

# SPOTLIGHT ON

## Oregon State University Veterinary Medicine

Advancing animal health and welfare through research

### COVID in the wild and mesenchymal stromal cell therapy

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In our previous Spotlight, we shed light on the broad areas of research activity within our College, areas that addressed societal needs across our land-, sea-, space-, and sun-grant missions. This time around, we will highlight specific researchers with projects of immediate relevance.

In 2020, SARS-CoV-2, the virus responsible for COVID-19, took the world by storm. In the process, it raised numerous questions, including the roles of veterinary species in its life cycle. Brian Dolan, associate professor of immunology, is investigating approximately 1,600 wild animal specimens for the presence of the virus. In doing so, he hopes to identify which wild animals may harbor the virus, allow it to mutate, suffer from disease, and perhaps serve as a reservoir for future reinfection of humans. He will collect samples in conjunction with the Oregon Veterinary Diagnostic Laboratory at Oregon State, the Oregon Department of Fish and Wildlife, and wildlife rehabilitators around the state. Collection will focus on mammals, based on the currently identified host range, and on those species that have a higher potential for human contact. New SARS-CoV-2 isolates will be sequenced fully to identify whether they represent recent transmission from infected humans to wildlife or whether the infection appears to be establishing itself in these animal populations. A wildlife reservoir would allow for divergent, and potentially unmonitored, paths of evolution, with the possible consequence of human reinfection with a novel strain at a later date. Additionally, these animals will be investigated for clinical disease to establish the veterinary importance of these infections. This work is being done in cooperation with and funded by the USDA APHIS.

Dr. Lacy Kamm, Assistant Professor of Large Animal Surgery, is investigating the use of autologous and allogeneic mesenchymal stromal cells in the treatment of degenerative, inflammatory conditions including osteoarthritis, tendonitis, and desmitis in horses. Chronic musculoskeletal inflammation is a



Dr. Kamm collecting mesenchymal stromal cells from the sternum of a donor.

common problem in all species; thus, knowledge gained from horses has pertinence to other species, including humans, and new therapeutic modalities can have a broad beneficial impact. Treatment consists of local injections with stromal cells collected either from the patient or from major histocompatibility class II-low donor horses. These cells contribute to healing by 2 distinct mechanisms. First, some differentiate into cells specific to the target tissue and act in concert with local cells to produce the appropriate extracellular matrix products. Second, the injected cells release trophic or anti-inflammatory cytokines and influence local cells to promote healing. Dr Kamm's primary interest is in identifying a donor cell line that can be used in recipient horses to maximize the therapeutic effects in the treatment of musculoskeletal disease. This work is largely funded internally, with student involvement funded by Boehringer Ingelheim.