

The tray 63 is then slid inwardly into the chamber 13 and the culture dishes 75 may be easily removed for placement on the microscope stage 25 or elsewhere within the chamber 13.

In order to prevent the airlock itself from becoming the source of the admission of atmospheric air to the chamber 13 gas inlet 65 may be provided in the airlock 57. Preferably commercially available premixed gas made up of, for example, 5% O<sub>2</sub>, 5% CO<sub>2</sub>, and 90% N<sub>2</sub> is infused into the airlock 57 through the connector 65.

Although the airlock 57 is shown in the illustrated embodiment as positioned in the back wall of the enclosure 15, it would be equally possible to position the airlock elsewhere, for instance, in the left side wall of the enclosure 15. The major constraint for the position of airlock 57 is that a user with hands extended through the hand openings 17 should be able easily to operate the interior portion of it.

Although the enclosure 15 in the illustrated embodiment of the incubator 11 in accordance with the invention has been described as being transparent, if desired, portions of it may be opaque and made out of materials other than plexiglass. For instance, the portion of the enclosure 13 below the floor 32 of the chamber 13 and the back wall of the enclosure 15 could be opaque and made, for instance, out of metal.

In the embodiment of the incubator in accordance with the invention illustrated in FIGS. 5 and 6 of the drawings an interior platform and storage compartment 68 may be provided within the chamber 13 to the right of the microscope stage 25 for providing additional storage space for culture dishes and other items within the chamber 13. Preferably the top surface 76 of the platform 77 is at the same height as that of the microscope stage 25. The hinged top sections 78 of the platform 77 may be opened for access to the interior storage compartment. Apertures in the side walls 79 and 80 of the platform 77 permit circulation of gas through the interior of the platform for maintaining appropriate storage conditions.

While the invention has been described with relation to a particular illustrated embodiment, it should be recognized that various modifications can be made within the scope of the appended claims without departing from the spirit and scope of the invention. For instance, the walls of the incubator chamber could be flexible and other equipment could be placed within the chamber 13 in addition to or instead of a microscope.

We claim:

1. An environmentally controlled incubator, comprising:
  - (a) an environmentally closed chamber including an enclosure having a transparent portion, said transparent portion including means for strongly attenuating transmission of light below a predetermined wavelength for preventing damage to culture media and biological materials within said chamber;
  - (b) means for positioning a microscope stage having a microscope mounting thereon within said chamber;
  - (c) a first aperture for permitting a microscope mounted on said stage to extend through said aperture;
  - (d) second and third apertures within said enclosure positioned for allowing one using a microscope mounted on said microscope stage to manipulate things within said chamber, and sealing means for

minimizing leakage between said chamber and the external ambient in the annuli between the edges of the said apertures and the microscope and forearms or hands of a user.

2. The incubator of claim 1 wherein said transparent portion of said enclosures strongly attenuates light having a wavelength of less than about 500 nm.

3. The incubator of claim 1 further including means for controlling the concentration of oxygen in the ambient gas within said chamber.

4. The incubator of claim 3 wherein said means for controlling the concentration of oxygen includes:

- (a) means for sensing the concentration of oxygen in said ambient gas; and
- (b) means for adding additional nitrogen to said ambient gas until the concentration of oxygen in said ambient gas reaches a predetermined level.

5. The incubator of claim 4 wherein said predetermined level is selected to be between about 5 to 10 percent.

6. The incubator of claim 1 further including an airlock for permitting objects to be placed within or removed from said chamber without modifying substantially the makeup of the ambient gas within said chamber.

7. The incubator of claim 6 wherein said airlock includes:

- (a) a cavity extending through said enclosure;
- (b) an internal door between said cavity and said chamber;
- (c) an external door between said cavity and the exterior of said chamber; and
- (d) means for permitting only one of said doors to be open at a time.

8. The incubator of claim 7 wherein said airlock further includes means for permitting the supply of gas of a selected composition to said cavity for maintaining the composition of the gas within said cavity to be similar to that of said ambient gas within said chamber.

9. The incubator of claim 4 wherein said airlock further includes a tray slidably mounted within said cavity for movement between position proximate the internal and external sides of said airlock.

10. An environmentally controlled incubator, comprising:

- (a) an environmentally closed chamber including an enclosure having a transparent portion;
- (b) means for positioning a microscope stage having a microscope mounted thereon within said chamber;
- (c) a first aperture for permitting a microscope mounted on said stage to extend through said aperture;
- (d) second and third apertures within said enclosure positioned for allowing one using a microscope mounted on said microscope stage to manipulate things within said chamber, and sealing means for minimizing leakage between said chamber and the external ambient in the annuli between the edges of the said apertures and the microscope and forearms or hands of a user.
- (e) means for sensing the concentration of oxygen in the ambient gas within said chamber; and
- (f) means responsive to the sensing by said sensing means of an oxygen concentration above a predetermined level for adding additional nitrogen to the ambient gas in said chamber for reducing said oxygen level to said predetermined level.