

Friday, September 22nd

4:10 – 5:00 PM

Barnard Hall 103

“Quantum Biology”: How nature harnesses quantum processes to function optimally, and how might we control such quantum processes to therapeutic advantage.

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Abstract: Imagine driving cell activities to treat injuries and disease simply by using tailored magnetic fields. Many relevant physiological processes, such as: the regulation of reactive oxygen species; epigenetic changes to induce pluripotency; cell proliferation and wound healing; cellular respiration rates; ion channel functioning; and DNA repair were all demonstrated to be controlled by weak magnetic fields (with a strength on the order of that produced by your cell phone), very likely via the electron quantum property of “spin”. Research has not been able to track spin states to manipulate physiological outcomes in vivo and in real time, without which the potential game-changing clinical benefits of “Quantum Biology” cannot be realized. With novel quantum instrumentation, we are learning to control spin states in cells and tissues, having as a goal to write the “codebook” on how to deterministically alter physiology with weak magnetic fields to therapeutic advantage. In the long term, the electromagnetic fine-tuning of endogenous “quantum knobs” existing in nature will enable the development of drugs and therapeutic devices that could heal the human body — in a way that is non-invasive, remotely actuated, and easily accessible by anyone with a mobile phone.

Host: Nick Borys

**** Refreshments served in the Barnard second floor atrium at 3:45. ****