



# 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



# Laminitis by the Numbers

## Lameness

United States  
• 15.7%

United Kingdom  
• 20.7%

## Euthanasia

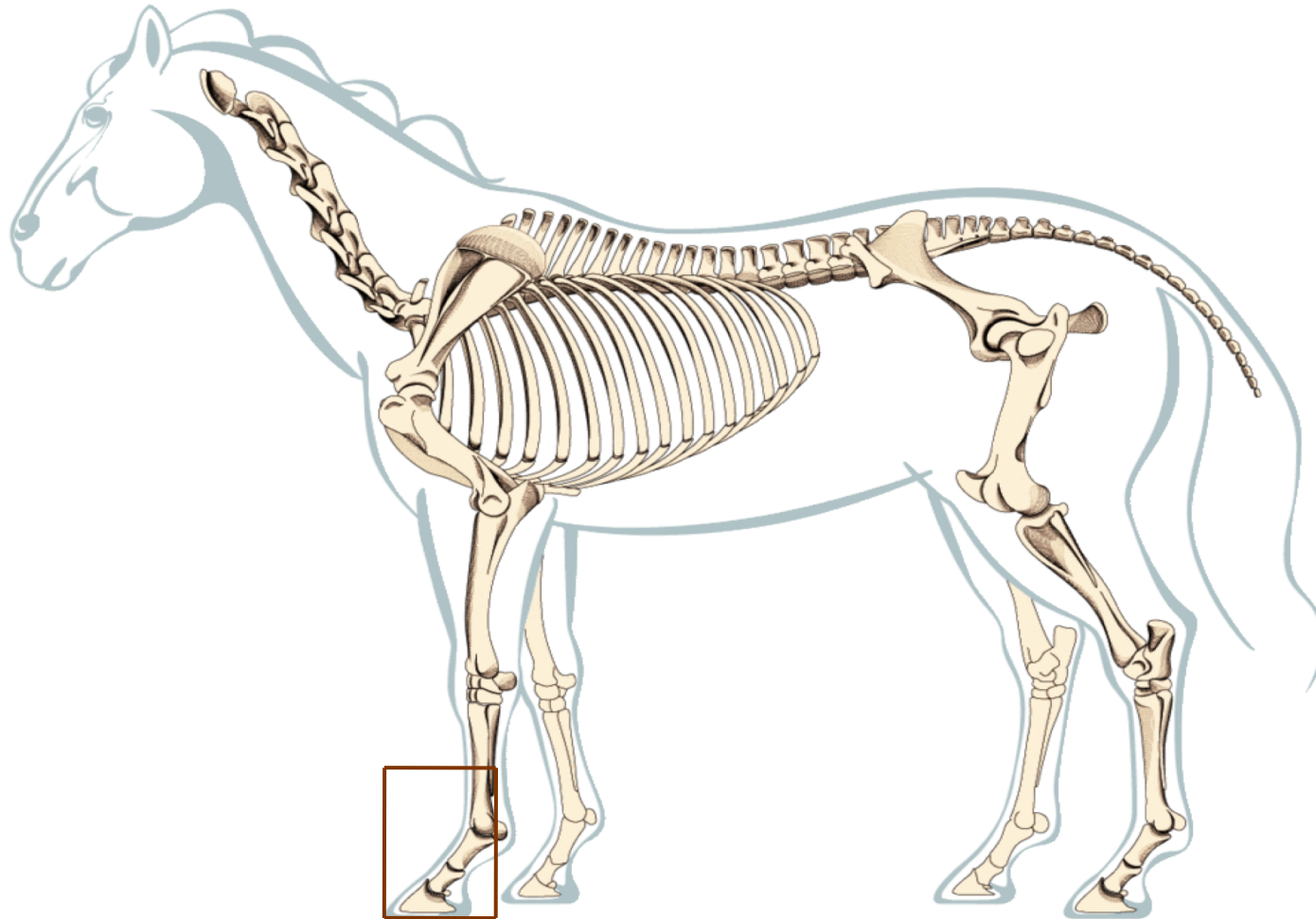
Laminitis Cases  
• 4.7%

Teaching Hospitals  
• 50.2%



(NAHMS, 2000; NEHS, 2016)

# Anatomy





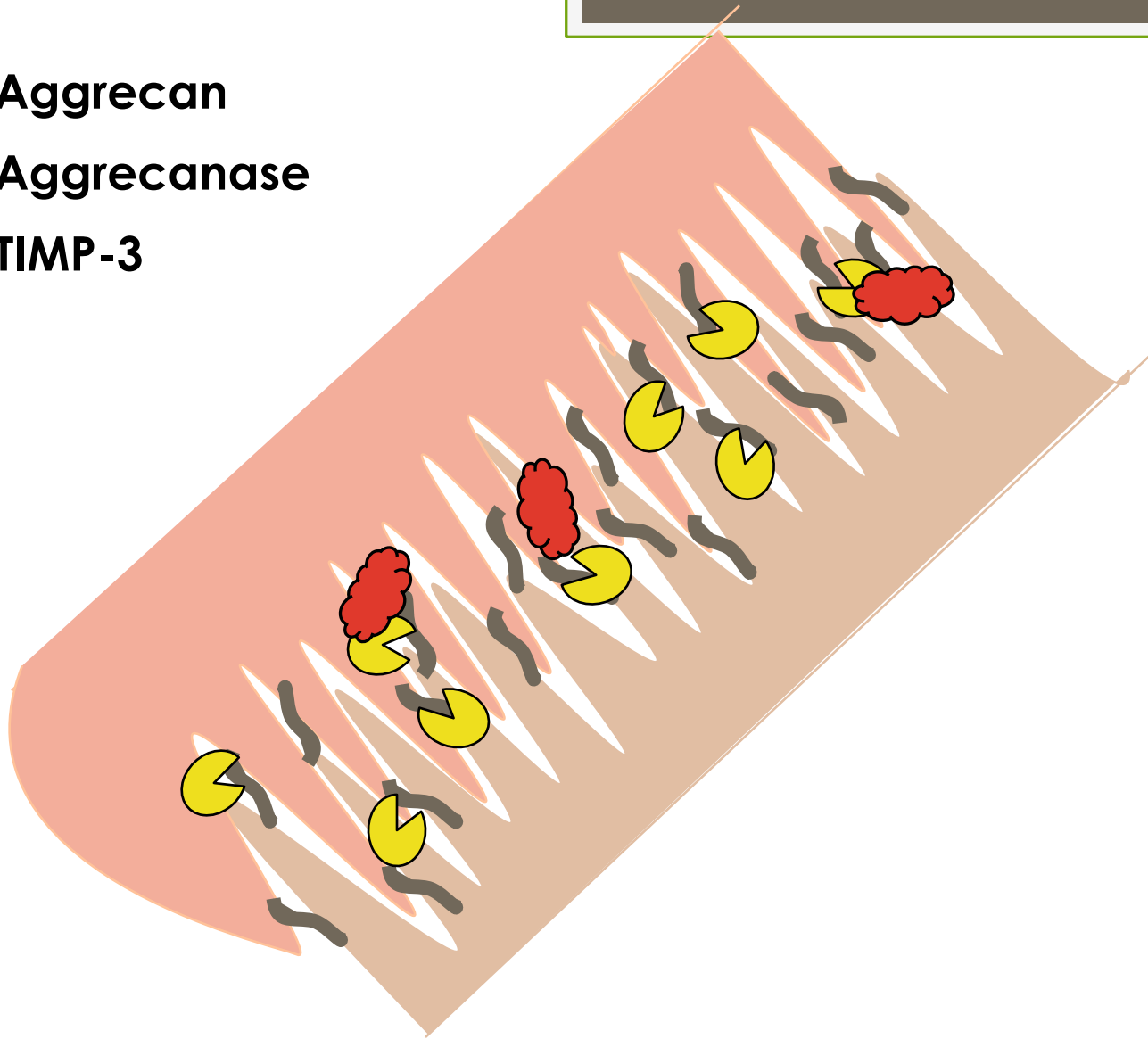
Sensitive Laminae  
attached to the  
Coffin Bone



Insensitive Laminae  
attached to the  
Hoof Wall



-  Aggrecan
-  Aggrecanase
-  TIMP-3



# Activated Enzyme Basement Layer Destruction

**AGGRECANASE**

***TIMP-3***

DEGRADE      PRESERVE

**NORMAL  
LAMINA**

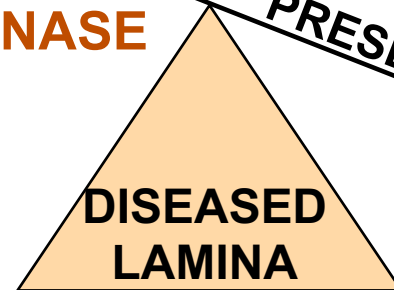
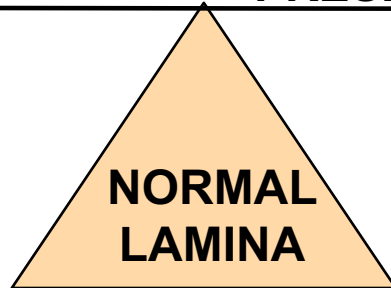
**AGGRECANASE**



DEGRADE

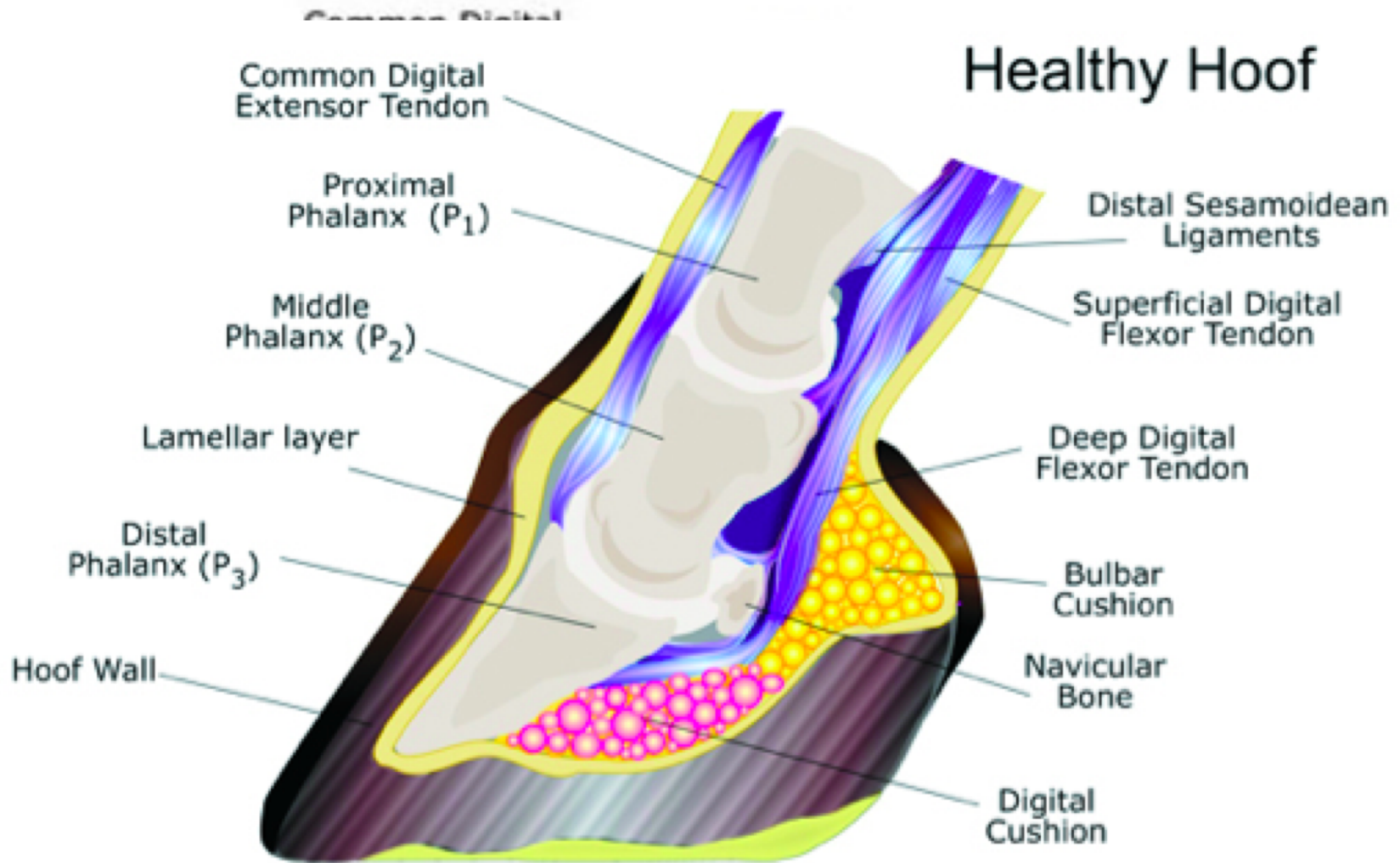
PRESERVE

**DISEASED  
LAMINA**



# Rotation

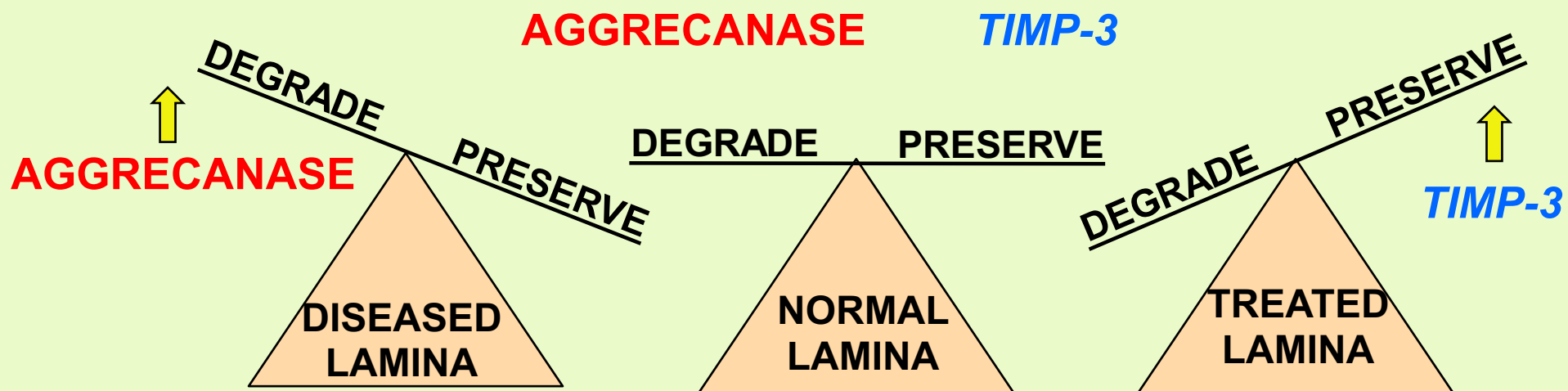
*Detached distal phalanx rotates and disrupts weight distribution*



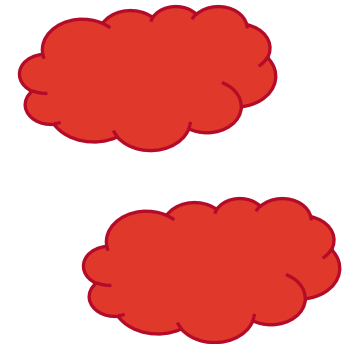
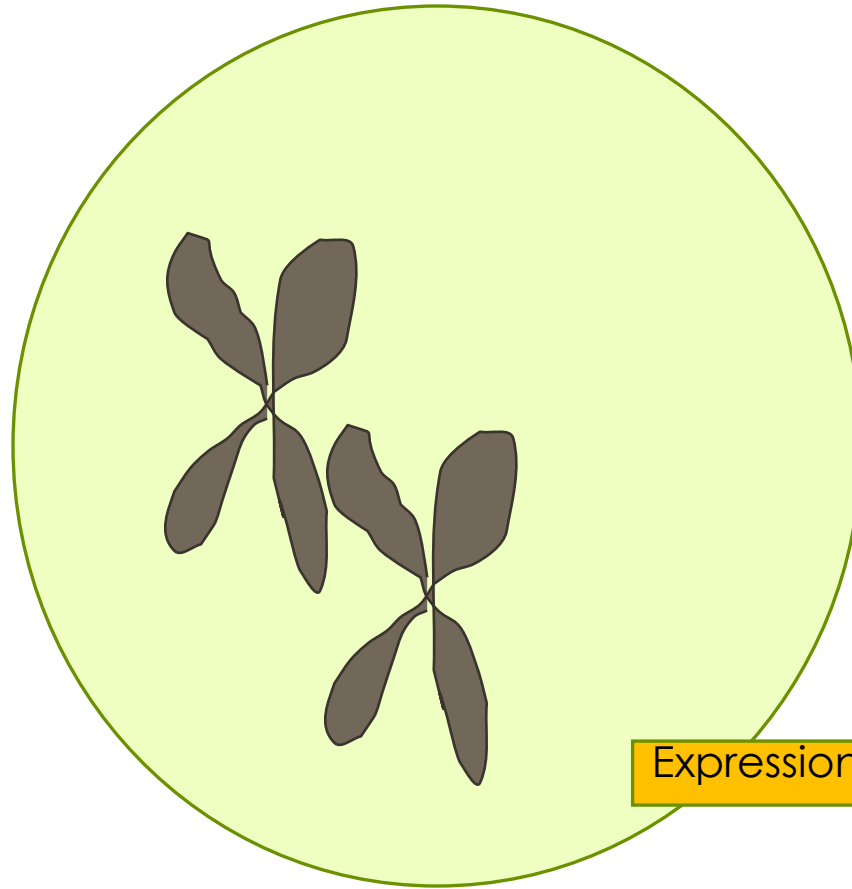
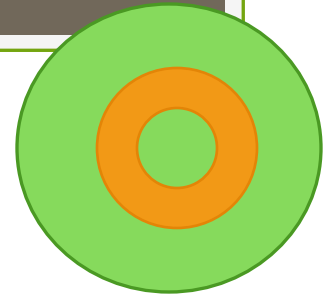


# Current Study

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# Gene Therapy





# Assays




Viral  
Detection




Viral  
Quantification



Protein  
Detection



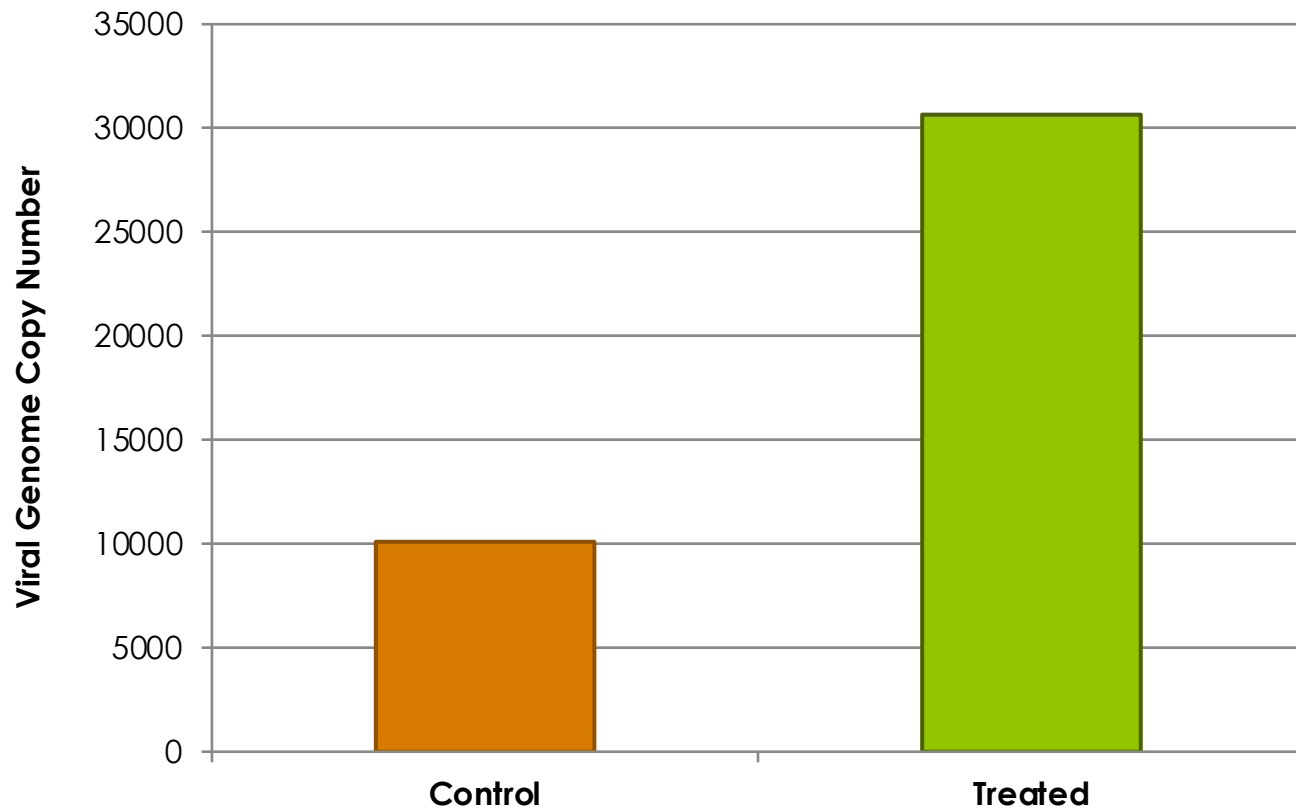
Protein  
Quantification



Protein  
Function

# Results

## Transduction of rAAV in Equine Hoof Tissue



# Hope on the Horizon

- Clinical Procedure
- Specific Treatment
- Preventative





# References

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# Questions

