Cancer screening could be revolutionized by new cell sorting method

The field of cytometry, or cell measurement—which helps doctors diagnose problems including cancer, in which cells morph into unusual forms—has long depended on the ability to sort cells into their biological components such as DNA, RNA and proteins.

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[Physicist Sadao] Ota and his colleagues have developed a new technique they call “ghost” cytometry, which can rapidly sort many cells based on physical characteristics such as size and shape—but without the need to generate images first. They tweaked the typical cytometry setup and added a single-pixel detector—a camera that images one pixel at a time rather than thousands at once—creating a device that can generate a unique signature for fluorescently labeled cells based on the light they emit. Essentially this approach produces a “ghost” depiction of a cell’s structure, an identifiable pseudo-image based on the activated light particles.

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Ota and his team trained a machine-learning algorithm to recognize the signatures of breast and pancreatic cancer cells, both from humans. The program was able to accurately distinguish between the two types of cells—which have similar sizes and structures—when they were mixed together and passed through the Ota team’s device at a rate of 10,000 cells per second.

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If it takes off, [biologist Andrew Filby[says, “it will change the field of cell sorting and cytometry permanently.”

Read full, original post: “Ghost” Cytometry May Improve Cancer Detection, Enable New Experiments