

## James & Esther King Biomedical Research Program

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*Diabetes & Obesity Research Center  
Sanford-Burnham Medical Research Institute*

*2010 Program  
Postdoctoral Research Fellowship  
(3-year project)*

**Project Title:** Functional Analysis of Novel Akt Substrate ASC2D in Glucose Transport System and Its Role in Insulin Resistance

**Project Summary:** Smoking – long known to increase the risk of cardiovascular disease – is also associated with an increased risk of developing type 2 diabetes. It has been found that smokers are more than twice as likely to develop the condition of insulin resistance and type 2 diabetes as non-smokers. Impaired sugar glucose transport into the cells for metabolism is the hallmark of type 2 diabetes. Insulin regulates glucose metabolism primarily through the activation of glucose transport system that is impaired under insulin resistant state in humans. We discovered an unknown protein molecule ASC2D, which is essential for insulin-stimulated glucose transport in the fat cells. In this project, we plan to further investigate the molecular mechanisms whereby ASC2D regulates glucose transport and the movement of glucose transporter GLUT4 inside the cells. In addition, we will also investigate how ASC2D is regulated in normal control mice and mice treated with nicotine and high-fat diet. This project will lead to uncovering a novel signal pathway involved in the regulation of glucose metabolism, and provide new insight for potential therapeutic targets for smoking- and high-fat diet-induced diabetes.