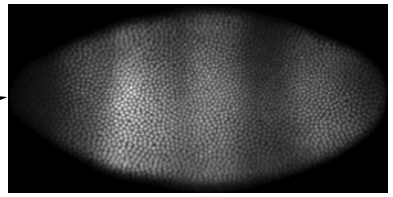
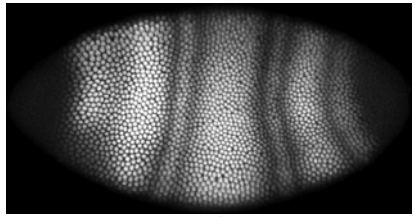
Making a Smooth Whole Embryo Mask in Preparation for Data Collection

Case 1: early patterns have lower staining intensity

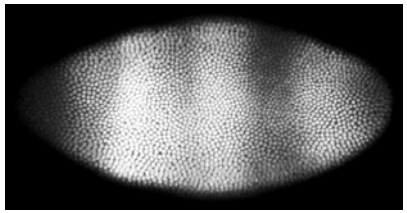
Case 2: later patterns have higher staining intensity

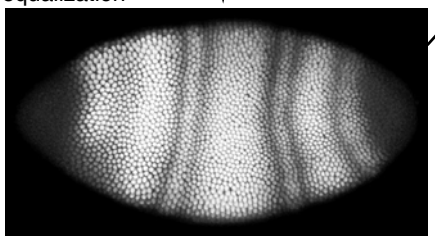
Pixel Maximum





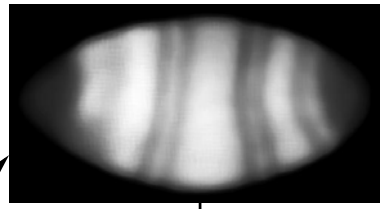
Apply a 50 pixel pad and perform histogram equalization

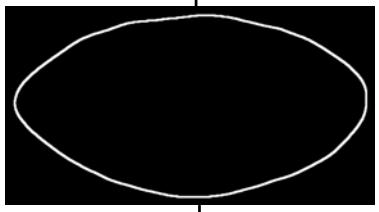




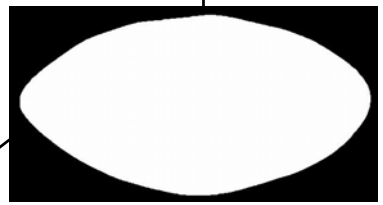
In this way all embryos obtain a uniform overall brightness, so that the embryo outline can be consistently determined across different ages and stain types.

Shrink and blur using median filter





Thresholding and distance transform yields a smooth embryo outline



Filling the outline, and 10 cycles of erosion creates a new mask.

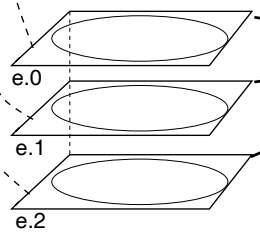
Smooth Whole Embryo Mask

Purpose:

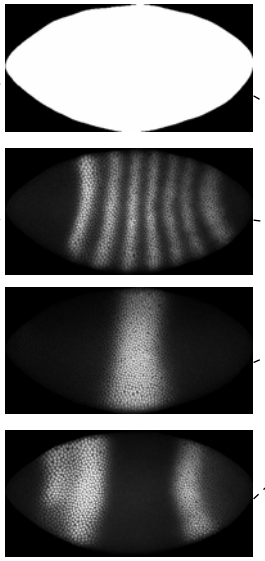
Because we would like to make expression data relative to the physical dimensions of the embryo, it is important to convince ourselves that we have accurately defined the physical bounds of each embryo. By applying these steps and looking at the bounds we have established for each embryo, it is clear that we have accomplished this consistently for all embryos.

Input:

3-Element Embryo KDF File, Rotated and Cropped

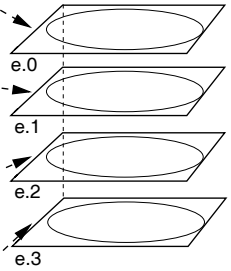


All channels are padded, then sent through the blob extractor using the new embryo mask. The mask also extracts itself, and finally all are appended along the elements axis



Output:

4-channel embryo KDF file



This file is suitable input to the data collection procedure