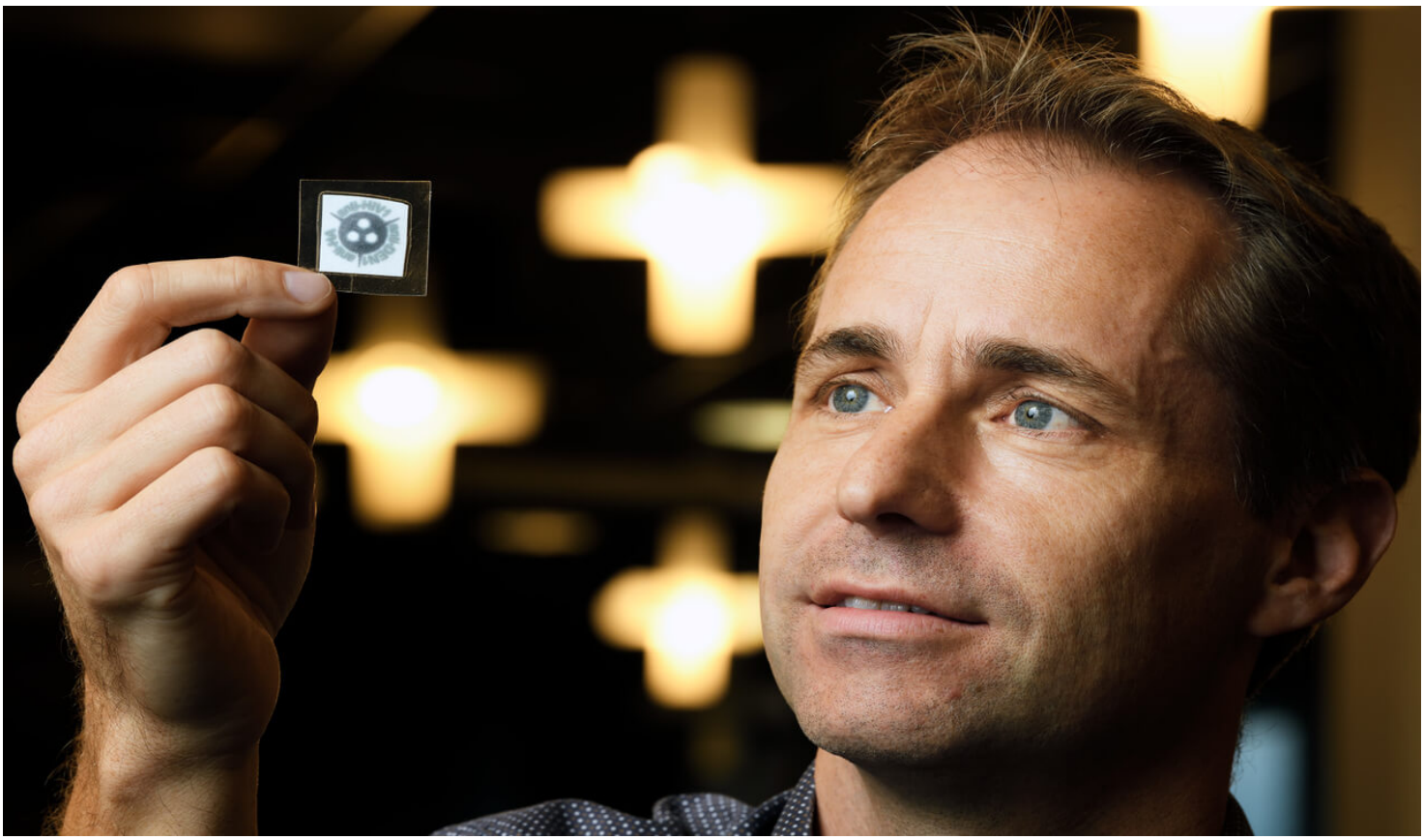

Luminescent strip

GLOWING PAPER CAN TEST FOR INFECTIOUS DISEASE

SCIENCE

A new inexpensive device has been developed that can test for infectious diseases with very minimal equipment.

Spotted: One serious difficulty for medical personnel working in remote or impoverished regions is how to test for infectious diseases without using complex and expensive equipment. At Springwise, we have seen several approaches to this problem. One example is an insulin kit specially designed for children, and home-based clinical tests. Researchers from Eindhoven University of Technology (TU/e) and Keio University in Japan have recently come up with a new, reliable way to test for infectious diseases, using just a special glowing paper strip, a drop of blood and a digital camera.

The test uses a luminous sensor protein that shows the presence of antibodies in the blood that the body makes in response to infectious disease. After a droplet of blood comes on the paper, the sensor protein triggers a reaction, similar to one that also illuminates fireflies, which produces a blue bioluminescent light. In a second step, an enzyme converts the blue light into green light. However, if a disease antibody binds to the sensor protein, it blocks the second step. The more antibodies there are to a particular disease, the bluer the strip.

To use the strip, a drop of blood is applied to the paper. After twenty minutes, the underside of paper will emit the blue-green light. A digital camera, such as the camera on a mobile phone, can determine the ratio of blue and green light and discover not only whether the antibody is in the blood, but also how much.

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Takeaway:

In their prototype, the researchers successfully tested for HIV, flu and dengue fever. The test is expected to be commercially available within a few years. When this happens, it could become much easier and cheaper to test for a number of very serious infectious diseases. How else could this technology be used to improve health and save money?