

# KEYNOTE TALK

Saturday, October 10, 2020 at 1:30pm

## Enriching Cancer Research Through Unconventional Collaborations

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**Abstract:** Cancer is complicated and complex, arising in multiple cell types and tissue of origin, initiating and progressing differently in different individuals or under different conditions, with effects crossing multiple biological scales. It is also adaptive, evolving at both the molecular and cellular scales during treatment. Because of this, cancer researchers are often early adopters of new technologies, methods and approaches and they routinely adopt tools and methods originally developed in other, very different fields for use in modeling, understanding, and combating cancer. Systems biology, with its combination of experimental biology and mathematical modeling, plays an increasingly important role in cancer research. Advances in data science, high performance computing, and artificial intelligence have led to increasingly creative adoption of these tools and approaches in cancer research. But high-dimensional data, complicated problems, and collaborative problem solving also exist in areas such as entertainment video games and virtual and augmented reality. And cancer data and its contextual information can come from a variety of sources including patients and the public through citizen science and crowdsourcing. This talk will explore this broader collaborative and creative space and high-light both on-going and new programs supported by the National Cancer Institute to create opportunities for cross-field interactions and to accelerate new collaborations and new inter-disciplinary approaches to cancer research.



**Speaker Bio-Sketch:** Jennifer Couch, Ph.D., is the Chief of the Structural Biology and Molecular Applications Branch, Division of Cancer Biology, NCI, NIH. Dr. Couch's branch supports research and development of enabling technologies, models and methodologies including structural biology and biophysical characterization; bioinformatics, computational biology, mathematical modeling, data science, systems biology, citizen science and crowdsourcing methods; and bioengineering, biomimetics and biotechnology. Dr. Couch co-leads the NIH Citizen Science Working Group and acts as the NIH Citizen Science and Crowdsourcing Coordinator. She co-leads the Technology Development Implementation Team for the Cancer Moonshot Initiative and the NCI Artificial Intelligence Working Group.

And she participates in trans-NIH and trans-agency efforts in a variety of areas including big data, single cell, inter-disciplinary research, systems pharmacology, AI, and interactive digital media.