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Tiny drones to target cancer, powered by Artificial Intelligence

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Cancer is a major global health challenge that causes millions of deaths every year. Current treatments such as surgery, chemotherapy, and radiotherapy have limitations and side effects. Therefore, there is a need for novel and effective approaches to fight cancer. Here, a new approach is presented that uses tiny drones to target and kill cancer cells that have spread in the body. These drones include nanodrones loaded with immunotherapy drugs that can amplify the effect of radiotherapy on cancer cells locally (via Einstein's photo-electric effect), while releasing immunotherapy medicine that trains a subject's white blood cells to recognize and eliminate cancer cells throughout the body. The design, fabrication, and testing of these drones in vitro and in vivo leading to FDA approved clinical trials is described with the integration of artificial intelligence for image-guided precision treatment. The potential benefits, challenges, and future directions of this innovative technology for making immunotherapy low-cost and widely accessible across Africa are presented, offering a promising and personalized way to treat cancer with minimal damage to healthy tissues. Opportunities for cross-disciplinary research and career development in medical/bio-physics and artificial intelligence are also presented.

Abstract Category

Medical Physics

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