# Explanations macro distancePigments\_nucleus\_v1

Before launching this macro, you should launch detectPigment\_generalisation\_v3 on the image to treat with this macro; the zip file created by this macro (containing cells and pigments) is the one loaded in step 1/. The purpose of this macro is to compute the distance between the nucleus and all the pigments; this distance is computed in 3-dimensions.

1/ Choose the zip file associated to the image to treat, created by detectPigment\_generalisation\_v3.  
2/ Choose the microscope and the Z-step; the microscope is for the pixel size in XY (-> modify it to the pixel size of the acquired image):

Une image contenant texte, capture d’écran, Police, nombre

Le contenu généré par l’IA peut être incorrect.

3/ A 3d detection of the nucleus is performed, using Otsu threshold Method [1]; the slice with bigger standard deviation is defined as the focal plan. The user is asked for each cell sequentially to check or draw the nucleus; be sure to put the ROI at the most “central” slice because distance will be computed from this slice.

Une image contenant capture d’écran

Le contenu généré par l’IA peut être incorrect.

4/ The macro computes (and saves) 2 result tables: the first one (\*distanceNucleus\_eachPigment.xls) computes 3D distance (in µm) from each pigment to the center of the corresponding nucleus:

Une image contenant texte, capture d’écran, Police, nombre

Le contenu généré par l’IA peut être incorrect.

The second one is a table containing nucleus information (\*nucleus\_information.xls):

Une image contenant texte, capture d’écran, Police, nombre

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[1] Otsu, N. (1979). A Threshold Selection Method from Gray-Level Histograms. *IEEE Transactions on Systems, Man, and Cybernetics*, *9*(1), 62–66.[doi:10.1109/tsmc.1979.4310076](https://doi.org/10.1109/tsmc.1979.4310076)