

**Southwest Health Equity Research Collaborative  
PILOT PROJECT PROGRAM**

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**Project Title: *“Developing room temperature preservation and storage strategies for medicinally-relevant biological molecules”***

**Proposal Abstract:**

Many medicines, vaccines and other medical technologies require well-controlled temperature during distribution and storage to remain viable. In some regions maintaining a constant temperature is feasible with traditional electric refrigeration, but in many rural and poor areas such temperature control is complicated by an unreliable power supply or even a lack of power. Northern Arizona is an example of such a location, with an estimated 32% of homes in Navajo Nation lacking electricity. Therefore it is useful to consider alternative storage strategies that reduce or possibly eliminate the requirement for continuous, accurate and precise temperature control. This proposal describes using computational chemistry techniques to develop ionic liquid-based solutions as a class of materials to serve as protective agents for the temperature-resistant storage of insulin. While diabetes affects all populations of people, the disease is especially prevalent among people that are more likely to have worse access to healthcare, including women, minorities, and lower socioeconomic classes. This means that improved, more robust treatment strategies for diabetes will have a significant impact on people often poorly served by the healthcare system.