Claims:

1. A specimen chamber for use with a sample imager, comprising:

a chamber housing comprising:

a first face and a second face opposite each other along a first direction, wherein the first face is configured to face an imaging lens, the second face is configured to mount with a lid having a window, and the first face is spaced from the second face in a lens-facing direction along the first direction;

first and second endwalls opposite each other along a second direction substantially perpendicular to the first direction; and

first and second sidewalls opposite each other along a third direction substantially perpendicular to the first and second directions,

wherein the first and second endwalls and the first and second sidewalls substantially enclose an interior volume with respect to the first and second directions, and the interior volume is configured to contain a local environment therein; and

an air actuator unit configured to direct conditioned air to a target location alongside the first face and spaced from the first face in the lens-facing direction for inhibiting or at least reducing condensation accumulation on the imaging lens.

2. The specimen chamber of claim 1, wherein the air actuator unit comprises an air actuator, a duct member, and an outlet port, wherein the air actuator is configured to induct air from exterior of the specimen chamber and direct the inducted air into a channel defined by the duct member, wherein the channel is configured to direct the inducted air to the outlet port, such that the inducted air exits the outlet port and travels exterior to and alongside the second face of the chamber housing.

3. The specimen chamber of claim 2, wherein the air actuator comprises a fan or an outlet member in communication with the duct, the outlet member at least partially defining an outlet passageway that terminates at the outlet port.

4. The specimen chamber of claim 3, wherein the outlet member comprises fins that protrude within the outlet passageway and are configured to direct the flow of air exiting the outlet port.

5. The specimen chamber of claim 4, wherein the fins are elongated along respective directions that diverge from each other in a downstream direction, thereby causing the inducted air to spread outwardly as the inducted air exits the outlet port.

6. The specimen chamber of claim 3, wherein the outlet member has an outlet base surface that at least partially defines the outlet passageway, the fins extend from the outlet base surface along a direction opposite the lens-facing direction, and the outlet base surface is substantially parallel with the first face of the chamber housing, thereby causing the inducted air to exit from the outlet member in respective air flow directions that are substantially parallel with the first face of the chamber housing; and wherein the outlet base surface faces a portion of the first face of the chamber housing, such that the portion of the first face partially defines the outlet passageway.

7. The specimen chamber of claim 1, further comprising a heating element configured to heat the interior volume of the specimen chamber, wherein the heating element is configured to heat the interior volume of the specimen chamber to a temperature in a range of about 30ºC to about 40ºC.

8. The specimen chamber of claim 7, wherein at least a portion of the heating element is adjacent to the channel, such that the inducted air is directed along the at least the portion of the heating element, wherein the inducted air is heated by the heating element.

9. The specimen chamber of claim 1, further comprising at least one temperature sensor configured to measure temperature at the target location.

10. The specimen chamber of claim 1, further comprising the lid, wherein the lid is configured for repeated attachment to and detachment from the second face of the chamber housing, and the lid comprises at least one of a heating element or a thermal insulating layer, and wherein the lid comprises a lid heating element, and the lid hearing element is configured to heat the specimen chamber to a temperature in a range of about 30ºC to about 40ºC.

11. A system for sample imaging, the system comprising:

a control unit for delivering conditioned air; and

a specimen chamber comprising:

a chamber housing having an upper face, a lower face opposite the upper face, and walls that extend vertically between the upper and lower faces, wherein the walls define an

interior volume of the specimen chamber, and the lower face is configured to face an imaging lens; and

an air actuator unit configured to direct conditioned air to a target location alongside the lower face for inhibiting or at least reducing condensation accumulation on the imaging lens.

12. The system of claim 11, wherein the air actuator unit comprises an air actuator, a duct member, and an outlet port, wherein the air actuator is configured to induct air from exterior of the specimen chamber and direct the inducted air into a channel defined by the duct member, wherein the channel is configured to direct the inducted air to the outlet port, such that the inducted air exits the outlet port and travels exterior to and alongside the second face of the chamber housing.

13. The system of claim 12, wherein the air actuator comprises a fan, and the specimen chamber comprises at least one heater located alongside the channel, wherein the at least one heater is configured to heat the inducted air prior to the inducted air existing the outlet port.

14. The system of claim 12, wherein the outlet port includes fins that are elongated along respective directions that diverge from each other in a downstream direction, thereby causing the inducted air to spread outwardly as the inducted air exits the outlet port.

15. The system of claim 11, further comprising the lid, wherein the lid is configured for repeated attachment to and detachment from the upper face of the chamber housing, and the lid comprises at least one of a heating element or a thermal insulating layer, and wherein the lid comprises a lid heating element, and the lid hearing element is configured to heat the specimen chamber to about 37ºC.