Analyzing the Drosophila Embryo Development using Scikit image

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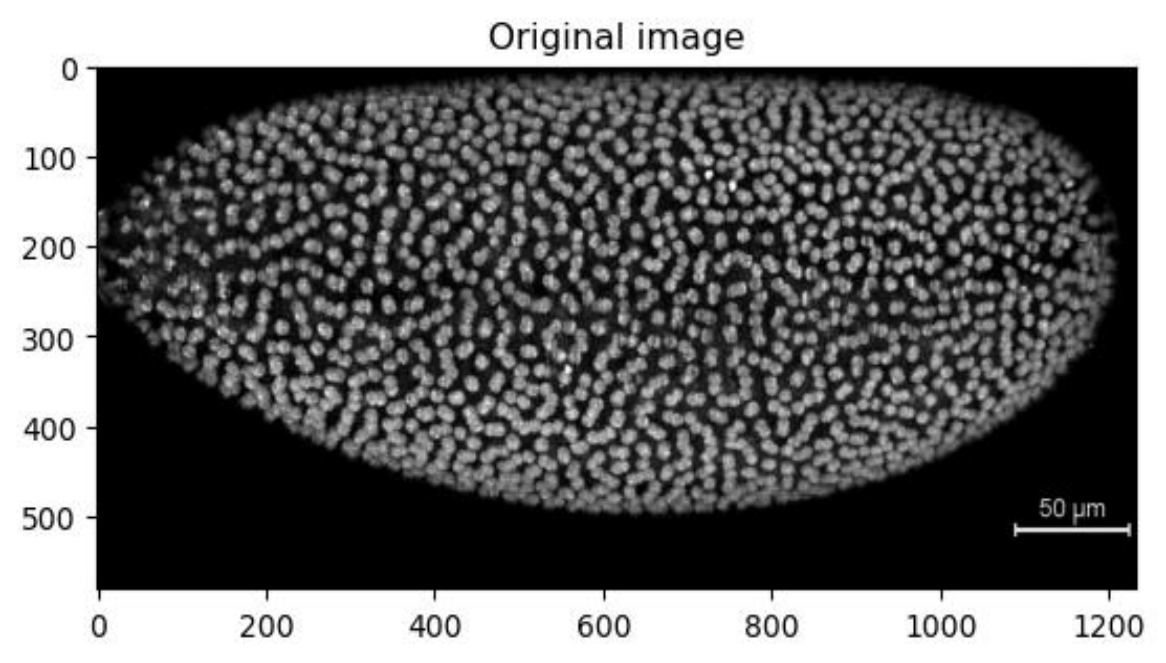
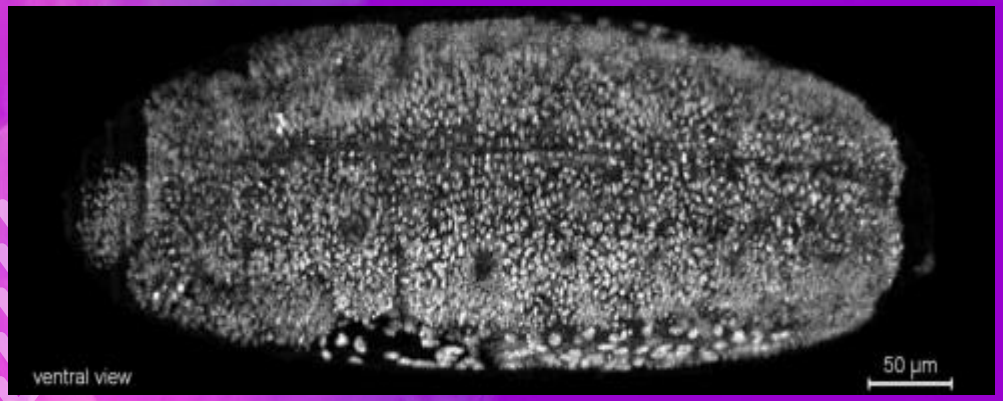
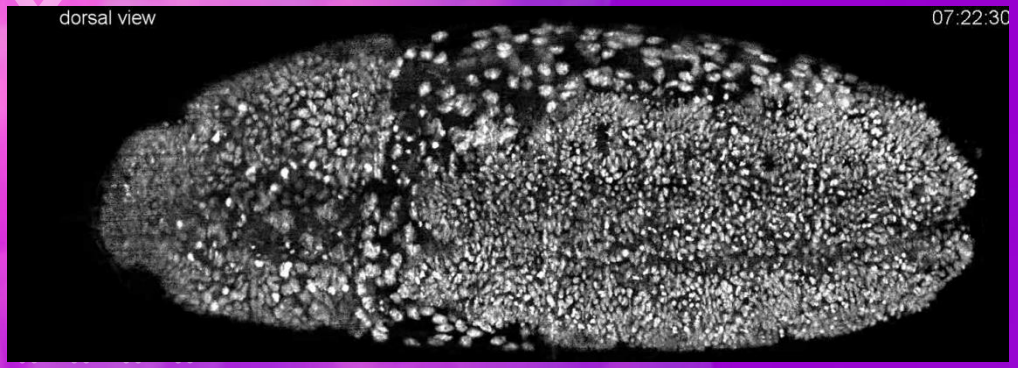
ABOUT IMAGE 1



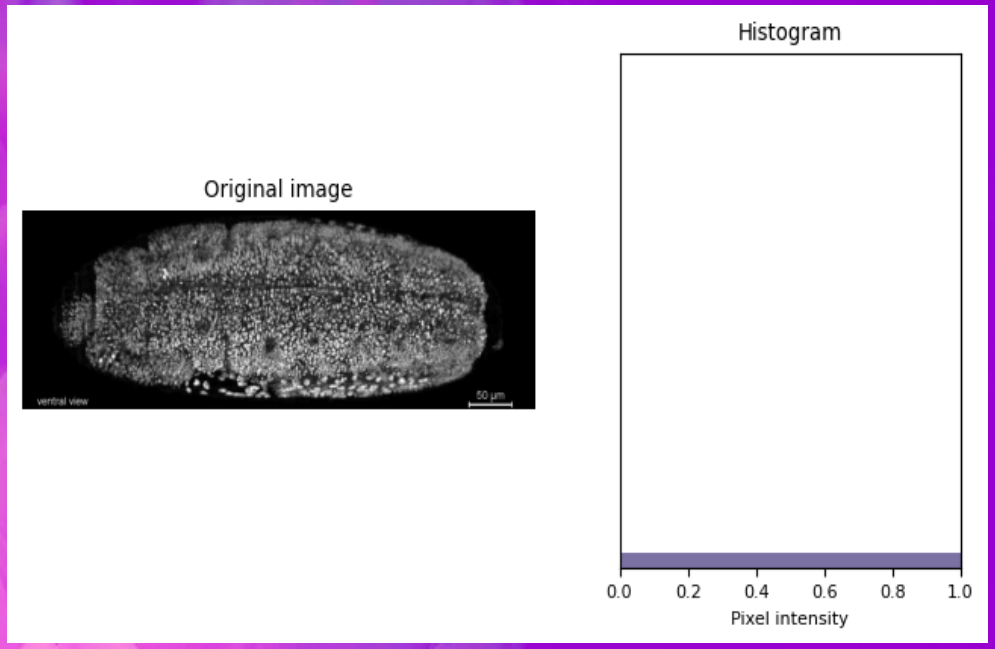
This is the image of syncytial development of Drosophila , it begins its development in an unusual way: **a series of nuclear divisions without cell division creates a syncytium**. **All the cleavage nuclei are contained within a common cytoplasm**

ABOUT IMAGE 2

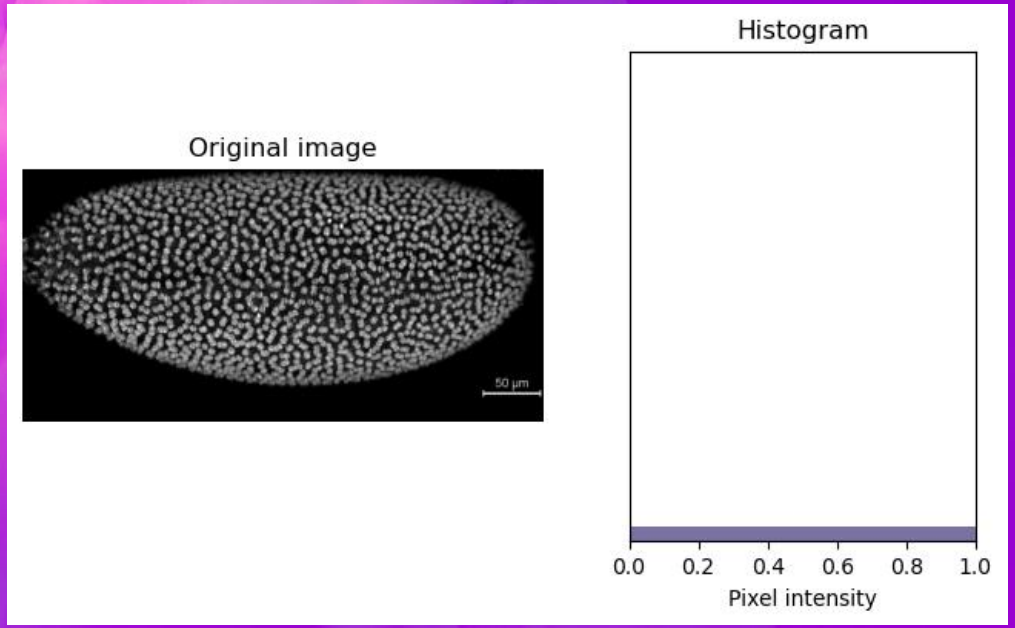




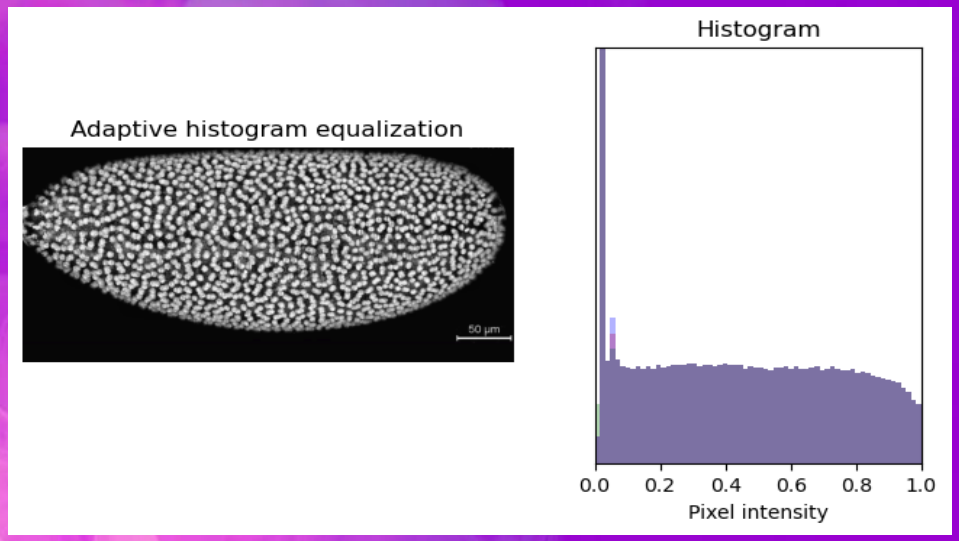
This is the image DV of Drosophila , Dorsal/ventral (DV) patterning is **the process whereby embryonic cells assume different developmental fates as a function of their position along an organism's DV axis**. In the Drosophila embryo, DV patterning begins during oogenesis and is completed during the early stages of embryogenesis.



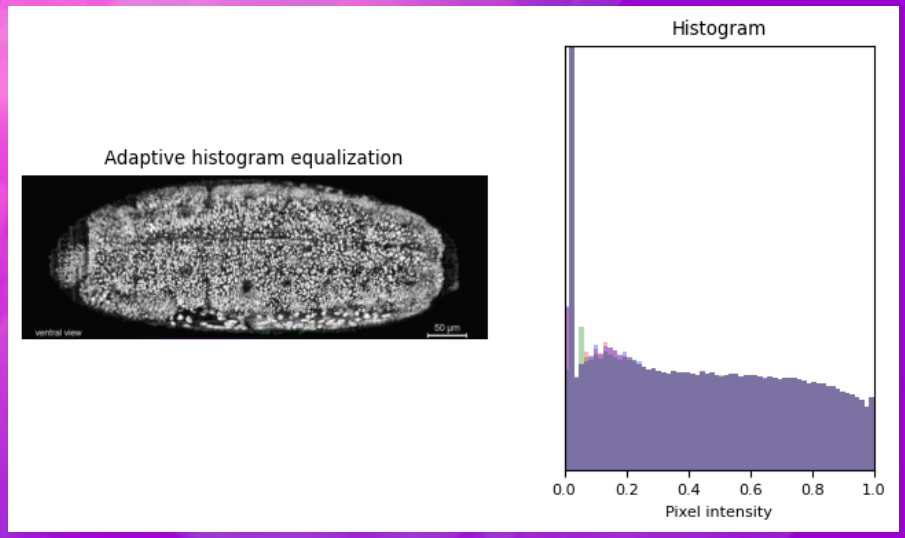
#Now analyzing embryogenesis (ventral) through histogram – FIGURE 2



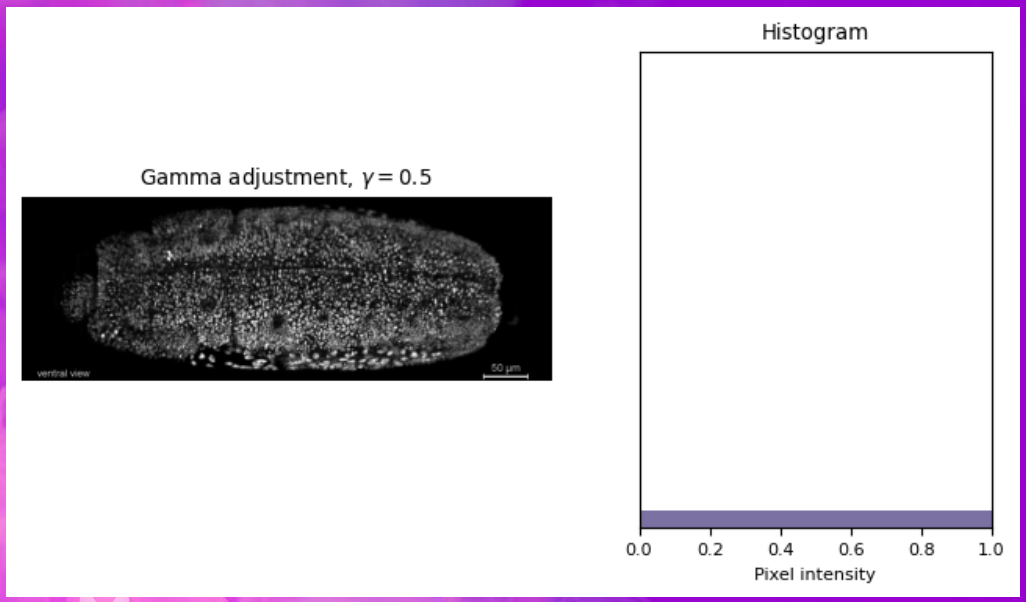
#analyzing the histogram for early stage drosophila‘ -- FIGURE 1



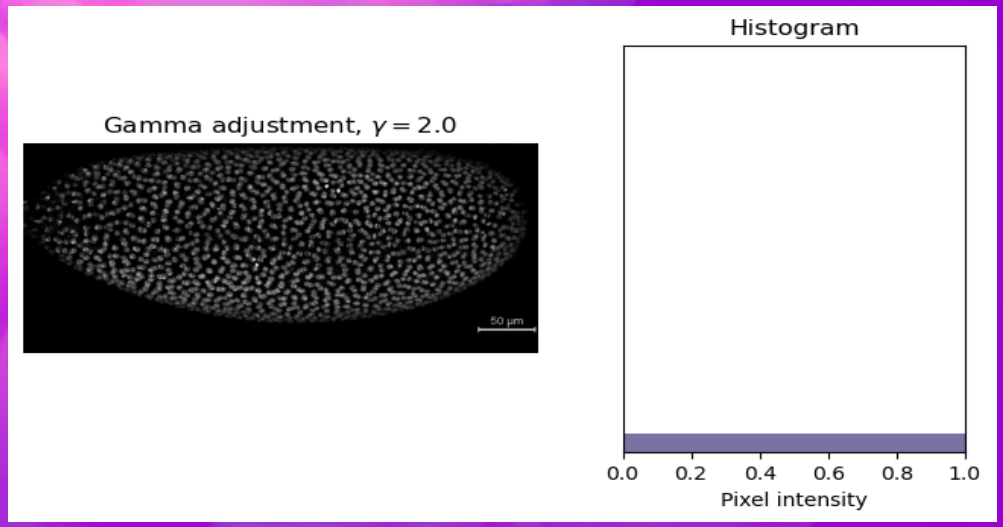
#adaptive histogram equalization for early stage drosophila



#adaptive histogram equalization for Ventral drosophila

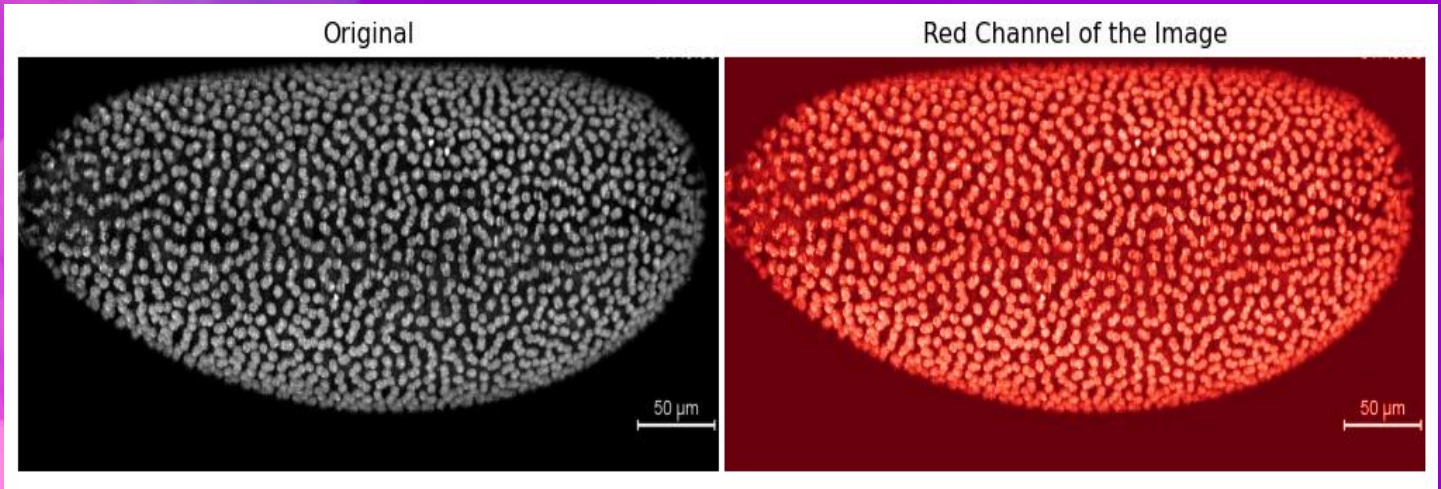


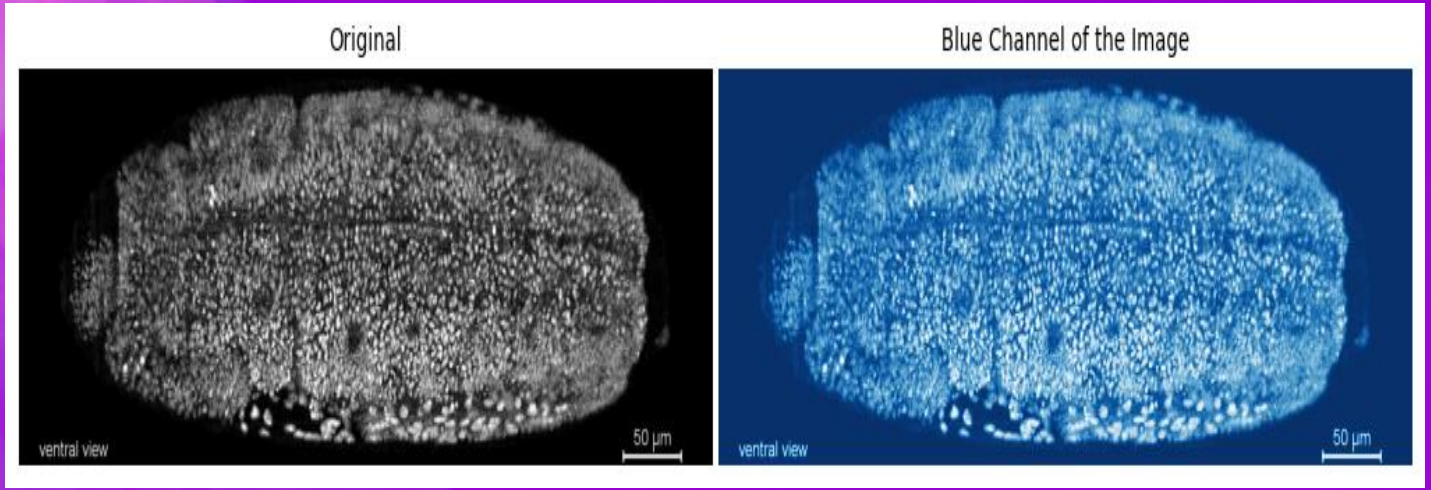
#gamma correction for embryogenesis (ventral)drosophila



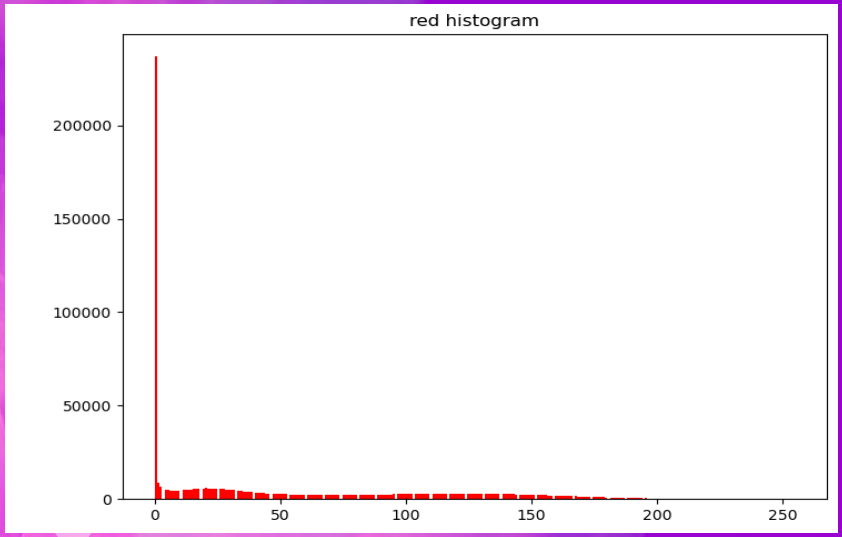
#gamma correction for early stage drosophila

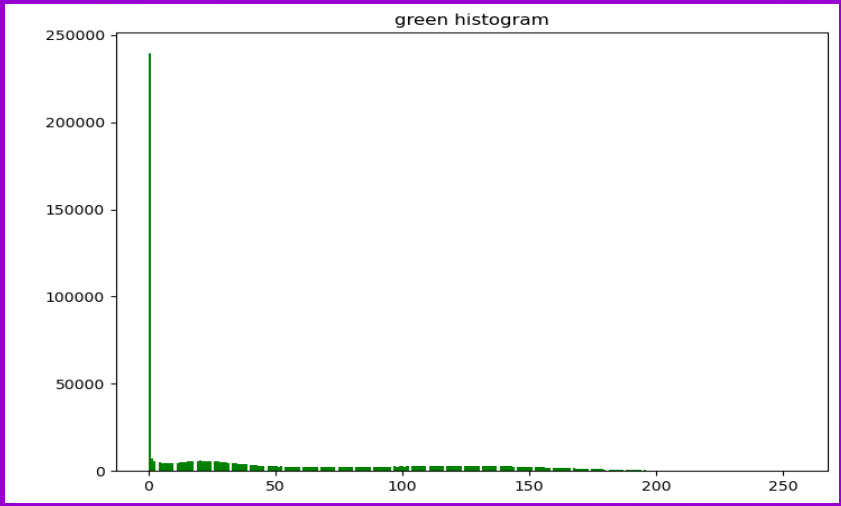
conversion of rgb scale and gray scale is done to analyze the early stage and ventral drosophila

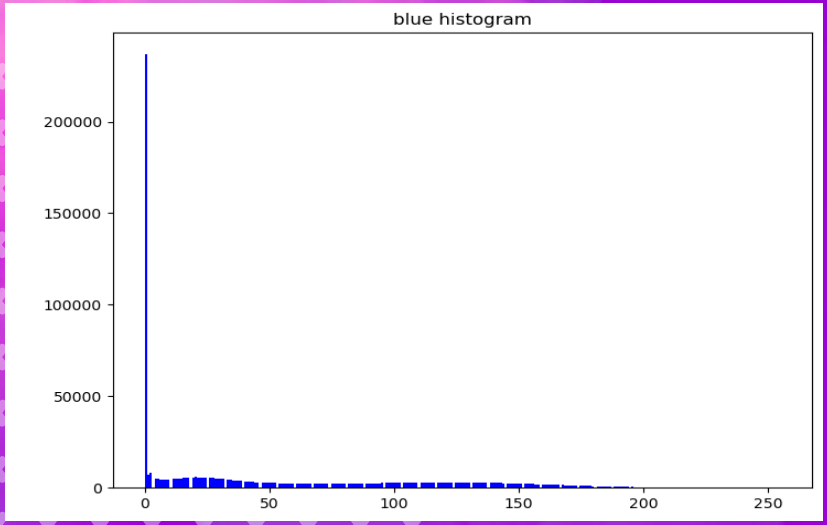


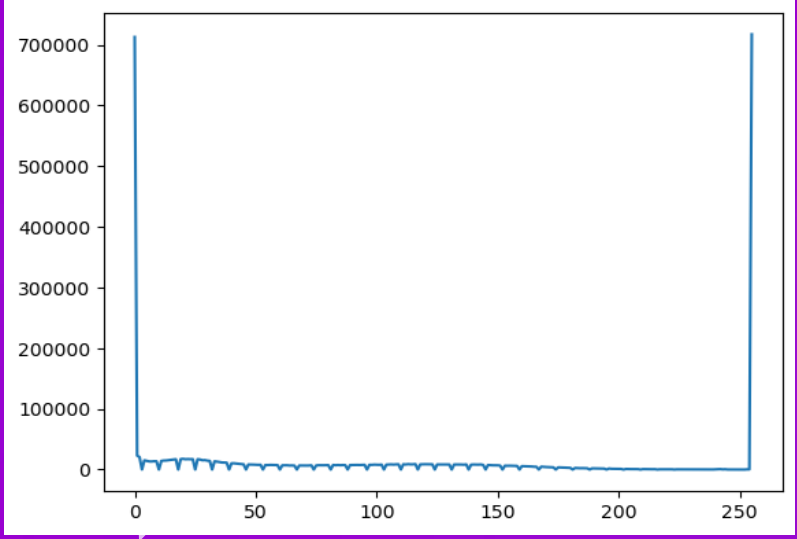


analyzing the intensities through histogram for early stage drosophila

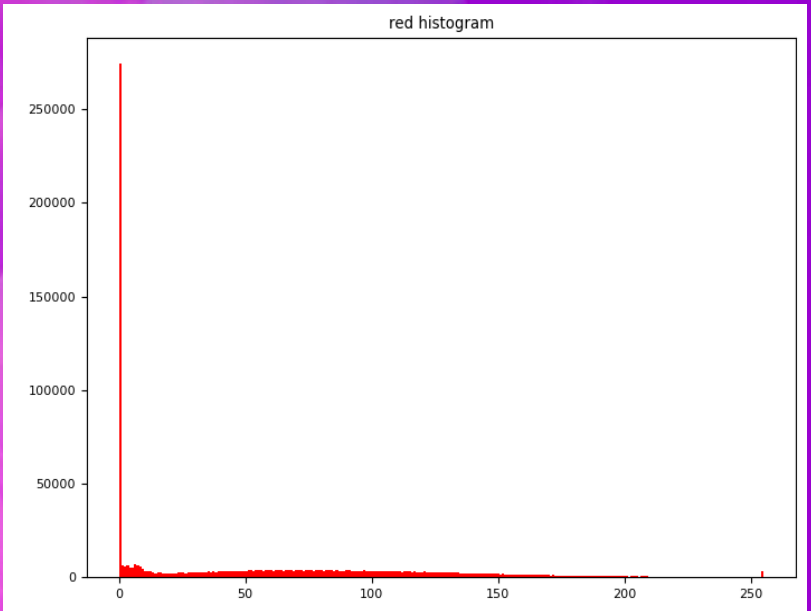


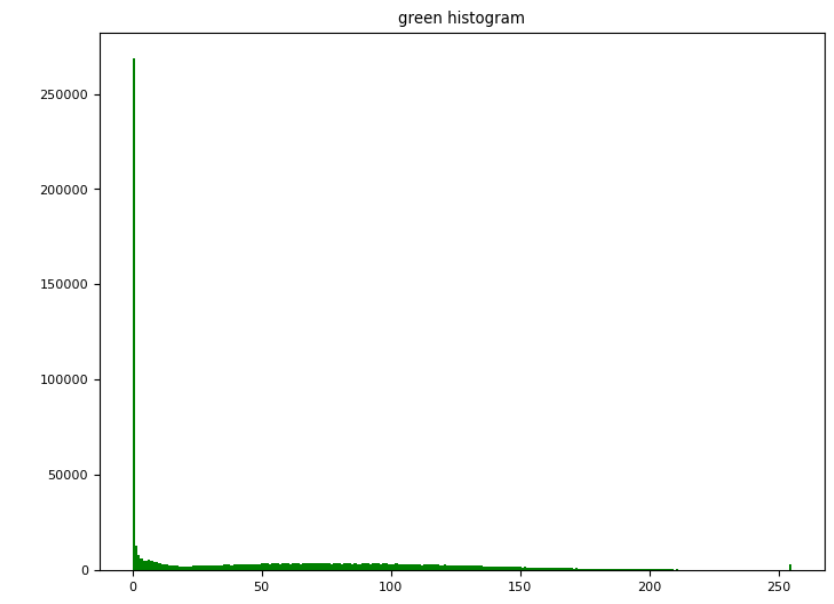


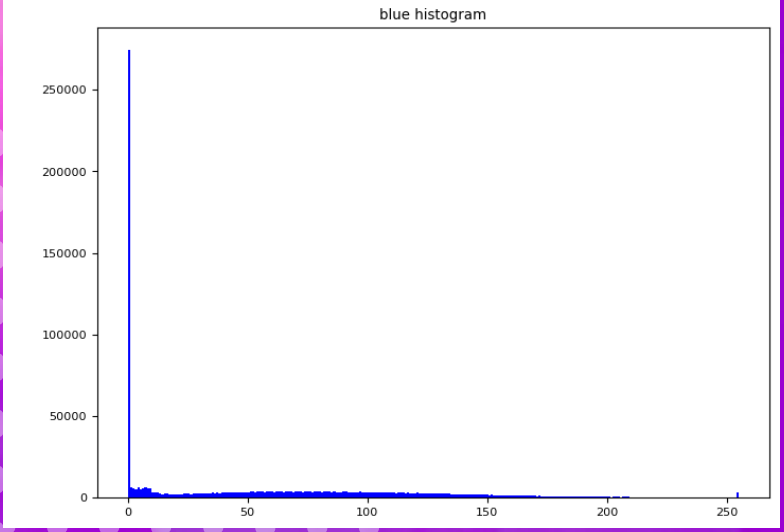


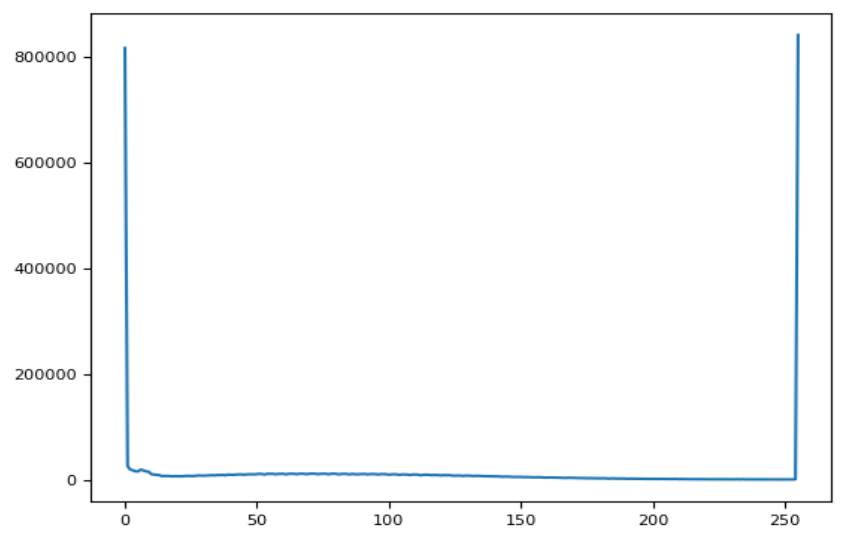


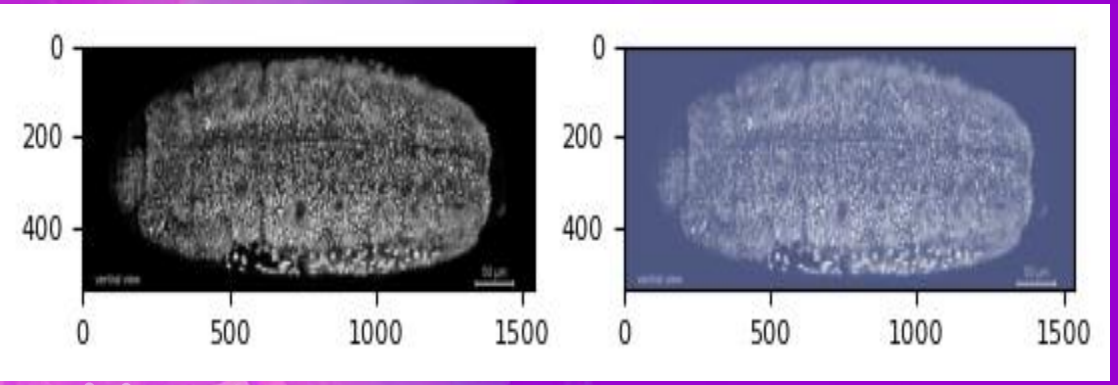
analyzing embryogenesis (ventral) through histogram



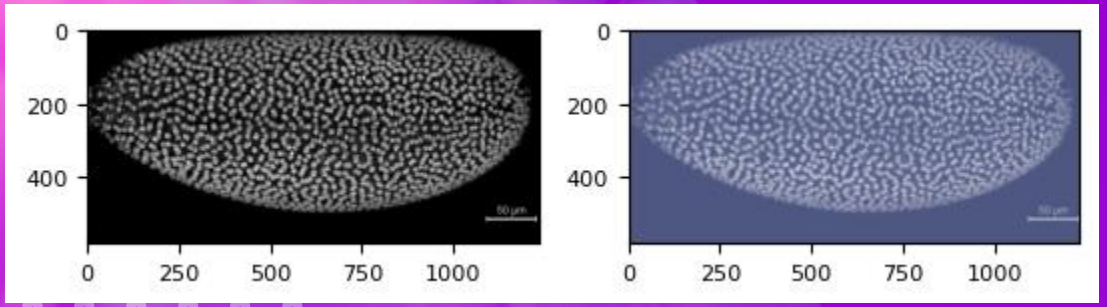








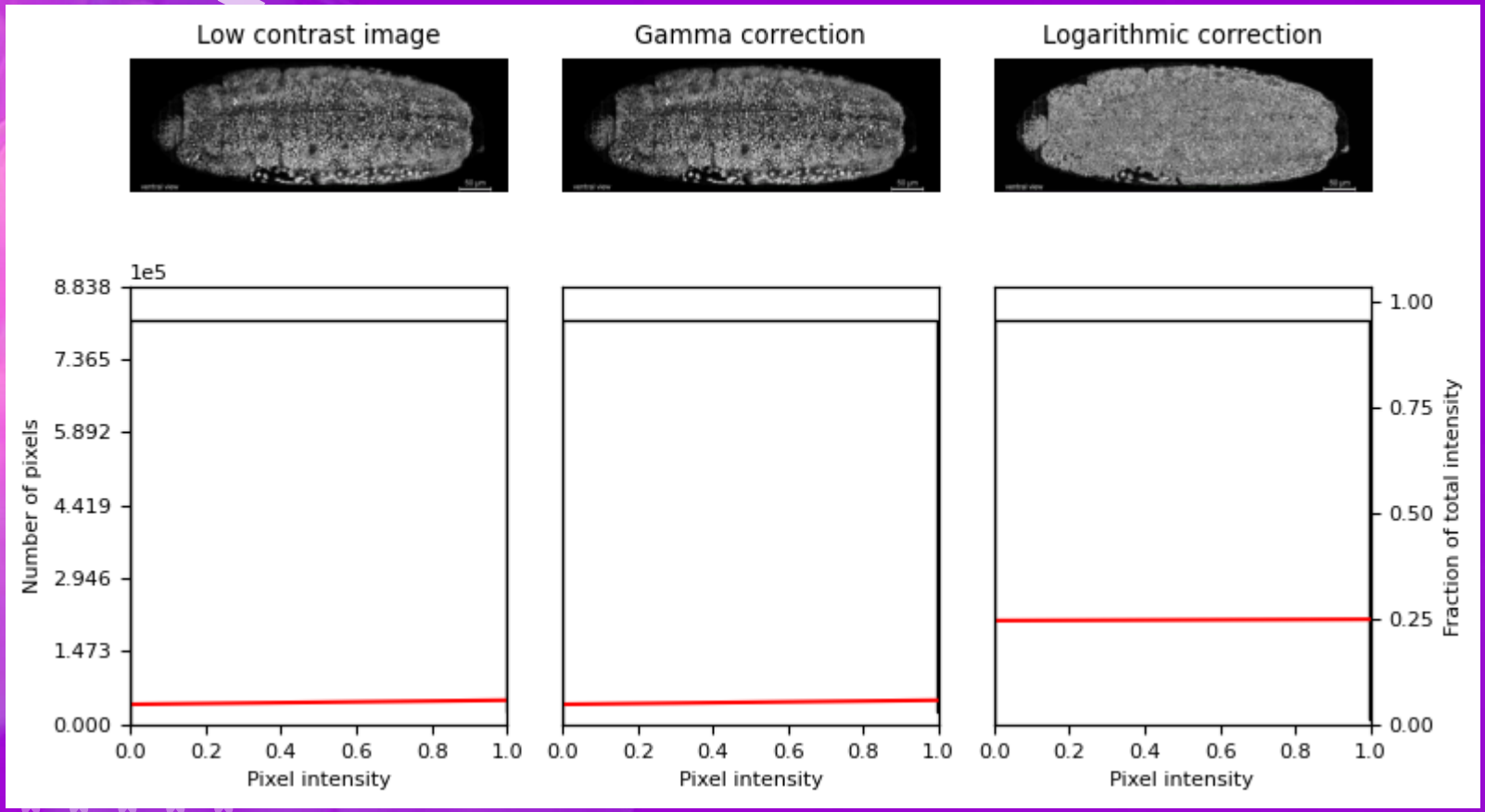
#creating the ventral image as gaussian convolved



#creating the early stage drosophila image as gaussian convolved

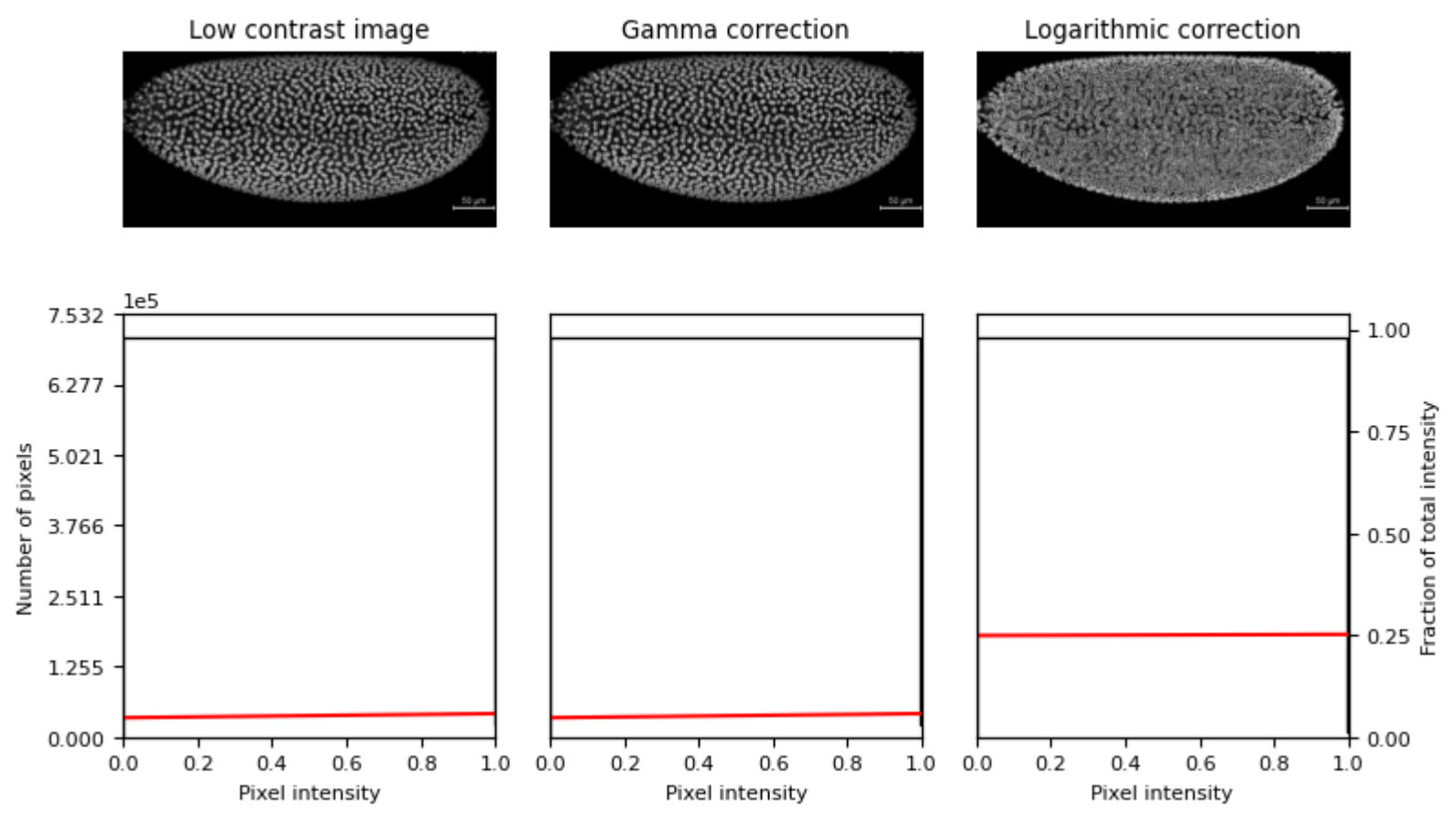
##Now analyzing embryogenesis (ventral) through histogram intensities in low contrast and gamma and logarithmic correction

#we can see that the intensity is more in logarithmic correction as compared to gamma and low contrast image



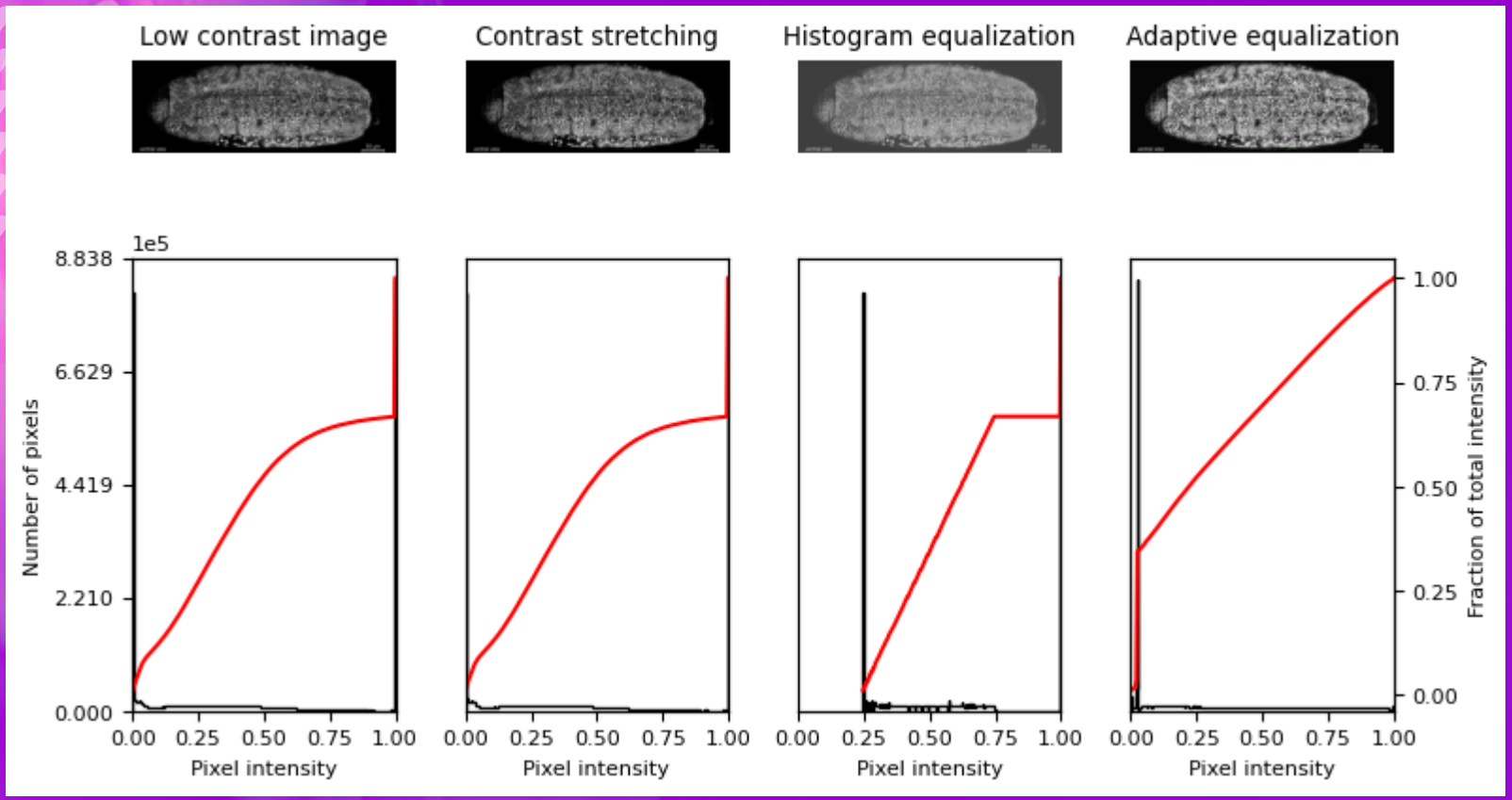
##Now analyzing the early stage of drosophila through histogram intensities in low contrast and gamma and logarithmic correction

#we can see that the intensity is more in logarithmic correction as compared to gamma and low contrast image

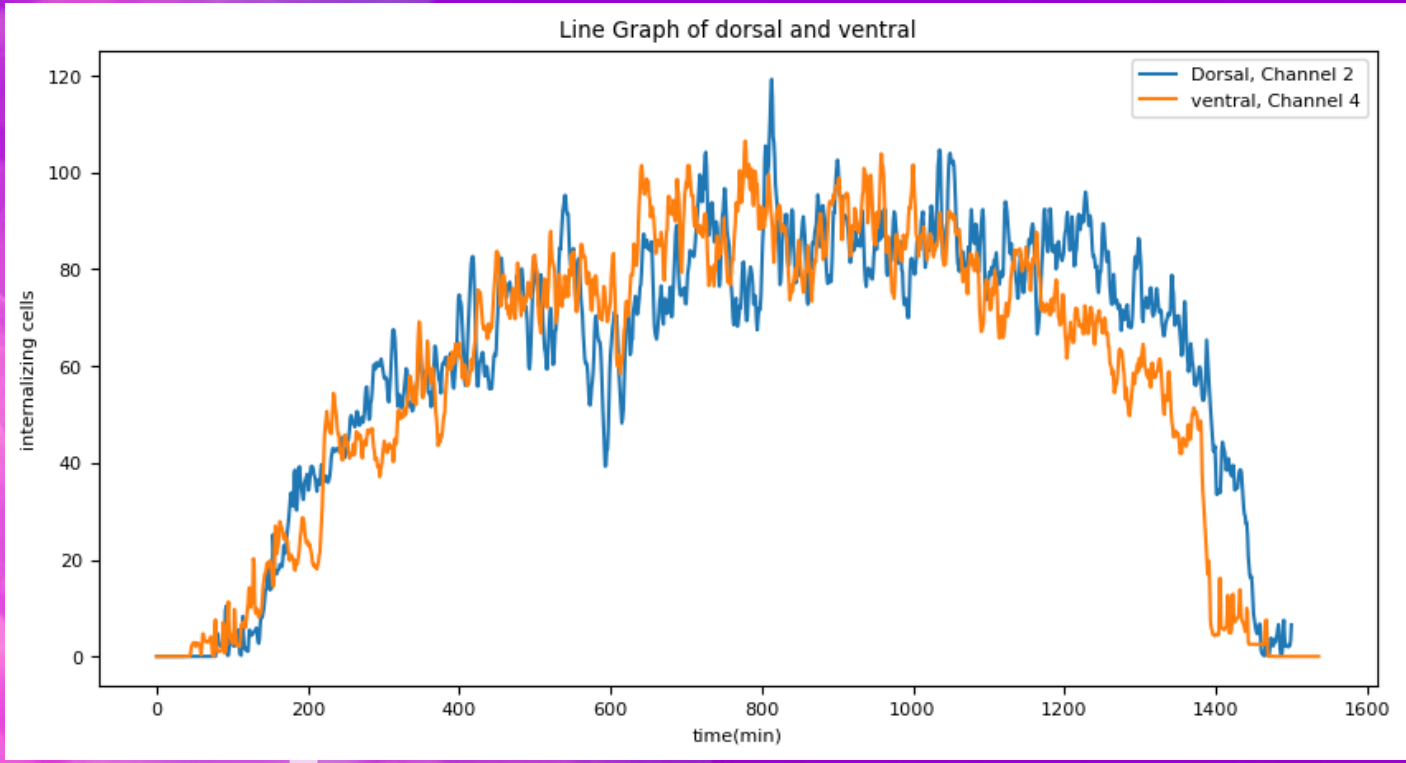


##analyzing embryogenesis (ventral) through histogram in contrast stretching ,histogram equalization,adaptive equalization

In this situation we can see that for low contrast and contrast stretching the graph is almost the same but in case of histogram equalization, the graph is linearly increasing at one point after that it gets constant also in adaptive equalization it can be seen that the at first, only no of pixel is increasing after a certain no of pixels is reached then only pixel intensity increases

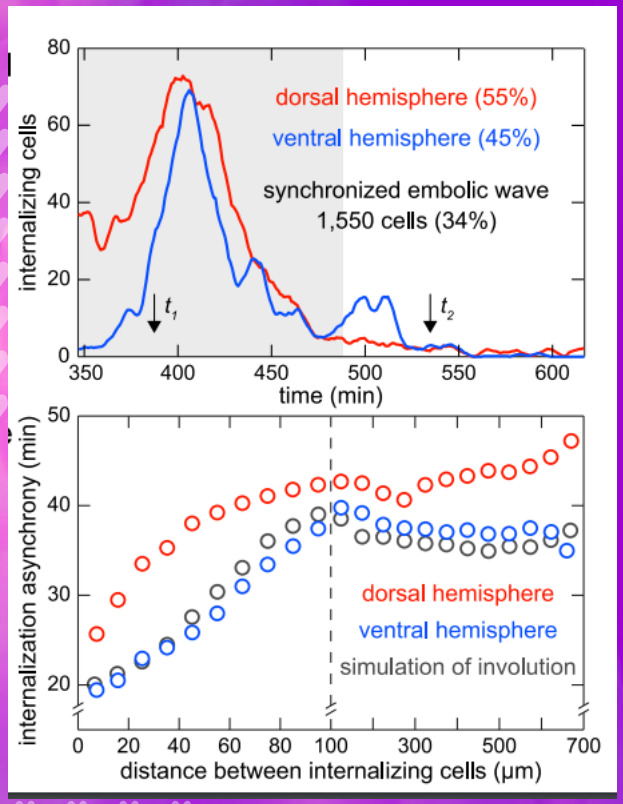


COMPARISON BETWEEN ZEBRAFISH(DV) AND DROSOPHILA (DV)



as seen here the dorsal is comparatively higher than the ventral one during embryogenesis in **drosophila**

COMPARISON BETWEEN ZEBRAFISH(DV) AND DROSOPHILA (DV)

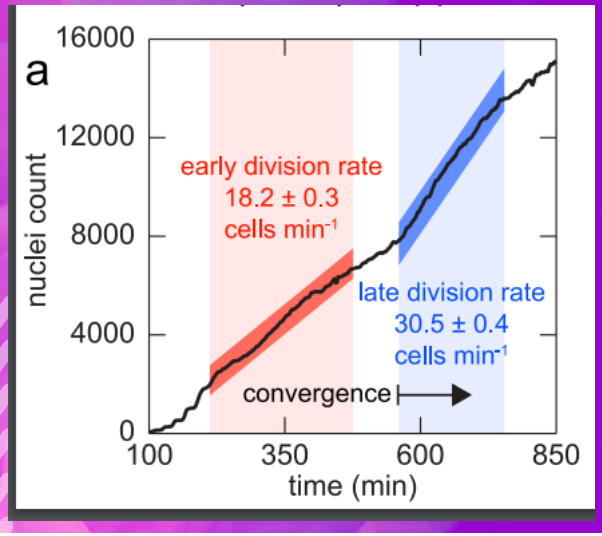


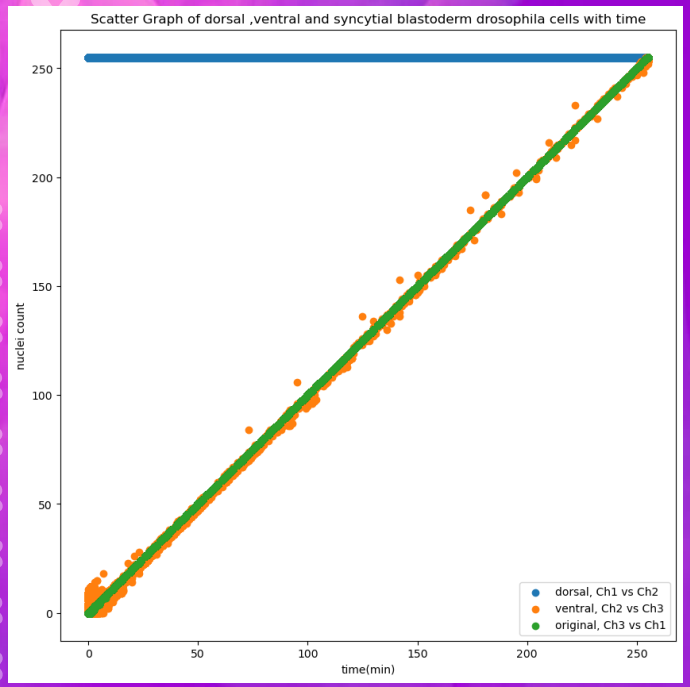
as seen here the dorsal is comparatively higher than the ventral one in **zebrafish**

The same case as seen in previous slide was with drosophila, there are quite similarities such as :

1) In drosophila and in case of zebrafish ,the cells are initially increasing (in drosophila its increasing from 0) whereas in zebrafish it initially has some value , but with increase in time the cell count decreases.

COMPARISION BETWEEN ZEBRAFISH(DV) AND DROSOPHILA (DV)

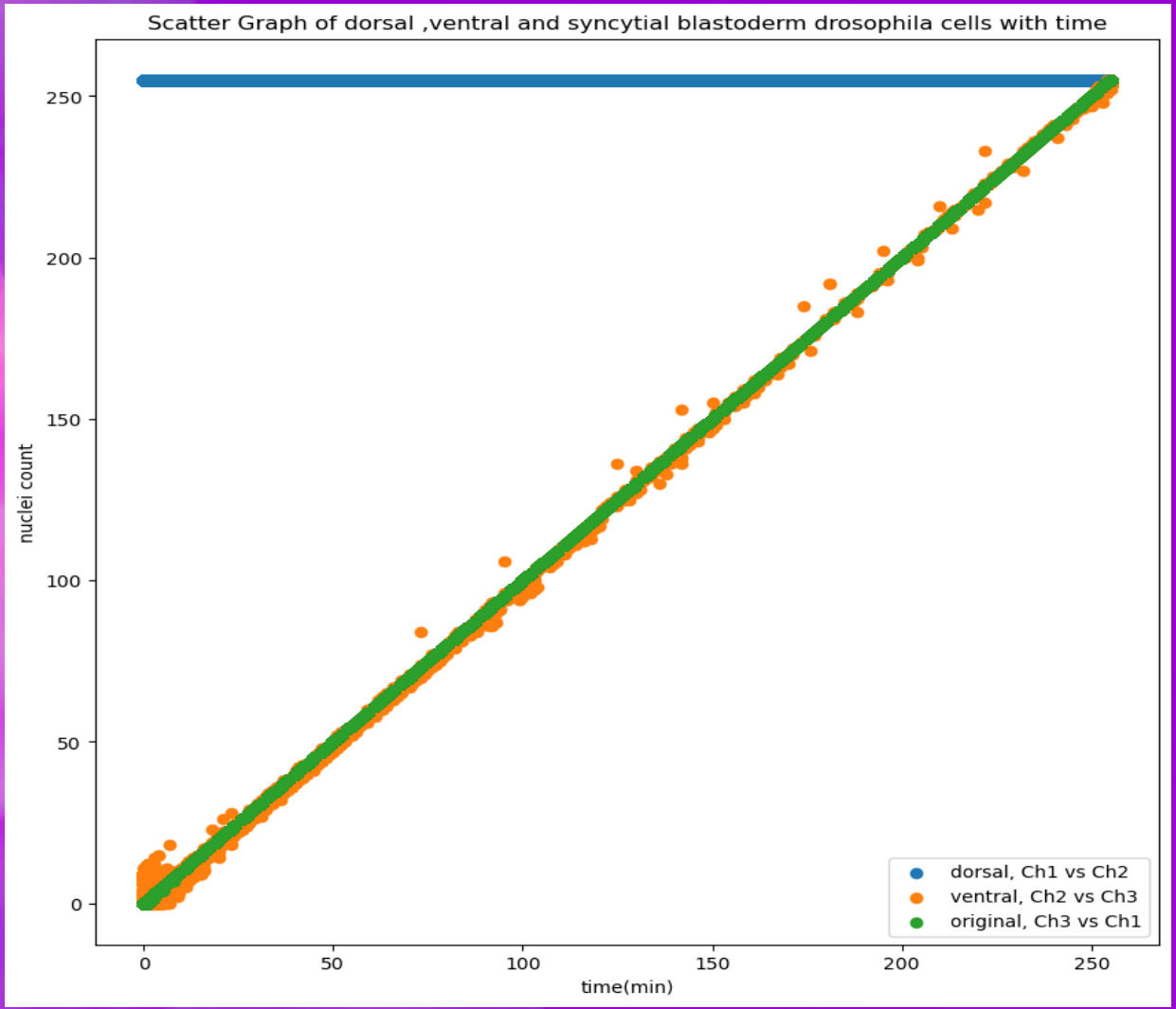




The same case as seen in previous slide was with drosophila but there are quite similarities such as :

2) In drosophila and in case of zebrafish ,the nuclei count is increasing with time in somewhat linear way whereas in drosophila the scatter plot shows that the DV curve has linear relation with time also it can be seen that in early stage of drosophila (blue line) the plot is almost constant with increasing time.

COMPARISION BETWEEN ZEBRAFISH(DV) AND DROSOPHILA (DV)



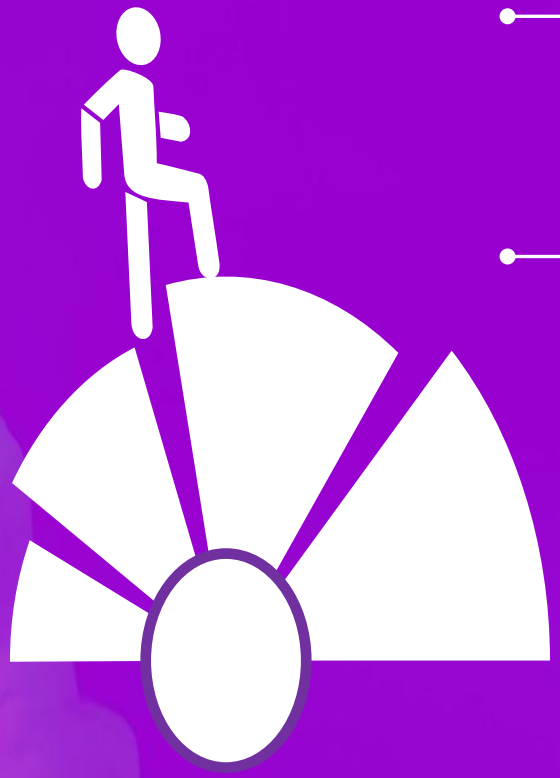
Timeline

Day 1-3

Got insights of Scikit Image through documentation. And installation of environment

Day 4-5

Understanding the image and finding the relationship between the different types of image



Day 5-7

Started coding and debugging issues encountered while analyzing the comparisons .

Day 7-8

Reviewing the code again and preparing the final documentation

Thank You