

# *Colloquium*

UNIVERSITY OF GEORGIA  
DEPARTMENT OF STATISTICS

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## **“Validation and Selection of ODE Models for Parotid De-differentiation”**

Salivary glands are important for producing salivary proteins which contribute to host defense, lubrication, and digestion. However, salivary glands are often damaged or destroyed by radiation therapy or surgery for head and neck cancers, or by advanced Sjogrens syndrome. In order to engineer or replace salivary glands, it is important to define the major intracellular pathways of the nuclear program that causes terminal differentiation of the parotid acinar cells. Gene network discovery is a critical part to do this. Under this situation, Li (2010) proposed an ordinary differential equation (ODE) model for three genes which have important roles in recovering salivary gland cells. However, in practice, the functional relationships between these three genes are unknown and Li's model does not follow the law of mass-action. Thus, we compare Li's model with a model following the law of mass-action and investigate their validity for observed mRNA expression time series data using the Bayesian approach.

**Thursday January 20th, 2011**

ROOM 306

Statistics Building

University of Georgia

Athens, GA 30602

3:30 P.M. – Room 306, Statistics Building

**Refreshments following talk at 4:30 P.M. in room 230 (The Cohen Room)**