

# MATHEMATICAL SCIENCES COLLOQUIUM

Monday Nov. 7, 2016 from 4-4:50 PM

LALLY 104

Lecture by **Dr. Helen Moore, Associate Director, Quantitative Clinical Pharmacology  
Bristol-Myers Squibb, Princeton, New Jersey**

**Title:** Mathematical Optimization of Combination Therapy Regimens

**Abstract:**

Combination therapy is increasingly important, especially when resistance to drugs is a concern. However, finding the best possible doses to use can be challenging. If three drugs are to be combined, and there are 5 dose levels of each to be tested, this gives  $5^3$  dose combinations. Instead of testing 125 dose groups, we can use mathematical modeling and simulation to predict combinations that should be used to achieve optimal outcomes. These optimal combination predictions can then be tested against other proposed combinations.

I will discuss the optimal control framework and show examples applying it to optimize combination therapy regimens for HIV and leukemia. These include comparisons to traditional regimens, and optimization under constraints such as fixed allowable dose levels typical for patient therapies used in the clinic.

Refreshments to be offered 3:30-4pm in the 4<sup>th</sup> Floor Lounge

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For more information about Dr. Moore,

[http://www.mathaware.org/mam/2015/highlighted/MAM%202015%20profile\\_Moore.pdf](http://www.mathaware.org/mam/2015/highlighted/MAM%202015%20profile_Moore.pdf)

Anyone interested in meeting with Dr. Moore on Monday please get in touch with David Isaacson,

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