

3rd International Philadelphia Spine Research Symposium, November 9-12, 2015, Philadelphia

Day 1: Monday, 9 November 2015

Time	Program	Speakers/Moderators
7:00-12:00	Registration	
7:00-9:00	Breakfast	
8:45-8:55	Welcome to the 3rd International Philadelphia Spine Research Symposium	
	Cell and Molecular Biology of the Disc I	
8:55-9:00	Introduction to Session by Discussion Leader	Mauro Alini AO Research Institute, Davos
09:00	S1.1: Invited Talk: Role of Cell Signaling Pathways in Control of Postnatal Mouse Intervertebral Disc Development, Differentiation, and Aging	C Dahia Hospital for Special Surgery, New York
09:30	S1.2: Invited Talk: Regulation of Proliferation and Senescence in Intervertebral Disc Cells: The Role of Growth Factors and Exogenous Stresses	D Kletsas National Centre for Scientific Research, Athens, Greece
10:00	S1.3: Invited Talk: Testing the Efficacy of GDF-6 as a Potential Therapy for Cell Based IVD Regeneration and Tissue Engineering Strategies	J Hoyland University of Manchester, UK
10:30	Short Break	
10:45	S1.4: Whole-Transcriptome Profiling of Notochordal Cells during Embryonic Nucleus Pulposus Formation	S Peck University of Pennsylvania
11:00	S1.5: Nucleus Pulposus Cell Vacuolation: A New Perspective From N-Cadherin/Cadherin 2 Function	V Leung University of Hong Kong, PR China
11:15	S1.6: Aggrecan Ultrastructure is Tissue-Specific	R Craddock University of Manchester
11:30	S1.7: PHDs Control HIF-1 Transcriptional Activity Under Hypoxia Independent of PKM2 and JMJD5 in Nucleus Pulposus Cells	Z Schoepflin Thomas Jefferson University, Philadelphia
11:45	Discussion	

12:00-1:30	Boxed Lunch and Poster Session I	
	Mechanisms of Disc Degeneration and Animal Models	
1:30	Introduction to Session by Discussion Leader	J Kang Harvard University
1:35	S1.8: Invited Talk: Development of an Inducible Large Animal Model of Intervertebral Disc Degeneration for Preclinical Evaluation of Injectable Therapeutics	L. Smith University of Pennsylvania
2:05	S1.9: Invited Talk: In Search of Biomarkers for IVD Degeneration- Systemic Cytokine Profiles in Low Back Pain	N Chahine Hofstra North Shore-LIJ School of Medicine, New York
2:35	S1.10: Polyphenol Epigallocatechin 3-gallate Significantly Decreases Inflammation and Oxidative Stress in Human Intervertebral Disc Cells	O Krupkova ETH, Zurich
2:50	S1.11: Toll-like Receptor2 Regulates Nerve Growth Factor through NF-κB in Intervertebral Disc Cells	L Haglund McGill University, Montreal
3:05	S1.12: Aging Enhances the Degradative Response to Tail Compression and the Compression-induced Reduction of Wnt Signaling in the Nucleus Pulposus Contributes Degeneration	N Holguin Washington University, St. Louis
3:20	Discussion	
3:30	Coffee Break	
4:00	Introduction of the Plenary Speaker Jill P. Urban, Oxford University	M Risbud Thomas Jefferson University, Philadelphia
4:15	Plenary Lecture: Regulation of Disc Cell Behaviour by the Physico-Chemical Environment	
5:00	Discussion	
5:20-7:30	Welcome Reception and Poster Session I	

Day 2: Tuesday, 10 November 2015

Time	Program	Speakers/Moderators
7:00-7:55	Continental Breakfast	
	Biomechanics, Modeling, and Disease Mechanisms	
7:55	Introduction to Session by Discussion Leader	D Elliott

		University of Delaware
8:00	S2.1: Invited Talk: Intervertebral Disc Degeneration: Osmolarity, Inflammation, and Regeneration	K Ito University of Eindhoven, Netherlands
8:30	S2.2: Invited Talk: Solving Low Back Pain - If We Can't Measure It, We Can't Improve It	J Lotz University of California San Francisco
9:00	S2.3: Biomechanical Effects of Intervertebral Disc Degeneration on Vertebral Body Mineral Density: A Finite Element Analysis	W Gu University of Miami, FL
9:15	S2.4: Finite Element Model Development and Validation of a Healthy Human Lumbar Spine	R Haddas Texas Tech University, Lubbock, TX
9:30	S2.5: In-vivo Characterization of Human Lumbar Intervertebral Discs by Magnetic Resonance Elastography: Diurnal Changes in Shear Stiffness and Relationship with Degeneration	B Walter University of Ohio, Columbus
9:45	Discussion	
10:00	Short Break	
10:15	S2.6: Invited Talk: Mechanobiology of the Intervertebral Disc: Characterization of the Tissue-specific Effects of Whole-body Vibration in a Mouse Model	C Seguin University of Western Ontario, London, Canada
10:45	S2.7: Progressive Spinal Kyphosis in Perlecan Deficient Mice	A Parajuli University of Delaware
11:00	S2.8: Inflammatory Stimulation Alters Hydraulic Permeability and Compressive Moduli of Nucleus Pulposus Cells in a Manner Dependent on F-actin Function	R Jacobsen The Feinstein Institute For Medical Research, New York
11:15	Discussion	
11:30	Boxed Lunch and Afternoon Break	
12:00 – 2:00	Optional Tour of Constitution Center (fee applies)	
	Tissue Engineering and Regenerative Medicine I	
	Introduction to Session by Discussion Leader	Rita Kandel Mount Sinai Hospital, Toronto
2:00	S2.9: Invited Talk: Biological-basis of Designing Biomaterials for the Degenerated Disc	A Pandit University of Galway, Ireland
2:30	S2.10: Invited Talk: Using Functionalized Peptides to Control Disc Cell Behavior and Biosynthesis	L Setton Washington University, St. Louis
3:00	S2.11: Invited Talk: Exploration of Annulus Fibrosus Progenitor Cells	D Sakai Tokai University, Japan
3:30	S2.12: Nucleus Pulposus Phenotypic Markers to Determine Stem Cell	A Thorpe

	Differentiation: Fact or Fiction?	Sheffield Hallam University, UK
3:45	S2.13: Efficacy of Demineralized Bone Sponges and Concentrated Bone Marrow in Posterolateral Lumbar Fusion	BJ Yoon Hospital for Special Surgery, New York
4:00	Discussion	
4:10	Poster Session I and II	
5:30-6:15	Special Rising Star Session: ORS Spine Section Building Bridges in Disc Research: The Way Forward The Role of the IVD Microenvironment on Neurovascular Ingrowth	Spine Section Officers R Hartman University of Pittsburgh D Purmessur Ohio State University, Columbus

Day 3: Wednesday, 11 November 2015

Time	Program	Speakers/Moderators
7:00	Coffee and Pastries	
	Mechanisms of Disc Degeneration II	
7:25	Introduction to Session by Discussion Leader	Judith Hoyland University of Manchester
7:30	S3.1: Invited Talk: Biology of Intervertebral Disc Aging: Age-related Alterations in Cellular Senescence and Bioenergetics	N Vo University of Pittsburgh
8:00	S3.2: Invited Talk: Inflammation in Intervertebral Disc Degeneration	L Creemers University Medical Center Utrecht
8:30	S3.3: Invited Talk: Prolyl Hydroxylase 2 Controls Inflammatory Actions of TNF- α on Nucleus Pulposus Cells	M Risbud Thomas Jefferson University, Philadelphia
9:00	S3.4: Disc Cells Respond to <i>Propionibacterium Acnes</i> and Release Cytokines which Activate Bone Marrow Leukocytes	S Dudli University of California, San Francisco
9:15	S3.5: Degenerative IVDs Sensitize Sensory Neurons to Heat Stimuli via IL-6/AKAP/TRPV1 pathway	J Stover University of Utah, Salt Lake City
9:30	S3.6: Excessive Reactive Oxygen Species are Therapeutic Targets for Intervertebral Disc Degeneration	S Suzuki Keio University, Japan
9:45	Discussion	

9:55	Coffee Break	
	Tissue Engineering and Regenerative Medicine II	
10:15	Introduction to Session by Discussion Leader	Lisbet Haglund McGill University, Montreal
10:20	S3.7: Invited Talk: In vitro Generated Intervertebral Disc: Towards Engineering Tissue Integration	R Kandel Mount Sinai Hospital & University of Toronto, Toronto
10:50	S3.8: Invited Talk: Image-based Approaches for Repair and Regeneration of Intervertebral Disc	L Bonassar Cornell University, New York
11:20	S3.9: Invited Talk: Development of a Whole Bovine Long-term Organ Culture System that Retains Vertebral Bone for Intervertebral Disc Repair and Biomechanical Studies Using PrimeGrowth Media	F Mwale McGill University, Montreal
11:50	S3.10: Invited Talk: Annulus Fibrosus Repair Strategies in the Intervertebral Disc	J Iatridis Icahn School of Medicine, Mount Sinai, New York
12:20	Boxed Lunch and Poster Session II	
	Tissue Engineering and Disease Mechanisms	
2:25	Introduction to Session by Discussion Leader	N Malhotra University of Pennsylvania
2:30	S3.11: Invited Talk: The Clinical Translation of Organ Culture Models	S Grad AO Research Institute, Davos
3:00	S3.12: Invited Talk: A Clinician-Scientist's Journey in Disc Reconstruction & Regeneration; Stories from Bench to Bed-side	A Diwan University of New South Wales, Australia
3:30	S3.13: Towards a Single Stage Procedure for Intervertebral Disc Repair using Nasal Septal Chondrocytes	C Buckley Trinity College Dublin, Ireland
3:45	S3.14: Role of Inorganic Polyphosphates in Enhancing Nucleus Pulposus Tissue Formation In Vitro	R Gawri University of Toronto
4:00	S3.15: Molecular Engineering of Cartilage using Biomimetic Aggrecan	E Philips Drexel University, Philadelphia
4:15	Discussion	
4:30	Coffee Break	
4:45	Business Meeting (PSRS Organizing Committee)	
5:15	Introduction of the Speaker and Award Presentation	M Risbud, L Setton
5:30-	PSRS Lifetime Research Achievement Award and Lecture	P Roughley

6:30	"Adventures in Disc Degeneration"	Shriners Hospital, Montreal
7:00-9:00	Optional Networking Dinner at Historic "City Tavern Restaurant" (138 South 2nd St at Walnut St., Philadelphia, PA 19106) – Paid Event	

* Please dismantle posters at the END of this day.

Day 4: Thursday, 12 November 2015

Time	Program	Speakers/Moderators
6:45	Coffee and bagels	
	Cell Biology, Disease and Pain mechanisms	
7:25	Introduction to Session by Discussion Leader	Irving Shapiro Thomas Jefferson University, Philadelphia
7:30	S4.1: Invited Talk: Leveraging" for Improved Detection of Genetic Risk Factors of Intervertebral Disc Degeneration	D Chan University of Hong Kong
8:00	S4.2: Invited Talk: Allosteric Small Molecule Inhibitor of NGF Signaling in Facet Joint Pain	H Sampen Rush University, Chicago
8:30	S4.3: Older Mice Exposed to Young Systemic Environment have Healthier Discs	P Patil University of Pittsburgh
8:45	S4.4: Generation of Human Nucleus Pulposus Cells from Stem Cells: First Steps Towards Intervertebral Disc Regeneration	A Camus University of Nantes, France
9:00	S4.5: Hypoxic Induction of Autophagy in Nucleus Pulposus is Independent of HIF-1 α	H Choi Thomas Jefferson University, Philadelphia
9:15	Discussion	
9:30	Coffee Break	
	Biomechanics, Biomaterials and Animal Models	
9:45	Introduction to Session by Discussion Leader	Keita Ito University of Eindhoven, Netherlands
9:50	S4.6: Invited Talk: Investigation of a Novel Alpaca Model for Disc Degeneration and Pre-clinical Spinal Device Evaluation	A Bowden Brigham Young University, Utah

10:20	S4.7: Invited Talk: Annulus Fibrosus 3-D Strain Fields for Near Equilibrium Compressive Loading of the Intervertebral Disc	E Vresilovic Pennsylvania State University, Hershey Medical Center
10:50	S4.8: Polyphenol Metabolites Potentially Alleviates Painful Behavior Induced by Annular Injury – An In-vivo Rat Model	A Lai Mount Sinai, New York
11:05	S4.9: Restoring Biomechanics of the Intervertebral Disc with a Thermogelling Bioadhesive Hydrogel Composite	T Christiani Rowan University, New Jersey
11:20	S4.10: Anti-inflammatory Injectable Hyaluronic Acid for Annulus Fibrosus Repair	Z Kazezian AO Research Institute, Davos
11:35	S4.11: Nucleotomy Alters Internal Strain Distribution of the Human Lumbar Intervertebral Disc	A Claeson University of Delaware
11:50	Discussion	
12:00	Short Break	
12:20	Awards Ceremony	PSRS Organizers and F Mwale
1:00	Meeting Adjourned	