Langerhans Lab Protocols

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Primer for collecting morphometric data with TPS software

Using TpsDig2 to Digitize Landmarks:

1. **Place digital image files to be included in the tps file for digitizing into a common folder. It is often useful to separate each collection/population into separate folders.**

2. **Build a tps file:**
   a. Open tpsUtil.
   b. Under "Operation," select "Build tps file from images."
   c. Click "Input," select any image file within the desired folder containing all relevant files.
   d. Click "Output," create a name for the tps file that will be created. Use a name relevant to the project. Be sure it's created within the same folder as the image files.
   e. Click "Setup," be sure all images desired for inclusion are checked, uncheck any that you don't want in the file.
   f. Be sure "Include path?" is unchecked (this will only place the image name, not the directory, in the tps file, permitting you to move the files around to different folders or computers later).
   g. Click "Create."

3. **Digitize Images using tpsDig2:**
   a. Open tpsDig2
   b. Select File->Input source->File, and select the tps file desired.
   c. The first image in the file should appear in the main window, and now you can move from image to image using the red arrows at the top left.
   d. You can zoom using the "+" and "-" symbols near the text window at the top that says "1.000" (that value is the zoom magnification). You can also potentially use the mouse scroll wheel to zoom.
   e. Set the scale on the photo:
      i. Open the Image Tools panel by clicking the icon of tools (hammer, screwdriver, wrench) at the top, or selecting "Options->Image Tools…".
      ii. Select the "Measure" tab.
      iii. Enter Reference length (e.g. 10 millimeters).
      iv. Click "Set scale".
      v. Click the two ends of a line with the known length of the Reference length.
      vi. Click "OK".
   f. Place landmarks in appropriate locations:
      i. Select the Crosshairs icon at the top bar to select the landmarking tool.
      ii. You can change the landmarking cursor with the "Cursors" tab in the "Image Tools" panel.
      iii. Click the appropriate landmarks and move on to next image. Always be sure to digitize landmarks in the EXACT SAME ORDER on every specimen.
      iv. You can click the # icon at the top to toggle showing the landmark numbers on the image or not.

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     v.   You can change the color, size, etc. of the landmarks and other features with the "Colors" tab in the "Image Tools" panel.

    vi.   You can edit the image with the "Tools" tab in the "Image Tools" panel: e.g. flip the image horizontally if specimen is facing wrong direction.

4. **Save the data**
   a. Click the icon at the top with the arrow pointing to a floppy disk, or select "File" -> "Save data as".
   b. Select "Overwrite" to save over previous data.