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Biochemistry & Molecular Biophysics **Seminar**

Technologies for personalized delivery of energy-based image-guided interventions

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Electromagnetic fields induce a range of bioeffects on cells and tissues that can be harnessed for therapeutic benefit and delivered via minimally-invasive image-guided interventions. We are particularly interested in application of microwave energy for controlled heating, offering a practical means for tissue ablation, localized and triggered drug delivery, and microenvironmental changes that may potentiate other therapeutic modalities. Realizing these capabilities in the clinical setting for specific indications requires identification of electromagnetic field parameters that yield desired bioeffects, and the design of practical devices capable of controlled delivery of prescribed field profiles integrated with image-guidance systems. In this talk, I will present our group's efforts developing integrated computational and experimental platforms for studying bioeffects of applied energy *in vitro* and *in vivo*; design and translation of devices for precise and conformal image-guided energy delivery to site-specific targets; and development of personalized computational models as clinical decision support tools for guiding delivery of interventional procedures and assessing treatment outcomes.