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Mobile Apps II

Week 13 Summaries

Article 1: A novel way to detect mutated DNA in blood of cancer patients

A group of scientists at St. Petersburg City Cancer Center in Russia have recently conducted a cancer study to replace tissue sample testing in place of blood tests. Currently doctors extract a microscopic tissue sample from the organs of cancer patients to learn about the specific tumor type from its DNA. This approach is due to the lack of DNA released into the bloodstream by tumor cells, which makes it difficult to detect the tumor. Recently the scientists have been successful in increasing cancer cell DNA in blood by subjecting rectal cancer patients to standard radiation therapy. This is due to the radiation exposure killing to cancer cells, which in turn release their DNA called “ctDNA”. Upon completion of their study, the cancer patients showed five times increase in ctDNA in blood from pre-radiation treatment levels. This method could mean replacement of the invasive tissue sampling procedure in other cancers as well in the near future.

Article 2: MIT Engineers Develop a Flexible, Paper-Thin Loudspeaker

Engineer at MIT have created a flexible, ultra-thin loudspeaker that can turn any surface into an audio source. Using just a fraction of the energy of a traditional speaker, this thin-film loudspeaker is capable of generating high-quality sounds on any surface the film is bound to. The design consists of tiny domes on a thin layer of piezoelectric material and two clips. Each dome vibrates individually, so even when the layer is attached to a surface, the sound is not impeded. Since each dome is s single sound producing unit, it takes thousands to the small domes to produce an audible sound. The domes themselves are 15 microns in height and about one sixth the thickness of human hair. This could be the future of speakers where traditional speakers would be replaced with this thin speaker.

Bibliography

@misc{gershater_2022, title={A novel way to detect mutated DNA in blood of cancer patients}, url={https://sciworthy.com/a-novel-way-to-detect-mutated-dna-in-blood-of-cancer-patients/}, journal={Sciworthy}, publisher={Bernard Gershater}, author={Gershater, Bernard}, year={2022}, month={Mar}, abstract={ This article is interesting, because I was not aware that tissue sample were utilized in order to the find the unique sequence of the tumor which helps doctors tailor treatment specific to that patient. This breakthrough is important because invasive procedures such as obtaining tissue sample from the affected organ can pose a risk for the patient.}}

@misc{zewe_2022, title={Researchers develop a paper-thin loudspeaker}, url={https://news.mit.edu/2022/low-power-thin-loudspeaker-0426}, journal={MIT News | Massachusetts Institute of Technology}, author={ZEWE, ADAM}, year={2022}, month={Apr}, abstract={ This is interesting because incredibly thin of a device it is and the fact that it can produce 86 decibels at 10kilohertz. This new device is important because it could transform cars, theaters, and any walls of a room to provide a more immersible experience.}}