

## DATA MANAGEMENET PLAN

Large amounts of data are typically generated from the experiments detailed in this proposal, as many experiments include imaging files, across several x-y positions, each scanned through several z-planes, resulting in 3D image volumes, or “stacks”, as well as large data sets resulting from proposed MiSeq experiments in Objective 3. To accommodate these and similar experiments, the Peyton lab has three common computers containing ~10 terabytes (TB) of total space across 4 hard drives. In addition, each student or postdoc is given a personal external hard drives with at minimum 2 TB of space per hard drive, per individual project. The lab also owns common external hard drives for routine and undergraduate work that contain 2 TB of space each, as well as a 20TB server that is maintained by UMass Computer Services, and Ethernet access to the Green Computer Center in Holyoke, MA.

The following procedure is followed to generate and store data files.

1. Data is generated and collected on the Zeiss (microscope)- or MiSeq-attached computer hard drives.
2. Data is moved onto a personal external hard drive or the lab server (anywhere from 2-200GB per experiment).
3. Data is confirmed to be viable on the hard drive or server, then and deleted off of the Zeiss computer.
4. Data is taken to one of two Imaris-attached computer for analysis, or uploaded to the Green Computer Center servers for analysis on the software they provide at no charge.
5. After analysis, 3-4 types of files will exist for every x-y position from the microscope:
  - Original Zeiss Axiovision/Zen file
  - Saved IMS scene file (Imaris file)
  - Excel file of statistics generated via your analysis
  - An MPEG, AVI, or MOV file of a movie you may have recorded.
6. The Axiovision/Zen file is then deleted, and all other files are organized in a fashion that correlates with lab notebook page and project numbers.
7. It's typical that each manuscript-worth of data will require 2TB of space.
8. Once a student has moved to a new project, the data will be moved to “permanent storage”. This will likely mean that the full hard drive will go into storage in the Peyton lab, and the student will be given a new hard drive for the next phase of his/her thesis.
9. **Data Preservation.** Once #8 is complete, a data index is made so that Dr. Peyton, and new students, can find and easily access generated data. An excel sheet titled “data index Student Initials Date” (e.g. Data Index SRP 8-1-14) that explains the folder organization created in step #6. This index file includes any abbreviations used, the date range in which all data was collected, an author list and contact info for authors for anyone that contributed to the data collection in the hard drive, page numbers of the lab notebook wherein data can be matched to specific experiment and experimental protocol, and any other pertinent information needed for a future student to read, understand, and use data in future projects.

Importantly, data sharing between the Peyton lab members, and collaborators, must be streamlined and constantly accessible between all scientific members. To do this, we currently use DropBox file sharing software, with a hierarchically organized file structure for work on this project. PIs, students, and postdocs have full access rights to all data and materials within, and all members have personal laptops with internet to access files at all times. The server is password protected, so only lab members and collaborators can access it. It is only accessible from a UMass-networked computer.

Both research and educational objectives are expected to generate materials, protocols, and wiki pages on tissue engineering, hosted by openwetware.org free of cost. Protocols and

biomaterial samples will be supplied at no cost with other researchers in the field upon request. The Peyton lab uses the NSF-funded openwetware website, and posts current research projects as well as all active protocols. When applicable, cell lines generated will be kept permanently in the Peyton lab, and will be freely shipped to researchers upon request.