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## **Microwave irradiation enhances gene and oligonucleotide delivery and induces effective exon skipping in myoblasts.**

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Microwave (MW) energy consists of electric and magnetic fields and is able to penetrate deep into biological materials. We investigated the effect of MW (2450 MHz) irradiation on gene delivery in cultured mouse myoblasts and observed enhanced transgene expression. **This effect is, however, highly variable and critically dependent on the power levels, duration and cycle conditions of MW exposure.** MW irradiation greatly enhances delivery of 2'O methyl-phosphorothioate antisense oligonucleotide (AON) targeting mouse dystrophin exon 23 and induces specific exon skipping in cultured myoblasts. Effective delivery of AON by MW irradiation is able to correct the dystrophin reading frame disrupted by a nonsense point mutation in the H2K mdx myoblasts, resulting in the restoration of dystrophin expression. MW-mediated nucleic acid delivery does not directly link to the increase in system temperature. The high variability in gene and oligonucleotide delivery is most likely the result of considerable irregularity in the distribution of the energy and magnetic field produced by MW with the current device. **Therefore, achieving effective delivery of the therapeutic molecules would require new designs of MW devices capable of providing controllable and evenly distributed energy for homogenous exposure of the target cells.**

Remark Ph. Hug :

Because there is as much as different human expositions in 24 hours than humans in the world, we all be dead before all experimental's exposition possibilities would be explored.