Portable Digital Inverted Microscopes

Problem Statement: Microscopes are the key pieces of equipment in most research institutes, academic sectors and diagnostic laboratories. Diagnostics or the pathology labs in 2-, 3-, or 4- tier cities serve as sample collection centres; however, immediate sample analysis and reporting the diagnosis results is a constraint as the laboratories lack microscopes. Currently, the labs transport the sample slides to larger diagnostic labs for analysis and await the reports, which delays treatment of emergency-case patients. Moreover, the probability of degradation of the sample during transport is high leading to difficulty in analysis. If Microscopes are available, labs could generate and capture diagnostic quality images and analyse the samples independently. The present research has addressed this lack by developing a portable microscope unit.

Uniqueness of the Solution: The Portable Digital Inverted Microscope comprises two lines of battery-operated, portable, brightfield microscopes (single and variable magnification) fitted with digital displays. These microscopes have a compact, ergonomic design. They can capture, store and transmit high-resolution colour images and videos that can be directly projected onto a screen using an HDMI connector. The set-up allows real-time interaction with research collaborators or demonstrating to a class during image or video capture. The digital display (mobile phone or iPad) can be removed from the microscope when not in use. As these are inverted microscopes, they can image slides and liquid samples. Internal optical and mechanical designs are optimised for image quality and stability of the sample.

Current Status of Technology: The prototype of the Portable Digital Inverted Microscopes is ready for deployment.

Societal Impact: These microscopes are suitable for pathology labs (especially IVF labs handling liquid samples) in 2-, 3-, or 4- tier cities and for teaching and research institutes. This line of microscopes addresses the need for good quality inverted microscopes in many research and diagnostic labs in India, as well as for field-based studies.

Patent(s): Filed

Relevant Industries: Healthcare, Digital Care Devices.

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