The rat tail nucleotomy model is a preclinical animal model commonly used in research to study intervertebral disc degeneration and potential therapeutic interventions for treating associated low back pain.

In this model, a small incision is made in the tail of a rat, and a portion of the intervertebral disc is surgically removed (a procedure called nucleotomy). This creates a localized injury that simulates the degeneration of the intervertebral disc commonly seen in humans with chronic low back pain.

The model allows researchers to study the progression of intervertebral disc degeneration and the effectiveness of various treatments in mitigating the associated pain and disability. It has been used to investigate the effectiveness of therapeutic agents such as stem cells, growth factors, and gene therapy in promoting disc regeneration and reducing pain.

The rat tail nucleotomy model has some limitations, including the fact that it does not completely replicate the human spine and may not fully capture the complexity of the intervertebral disc degeneration process. Nevertheless, it remains a useful tool for preclinical research in this field.