Intervertebral Disc Degeneration in Racehorses
- Caused by traumatic falls
- Leads to compression on spinal cord, often leading to euthanasia of horse
- Current solution - implanting spinal cage

Inadequate Surgical Procedure
- Lack of proper instrumentation
- Cage requires a backplate for stability

Goal: Design appropriate instrumentation and cage that does not require a backplate

Equine Cervical Spinal Cage

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Validation Testing via Cadaver Lab
- Testing showed considerable decrease in surgical time with streamlined drilling procedure and less fluoroscopy
- Cut-out space for cage drilled out using Drill Guide
- Cage successfully implanted and fixated onto C5-C6 junction

Solution
- Drill Guide Prototype with Adjustable Angle and Depth Control
- Spinal Cage with 4 Screw Holes
  Provides improved fixation via attachment to adjacent vertebrae
  Eliminates need for backplate

Future Plans
- Ongoing work is to be passed on to Drexel's Implant Research Center. Some areas of revision include:
  - Adding more fixation spikes to the instrument to increase stability during drilling procedure
  - Implementing lattice structures in cage to promote bone growth

Impact
Through development of these technologies, the group has begun to reinvent and standardize a surgical procedure that was previously risky and time inefficient. With this development, a dramatic reduction in surgery time as well as risk has been achieved.