



User Guide
Application of KoShiPath 1.0
for Precise *Estimation of Ki-67 Index*

Rishik Kolpekwar

koshipath@gmail.com

<https://www.koshipath.com/>

Start with setting up KoShiPath Image Folder

Important NOTES

KoShiPath supports images in **JPG format only**.

KoShiPath runs on **Windows Operating System only**

- Multiple JPG images for a given case with approximate total number of tumor nuclei more than 1000 nuclei from hotspots should be copied to a single folder with proper label for a particular case prior to opening the KoShiPath Program.
- Once the labelled folder for a case is set up with easily searchable and accessible location, then run KoShiPath 1.0 (Next Slide)

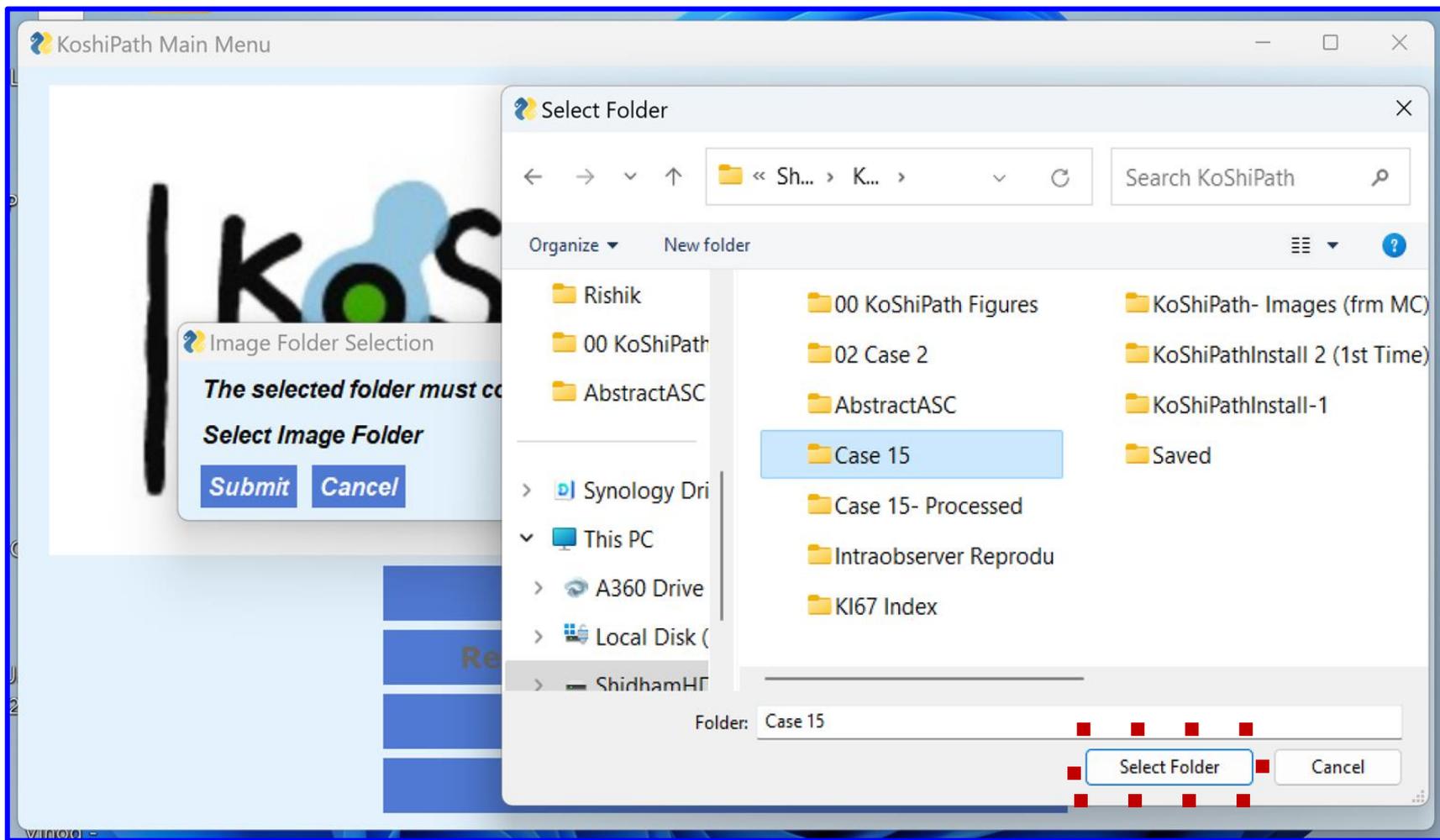
Main Menu: Initiate Auto-Counting Mode



Select “Browse”



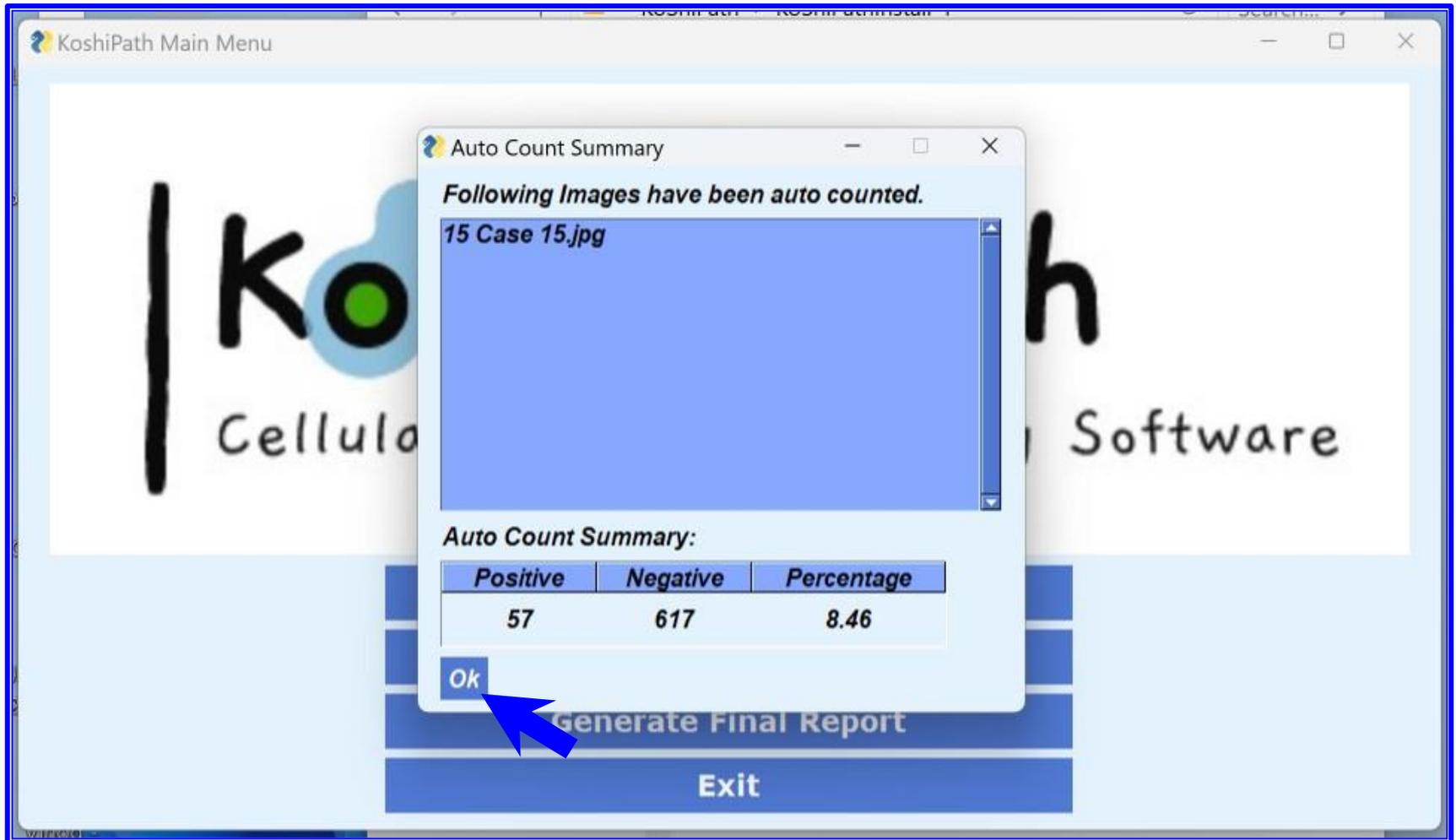
Select Image Folder



Confirm Image Folder



Auto-Counting Summary



Auto-Counting Mode Complete

- At the end of Auto-Counting Mode, KoShiPath creates an auto-counted version of each image “*-ksp.jpg” and puts these annotated versions in the previously selected folder (-ksp is an abbreviation for KoShiPath)
- Please do NOT edit/remove/update these “*-ksp.jpg” files. Please note that KoShiPath does not override or change the original image
- In the example show earlier, the auto-annotated file name would be - “15 Case 15-ksp.jpg”
- The “-ksp.jpg” files are needed before the next step is started

Initiate Review Image Mode

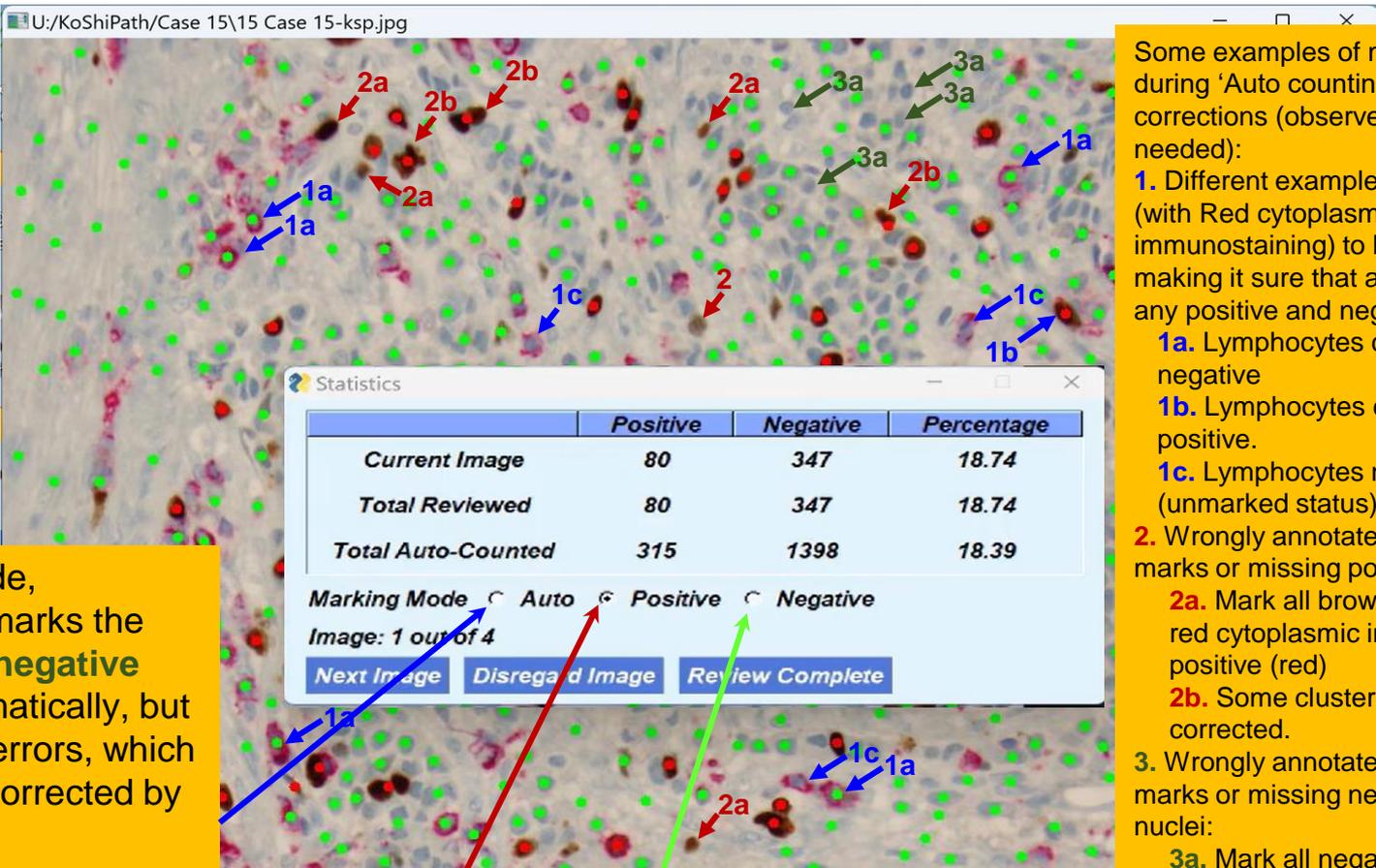


**Click 'Yes' to confirm the folder for Review.
Usually continue with the same folder
for Auto-Counting mode**



Review and correct errors during automode

Select *positive* or *negative* radio button to correct the **positive** (Red) or **negative** (Green) annotations
(Pancreatic Neuroendocrine tumor, dual color immunostaining with Ki-67 Brown and LCA Red)



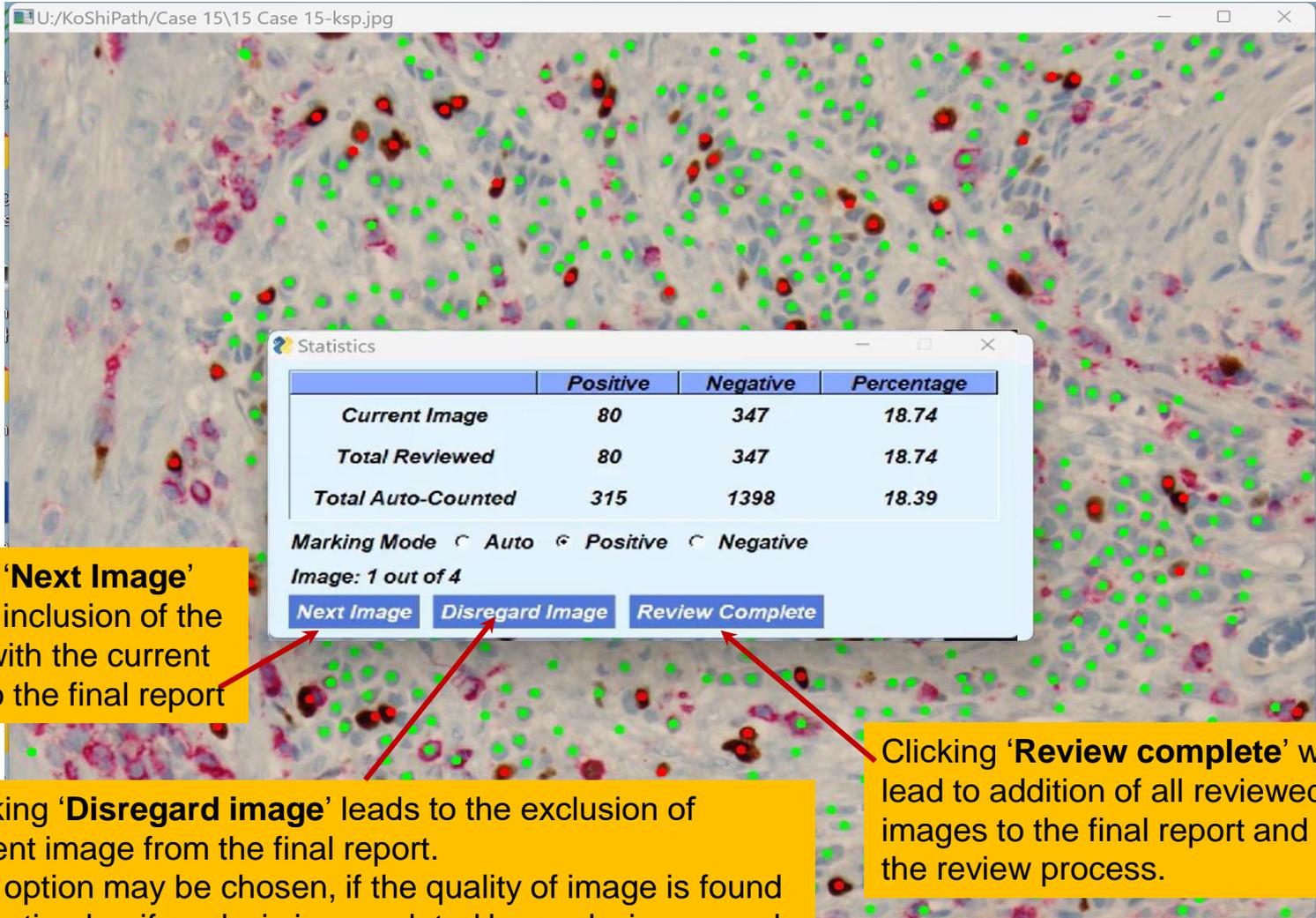
In **Auto** mode, KoShiPath marks the **positive** or **negative** nuclei automatically, but not without errors, which have to be corrected by expert

In **Positive** mode, each click will select the nucleus as **positive** with red mark (or will deselect wrongly marked red nucleus)

In **Negative** mode, each click will select the nucleus as **negative** with green mark (or will deselect wrongly marked green nucleus)

- Some examples of mis-annotations during 'Auto counting', which may need corrections (observe the demo video as needed):
- Different examples of lymphocytes (with Red cytoplasmic LCA immunostaining) to be weeded out by making it sure that all are deselected of any positive and negative marks:
 - Lymphocytes counted as negative
 - Lymphocytes counted as positive.
 - Lymphocytes not continued (unmarked status).
 - Wrongly annotated positive (Red) marks or missing positive tumor nuclei:
 - Mark all brown nuclei without red cytoplasmic immunostaining as positive (red)
 - Some clusters need to be corrected.
 - Wrongly annotated negative (Green) marks or missing negative tumor nuclei:
 - Mark all negative tumor nuclei without red cytoplasmic immunostaining as negative (green)
 - Some clusters with missing marks need to be corrected

Click Review Complete when finished reviewing



Clicking '**Next Image**' leads to inclusion of the results with the current image to the final report

Clicking '**Disregard image**' leads to the exclusion of current image from the final report. This option may be chosen, if the quality of image is found suboptimal or if analysis is completed by analyzing enough number of tumor nuclei (usually at least 1000 nuclei) required to calculate the Ki-67 positivity in percentage.

Clicking '**Review complete**' will lead to addition of all reviewed images to the final report and end the review process.

Review Counting Statistics Summary

KoshiPath Main Menu

Final Review Summary

Final review summary for case: Case 15

Total Images included: 1

Positive	Negative	Total	Percentage
75	623	698	10.74

Ok

Review Images to Finalize Count

Generate Final Report

Exit

Review Mode Complete

- At the end of Auto-Counting Mode, KoShiPath creates a reviewed version of each image with the file name “*-ksr.jpg” and parks these in the original image folder (-ksr is an abbreviation for ‘KoShiPath reviewed’)
- Please do NOT edit/remove/update these “*-ksr.jpg” files. Please note that KoShiPath does not override or change the original image
- In the example show earlier, the auto-annotated file name would be - “15 Case 15-ksr.jpg”
- The “-ksr.jpg” files are needed to generate the final report

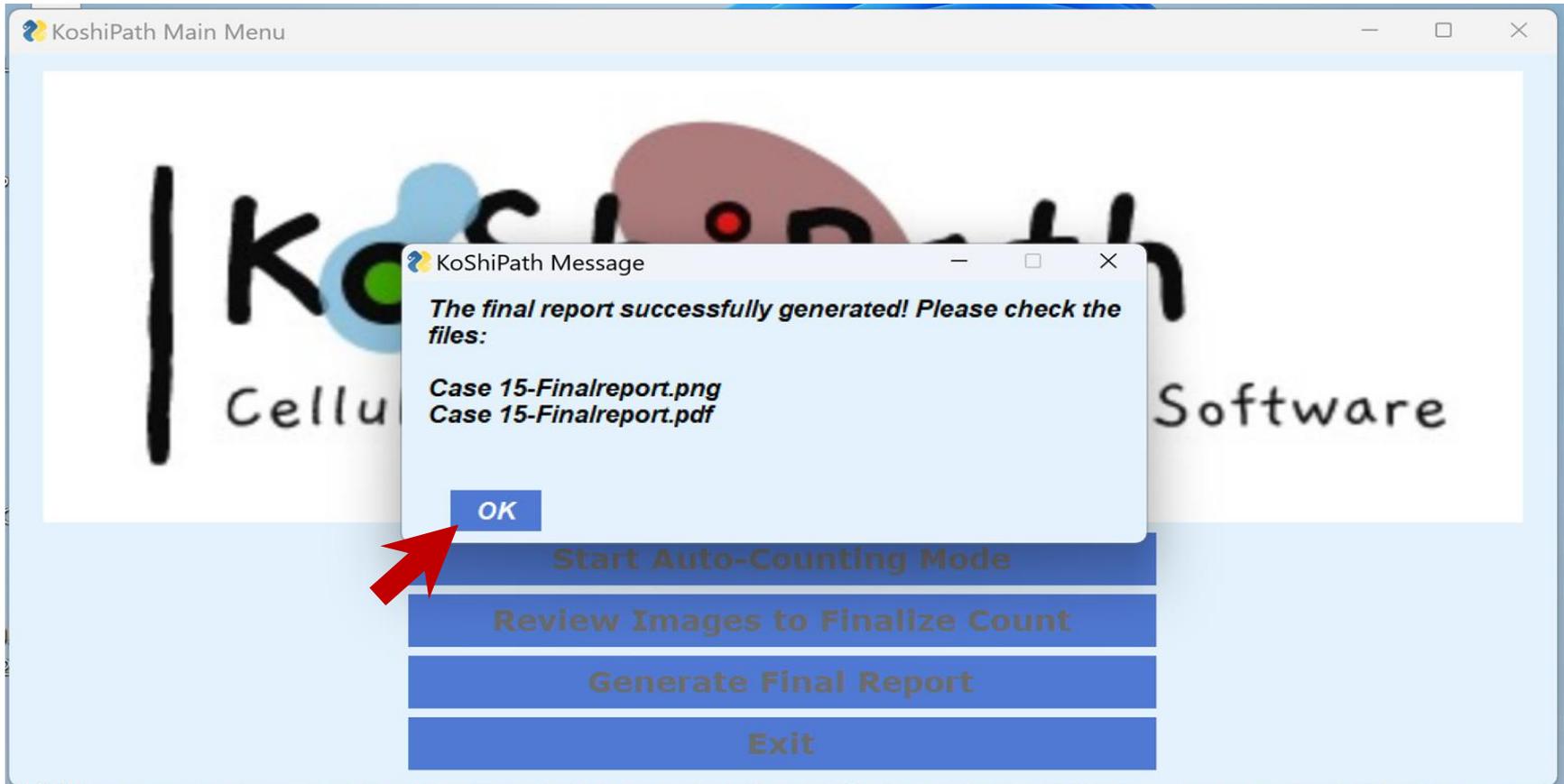
Initiate Generate Final Report



Confirm the folder used in previous steps



Final Report will be generated in both PNG and PDF Formats and saved in the image folder originally selected



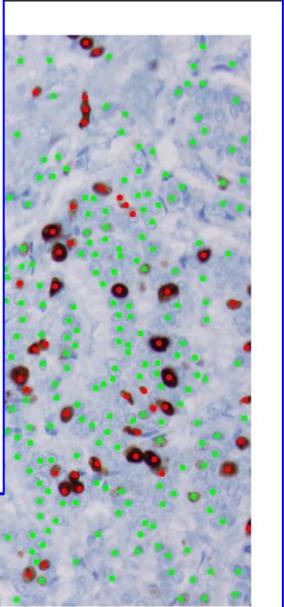
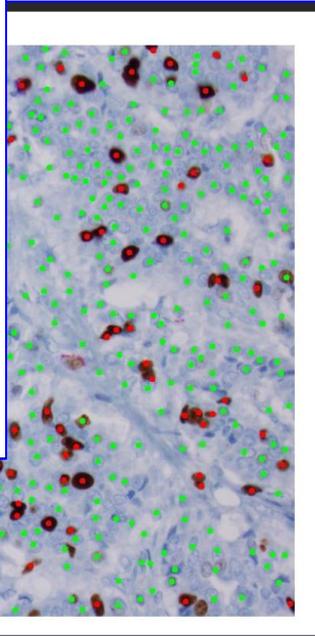
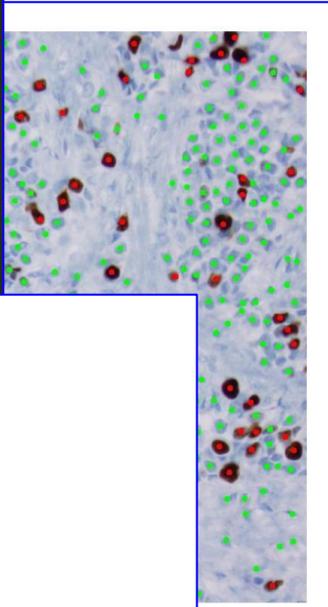
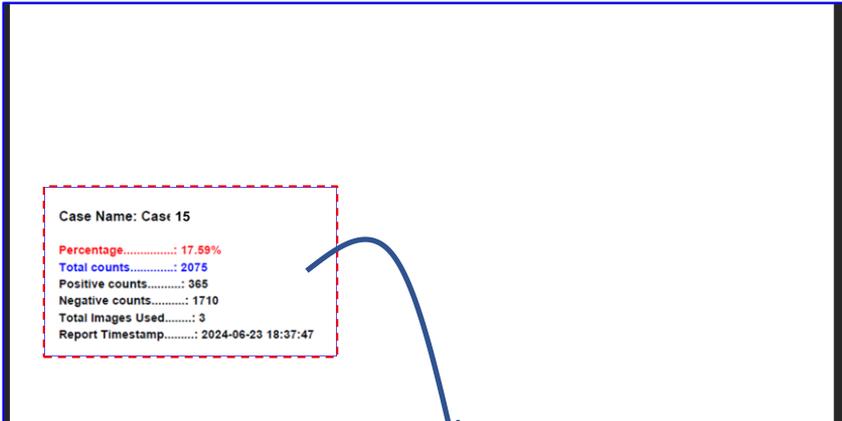
Exit KoShiPath



KoShiPath Analysis Completed

- The final report is saved in the original image folder as PDF version and PNG version.
- The Final Report files will be labelled as 'folder name with dash Finalreport. e.g. Case 15-Finalreport.pdf and Case 15-Finalreport.png.
- The report may be kept on file or attached with the final pathology report as part of its record.

Final Report (PDF version) with the results on the first page as shown below



Case Name: Case 15

Percentage.....: 17.59%

Total counts.....: 2075

Positive counts.....: 365

Negative counts.....: 1710

Total Images Used.....: 3

Report Timestamp.....: 2024-06-23 18:37:47

Final Report (PNG version) with the results on the top as shown below

Case Name: Case 15
Positive: 365 Negative: 1710 Percentage: 17.59%

case1-3D- Positive:96 Negative:539 Percentage:15.12%

Case Name: Case 15
Positive: 365 Negative: 1710 Percentage: 17.59%

PNG file of result

KoShiPath.com

Questions and Feedback

- If you have any questions regarding KoShiPath please refer to <https://www.koshipath.com/faq> (Frequently Asked Questions)
- If you do not find the answer to your question, please feel free to utilize the <https://www.koshipath.com/contact-us> to reach us.

Thank you for using KoShiPath and contributing to our global initiative to help Medical Community!

Rishik Kolpekwar