962-35-179 **K. Renee Fister*** (renee.fister@murraystate.edu), Department of Mathematics and Statistics, 6C Faculty Hall, Murray State University, Murray, KY 42071, and **C. Maeve McCarthy** (maeve.mccarthy@murraystate.edu), Department of Mathematics and Statistics, 6C Faculty Hall, Murray State University, Murray, KY 42071. *Optimal Control of a Chemotaxis System.* Preliminary report.

Chemotaxis is the process by which cells move toward or away from a chemical attractant. The cell and chemoattractant concentrations are governed by a coupled system of parabolic partial differential equations which have been used to describe such concepts as biological pattern formation and tissue inflammatory response to an invasion of bacteria. We investigate the optimal control of the proportion of cells being generated in two settings. One involves harvesting the actual cells and the other depicts removing a proportion of the chemoattractant. The optimality system for each problem is uniquely determined and it contains forward and backward reaction-diffusion and convection-diffusion equations. Numerical results are presented. (Received August 23, 2000)