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

Click to link to worldhorsewelfare.org courtesy of Mason Lab.

Click to link to 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)
Anatomy

acvs.org
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**

**DISEASED LAMINA**

**DEGRADE**  
**PRESERVE**

**AGGREGANASE**
Detached distal phalanx rotates and disrupts weight distribution

Common Digital Extensor Tendon

Proximal Phalanx (P₁)

Middle Phalanx (P₂)

Distal Phalanx (P₃)

Lamellar layer

Distal Sesamoidean Ligaments

Superficial Digital Flexor Tendon

Deep Digital Flexor Tendon

Bulbar Cushion

Navicular Bone

Digital Cushion

Hoof Wall
Current Study
Gene Therapy
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
References


Questions