

The roles of iron regulatory proteins 1 and 2 in neuronal differentiation and iron-mediated cell death

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Abstract

Iron Regulatory Proteins 1 and 2 (IRP1 and IRP2) are key regulators of cellular iron levels. Iron is essential for proper brain development and function but can lead to cellular damage if not properly regulated. In order to study the effects of reduced expression of IRP1 and IRP2 on neuronal health and neurodegeneration, we are using mouse neurons that have been transfected with shRNA to specifically knockdown IRP1 or IRP2. Mouse neurons are well-studied and share many key cellular pathways with human neurons, making them an appropriate model to study the effects of IRP1 and IRP2 knockdown. We will begin to investigate the effect of the knockdowns on the mouse neurons through proliferation assays and differentiation assays. These experiments will reveal how the knockdown of IRP1 and IRP2 affect neuronal growth, maturation, and development compared to healthy control cells. Understanding these processes is incredibly important for humans as iron dysregulation can lead to neurodegenerative diseases such as Alzheimer's.

Results

IRP knockdown influences cell morphology

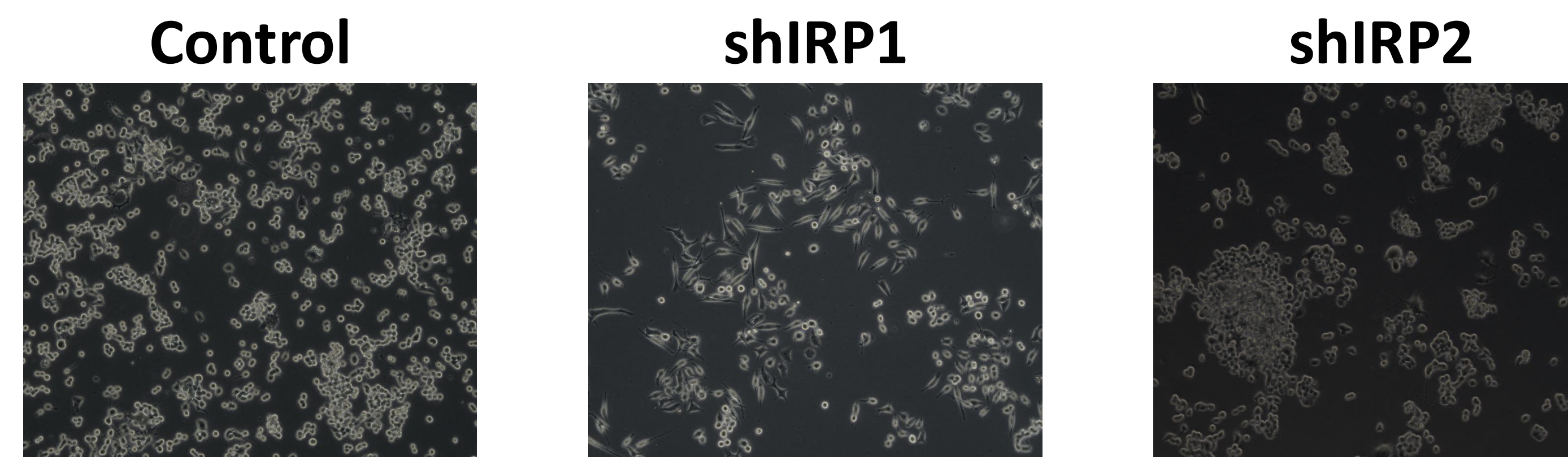


Figure 3.

Conclusions

Approach

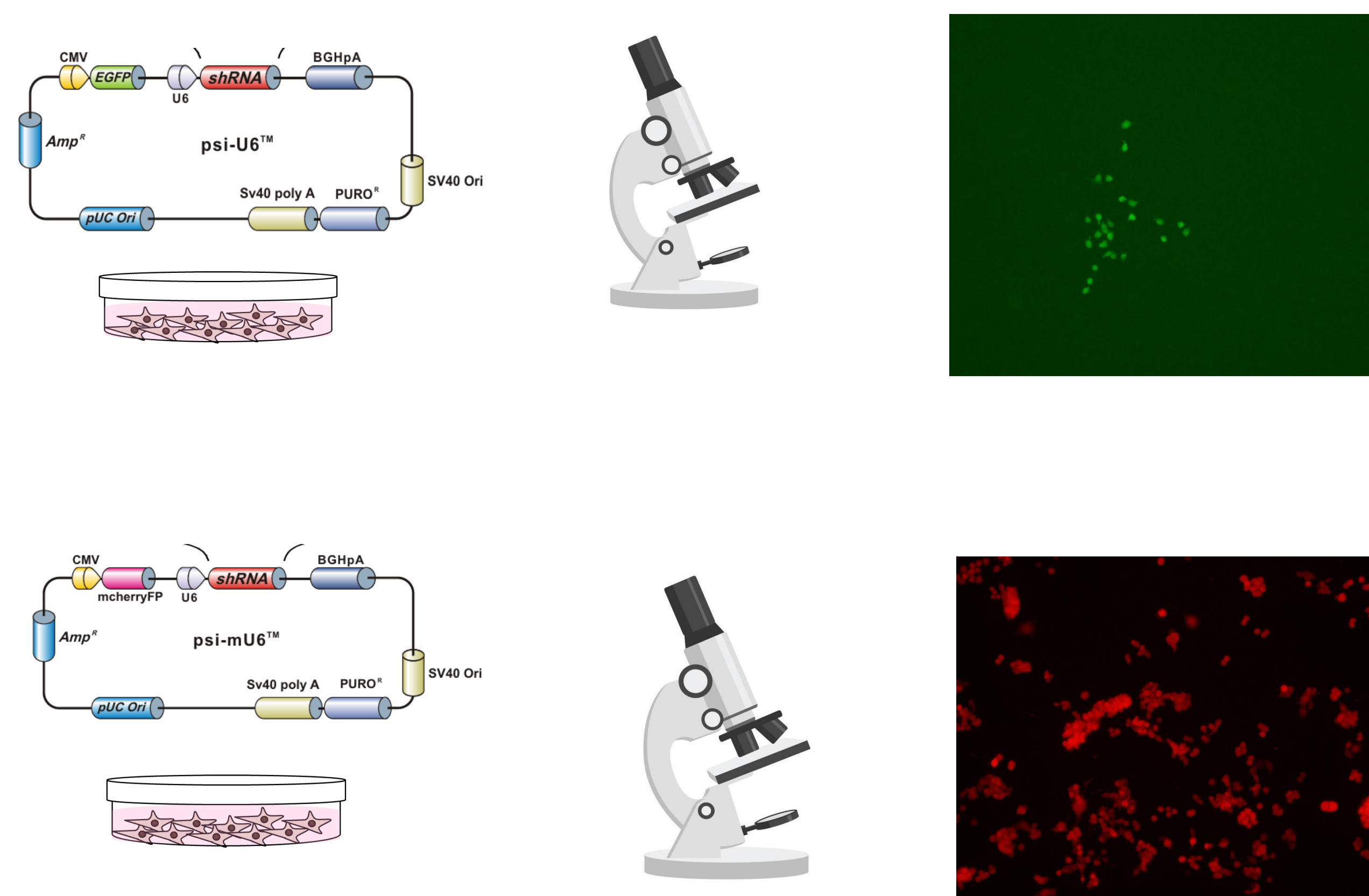


Figure 1.

IRP knockdown influences cell proliferation

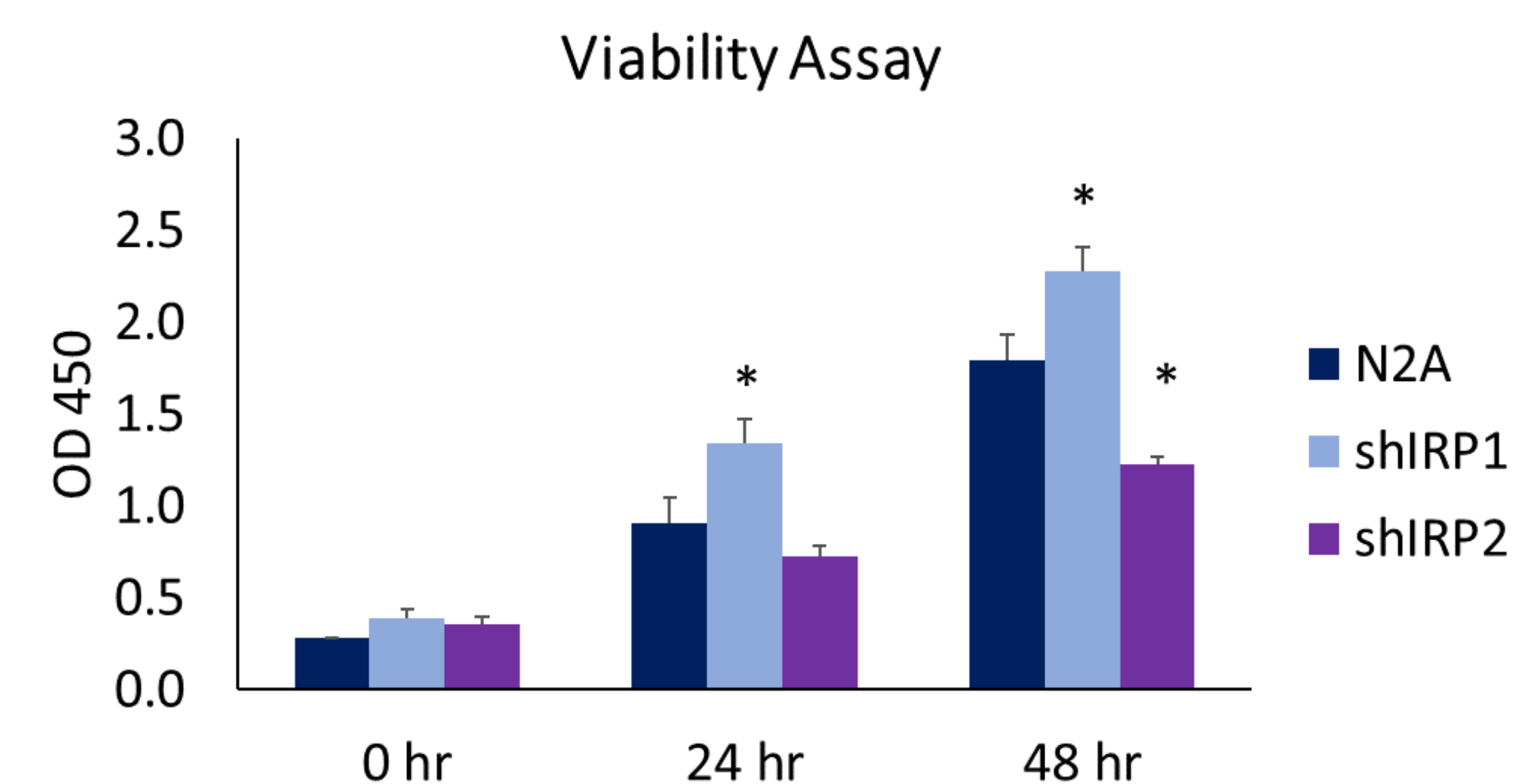
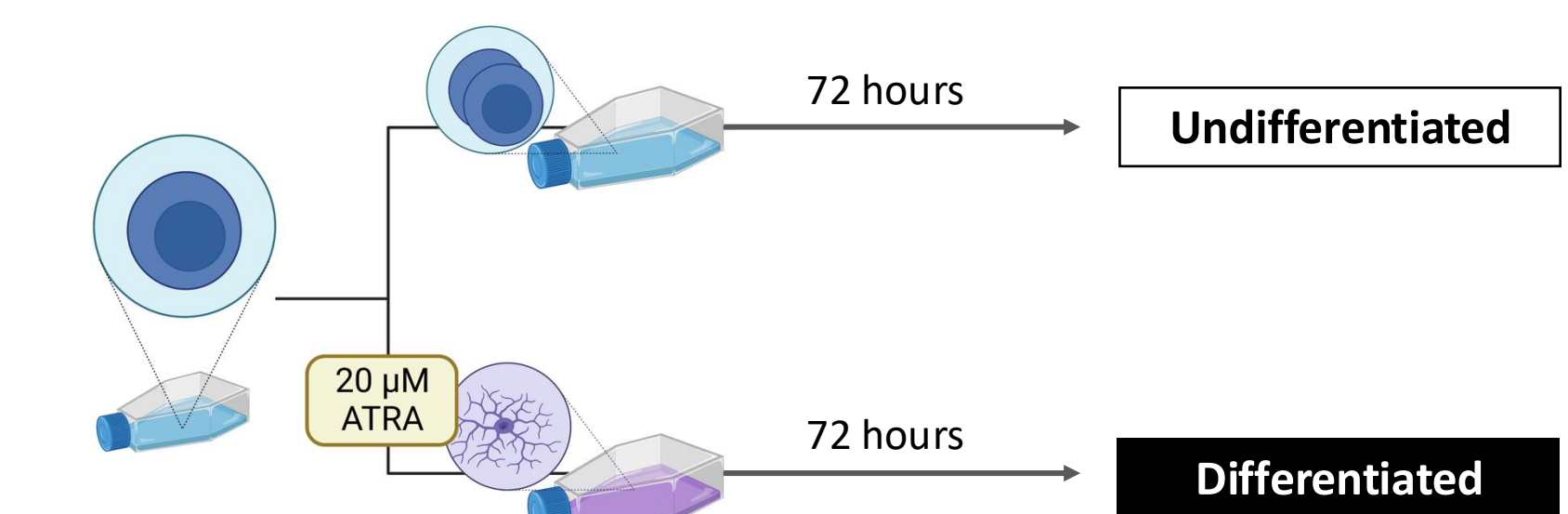
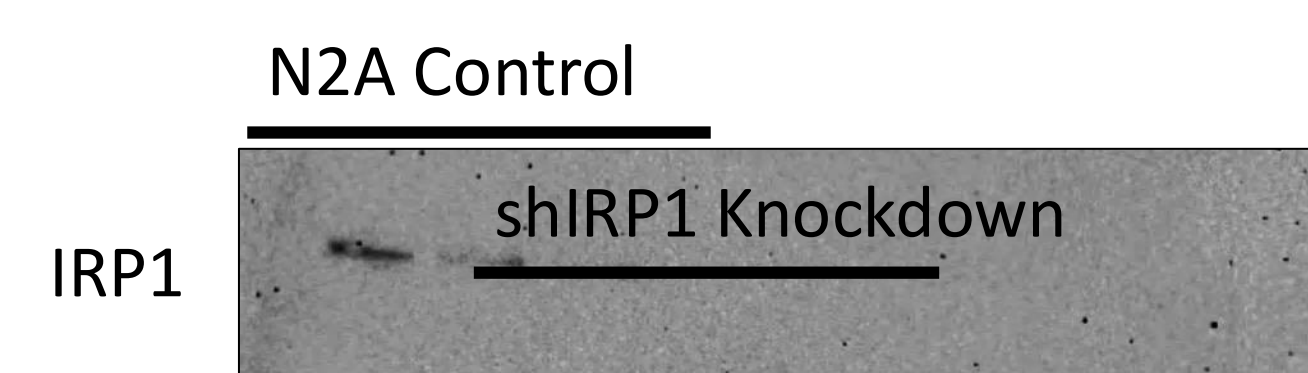


Figure 4.

Future Directions



Validation of model



IRP knockdown influences gene expression

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