Lecture Abstracts

Dr. Dori Borjesson (DVM, PhD), University California-Davis
Title: Introduction to Stem Cells and Regenerative Medicine
Objective: The objective of this presentation is to provide working definitions of stem cells and regenerative medicine in the context of veterinary medicine and current clinical applications for practitioners.

Dr. Fernando Fierro (PhD), University of California-Davis
Title: Stem Cells and Genetic Modification
Objectives: In recent years, gene and cell therapies have been combined to create exciting new therapeutics. The objective of this presentation is to discuss the most common methods used to engineer cells to either reprogram them, or to enhance their therapeutic potential. We will also address key safety concerns to keep in mind, in order to bring these novel concepts into practice.

Dr. Amir Kol (DVM, PhD), University of California-Davis
Title: Mesenchymal Stem Cell Based Therapeutic Approach to Inflammatory Bowel Disease
Abstract: Canine inflammatory bowel disease (IBD) is a chronic, idiopathic disease characterized by diarrhea, vomiting, weight loss and intestinal inflammation that is often poorly responsive to medical treatment. Canine IBD is a complex multifactorial syndrome, mediated by altered innate and adaptive immune pathways. Recent research suggests that dysregulated Th1 and Th17 responses may play a key role in the pathogenesis of canine IBD. Mesenchymal stem cells (MSCs) can be isolated from patient’s adipose tissue, expanded ex-vivo and used as a therapeutic agent. Canine MSCs have potent immunomodulatory properties and regulate various immune cell subsets, including Th1 and Th17 cells. MSC products are in advanced clinical trials for the treatment of human IBD. Preliminary results in dogs with IBD are promising, though additional studies are needed to fully determine the safety profile as well as the parameters that determine the efficacy of this novel therapeutic.

Objective: The learning objectives for this presentation will include:
• Reviewing the immune-pathogenesis of inflammatory bowel disease and introducing mesenchymal stem cell immunomodulatory properties
• Describing preclinical and human clinical trials of mesenchymal stem cells therapies for human inflammatory bowel disease
• Reporting on our ongoing veterinary clinical trial in dogs with inflammatory bowel disease
Dr. Boaz Arzi (DVM), University of California-Davis  
**Title:** Mesenchymal Stem Cell Therapy for Non-responsive Gingivostomatitis in Cats  
**Abstract:** Feline gingivostomatitis (FCGS) is a chronic and debilitating disease and its etiology is currently elusive. This lecture will describe a cutting-edge clinical trial on the use of adipose-derived, fresh and cultured autologous or allogeneic stem cells for the treatment of FCGS that did not respond to standard therapy such as dental extractions.  

**Objective:** The objective of this presentation is to describe a clinical trial on using adipose-derived stem cells for the treatment of severe, chronic and non-responsive gingivostomatitis in cats. The attendance will be presented with the concept, result of a 4 year clinical trial and future directions.

Dr. Frank Vestraete (DVM), University of California-Davis  
**Title:** Regenerative approach to mandibular reconstruction in dogs  
**Abstract:** Our experience from the past 5 years gained from applying a compression resistant matrix impregnated with rhBMP-2 to effect mandibular bone regeneration will be presented.  

**Objective:** This presentation will describe the mandibular reconstruction program of the Dentistry and Oral Surgery Service at the VMTH, UC Davis. The attendance will receive an overview of the program, the results and future directions.

Dr. Larry Galuppo (DVM), University of California-Davis  
**Title:** Clinical Application of Stem Cells for Orthopedic Injuries in Horses  
**Objective:** The objectives of the talk are to promote the concept of using stem cells in clinical practice, to understand the decision making process for what type, when and how to treat orthopedic injuries and to relate treatment decisions and injury type to patient outcome.

Dr. Mathieu Spriet (DVM), University of California-Davis  
**Title:** Stem cell tracking: Understanding Stem Cell Distribution to Optimize Administration  
**Objective:** Understanding the fate of stem cells after their administration to the patient is key in the evaluation and optimization of therapies. In particular when different techniques of administration are available, comparing the retention and distribution is important to select the optimal technique. The objective of this presentation is to discuss the different tracking techniques available, present some results in horses, dogs and cats and discuss future directions to improve cell tracking.

Dr. Aijun Wang (PhD), University of California-Davis  
**Title:** Designing biomaterials and stem cells for neural tissue engineering  
**Objective:** The learning objectives of this presentation are:  
- To learn some basic biomaterial engineering technologies and know how to use these technologies to improve neural tissue repair.  
- To learn the basic concept of neural replacement and neural protection and their application in neural tissue engineering.
Dr. Francis Karanu (PhD)

Title: Islet Transplants – Back to Fido

Objectives: By the end of the presentation, the audience members will:

- Appreciate the history of canine research for human islet transplants
- Understand the barriers to a commercial islet transplant product
- Explore the current state of literature for islet transplants for companion animals