LECTURE ABSTRACTS

Day 1: June 4, 2016

Session 1 – Stem Cells

**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

**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. Dori Borjesson** (DVM, PhD), University California-Davis

**Title:** Mesenchymal Stem Cell Therapy for Non-responsive Gingivostomatitis in Cats

**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. 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.

**Session 2 – Tissue Engineering**

Dr. Eduardo Silva (PhD), University of California-Davis  
**Title:** Polymer Systems for Tissue Regeneration  
**Objective:** Tissue regeneration results from the spatially and temporally regulated signaling between and within cell populations and the extracellular matrix. Polymeric materials can mimic or enhance this communication and therefore they have the potential to intervene in these processes in a therapeutic manner. These cell instructive polymer systems provide insoluble signaling molecules and cues (e.g., adhesion peptides) or soluble signaling molecules (e.g., growth factors) alone or in specific combinations to either host tissue cells or to transplanted cells to regulate their activation, multiplication and differentiation. Multiple aspects of regeneration must be considered to design effective approaches to enable functional tissue regeneration, and this it will be reviewed and addressed in this presentation.

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. Frank Verstraete (DVM), University of California-Davis  
**Title:** Regenerative approach to mandibular reconstruction in dogs  
**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. Leigh Griffiths (VMB, PhD), University of California-Davis  
**Title:** Cardiovascular Tissue Engineering: Current Approaches and Future Potential  
**Objective:** The learning objectives of this presentation are:  
- To understand current concepts in Tissue Engineering  
- To review current approaches to cardiovascular tissue engineering  
- To understand current issues and potential solutions in the field
Session 3 – Emerging Topics in Regenerative Medicine

Dr. Mary Lassaline (DVM), University of California-Davis  
**Title:** Emerging Topics: Stem Cell Treatment for Recurrent Uveitis  
**Objective:** The objective of this short presentation is to overview the potential role and function of stem cells in large animal patients with recurrent uveitis.

Dr. David Simpson (PhD), University of California-Davis  
**Title:** Emerging Topics: Exosomes and cardiomyopathy  
**Objective:** The objective of this presentation is to provide an overview of stem cell derived exosomes as a potential therapeutic options for patients with heart disease. This presentation will provide a brief introduction on the structure and function of exosomes and the mechanisms by which exosomes therapeutic benefits.

Dr. Dori Borjesson (DVM, PhD), University of California-Davis  
**Title:** Emerging Topics: Stem cells and spinal cord injury  
**Objective:** The objective of this short presentation is to overview the potential role and function of stem cells in patients with spinal cord injury.

Dr. Doug Herthel (DVM), Alamo Pintado  
**Title:** Emerging Topics: Equine Induced Pulmonary Hemorrhage  
**Objective:** TBA

Dr. Keith Baar (PhD), University of California-Davis  
**Title:** Developing Models to Minimize Tendon and Ligament Injuries and Improve Return to Play  
**Objective:** At the end of the talk the audience will be able to:  
- List the differences between tendons and ligaments  
- Describe the regional mechanics of a tendon  
- Demonstrate how the mechanics of a tendon are determined  
- Explain the optimal exercise program for tendons and ligaments  
- Recall a nutritional intervention that improves tendon/ligament health

Day 2: June 5, 2016

Session 4 – Genetic Basis for Disease

Dr. Danika Bannasch (DVM, PhD), University of California-Davis  
**Title:** Genetics 101  
**Objective:** The objective of this presentation will be to provide a basic review of genetic terminology and principles.

Dr. Danika Bannasch (DVM, PhD), University of California-Davis  
**Title:** Basic genetics for large and small animal clinicians  
**Objective:** The objective of this presentation is to describe the mechanisms for inheritance and the principles of genetic testing.
Dr. Carrie Finno (DVM, PhD), University of California-Davis  
**Title:** *Nutragenomics; modulating equine genetic diseases with nutritional intervention*  
**Objective:** This seminar will focus on the interaction between genetics and nutrition, with specific emphasis on managing polysaccharide storage myopathy Type 1 and vitamin-E associated inherited diseases in the horse.

Dr. Carrie Finno (DVM, PhD), University of California-Davis  
**Title:** *Interpretation of genetic test results and Q&A*  
**Objective:** This seminar will focus on how to interpret genetic test results, particularly for susceptibility traits. Additionally, time will be allocated for an interactive question and answer session.

**Session 5 – Transfuanation, Microbiota and Nutrition**

Dr. Gary Magdesian (DVM), University of California-Davis  
**Title:** *The Equine Intestinal Microbiome in Disease: Can We Help?*  
**Objective:** To learn what the equine intestinal microbiome is, and how it is altered with disease and to learn what transfaunation is and discuss the pros and cons about its potential to alter the microbiome.

Dr. Amir Ardeshir (DVM, MPVM, PhD), University of California-Davis  
**Title:** *How does the gut flora hack the immune system?*  
**Objective:** This presentation will focus on the following learning objectives:
  - Early life development of the immune system has a profound effect on health and gut microbiota is one of the key players in programming this complex system.
  - How to alter the immune response using the gut microbial comminutes?

Dr. Doug Herthel (PhD), Platinum Nutrition, Alamo Pitado  
**Title:** *Building a More Durable Athlete, the Role of Nutrition*  
**Objective:** TBD