<u>friendly</u> 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, <u>and back them up</u>.)



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