How are pulsed electric fields being used in cancer therapy?

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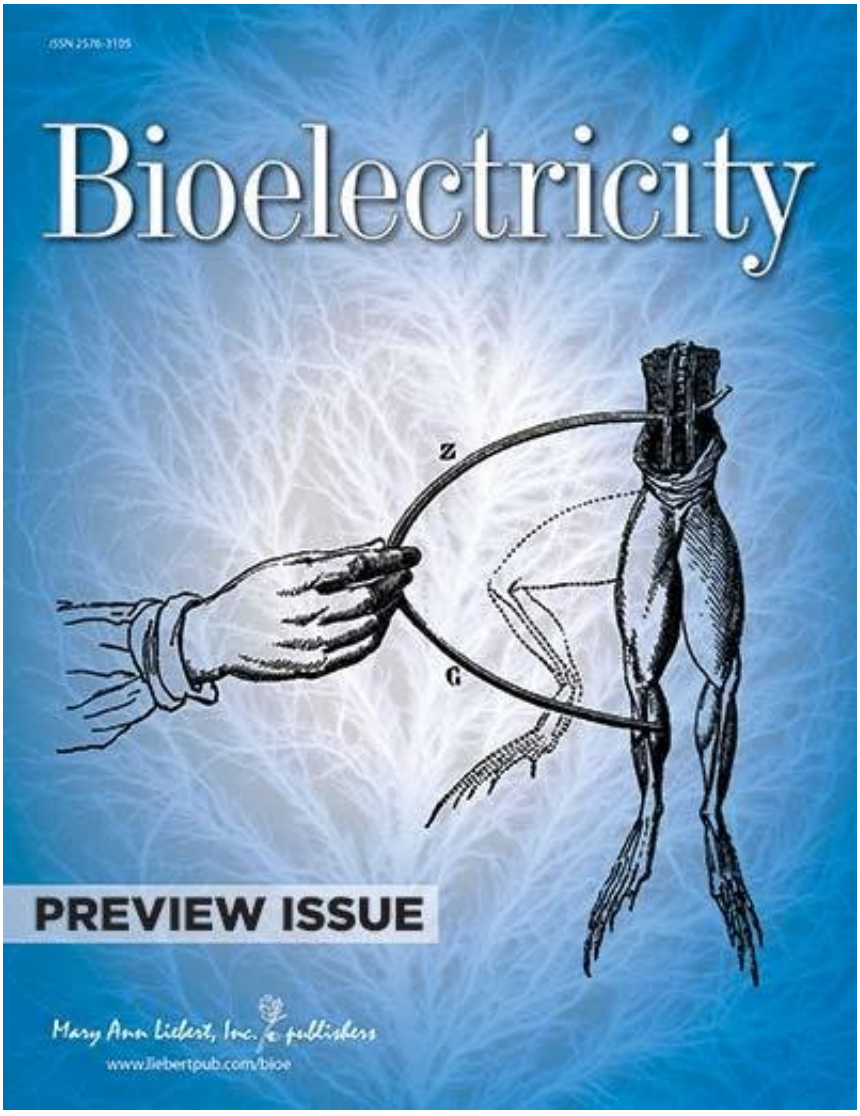

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Pulsed electric fields are helping fight cancer, whether by inducing tumor cell death or by stimulating the immune system. A comprehensive overview of this developing field is published in the preview issue of *Bioelectricity*.

Richard Nuccitelli, Ph.D., of Pulse Biosciences, Hayward, CA, discusses the different ways bioelectricity is being used to treat tumors in the article "Application of Pulsed Electric Fields to Cancer Therapy." Dr. Nuccitelli provides a clearly written description of the three main types of pulses and their uses. Pulses in the millisecond domain are typically used to facilitate the uptake of nucleic acids, such as plasmids, by cells. These can therefore be used to deliver genes encoding cancer-fighting proteins into tumor cells. Pulses in the microsecond domain allow small molecules, such as drugs, to cross the cell membrane significantly increasing the efficiency of the treatment. The very short pulses, in the nanosecond domain, can create millions of small pores in the cell membrane that by themselves affect cell signaling and cell function. This excellent review introduces readers to one of the most advanced of the many applications of bioelectricity to human health.

"The development and testing of pulsed electric field technology perfectly illustrate how research in bioelectricity leads to transformative biomedical approaches," says Dany Spencer Adams, Editor-in-Chief of Bioelectricity, from Tufts University, Medford, MA.

More information: Richard Nuccitelli, Application of Pulsed Electric Fields to Cancer Therapy, *Bioelectricity* (2018). DOI: 10.1089/bioe.2018.0001

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