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"The Fecal Position: Tracking Progressive DNA Repeat Expansion via Stool DNA Extraction"

Friedreich Ataxia is a progressive DNA repeat expansion disease. Examining DNA repeat expansion in mouse models require sacrificing the mouse and taking samples of organs. The obvious non-lethal targets, such as ears, tails, and blood do not have levels of repeat expansion comparable to internal organs. However, recent publications suggest that stool may be a suitable non-lethal candidate for tracking repeat expansion over time. Stool DNA may allow researchers to monitor the effect of interventions aimed at slowing DNA repeat expansion over time without harming the mouse.

A commercial kit was first used to extract DNA from feces without success. Stool DNA was isolated using a "home-made" approach based on older methodology. The presence of mouse DNA within the bacterial background DNA was first confirmed using mouse beta actin PCR primers. This was followed by two rounds of nested PCR with PCR primers specific for the expanded GAA●TTC tract in the frataxin transgene carried by the Friedrich Ataxia model mouse.

Stool DNA poses a unique challenge due to the degradation of its components, high lipid content, and high level of bacterial DNA contamination. However, this method of DNA extraction was nearly 100% successful. We compare ear samples taken at three weeks to stool taken later to prove the utility of this approach for repeat expansion models.