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Focusing on the scholarship of teaching and learning in mathematics is an important component in the preservice education of secondary mathematics teachers. Unfortunately, preservice teachers rarely have the opportunity to engage in work that leads to mathematical discoveries and the communication of those discoveries. The Research Experiences for Undergraduates (REU) Site for Secondary Mathematics Teachers at Illinois State University was designed in response to the national need for highly qualified mathematics teachers and the call for prospective mathematics teachers to experience scholarship. The goals of the program are to expose teachers to mathematics research, expand their views of mathematics as a dynamic endeavor, to provide opportunities for mathematical discovery, and to enhance their content and pedagogical content knowledge. This presentation will describe the REU program, sample research problems, components designed to help teachers translate their research experience to the classroom, and suggestions for implementation. In addition, data will be provided that characterizes the changes in teacher beliefs as a result of experiencing mathematics research. (Received September 22, 2011)