CLAIMS

1. An automated slide imaging system, comprising:

an imager configured for acquiring images of a specimen affixed to a surface of a slide, the specimen comprising a plurality of objects distributed within a three-dimensional volume, and for generating a whole specimen image from the acquired images, the acquired images include a macro image of the specimen, and a plurality of micro images of the specimen,

wherein the objects are depicted in focus in the whole specimen image regardless of individual locations of the respective objects within the three-dimensional volume;

the imager comprising

a first imaging platform configured for seating the slide, and a first camera configured to acquire the macro image when the slide is seated on the first imaging platform, a second imaging platform configured for seating the slide, and a second camera configured to acquire the micro images of a specimen affixed to a slide seated on the second imaging platform.

2. The imaging system of claim 1, the three-dimensional specimen volume has a length, a width and a thickness, the thickness defining a z-axis relative to the slide surface, wherein respective objects of the specimen are located at differing locations along the z-axis.

3. The imaging system of claim 2, wherein the macro image includes one or more fiducial markers located on the slide surface, and wherein the imager is configured to determine a relative location and boundaries of the specimen on the slide surface based at least in part on the one or more fiducial markers.

4. The imaging system of claim 3, wherein the imager is configured to acquire the micro images based at least in part on the relative location and boundaries of the specimen on the slide surface determined from the macro image.

5. The imaging system of claim 4, wherein the imager is configured to acquire the micro images of the specimen at a same z-axis of the three-dimensional specimen volume.

6. The imaging system of claim 1, wherein the imager is configured to automatically move at least one of the second camera and second imaging platform relative to the other for acquiring the micro images.

7. The imaging system of claim 1, wherein an optical axis of the second camera forms a non-orthogonal angle with the second imaging platform.

8. The imaging system of claim 1, the slide having a thickness, wherein the micro images each includes at least a portion of the slide underlying the surface.

9. The imaging system of claim 1, wherein the specimen is covered with a coverslip that is sufficiently transparent to acquire the micro images of the specimen through the coverslip, the coverslip having a thickness, wherein the micro images each includes at least a portion of a depth of the coverslip.

10. The imaging system of claim 1, the slide having a width defining an x-axis, and a length defining a y-axis, wherein the imager is configured to translate the slide along the y-axis relative to the second camera as the second camera acquires the micro images at respective y-axis locations, each micro image including an entire x-axis width of the specimen based on the determined specimen boundaries on the slide surface.

11. The imaging system of claim 1, the imager comprising

one or more slide holder receptacles, each slide holder receptacle configured to receive a slide holder comprising a plurality of slots, each slot configured to hold an individual slide, and

a robotic arm assembly configured to

engage and remove the slide from a slot of a slide holder in the slide holder receptacle,

transport and seat the slide on the first imaging platform for acquisition of the macro image,

re-engage and remove the slide from the first imaging platform,

transport and seat the slide on the second imaging platform for acquisition of the micro images, and

re-engage and remove the slide from the second imaging platform.

12. The imaging system of claim 11, wherein the robotic arm assembly is further configured to

transport the slide to a same or a different slide holder from which the slide was removed, and

release the slide into a slot of the respective same or different slide holder.

13. The imaging system of claim 12, wherein the slot of the respective same or different slide holder is the same slot from which the slide was removed by the robotic arm assembly.

14. The imaging system of claim 1, the imager further comprising an image processor configured to generate the whole specimen image from the micro images, wherein the image processor determines a respective best focus image for individual objects in the micro images, and wherein the best focus images of the objects are incorporated into the whole specimen image.

15. The imaging system of claim 14, wherein the image processor is configured to identify objects of interest in the specimen, and to store images of said identified objects of interest with the whole specimen image.

16. The imaging system of claim 1, wherein the macro image of the specimen includes an image of a bar code on the slide surface, and wherein the imager is configured to obtain information regarding the specimen from the bar code.

17. The imaging system of claim 1, wherein the specimen is a cytological cellular specimen and the objects are cells.

18. The imaging system of claim 1, wherein the specimen is a pathologic tissue specimen and the objects are tissue structures.

19. The imaging system of claim 1, further comprising a review station including a display monitor, a user interface, and a processor operatively coupled with the respective display monitor and user interface, wherein the processor is configured to display the whole

specimen image on the display monitor along with separate images of individual objects within the specimen image.