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## *In silico* oncology: Computational horizons in cancer systems biology and multiscale cancer modeling

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We have developed a multi scale platform for the predictions of the effects of mutations on oncogene activation through a combination of molecular, biophysical and cellular models. We have combined the specificity of molecular modeling with the power of network models to predict the molecular mechanisms that lead to the activation of pathways. We have also employ spatial and stochastic models to describe how the effects of the tumor microenvironment can lead to oncogenic signals through non-canonical pathways. We will describe the applications of these models in the clinical contexts of non small cell lung cancer, neuroblastoma and hepatocellular carcinoma.

### Biography

Ravi Radhakrishnan is a Professor of Bioengineering, Biochemistry & Biophysics and Chemical and Biomolecular Engineering at the University of Pennsylvania. His expertise is in Chemical Physics, Statistical Mechanics and Computational Biology. His laboratory focuses its research on the biophysics of single molecules and cell membranes and signaling mechanisms in cancer. Through his work, he has pioneered novel discovery platforms in *in silico* Oncology and *in silico* Pharmacology. He has authored over 100 articles in leading peer reviewed journals and serves as a Referee for over 50 leading journals, publishers and federal funding agencies. He also serves as an Editorial Board Member and Associate Editor for 5 journals and also regularly serves as a Panelist and Study Section Member for National Science Foundation, National Institutes of Health and several Federal Science Foundations' in the EU. He is a Fellow of the American Institute of Medical and Biological Engineering.

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