Droplet Lens Could Make Your Smart Phone Into a Microscope

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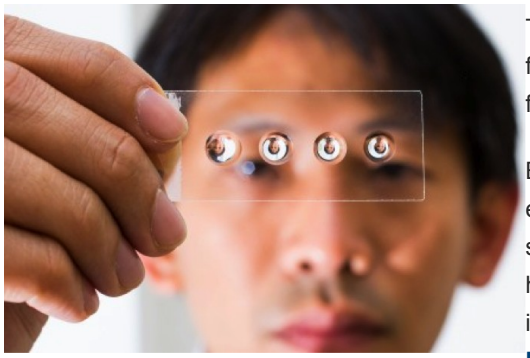

The development of a tiny slipcover lens could lead to the first smartphone microscope, potentially changing the face of disease diagnosis in the developing world.

Because most people have access to mobile phones—even in many of the world's poorest countries—smartphones have the potential to bring improved healthcare to people that previously couldn't afford it. With this in mind, scientists based at **Australian National University** have designed and developed a simple and cheap method of creating a lens that can be attached to smartphones to create a high-resolution microscope.

Working in collaboration with the Sydney-based **Garvan Institute of Medical Research**, the scientists have created a 3-D-printable enclosure that secures the lens with two LED lights and a flat coin battery to facilitate attachment to mobile devices.

By adding micro amounts of fluid to the curved device it is possible to increase the magnifying power of the lens up to 160 times with an acuity of 4 μm. While the aesthetics and robustness still require some attention, the implications for the tiny device could be massive.

Many diagnoses can take place under a microscope, such as blood disorders like thalassemias and simple fungal growths. Even malaria can be detected using a simple staining method, a diagnostic technique which, if it could be undertaken remotely with a tiny mobile microscope, could change the face of malaria diagnosis in developing countries.

If a sample has to be taken, prepared, preserved and then dispatched for remote laboratory assessment, diagnosis becomes expensive, time consuming and difficult. But, if the method of defining a diagnosis is at hand, then the likelihood of effective treatment increases drastically and could dramatically reduce cost. The team has already been approached by a German group to investigate the possibility of using the lens for teledermatology.

Further to this, the development of specific apps for other diagnostic techniques could expand the potential of the smart microscope, allowing the creation of a tiny multifunctional laboratory.

By Adele Graham-King