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Using light, high energy radiation and theranostic nanomaterials to engineer interactions with biological systems

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The Australian Research Council Centre of Excellence for Nanoscale Biophotonics draws on key advances of the 21st century, nanoscience, and photonics to help understand life at the molecular level.
This talk will focus on next-generation nanotechnologies developed in our Centre for probing, imaging and interacting with the living systems. These address the key challenges of ultrasensitive detection of key analytes in real environments, molecular complexity, and the requirement for interventions in deep tissue.

Theranostic nanomaterials simultaneously facilitate diagnostics including molecular sensing and active interventions required in therapies. I will discuss how our nanomaterials can produce light and interact with cells when stimulated with high energy radiation, and how this interaction can be quantified. The crossing of length scales inherent in radiotherapy combined with such nanomaterials forms powerful building blocks for innovative cancer treatments.

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