Tutorial 15: How to deal with Axoscope files for later import into FileMaker

AKA – Some notes from the Schmidt lab on file naming formats, location of raw files, converting from ABF to analysis files, using getrundata to extract time tag and other experimental details from Axoscope files.

Preamble – these are some of the conventions and formats we decided to use in developing our version of the FileMaker database. Some of this information may be of use to other labs when considering or developing their own version of a FileMaker database, particularly for *in vitro* locomotor experiments, and so we have included it here. KC - June 2006.

Naming conventions

As of 2006   – Eugene is using the format: aaayymmmdd
                 – Kris is using either Eugene's or kcaaayymmmdd

Experiment folder Format: aaayymmmdd (with a two-letter experimenter pre-fix)

Each experiment should receive its own folder, named according to a sequential order of experiments, denoted by three letters, followed by the date of the experiment, in the aaayymmmdd format:

We have also decided to add a two-letter prefix to denote the experimenter at the beginning of this name.

So, if I had done my first experiment on January 11, 2005, then kcaaa05jan11 would be the name of my first experiment folder. Had I done two experiments on that day, I would also have had kcaab05jan11.

Run Name format: aaayymmmdd_000*.abf

To simplify the naming process (and reduce errors) we have decided to use Axoscope's naming conventions (after allowing for long-filenames).

Again, we have decided to add a two-letter prefix to denote the experimenter at the beginning of this name. So, I would have my first run as kcaaa05jan11_0000.abf

So, to do this, in Axoscope,
1 - in the dialog box under File/SetDataFileNames, select the *allow long file names* box,
2 - make a new directory according to the naming convention for each experiment and
3 - set the first run file's name
4 - make sure you are recording files in axon binary integer format (not floating point)

Location of raw data files.

After each experiment, the folder containing the day's ABF files should be transferred to dave2 and then placed in the proper directory according to the following format: dave2:/brian/experimenter/year.

So, for me in June of 2006, I would place my folder (and all it's run files) in dave2:/brian/kris/2006, which would then contain a new folder called kcabc06jun21.

Adding the files to the FileMaker database

[AKA – how to get the time tag and other information out of your ABF files and into your FileMaker database]

1 – FTP Axoscope files from the computer they were collected on to the computer they are to be stored on (in our case this is dave2). All files for a given experiment should be in a folder named according to the above naming conventions.
2 – Run axon2run on data files. If using axon2run on multiple directories, with multiple files, you can do the following;

        for f in */*.abf   [e.g. could replace first asterisk with aa[j-u]*]
        do
                axon2run $f
        done
(you can also write this by separating each step, i.e. each line above, with semicolons)

3 – Run getrundata on all your files
        E.g.
        getrundata aa[j-u]05* > filename.csf
4 – open FileMaker and make a back up copy of the database
5 – In FileMaker, choose file/import/from file and then match the fields and import.

Conventions for entering experiment information in the time-tags before and during experiment runs

The particulars of an experiment can be included in the time tags, either as header information at the beginning, or as comments inserted throughout the run. The *getrundata* script, written by Gilles, searches for particular pieces of information (e.g. the age of the preparation, the number of barriers…) according to the following formats and rules.

Information to enter in time tags	Options and acceptable format	FileMaker field format	Field to map to in FileMaker	Time tag format examples
Experiment/Folder name	*ee*aaayymmmdd (*ee* are the initials of the experimenter)	Text	Experiment	kcabc06jun21
Filename	*ee*aaayymmmdd_000*.abf	Text	RunName	kcabc06jun21_0000.abf
Series name	e.g. PP, HEMI	Editable Text list	Series name	Series=PP
Experimenter	EZ, KC, BS	Editable Text list	Experimenter	E=KC
Age of prep	RD0, RD1, RD2, RD3, RD4…	Editable Text list	Age	Age=RD3
Highest level of lesion at beginning of experiment	Mid-collicular transection, C1 transection, T6 transection…	Editable Text list	Preparation	level=mid-col level=c1
Type of recordings used (may have multiple)	VR, EMG, ENG, IC	Editable Text list, multiple entry	RecordingType	Rec=vr,emg
Stimulation method	BS-EL, BS-CH, SP-EL, SP-CH	Editable Text list, multiple entry	Rhythm Activator	Stim=bs-el, bs-ch, sp-ch
Waveforms (list in order) *** shouldn't need this anymore***	RC4, RC5, RC8, RL2, RL3, RL5, LC4, LC5, LC8, LL2, LL3…		EC	
Purpose	Briefly describe experiment objective	text	Purpose	Purp= to see if …
Number of barriers	0B, 1B, 2B, 3B …	Number field	# Barriers	2b=c1,t9/t10
Barrier Level	C1, T1, T9/T10, T10/T11, T11/T12, T12/T13, T13/L1, L1/L2, L2/L3, L3/L4 …	Multiple entry, editable text list	Barrier Level	
Time tags	This format depends on how these will be imported, but I would like to know the tag number, the time (in seconds – Axoscope by default uses milliseconds), and then the text message that follows	Tag number in number, time in number, the text message in a text field	You will have a better idea than I whether this should be one large field or multiple linked fields – currently I have the time tags as 256 multiple entries (256 is arbitrary)	
Lesions	1 - Br-Seq, stag hemi for			

	staggered hemisection 2 – hemi for hemisection 3 – midsag, split for midsagittal lesion …			
Drugs added	Unless otherwise indicated, we will assume the drug concentration is in micromolar Typical examples: AP5, 5HT,ACH, NMDA, K/pot (potassium), Mg, ACSF, BIC (bicuculline), STRY (strychnine), BAC (baclofen)…		time tags	

So, for example, for each experiment the following should occur:

1) Make a new folder and set the first run file in the appropriate year of your data folder, using the conventions and method noted above. [All this is set under File/set file names….]
2) In the first file (which will be automatically called filename_0000.abf, you will enter the 'header' information (using control-shift-t), as time tags. You will need two or three time tags to enter this information (as each time tag will only accept about 55 characters). This is programmed into specific fields in the FileMaker database based on four conventions:
    i. Different data field entries are separated by semi-colons (;)
    ii. commas separate multiple lists or related fields of information,
    iii. the equal sign (=) is used to associate a particular field name with the information you want to insert)

thus, at the beginning of the experiment, you might enter the following;

E=kc; age=rd3; level=mid-col; stim=bs-el, sp-ch; rec=vr, eng; purp= to see if CNQX or AP5 will block brainstem-chemically induced spinal rhythm; 2B=C1, T9/T10

Following this information, you would enter the details of your experiment, such as any subsequent lesions, the addition of various drugs, etc that occurred throughout each run.

You only need to input header information once per experiment:
For simplicity, the initial experimental information found in the time tags should only be entered once per experiment and so should serve as the 'master' for the experiment, from the *0.abf file, which is always the first for the day, if we accept the above naming conventions.