2015 NORTH AMERICAN VETERINARY REGENERATIVE MEDICINE Conference
OUR LUMINARIES

Professor Jennifer Barrett – Virginia Tech’s Marion duPont Scott Equine Medical Center
Dr. Debra Canapp – Veterinary Orthopedic & Sports Medicine Group
Dr. Sherman Canapp – Veterinary Orthopedic & Sports Medicine Group
Professor Jayesh Dudhia – Royal Veterinary College (England)
Dr. Victor Ibrahim – Regenerative Orthopedics and Sports Medicine
Dr. Dwight Lin – Sports Medicine and PMR Clinician
Professor Alan Nixon – Cornell University and Cornell Ruffian Equine Specialists
Professor Biju Parekkadan – Harvard University School of Medicine
Dr. Ashok Singh – Cook County Hospital System
Professor Roger Smith – Royal Veterinary College (England)
Professor Rocky Tuan – McGowan Institute for Regenerative Medicine, University of Pittsburgh
Dr. Tracy Webb – Colorado State University
Professor Christine Zink – Johns Hopkins University School of Medicine

OUR EXECUTIVE TEAM
Karl Nobert, Chief Executive Officer
Colin Potts, Chief Operating Officer
Chris Grove, Chief Creative Officer
Peter Selover, Strategic Advisor
Professor Roger Smith, Chief Scientific Officer

www.recellerate.com
Dear Colleagues,

Welcome to the 2015 NAVRMA Conference, and thank you for supporting the North American Veterinary Regenerative Medicine Association.

NAVRMA held its inaugural conference in California in 2010. The organization was formed through the efforts and dedication of members of the UC Davis Center for Equine Health, Alamo Pintado Equine Medical Center, and Rood & Riddle Equine Hospital. Five years later, we have returned to California with a broad range of support, including our inaugural supporters as well as industry leaders in regenerative medicine and biomedical imaging, veterinary foundations, and experts in regulation of regenerative medicine and intellectual property protection. Our dedication to the partnership between the science and practice of veterinary regenerative medicine to better the health and lives of veterinary patients is evidenced by a conference program that showcases the development of new technologies for treating injury and disease in veterinary patients, the discovery of new targets in regenerative therapies, sharing results of rigorous studies to validate efficacy of these cutting edge strategies, education of veterinarians of new techniques on the horizon, and a discussion of unmet clinical needs. Our organization seeks to foster these goals, within a collaborative and engaging environment.

The scientific program is designed to introduce concepts of regenerative medicine on Monday morning, in order to give context to individual research studies presented as abstracts. Tuesday will emphasize basic science discoveries that drive clinical solutions. We will conclude our conference with the latest developments in regulatory and commercial aspects of veterinary regenerative medicine on Wednesday. Interactive sessions include our poster session and industry spotlight on Monday afternoon, short panel discussions Tuesday and Wednesday mornings during breakfast, the interactive Mentor Lunch Tables on Monday, and sponsored Key Opinion Leader Lunch Tables on Tuesday. Please take advantage of these opportunities to meet new people and form closer relationships in our field.

We chose Asilomar as the location for this year’s conference because of its beautiful setting and local attractions such as the Asilomar State Beach, Pebble Beach Golf Course and Monterey Bay Aquarium, as well as its cohesive environment for conference attendees. Our hope is that the various sessions, luncheon tables and breaks will enable new collaborations and opportunities to develop.

Above all, NAVRMA hopes that the promise for a cure that regenerative medicine offers becomes a reality for dogs, cats, horses, and other veterinary species, and that our organization enables development of treatments through its efforts to foster education and collaboration.

We hope you enjoy your time at Asilomar learning about the new advances being made in our field.

Sincerely,

Jennifer G. Barrett, PhD, DVM
Chair-NAVRMA
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## SCHEDULE At-a-Glance

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<tr>
<td>5:00 pm – 6:00 pm</td>
<td>Informal Mixer</td>
<td>Phoebe’s Cafe (Hearst Social Hall)</td>
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<tr>
<td>6:00 pm – 7:00 pm</td>
<td>Dinner</td>
<td>Crocker Dining Hall</td>
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<tr>
<td>6:00 pm – 9:00 pm</td>
<td>NARVMA Board Meeting</td>
<td>Woodlands North</td>
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<tr>
<td>7:00 pm – 9:30 pm</td>
<td>Registration / Check-In</td>
<td>Merrill Hall</td>
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### MONDAY

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<tr>
<th>Time</th>
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<tr>
<td>7:00 am – all day</td>
<td>Registration / Check-In</td>
<td>Seascape</td>
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<tr>
<td>7:30 am – 8:30 am</td>
<td>Breakfast</td>
<td>Seascape</td>
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<tr>
<td>8:30 am – 12:00 pm</td>
<td>Stem Cell Basics</td>
<td>Merrill Hall</td>
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<tr>
<td>12:00 pm – 1:00 pm</td>
<td>Lunch / Mentorship Tables</td>
<td>Seascape</td>
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<tr>
<td>1:30 pm – 5:00 pm</td>
<td>Regenerative Medicine in Practice</td>
<td>Merrill Hall</td>
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<tr>
<td>6:00 pm – 7:00 pm</td>
<td>Dinner</td>
<td>Seascape</td>
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<tr>
<td>7:00 pm</td>
<td>Keynote Speaker - Dr. Rocky Tuan</td>
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### TUESDAY

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<tr>
<td>7:30 am – 8:30 am</td>
<td>Breakfast Panel – Small Animal Clinical Practice</td>
<td>Seascape</td>
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<tr>
<td>8:30 am – 12:00 pm</td>
<td>Scientific Presentations</td>
<td>Merrill Hall</td>
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<tr>
<td>12:00 pm – 1:00 pm</td>
<td>Lunch / KOL Tables</td>
<td>Seascape</td>
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<tr>
<td>1:30 pm – 3:30 pm</td>
<td>Presentations</td>
<td>Merrill Hall</td>
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<tr>
<td>3:30 pm – 5:30 pm</td>
<td>Poster Session &amp; Industry Spotlight</td>
<td>Merrill Hall</td>
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<tr>
<td>6:00 pm – 7:00 pm</td>
<td>Dinner</td>
<td>Seascape</td>
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<tr>
<td>7:00 pm</td>
<td>Keynote Speaker - Dr. Andras Nagy</td>
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### WEDNESDAY

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<tr>
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<td>Breakfast Panel – Large Animal Clinical Practice</td>
<td>Seascape</td>
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<tr>
<td>8:30 am – 12:30 pm</td>
<td>Regulatory, Business and Industry Topics</td>
<td>Merrill Hall</td>
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<tr>
<td>12:30 pm</td>
<td>Boxed lunch</td>
<td>Options to eat onsite or get a to-go box for traveling</td>
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**Smile!**

We are honored to have guest photographer Nathaniel White onsite to capture the event in all its Technicolor splendor. When he's not pointing a camera, Dr. White is professor emeritus of equine surgery at Virginia Tech's Marion duPont Scott Equine Medical Center. He's not just a pretty face. When you see him walking the halls, be sure to show him your best smile!
MONDAY  June 29

7:30 am – 8:30 am  **Breakfast**

8:30 am – 12:00 pm  **Stem Cell Basics Lectures and Abstracts**

- Thomas Koch  A Stem Cell and Tissue-Engineering Primer
- Dori Borjesson  Informing Clinical Trials: Stem Cell Function and Tracking
- Tracy Webb  Feline MSC Therapy: Where are we now?

10:00 am – 10:30 am  **Break**

- Ralph Marcucio  Bone Fracture Healing: A New Paradigm in Endochondral Ossification
- Kurt Hankenson  Biological-based treatments for bone repair: Lessons from basic research and human clinical orthopaedics
- Takeaki Kubo  Cell therapy in Japanese veterinary medicine
- Boaz Arzi  Regenerative approach to mandibular reconstruction in dogs

12:00 pm – 1:00 pm  **Lunch Mentorship Tables**

1:30 pm – 5:00 pm  **Regenerative Medicine in Practice Lectures and Abstracts**

- Susan Volk  The role of type III collagen in the regenerative microenvironment
- Kaitlin Clark  Evaluation of Equine Mesenchymal Stem Cells for Cutaneous Wound Repair
- Valerie Johnson  Activated mesenchymal stem cells amplify antibiotic activity against chronic Staphylococcus aureus infection
- Alicia Bertone  Prospective Randomized Blinded Clinical Trial Evaluating Dental Pulp Treatment for Equine Lameness
- Ashlee Watts  Clinical response after different cell prep techniques
- Lynn Williams  Equine CB-MSC reduce synovial fluid nucleated cell count in a LPS induced synovitis model
- Boaz Arzi  Fresh, Cultured Autologous Mesenchymal Stem cells therapy for non-responsive gingivostomatitis in cats

3:30 pm – 4:00 pm  **Break**

- Ashlee Watts  Repeated Joint Injection of Autologous Vs. Allogeneic MSCs
- Dennis Lox  The Use of Urinary Bladder Matrix in Human Knee Osteo arthritis: A Veterinary Correlate
- Madhu Dhar  Clinical outcomes in horses having musculoskeletal injuries treated using autologous mesenchymal stem cells
- Nathaniel White  MRI guided regenerative medical treatment of deep digital flexor tendon and distal interphalangeal collateral ligament injuries in the equine foot

6:00 pm – 7:00 pm  **Dinner**

7:00 pm  **Keynote Speaker  Dr. Rocky Tuan**
**TUESDAY June 30**

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<thead>
<tr>
<th>Time</th>
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<tr>
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<tr>
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<td>Scientific Presentations</td>
<td>Lectures and Abstracts</td>
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<tr>
<td></td>
<td>Dean Betts</td>
<td>Canine Pluripotent Stem Cells: Ready for Prime Time?</td>
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<tr>
<td></td>
<td>Ardy Bayat</td>
<td>Electrical stimulation accelerates cutaneous repair</td>
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<td></td>
<td>Fernando Fierro</td>
<td>Increasing efficacy with clinically-compliant genetically engineered Multipotent Stromal Cells</td>
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<tr>
<td>10:00 am – 10:30 am</td>
<td>Break</td>
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<tr>
<td></td>
<td>Ian Tobias</td>
<td>Small molecule induction of canine embryonic stem cells towards the naïve pluripotent state</td>
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<td></td>
<td>Amir Kol</td>
<td>Th17 pathway as a target for mesenchymal stem cell therapy in dogs</td>
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<td></td>
<td>Aijun Wang</td>
<td>Engineering Biomaterials and Stem Cells for <em>In Utero</em> Repair of Birth Defects in Animal Models</td>
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<td></td>
<td>Anne Wooldridge</td>
<td>Equine endothelial progenitor cells: Improved isolation procedures and growth within hydrogel microspheres</td>
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<td></td>
<td>Mohammed Zayed</td>
<td>Chondrogenesis: Pairwise comparison between bone marrow and synovial fluid-derived mesenchymal stem cells</td>
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<tr>
<td>12:00 pm – 1:00 pm</td>
<td>Lunch</td>
<td>Key Opinion Leaders Tables</td>
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<tr>
<td>1:30 pm – 3:30 pm</td>
<td>Presentations</td>
<td>Lectures and Abstracts</td>
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<tr>
<td></td>
<td>Alan Nixon</td>
<td>Autologous stem cells as multifaceted effectors in cartilage repair and osteoarthritis</td>
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<td></td>
<td>Yoshinori Kasashima</td>
<td>Can stem cell loaded gelatin microspheres improve cell therapy for equine tendon injuries?</td>
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<td></td>
<td>James Dawkins</td>
<td>Myocardial delivery of heart-derived stem cells by non-occlusive intra-coronary infusion to target remodeling in porcine global 0versus single vessel administration by magnetic ischemic cardiomyopathy: systematic comparison of resonance imaging and histology</td>
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<tr>
<td></td>
<td>Jennifer Barrett</td>
<td>Mesenchymal stem cell differentiation to tendon is amplitude-dependent in a cyclic-strain bioreactor</td>
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<td></td>
<td>Mandi Lopez</td>
<td>Synthetic mRNA to Dedifferentiate Equine Adult Multipotent Stromal Cells</td>
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<tr>
<td></td>
<td>Yoshihiro Kishigami</td>
<td>Retrospective study of non-surgical treatment of mesenchymal stem cell on canine intervertebral disc disease</td>
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<td></td>
<td>Jenny Mumaw</td>
<td>Transduction efficiency of AAV capsids 1,2,5,6,8,9 in MSCs from common animal species and effects on immunomodulation</td>
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<tr>
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**Wednesday, July 1**

<table>
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<tr>
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<td></td>
<td><strong>Lectures and Abstracts</strong></td>
</tr>
<tr>
<td>Lynne Boxer</td>
<td>FDA Draft Guidance 218: Cell-Based Products for Animal Use</td>
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<tr>
<td>Karl Nobert</td>
<td>Regulation of veterinary regenerative medicine</td>
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<tr>
<td>Denni Day</td>
<td>A Stem-Cell Start-Up Guide: 12 Steps to Success</td>
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<tr>
<td>10:00 am – 10:30 am</td>
<td><strong>Break</strong></td>
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<tr>
<td>Daryl Boyd (Sponsor)</td>
<td>Goldic stem cell injury regeneration without transplantation</td>
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<tr>
<td>Merrilee Thoresen</td>
<td>A Comparison of Different Transport Conditions for Equine Bone Marrow and Bone Marrow Derived Mesenchymal Stem Cells</td>
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<tr>
<td>Eduardo Silva</td>
<td>Polysaccharide-based systems for engineering vascular networks</td>
</tr>
<tr>
<td>Alexis Mitchell</td>
<td>Cryopreservation of Equine MSCs</td>
</tr>
<tr>
<td>Jade LaDow</td>
<td>Tendon stem cells outperform bone marrow and adipose in a bioreactor model of tenogenesis</td>
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<td>Rahul Pathak (Sponsor)</td>
<td>Intellectual property protection</td>
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<tr>
<td>12:30 pm</td>
<td><strong>Boxed lunch</strong></td>
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KEYNOTE Speakers

Rocky S. Tuan

Dr. Rocky Tuan is the Associate Director of the McGowan Institute for Regenerative Medicine at the University of Pittsburgh. He has published over 400 research papers, has lectured extensively, and is currently Editor of the developmental biology journal, BDRC: Embryo Today, and the Founding Editor-in-Chief of Stem Cell Research and Therapy. Dr. Tuan directs a multidisciplinary research program, which focuses on orthopaedic research as a study of the biological activities that are important for the development, growth, function, and health of musculoskeletal tissues, and the utilization of this knowledge to develop technologies that will regenerate and/or restore function to diseased and damaged skeletal tissues. Ongoing research projects are directed towards multiple aspects of skeletal and related biology, including skeletal development, stem cells, growth factor signaling, bone-biomaterial interaction, extracellular matrix and cell-matrix interaction, nanotechnology, biomaterials, 3D printing, mechanobiology, regenerative medicine, and tissue engineering, utilizing an integrated experimental approach combining contemporary technologies of biochemistry, cell and molecular biology, embryology and development, cellular imaging, and engineering.

Andras Nagy

In June 2005, Dr. Andras Nagy put Canada on the map of stem cell research by establishing the country’s first, and to date only, human embryonic stem cell lines. On March 1, 2009, Dr. Nagy once again captured the world’s attention with another stem cell research breakthrough: the discovery of a new non-viral method of creating stem cells from other cells of the body that could lead to possible cures for devastating diseases including spinal cord injury, macular degeneration, diabetes and Parkinson’s disease. Joining Mount Sinai Hospital in 1988, Dr. Nagy has been involved in mouse embryonic stem cell research since its early days. His research resulted in an important development in cancer research in 1996 that provided a new tool for researchers and pharmaceutical companies to test new and existing treatments for cancer. Dr. Nagy has developed a broad spectrum of genomic technologies now used around the world. These technologies assist the study of gene function in development and disease, and are important tools in the development of stem cell based therapies. By using technologies to direct gene expression, scientists will gain control of stem cell behavior, propagation and differentiation, which will be essential if stem cells are to be used to treat human disease.
INVITED Speakers

Ardeshir Bayat

Dr. Bayat is a clinician scientist and an associate professor based at the Institute of Inflammation and Repair at the University of Manchester, England, UK. He leads a translational research group with an international reputation in wound healing. He has made an impact by bridging innovative science and technology from bench to bedside, such as by introducing an organ culture for testing drugs for skin scars and decellularised skin substitutes for single stage treatment of chronic wounds and novel therapies such as electrical stimulation for treatment of cutaneous wounds. He has many academic and industrial collaborators and is often an invited speaker who advises industry. He has published extensively with more than 350 original papers and published abstracts plus 450 international presentations. He acts as grant reviewer and editor for several journals. He has raised significant funding to date, in excess of £7,900,000 of research funding towards his research from a variety of sources including research councils, charities, industry, and gift donations.

Dean Betts

Dr. Dean Betts is currently an Associate Professor in the Department of Physiology & Pharmacology with a cross appointment in Obstetrics & Gynecology at the University of Western Ontario, London, Canada. He received degrees from the University of Western Ontario (BSc, MSc), and the University of Guelph (PhD). Following a post-doctoral fellowship in the Department of Genetics at Case Western Reserve University, Dr. Betts joined the faculty at the Ontario Veterinary College in 2001 to study nuclear reprogramming events in somatic cell nuclear transfer clones – ironically, genetically identical individuals as well. Dr. Betts’ research, which has resulted in over 40 peer-reviewed publications, has focused on characterizing and understanding the molecular and cellular mechanisms of early mammalian development using cattle embryos as his main experimental model. Notably, his studies on telomere length regulation presented evidence of a telomere-lengthening event during the first week of embryogenesis and that some healthy and fertile cloned animals and their offspring exhibit variant telomere lengths compared to their reproductively bred counterparts, suggesting that epigenetic alterations could be passed through the germ line. Dr. Betts was one of the first to apply RNA interference technology to study gene function in bovine embryos. Using live cell imaging and embryo microinjections his lab revealed that the stress adaptor protein p66Shc is mechanistically involved in the ROS signaling, telomere-dependent pathway of permanent embryo arrest. Applying global gene expression analyses to stably transfected bovine cell lines, his research has discovered alternative function(s) for the catalytic subunit of telomerase (TERT) that changes the cell state towards a progenitor stem cell-like condition. This information explains the utility of ectopically expressed TERT as a potent reprogramming factor in the production of induced pluripotent stem cells (iPSCs). Just prior to Dr. Betts’ move to the University of Western Ontario in 2008, his lab was one of the first groups to generate and characterize numerous canine embryonic stem cell lines and the first to isolate a mesenchymal stem cell population from umbilical cord blood of foals. These recent discoveries have led Dr. Betts to focus his research activities in developing clinically relevant animal models for stem cell–based transplantation therapies and to study various cell biological aspects of human embryonic stem cells and iPSCs.
Dori Borjesson
Dr. Borjesson earned her DVM degree from the University of California, Davis in 1995 and joined a small animal hospital for a year in private practice. She completed a residency at UC Davis in Clinical Pathology in 1999 followed by a PhD in Comparative Pathology at the Center for Comparative Medicine, UC Davis, in 2002. She joined the faculty as an Assistant Professor at the University of Minnesota for 4 years, after which she returned to UC Davis, School of Veterinary Medicine as an Associate Professor in 2006. She is currently a Professor and Department Chair (Pathology, Microbiology and Immunology). She is one of the leaders in their Veterinary Regenerative Medicine Program and her research focuses on mesenchymal stem cells and immunomodulation.

Lynne Boxer
Dr. Boxer obtained her veterinary degree from the Virginia-Maryland Regional College of Veterinary Medicine. After graduation, Dr. Boxer practiced equine medicine in an ambulatory practice in California before joining FDA’s Center for Veterinary Medicine. Dr. Boxer is a Veterinary Medical Officer in the Office of New Animal Drug Evaluation and is the Center lead for cell-based products at FDA’s Center for Veterinary Medicine.

Denni Day
Before starting VetPharm in 2000, Ms. Day created and directed the University of Rochester’s Community Research Network, an academic consortium of more than 1,400 private practice physicians who participated in industry-sponsored clinical trials. As a faculty member of the School of Medicine and Dentistry, she was CFO of the University’s Clinical Research Institute and the Clinical Trials Coordination Center associate director for administration/finance. Ms. Day has over 30 years of health care experience (clinical nursing, hospital and long-term care administration, management consulting, information systems design and implementation, teaching, and research). Her education includes BS (biology), American University; BS (nursing), Alfred University; and MSPH, University of North Carolina, Chapel Hill.

Fernando Fierro
Dr. Fierro graduated as Engineer in Molecular Biotechnology from the University of Chile and completed a PhD at Dresden University of Technology. He conducted his post-doctoral fellowship starting in 2008 at the University of California-Davis in the laboratory of Dr. Jan Nolta. Since 2012 he has been an Assistant Adjunct Professor at UC Davis.
**Invited Speakers**

Kurt Hankenson

Dr. Hankenson is currently the Associate Director of the Laboratory for Comparative Orthopaedic Research at Michigan State University. A former equine veterinarian, he began his independent research career at the University of Michigan in 2002 as a faculty member in the Orthopaedic Research Laboratories. In 2006 he moved to the University of Pennsylvania in the School of Veterinary Medicine, where he became the inaugural holder of the Dean W. Richardson Chair for Equine Disease Research in 2012. He has a long-standing interest in musculoskeletal dysfunction and repair. In particular, his laboratory explores the molecular and cellular basis for mesenchymal stem cell osteoblast differentiation and translates these findings to clinical bone regeneration. He received his DVM from the University of Illinois (1992), an MS from Purdue University (1997), and his PhD from the University of Washington (2001).

Thomas Koch

Dr. Koch received his DVM degree from the Veterinary College in Copenhagen, Denmark in 2000. He then worked in mixed practice before completing a one-year rotational internship in large animal medicine and surgery at the Ontario Veterinary College in 2001 to 2002. Following this, he returned to Denmark to work for one year as an equine practitioner. In 2003, he returned to the OVC to become a resident in large animal medicine. He completed his residency in 2005, and has since been doing his PhD studies in Biomedical Sciences at the OVC on the topic of equine stem cells from umbilical cord blood.

Ralph Marcucio

Dr. Marcucio began his research career as an intern at The Boyce Thompson Institute while he was an undergraduate at Cornell University in Ithaca, NY. After receiving his Bachelor’s Degree from Cornell University in 1990, Dr. Marcucio was accepted into Cornell University’s School of Agriculture PhD program. He completed his PhD in 1995. After receiving his PhD, Dr. Marcucio was awarded a prestigious NIH training grant to study tissue interactions that control development of the musculoskeletal system. He spent five years in the New York State College of Veterinary Medicine studying the origins of the musculature responsible for moving the head and jaw skeleton. In 2000, he joined the Molecular and Cellular Biology Laboratory at the University of California, San Francisco (UCSF). In this position, Dr. Marcucio began studying how the skeleton of the face attains its shape and form. In 2003, he was appointed to the faculty at UCSF as an Assistant Professor in Residence in the Department of Orthopaedic Surgery. His research program focuses on two basic science areas. First, using cutting-edge genomic technology, Dr. Marcucio is examining how the entire genome responds to orthopaedic trauma. This genome-mining approach is aimed at determining the global genome response during fracture repair and allows the possibility to generate improved, highly innovative therapies for people undergoing fracture repair. Second, he is examining the role that the brain plays during normal development of the facial skeleton. Many facial birth defects have an underlying brain malformation, and the goal of the research is to generate novel therapeutic approaches that will allow correcting facial malformations prior to birth.
Alan Nixon
Dr. Nixon is Professor of Orthopedic Surgery and Director of The Comparative Orthopaedics Laboratory and the JD&ML Wheat Orthopaedic Sports Medicine Laboratory in the College of Veterinary Medicine at Cornell University. He is also Chief Medical Officer at the Cornell University private practice Cornell Ruffian Equine Specialists in New York City. He obtained his veterinary degree from the University of Sydney in 1978 and completed a surgical residency and research degree at Colorado State University in 1983. He has held academic appointments at the University of Florida and Cornell University, where he has been a professor since 1988, serving as Chief of Surgery from 1998 to 2002. Dr. Nixon has authored over 350 papers and book chapters, and has written or co-authored two texts on equine orthopedics. Dr. Nixon's clinical work at Cornell University focuses on musculoskeletal injury and repair, with a specific interest in regenerative medicine. Research and translational clinical application over the past three decades have included joint pathobiology and cartilage repair with cell grafting, growth factor recombinant protein and gene-enhanced chondrocyte and stem cell transplantation techniques. Dr. Nixon's laboratory group has engaged in over 98 funded research projects including NIH and corporate funded grants with total budget expenditures of over $18 million.

Karl Nobert
Karl Nobert, Esq. is the founder of ReCellerate, Inc. and currently serves as the company's Chairman and CEO. Prior to starting ReCellerate, Mr. Nobert worked as an FDA Regulatory Attorney with the international law firm of Squire Sanders LLP (now Squire Patton Boggs LLP) in its Washington, DC office. While with the firm, he focused on the representation and counseling of clients in the food and drug industry. This involved advising companies on matters related to the regulation of human prescription and nonprescription drugs, human and veterinary biological products including a variety of regenerative medicine therapies and products. Mr. Nobert also currently serves as Legal Advisor to the International Veterinary Regenerative Medicine Society (“IVRMS”), which constitutes the veterinary thematic group of the Tissue Engineering International and Regenerative Medicine Society (“TERMIS”). He is also a member of the National Thoroughbred Racing Association's (“NTRA”) Safety and Integrity Alliance Subcommittee on Aftercare; and he sits on the Board of Directors Canter US, a national alliance of volunteers devoted to providing retiring thoroughbred racehorses with opportunities for new careers. He regularly speaks and publishes on the topics of animal health and veterinary regenerative medicine regulation. Mr. Nobert and Ms. Cynthia Hughes-Coons, Esq., Assistant General Counsel & Secretary at Bayer Animal Health co-edited a book on FDA’s Regulation of Veterinary Drug Products in 2013.

Eduardo Silva
Dr. Silva is currently an Assistant Professor of Biomedical Engineering at the University of California, Davis. He received his undergraduate degree in Metallurgical and Materials Science Engineering from University of Porto, Portugal, in 2001. He received his PhD in Engineering Sciences: Bioengineering in 2008 (Harvard University & University of Porto). After the completion of his PhD, Dr. Silva was awarded a Wyss Technology Development fellowship. He was also a lecturer and Instructor of Bioengineering at Harvard School of Engineering and Applied Sciences. His laboratory aims to develop new material-based strategies intended to minimize any manipulations of biological agents outside the body. His research group motto is to drive and dictate in situ regenerative medicine with noninvasive, or minimally invasive, material systems.
INVITED Speakers

Susan Volk
Dr. Volk, V.M.D., Ph.D., Dipl. A.C.V.S. completed the Veterinary Medical Scientist Training Program at the University of Pennsylvania, receiving her veterinary degree in 1995 and her PhD for a thesis examining Bone Morphogenetic Protein signaling during endochondral ossification in 1998. Dr. Volk returned to Penn’s Veterinary School to complete a Small Animal internship and surgical residency. During that time she continued to follow her research interest in the field of adult stem cells, focusing on defining optimal inducers of osteogenesis for canine mesenchymal stem cells (MSCs). She obtained board-certification in Small Animal Surgery in 2003. Dr. Volk joined the faculty of the School of Veterinary Medicine at the University of Pennsylvania as an Assistant Professor of Small Animal Surgery in 2007. Her research focuses on progenitor cell therapies for improving tissue repair and regeneration. Specific areas of interest include optimizing pre-delivery strategies (donor source and manipulation for maximal target cell differentiation) and methods of cellular delivery, defining regulatory cues important to direct progenitor cell homing to sites of injury, and influencing progenitor and reparative cell fate within healing tissues for use in cell-based therapeutic strategies in human and veterinary medicine.

Aijun Wang
Dr. Wang is an assistant professor of surgery in the Department of Surgery at the University of California, Davis. He is Co-Director of the Surgical Bioengineering Laboratory at UC Davis School of Medicine. Dr. Wang was trained in biology at Tsinghua University, China, and had undergone postdoctoral training at UC Berkeley Department of Bioengineering and Berkeley Stem Cell Center with a postdoctoral fellowship from California Institute for Regenerative Medicine (CIRM). He has been a faculty member of UC Davis since 2012. Dr. Wang’s research goal is to develop novel technologies that combine stem cell engineering and biomaterial engineering to promote tissue regeneration. One line of research is the study of stem cell contribution to vascular disease development (atherosclerosis etc.) and wound healing process (foreign body reaction and scar formation). Another line of research is the combination of stem cell engineering (stem cell identification, directed differentiation and delivery mechanisms) and biomaterial technology (nanomaterials, surface modification, biomolecule immobilization and drug delivery) for tissue regeneration.

Tracy Lehman Webb
Dr. Webb attended Ohio State University to obtain her doctor of veterinary medicine degree (1998). She then completed a clinical internship in small animal medicine and surgery (1999) and a residency in small animal emergency and critical care (2003) at Angell Animal Medical Center in Boston, Mass. Following completion of her residency, Dr. Webb was selected as a trainee at Colorado State University for a National Institutes of Health T32 Ruth L. Kirschstein National Research Service Award (2004). Dr. Webb received a K08 Clinical Investigator Award from the National Institutes of Health National Institute of Allergy and Infectious Disease in 2007. She finished her thesis work on the modification of the innate immune response during feline immunodeficiency virus infection and received her Ph.D. in Pathology (Immunology) in 2008. Dr. Webb is currently working as a Research Scientist at CSU in the Clinical Sciences Department of the College of Veterinary Medicine and Biomedical Sciences. Her many research projects focus on two main areas: regenerative medicine/stem cell therapy and biology, and cardiovascular disease.
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ReCellerate, Inc. is a global regenerative medicine company focused on the design, development and commercialization of safe and effective veterinary stem cell drug products for the treatment of horses, dogs, and cats. ReCellerate has assembled a team of some the world’s leaders in both veterinary and human regenerative medicine to meet its corporate goals. The company intends to pursue U.S. FDA and foreign drug approvals for each of its products. ReCellerate intends to support and work with others in the field to establish universal standards of quality and safety in the market. recellerate.com

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— Clinical research into the feasibility and safety of implanting mesenchymal stem cells underneath the pia mater: Barrie D. Grant, DVM, MS, DACVS, MRCVS (Barrie D. Grant Equine Consultant, Bonsall, CA, USA). See http://bit.ly/dgrant to learn more.

Canine/Small Animal

— Diagnostics in dogs that present with lameness, stiffness, or other symptoms of arthritis: Chad Devitt, DVM, MS, DACVS (VRCC Veterinary Specialty and Emergency Hospital, Englewood, CO, USA). See http://bit.ly/ddevitt to learn more.

— Diagnostics of disorders such as elbow fragmented medial coronoid process, medial shoulder instability, cranial cruciate and meniscal injury: Mitch Robbins, DVM, DACVS (Veterinary Specialty Center, Buffalo Grove, IL, USA). See http://bit.ly/drrobbins to learn more.


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Jennifer Barrett, Chair

Dr. Barrett is the Theodora Ayer Randolph Professor of Equine Surgery at Virginia Tech’s Marion duPont Scott Equine Medical Center (EMC). She received a doctorate in molecular and cell biology from Yale University in 1999, and a doctor of veterinary medicine degree from Cornell University in 2002. Dr. Barrett completed her internship in equine medicine and surgery at Rood & Riddle Equine Hospital in Lexington, Kentucky and her residency in equine surgery at the University of Illinois in Urbana. Her orthopedic postdoctoral research position was at the University of Wisconsin in Madison. Dr. Barrett joined the Marion duPont Scott Equine Medical Center’s faculty in August 2007 and achieved Diplomate status through the American College of Veterinary Surgeons in 2008 and the American College of Veterinary Sports Medicine and Rehabilitation in 2013. She is a member of the American Veterinary Medical Association, the American Association of Equine Practitioners, Tissue Engineering and Regenerative Medicine International Society, the Veterinary Orthopedic Society and the Phi Zeta Honor Society. She is a founding director of the North American Veterinary Regenerative Medicine Association and currently serves as Chair. Her research interests include tendon, ligament, and cartilage healing, stem cell and platelet rich plasma therapies, and tissue regeneration. She established the Regenerative Medicine Service at the EMC, which offers stem cell treatment and platelet rich plasma therapy to patients at the EMC and beyond. Her clinical interests include lameness, diagnostic imaging, orthopedic surgery, and emergency surgery.

Alan Nixon, Chair Elect

Please see “Invited Speakers” on page 13 for information about Dr. Nixon.

John Peroni, Immediate Past Chair

As a clinician, Dr. Peroni has treated a number of horses with musculoskeletal problems amenable to regenerative approaches including mesenchymal stem cells (MSCs) and platelet-rich plasma. Dr. Peroni has focused on the use of transduced MSCs in bone formation using an ovine fracture model, as well as the immunomodulatory effects of equine bone marrow-derived MSCs as part of an investigation into the use of allogenic stem cells for therapeutic purposes. His research includes the development of immune responses following exposure of equine lymphocytes and monocytes to allogenic MSCs in attempt to understand the relations between these cells and the immune system.

Scott Hopper, Treasurer

Dr. Hopper is a 1993 graduate of the University Wisconsin – Madison School of Veterinary Medicine. Following veterinary school Dr. Hopper completed an internship at Rood & Riddle Equine Hospital. The internship was followed by an equine surgical residency at Washington State University where he also obtained his Masters of Science in Veterinary Science. After a year of clinical instructorship Dr. Hopper returned to Rood & Riddle where he is currently a surgeon and partner.
Thomas Koch, Secretary
Please see “Invited Speakers” on page 12 for information about Dr. Koch.

Kurt Hankenson, Board Member
Please see “Invited Speakers” on page 12 for information about Dr. Hankenson.

Doug Herthel, Board Member
Dr. Herthel received his Doctorate of Veterinary Medicine degree from the University of California at Davis in 1971, completing an internship there in equine surgery the following year. In 1972, he and his wife established the internationally recognized Alamo Pintado Equine Medical Center in Los Olivos, Calif. to provide advanced diagnostics and therapy and to carry out his extensive research. Dr. Herthel has perfected methods for the management of colics, colic exploratory surgery, crushing type sutures for intestinal anastomosis, and colon resection in horses suffering from severe torsion. Dr. Herthel has developed an orthopedic laboratory and has created unique orthopedic devices, modified from human applications, for specific surgeries and post-operative support. He has shared his innovations with the profession in numerous articles in equine journals and textbooks on equine surgery. Dr. Herthel pioneered equine stem cell treatment in 1995, and has furthered his research by developing the Alamo Pintado Center for Biological Medicine, focusing on autologous bone marrow-derived equine stem cell therapy, as well as advancing the role of nutrition in veterinary medicine.

Susan Volk, Board Member
Please see “Invited Speakers” on page 14 for information about Dr. Volk.

Tracy Lehman Webb, Board Member
Please see “Invited Speakers” on page 14 for information about Dr. Webb.
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