

What is claimed is:

1. A computer-implemented method for processing electronic images, the method comprising:

receiving a digital image corresponding to a target specimen associated with a pathology category, wherein the digital image is an image of human tissue and/or an image algorithmically generated to replicate human tissue;

determining a quality control (QC) machine learning model, the QC machine learning model being generated by processing a plurality of training images, associated with the pathology category, to predict a quality designation based on one or more artifacts;

providing the digital image as an input to the QC machine learning model;

receiving the quality designation for the digital image as an output from the machine learning model; and

outputting the quality designation of the digital image.

2. The computer-implemented method of claim 1, wherein the quality designation is one of approved or rejected.

3. The computer-implemented method of claim 1, wherein the pathology category is one of histology, cytology, frozen section, or immunohistochemistry.

4. The computer-implemented method of claim 1, wherein the QC machine learning model is trained such that its parameters are set to detect the presence, absence, or degree of an artifact in each training image.

5. The computer-implemented method of claim 1, further comprising automatically generating a notification based on quality characteristic, the notification comprising an artifact presence, absence, or degree designation.

6. The computer-implemented method of claim 1, wherein outputting the quality designation of the digital image further comprises a visual indicator corresponding to an artifact of the digital image.

7. The computer-implemented method of claim 1, wherein outputting the quality designation of the digital image further comprises generating a report comprising at least one of a type of artifact found, a number of artifacts found, clinical impact of an artifact found, a time to rectify an artifact, potential pattern, or correlation in a plurality of artifacts.

8. The computer implemented method of claim 1, wherein the one or more artifacts comprise a missing tissue, a glass crack, a bubble, a blur amount, a missing tissue, a folded tissue, a line, a scratch, dust, pen, or a stain amount.

9. A computer-implemented method for processing electronic images, the method comprising:

receiving at least one digital image corresponding to a target specimen associated with a pathology category, wherein the digital image is an image of human tissue and/or an image algorithmically generated to replicate human tissue;

determining a quality assurance (QA) machine learning model, the QA machine learning model being generated by processing a plurality of training images,

associated with the pathology category, to predict a disease designation based on one or more biomarkers;

providing the digital image as an input to the QA machine learning model;

receiving the disease designation for the digital image as an output from the QA machine learning model;

receiving an external designation for one of the digital image or the target specimen;

comparing the disease designation to the external designation; and

outputting a comparison result based on comparing the disease designation to the external designation.

10. The computer-implemented method of claim 9, wherein the comparison result is a discrepancy indication.

11. The computer-implemented method of claim 10, further comprising determining a discrepancy level based on the discrepancy indication;

generating a warning if the discrepancy level is below a threshold; and

generating a trigger if the discrepancy level is above the threshold.

12. The computer-implemented method of claim 11, wherein the trigger comprises at least one of a manual re-designation of the digital image or a generation of an alert.

13. The computer-implemented method of claim 9, wherein the disease designation is at least one of a cancer detection, cancer grade, cancer origin,

diagnosis, a presence or absence of a microorganism, specimen type, cancer type, cancer status, tumor size, lesions risk level, or grade.

14. The computer-implemented method of claim 13, wherein the QA machine learning model is trained based on the presence, absence, or degree of a disease designation in each training image.

15. The computer-implemented method of claim 9, wherein the external designation is at least one of a manual designation or an automated designation.

16. The computer-implemented method of claim 9, further comprising generating a notification based on the comparison result if the comparison result is a discrepancy designation.

17. The computer-implemented method of claim 9, wherein an external designation is provided by a health care professional, a third-party entity, or a secondary system.

18. The computer-implemented method of claim 9, further comprising outputting a visual indicator corresponding to the comparison result.

19. The computer-implemented method of claim 9, further comprising:
receiving a plurality of additional comparison results; and
generating a report based on the comparison result and the additional comparison results, the report comprising at least one of a type of

discordance, type of concordance, number of discordances rectified to be concordant, or follow-up discordance.

20. A system for processing electronic images, the system comprising:
- at least one memory storing instructions; and
 - at least one processor executing the instructions to perform operations comprising:
 - receiving at least one digital image corresponding to a target specimen associated with a pathology category, wherein the digital image is an image of human tissue and/or an image algorithmically generated to replicate human tissue;
 - determining a quality assurance (QA) machine learning model, the QA machine learning model generated by processing a plurality of training images, associated with the pathology category, to predict a disease designation based on one or more biomarkers;
 - providing the digital image as an input to the QA machine learning model;
 - receiving the disease designation for the digital image as an output from the QA machine learning model;
 - receiving an external designation for one of the digital image or the target specimen;
 - comparing the disease designation to the external designation; and
 - outputting a comparison result based on comparing the disease designation to the external designation.