



Department of Biomathematics Seminar Series:
Frontiers in Systems and Integrative Biology

Thermodynamics of Error Correction



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4:15 PM

**A2-342 MDCC, Moss Auditorium
Marion Davies Children Clinic**

ABSTRACT:

Biological systems are able to replicate information with outstanding accuracy. In biochemical reactions, such as DNA duplication, different monomers can be distinguished because of their binding energies or via non-equilibrium kinetic mechanisms. I will show how, in simple copying reactions, these two discrimination modes are mutually exclusive and lead to opposite tradeoffs between error, dissipation and reaction velocity. In multi-step reactions, such as in kinetic proofreading, these different modes can be combined to improve overall accuracy. I will conclude by discussing how the second law of thermodynamics can be used to directly relate copying accuracy with thermodynamic observables.

Host: Tom Chou, Ph.D.

To receive e-mail seminar notices, contact David Tomita (dtomita@biomath.ucla.edu)

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