

## Claire Schulkey, Applied Mathematics

---

University: California State University, Los Angeles  
Year in School: Senior  
Hometown: Los Angeles, California  
Faculty Mentor: Dr. John Critser, Veterinary Pathobiology  
Funding Source: NSF-REU Program in Biosystems Modeling and Analysis

### **Understanding a cryoprotective agent; the ternary phase diagram of propylene glycol, sodium chloride and water**

Claire Schulkey, James Benson, and John Critser

The use of cryoprotectant agents (CPA) to aid in the preservation of cryopreserved tissues has become widely accepted as an important step in this process. Among the CPA used is propylene glycol, known to be less toxic to some cell types than other CPA. In order to optimize the usefulness of the CPA propylene glycol, the liquidus surface of the ternary system of sodium chloride/propylene glycol/water must be understood. To this end, a differential scanning calorimeter was used to precisely measure melting points for varying ratios of propylene glycol and sodium chloride, at differing concentrations of water in order to establish the isopleth and generate melting curves. (inserted only if this is indeed done) Curves were fit to a modified virial equation, and the Akaike Information Criterion (AIC) was used to determine the accuracy of fit.