Equine Paranasal Sinus 3D Anatomy Primer

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About this project:
Veterinary students demonstrate adequate understanding of equine paranasal sinus anatomy during lectures and labs, but lack knowledge retention when on clinical rotation. They also find difficulties in applying anatomy knowledge to radiograph/CT imaging interpretation. This project aims to provide students with highly detailed, medically accurate equine anatomy resources that can be easily accessed with mobile devices in clinical settings. Phase 1 testing will test students ability to identify structures in case radiographs and score their results. Control students will use only traditional learning resources while the test subjects will be able to access new 3D resources, with comparison of scores being the goal.

About the Data:
Instead of traditional methods/resources for learning anatomy, such as textbooks, videos, illustrations, or cadaver wet labs, this project uses a variety of interactive annotated 3D models segmented from CT data sets of 4 equine specimens and hosted on Sketchfab.com. Other resources include interactive HTML pages, A/B juxtaposition "sliders" composed with two still images/illustrations, and other illustrations highlighting key structures and their location in the head.

Next Steps:
One of the next steps in this project is to map the vasculature of the equine head. With the use of a novel contrast agent called BriteVu™, clinicians can obtain CT imagery of arterial and veins structures with unparalleled resolution. When these data sets are leveraged with pioneering segmentation workflows, we can create some truly amazing 3D models of anatomy that has not been imaged before. One example is the vasculature of the equine incisor region, as shown to the right. The original model has over 140 million polygons, and the model has revealed details that have up to now been undiscovered.