NC STATE UNIVERSITY

Comparative Medicine Institute

Phuong T T Nguyen

Postdoctoral Research Fellow

Diploma in Physics, Moscow State University Lomonosov

PhD in Mathematical Biology, University of Auckland

PhD in Theoretical Biophysics, University of Otago

Mentor: Belinda Akpa

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Mathematical biology & Theoretical Biophysics

Research emphasis:

Dr Nguyen develops mathematical models that help reveal the underlying mechanisms of biological systems or processes. Her models are intended to complement experimental studies and provide a quantitative framework for understanding emergent properties. The models are also used to test the effect of perturbing biological systems -- thereby aiding in biomedical decision making (e.g., choosing effective therapeutic intervention strategies)

Applications: Mathematical models

- Stem cell differentiation
- Immune response to infectious diseases
- Biochemical pathways (e.g., signaling pathways)

Research Strengths:

- Integration of biological concepts/knowledge into predictive mathematical models
- Communication in interdisciplinary environments

Selected Publications:

Nguyen P. T. T., Lewis J. G., Sneyd J., Lee R. S. F., Shorten P. R., A model of cortisol partitioning: Formula for estimating plasma free cortisol concentration when elastase-cleaved and intact corticosteroid-binding globulin coexist in circulation J. Steroid Biochem. Mol. Biol, 141: 16-25, 2014.

Nguyen P. T. T. , Conley A. J. , Sneyd J., Lee R. S. F., Soboleva T. K., and Shorten P. R. The role of enzyme compartmentalization on the regulation of steroid synthesis J. Theor. Biol, 332: 5264 , 2013.

Nguyen P. T. T., Lee R. S. F., Conley A. J., Sneyd J., and Soboleva T. K., Variation in 3β-hydroxysteroid dehydrogenase activity and in pregnenolone supply rate can paradoxically alter androstenedione synthesis. J. Steroid Biochem. Mol. Biol. 128: 12-20, 2012.

Nguyen T. T. F., Karelina T. A., and Kykyshkin A. K. Regulation of photosynthesis: Analysis of a model for sensitivity of delayed luminescence oscillation and CO2 fixation rate to variation of the model parameters. Biophysics (Russian Academy of Science), 52(5): 861-868, 2007.