Employing Recombinant Adeno-associated Viral Vectors for Delivery of a Therapeutic TIMP-3 Transgene to the Equine Distal Extremity

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Outline

- Introduction
- Current Study
- Future Application

Images: Courtesy of Mason Lab, worldhorsewelfare.org, vetmed.illinois.edu
Laminitis by the Numbers

**Lameness**
- United States: 15.7%
- United Kingdom: 20.7%

**Euthanasia**
- Laminitis Cases: 4.7%
- Teaching Hospitals: 50.2%

(NAHMS, 2000; NEHS, 2016)
Sensitive Laminae attached to the Coffin Bone

Insensitive Laminae attached to the Hoof Wall

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Aggrecan

Aggrecanase

TIMP-3
Activated Enzyme Basement Layer Destruction

AGGREGANASE  TIMP-3

DEGRADE  PRESERVE
NORMAL LAMINA

AGGREGANASE

DEGRADE  PRESERVE
DISEASED LAMINA
Current Study
DISEASED LAMINA

AGGREGANASE

DEGRADE

PRESERVE

TIMP-3

NORMAL LAMINA

DEGRADE

PRESERVE

TREATED LAMINA

DEGRADE

PRESERVE

AGGREGANASE
Gene Therapy

Expression
Assays

- Viral Detection
- Viral Quantification
- Protein Detection
- Protein Quantification
- Protein Function
Results

Transduction of rAAV in Equine Hoof Tissue

Viral Genome Copy Number

Control

Treated
Hope on the Horizon

- Clinical Procedure
- Specific Treatment
- Preventative


