The Data Sets - Olfactory Projection Fibers

< **Back to Data Sets Main**

Folder Contents:

This is 1 of the 6 data sets used for DIADEM.

This data set consists of 9 separate drosophila olfactory axonal projection image stacks, each with a corresponding gold standard reconstruction.

During the DIADEM Grand Challenge Competition: ‘OP_1’ through ‘OP_3’ were used for the Training Round, ‘OP_4’ through ‘OP_6’ for the Qualifier Round, and ‘OP_7’ through ‘OP_9’ for the Final Round.

Experimental Procedures:

Data set owner: GSXE Jefferis, Department of Zoology, University of Cambridge; L Luo, Department of Biology, Stanford University

Species: Drosophila

Strain: y w hs-FLP UAS-mCD8-GFP/+ or Y; FRTG13 tubP-GAL80/FRTG13 GAL4-GH146 UAS-mCD8-GFP

Nervous System Region: Olfactory Bulb

Fiber type: Axons

Labeling Method: GFP

Image Acquisition Method: 2-channel confocal microscopy

Tracing Method: Neurolucida (Williston, VT); Amira (Chelmsford, MA) extension module hxskeletonize (Evers JF et al., 2005, J Neurophysiol. Vol 93(4))

Objective Lens: 40x oil (NA=1.3) with 1.5x zoom

See Jefferis et al., 2007, Cell Vol 128(6) for general information related to the data

Z distance between successive images within an image stack: 3.03 pixels

Download Instructions:

1. Download and extract 'Olfactory Projection Fibers.rar'.

2. Folder will contain 2 subfolders: 'Image Stacks' and ' Gold Standard Reconstructions'.

3. 'Image Stacks' folder will contain 9 subfolders: ‘OP_1’ through ‘OP_9’.

4. 'Gold Standard Reconstructions' contains manually or semi-manually traced digital reconstructions ‘OP_1’ through ‘OP_9’. Each SWC file was traced in 3D using the image stack to which its name corresponds.

5. SWC files will align properly with their corresponding image stack when loaded into software that uses pixel-based coordinates, such as ImageJ or Neuromantic.

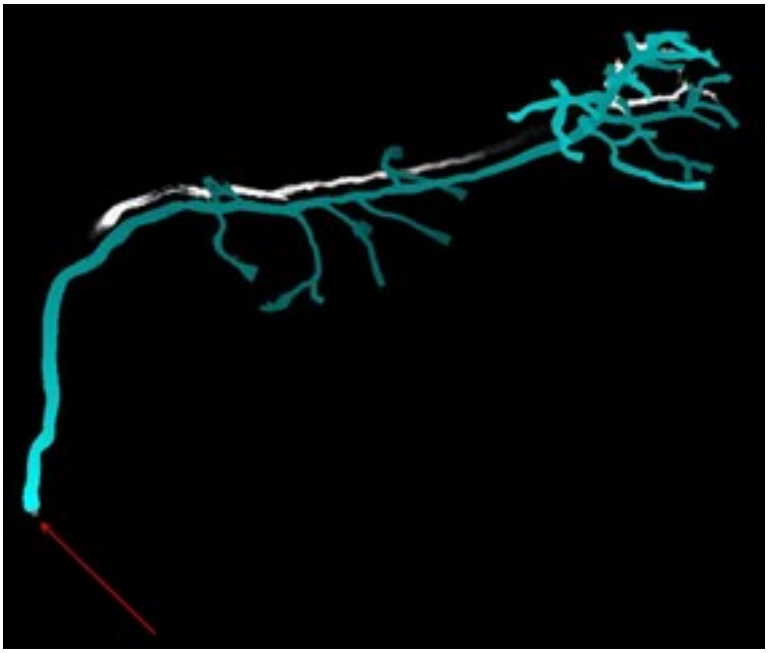
6. Each image stack contains only 1 axonal arbor to be traced.

7. Image stacks may contain other overlapping structures that should not be traced.

8. Starting coordinates are given below that clearly mark the root of the correct arbor to reconstruct.

9. Special note for this data set: External branches (i.e. branches that end in a termination) with path lengths of less than 6 pixels will be ignored when using the DIADEM metric. Thus, they can be traced or ignored without affecting the DIADEM metric score, provided that the traced branches remain less than 6 pixels in length.

10. Special note for this data set: Unlike other data sets, for some (but not all) image stacks, image file names were not padded with zeros. Regardless, Neuromantic loads all images in their correct image stack order.



Gold standard reconstruction ‘OP_1’ (light blue) is superimposed and offset (for visualization purposes) over its corresponding image stack. Arrow (red) points to the root of the reconstruction.

Individual Stack Information (all image stacks are 512x512 pixels in XY and 8 bits per pixel):

OP_1- Number of images: 60

OP_2- Number of images: 88

OP_3- Number of images: 62

OP_4- Number of images: 67

OP_5- Number of images: 76

OP_6- Number of images: 101

OP_7- Number of images: 71

OP_8- Number of images: 85

OP_9- Number of images: 92

Gold Standard Reconstruction Starting Coordinates (X and Y in pixels; Z in image sequence number, where top image Z = 0):

OP_1 (X,Y,Z): (30.979,429.04,0)

OP_2 (X,Y,Z): (0.72501,391.08,25)

OP_3 (X,Y,Z): (93.742,179,38)

OP_4 (X,Y,Z): (128.2,504.37,0.3)

OP_5 (X,Y,Z): (185.7,264.02,33)

OP_6 (X,Y,Z): (15.074,412.01,10)

OP_7 (X,Y,Z): (119.76,215.98,39)

OP_8 (X,Y,Z): (118.64,181.34,55)

OP_9 (X,Y,Z): (64.56,364.47,4)