1090-65-122 **Yekaterina Epshteyn*** (epshteyn@math.utah.edu), Yekaterina Epshteyn, Department of Mathematics, Salt Lake City, UT 84112. *Numerical methods for chemotaxis models.*

In this talk, I will first discuss several chemotaxis models including the classical Patlak-Keller-Segel (PKS) model. Chemotaxis is the phenomenon in which cells, bacteria, and other single-cell or multicellular organisms direct their movements according to certain chemicals (chemoattractants) in their environment. The mathematical models of chemotaxis are usually described by highly nonlinear time dependent systems of PDEs. Therefore, accurate and efficient numerical methods are very important for the validation and analysis of these systems. Furthermore, a common property of all existing chemotaxis systems is their ability to model a concentration phenomenon that mathematically results in solutions rapidly growing in small neighborhoods of concentration points/curves. The solutions may blow up or may exhibit a very singular, spiky behavior. In either case, capturing such solutions numerically is a challenging problem. In the talk we will discuss and compare recently developed numerical methods for the (PKS) chemotaxis model. Numerical experiments to demonstrate the stability and accuracy of the proposed methods for chemotaxis models will be presented. Ongoing research projects will be discussed as well. (Received February 24, 2013)