Dentistry and Oral Surgery

Faculty within the Dentistry and Oral Surgery program seek to improve understanding of oral disease processes, to expand upon available treatment options, and to optimize patient care. A full range of dental services is available for dogs, cats, horses, pet rabbits and rodents, and zoo animals. The School of Veterinary Medicine’s extensive expertise and reputation in dentistry and oral surgery attracts patients from all over California, as well as a number of other states and countries.

**Oral and maxillofacial surgery** - Veterinary dentists at the School conduct significantly more oral and maxillofacial surgery than any other academic veterinary dentistry program. In addition to the more common teeth cleanings, extractions and root canal treatments, procedures performed by faculty include tumor surgeries, the repair of mandibular and maxillofacial fractures, and cleft palate surgeries.

**Cutting-edge jaw reconstructions** – The UC Davis Veterinary Dental and Oral Surgery program is a world-leading academic veterinary service that has an oral and maxillofacial program specializing in the jaw; and is the only program in the world that performs jaw reconstruction using cutting-edge technologies on a regular basis

- Surgeons have pioneered a new procedure to remove diseased or damaged jawbones and regrow new bone. Surgeons cut out the affected portion of the jaw and screw in a formed titanium plate to the remaining bone. A sponge soaked in bone morphogenic protein is placed where the jaw used to be, and the sponge scaffolding stimulates the remaining jawbone to grow new bone cells. After 8 to 10 weeks, the new bone is fully formed
- Clinicians collaborate with UCD biomedical engineers in a novel approach to jaw reconstruction. Biomedical engineering produces 3D “prints” of patients’ skulls from CT scans, which greatly assist the faculty with their surgical modeling and planning. With this technique, surgeons can now produce a full arch jaw for these pet surgeries, giving dogs a more normal function and appearance. Our surgeons are the only ones in the world to apply this in veterinary medicine, and there is hope that the technique can be applied to human reconstructive surgery
- UC Davis veterinary dentistry residents are the only ones in the world that currently perform reconstructive surgery on a regular basis utilizing these cutting edge-tools and techniques

**Feline chronic gingivostomatitis**

- Scientists discovered that cats with chronic gingivostomatitis are significantly more likely to concurrently shed both feline calicivirus and feline herpesvirus 1 than are cats with classic periodontal disease.
- Researchers are conducting innovative stem cell therapy studies on feline chronic gingivostomatitis, a debilitating, painful inflammatory disease in cats, in an effort to develop a regenerative approach that can positively regulate the immune system. If successful, the approach has an almost immediate translation effect to humans with oral lesions, who currently must use steroids for relief from the inflammation.

**Investigating marine mammal jaws** - Veterinary dental faculty are engaged in active programs with the California Academy of Sciences and the Marine Mammal Center, examining dental and temporomandibular joint (TMJ) lesions in wild animals with a current focus on marine mammals. The team works to characterize the joints in marine mammals, and is the only academic veterinary dentistry program in the world that conducts TMJ research, mapping TMJ disorders among mammals.
Game-changing publishing

- Veterinary dentistry faculty published *Oral and Maxillofacial Surgery in Dogs and Cats* in 2012, and the book quickly became the bible of oral maxillofacial surgery in the world. This unprecedented resource is now present in virtually every clinic and hospital where veterinary oral surgery is performed.
- Statistics from the American Veterinary Dental College reveal that the UCD Veterinary Dentistry and Oral Surgery team has produced 2/3 of all the research publications in the veterinary dental field, publishing nine to ten research papers per year.

Advancing the field with diagnostic imaging

- Cone-beam computed tomography (CBCT), the standard of care in human oral and maxillofacial diagnosis and treatment planning, is now being translated to veterinary medical care by our clinicians. UCD veterinary dentistry and oral surgery is only academic veterinary facility in the world that utilizes this technology. CBCT delivers high resolution images in two- and three-dimensional views, and allows for a more precise analysis of bone structure, tooth orientation and oral and maxillofacial disorders. Each dentistry resident is required to complete at least one project on the CBCT.
- Veterinarians compared the diagnostic benefits of conventional radiographs vs. computed tomography (CT) images of the skulls of dogs and cats with maxillofacial trauma. They determined that CT is superior to conventional skull and dental radiography for identification of anatomic structures and traumatic injuries in dogs and cats. While skull radiography is useful for visualizing the mandibular body and dental occlusion, CT allows for accurate assessment, diagnosis and treatment planning of MFT in dogs and cats.

Classifying canine (and human) tooth resorption - Researchers studied the prevalence of tooth resorption in dogs (a destructive process which can lead to the loss of teeth without treatment) and determined that resorption lesions, in general, and external replacement and external inflammatory resorption, in particular, were frequently detected in dogs; and that classification of tooth resorption in humans was applicable to tooth resorption in dogs.

Reparing the damage from a cleft palate – Dental clinicians successfully performed the first reported complete surgical correction of a bifid nose (one that is divided into two parts) associated with a cleft of the primary palate on a 1-year old Springer spaniel dog. As a result, there was an immediate return to normal function.

Insights into elephant TMJ discs - Veterinary dentists compared differences in the tissue structure between the African and Asian elephant species. They also quantified the biochemical and biomechanical properties of the African elephant disc. The study provides unique insight into the elephant TMJ disc as well as an intriguing comparison between the two species.

Effective approach to endodontic disease - Clinicians determined that surgical endodontic treatment (root canal treatment) was an effective option for dogs whose teeth are endodontically diseased (meaning the dental pulp within the hollow area of tooth is damaged) but periodontally healthy (meaning the gums are healthy).

Urging against the use of dental implants in companion animals – UC Davis veterinary dentists have teamed with a veterinary ethicist in a collaborative effort with professors from other universities to speak out against the use of dental implants in dogs and cats. While implants are commonplace in human dentistry, the team urges veterinarians to resist transferring this application to veterinary patients. It is their position that implants are unnecessary, unethical and there is lack of scientific evidence suggesting implants are effective and safe.