19th World Congress of the International Society for Aerosols in Medicine
University of North Carolina at Chapel Hill
William and Ida Friday Center for Continuing Education

ISAM One-Day Symposium

Inhaling Nanoparticles by Accident and on Purpose - Challenges and Opportunities for Toxicology and Therapeutics

April 6, 2013

Session 1:
Nanotoxicology

9:00 – 9:25 AM: Biokinetics of inhaled nanoparticles and health effects: an overview
Wolfgang Kreyling, Helmholtz Center Munich, DE

James Bonner, North Carolina State University, USA

10:00 – 10:20 AM: Coffee Break

10:25 – 10:50 AM: Nanoparticle Exposure of In-vitro Epithelial Co-culture Cell Systems for Risk Assessment
Barbara Rothen-Rutishauser, Adolphe Merkle Institute, University of Fribourg, CH

10:55 – 11:20 AM: The Cellular Responses to Engineered Nanoparticles: It is a Pathway-driven Process
Christie M. Sayes, RTI International, USA

11:20 – 12:20 PM: Panel Discussion with attendees (opportunity for attendees to ask more in-depth questions and/or to discuss their own contributions to the field)

12:20 – 1:10 PM: Lunch Break
Session 2:
Nanomedicine

1:15 – 1:35 PM:  From the Bad to the Good: Biomedical Nanoparticles as Inhalative Medicine
Claus-Michael Lehr, Saarland University, DE

1:40 – 2:00 PM:  Pulmonary Therapies Enabled by Mucus Penetrating Nanoparticles
Justin Hanes, Johns Hopkins University, USA

2:05 – 2:25 PM:  Nanoparticle-surfactant Interactions
Peter Gehr, University of Bern, CH

2:30 – 2:50 PM:  Macrophage Uptake: Important to Avoid?
Fakhrul Ahsan, Texas Tech University Health Sciences Center, USA

2:55 – 3:15 PM:  Coffee Break

3:20 – 3:40 PM:  Nanotechnology in Dry Powder Formulations
Heidi Mansour, University of Kentucky, USA

3:45 – 4:05 PM:  Engineered Nanoparticles for Medical Applications
Ben Maynor, Liquidia Technologies Inc., USA

4:10 – 4:30 PM:  Recent Advances in Therapy of Lung Diseases using Nanoparticles
Raimar Loebenberg, University of Alberta, Canada

4:35 – 4:55 PM:  Inhaled Nanoparticles to Treat Lung Infection
David Cipolla, Aradigm Corp., USA

5:00 – 6:00 PM:  Panel Discussion with attendees (opportunity for attendees to ask more in-depth questions and/or to discuss their own contributions to the field)
Posters for Nanoparticle Toxicology and Medicine Pre-Congress Symposium

O-041 Bioengineering Of siRNA For Treatment Of Inflammatory Lung Disease
JM Ramsey¹, C Kelly², AB Yadav¹, NG McElvaney⁴, D Small³, C Taggart³, SA Cryan¹
¹ School of Pharmacy, Royal College of Surgeons in Ireland, Dublin 2, Ireland
² School of Biology and Environment Science, University College Dublin, Dublin 4, Ireland.
³ Centre for Infection and Immunity, Queen’s University Belfast, Belfast, United Kingdom
⁴ Respiratory Research Division, RCSI, Education and Research Centre, Beaumont Hospital, Dublin 9, Ireland

O-046 In Vivo Inhalation Exposures To Super-Paramagnetic Iron-Oxide Nano-Particles (SPIONP) Followed By Magnetic Particle Detection (MPD) And Accelerator Mass Spectrometry (AMS) Analysis
VB Mikheev¹, WC Forsythe¹, W Wang², PD Nallathamby², KR Minard³, JG Teeguarden³, BD Thrall³, KM Waters³, N Karin⁴, H Enright⁴, M Malfatti⁴, K Turteltaub⁴
¹ Battelle Memorial Institute, COLUMBUS, OH, United States of America
² Oak Ridge National Laboratory, OAK RIDGE, TN, United States of America
³ Pacific Northwest National Laboratory, RICHLAND, WA, United States of America
⁴ Lawrence Livermore National Laboratory, LIVERMORE, CA, United States of America

O-051 Pharmacokinetics Of CPZEN-45, A Novel Anti-Tuberculosis Drug In Male Guinea Pigs
SNM Hanif¹, D Raghuvanshi¹; P Durham², AJ Hickey², L Garcia Contreras¹
¹ The University of Oklahoma Health Sciences Center, Oklahoma City, OK, United States of America
² RTI International, Research Triangle Park, NC, United States of America

P-003 Development Of An Hplc Method To Determine CPZEN-45 In Biological Matrices
SNM Hanif¹, AJ Hickey², L Garcia Contreras¹
¹ The University of Oklahoma Health Sciences Center, Oklahoma City, OK, United States of America
² RTI International, Research Triangle Park, NC, United States of America

P-006 Clinical Patient Nasal Deposition Of Nonaqueous Beclomethasone Spray Versus Aqueous Nasal Sprays Of Fluticasone And Mometasone
R Chand¹, PJ Kuehl¹, JD McDonald¹ and C Leach¹
¹ Lovelace Respiratory Research Institute, Albuquerque, NM, United States of America

P-008 Aerosol Generation And Deposition In The Human Lung
SH Hsu¹, SH Huang¹, CW Lin¹, HD Wu², CW Chen³, YM Kuo⁴, CC Chen¹
¹ National Taiwan University, TAIPEI, Taiwan
² National Taiwan University Hospital, TAIPEI, Taiwan
³ Institute of Occupational Safety and Health, NEW TAIPEI CITY, Taiwan
⁴ Chung Hwa University of Medical Technology, TAINAN, Taiwan

P-014 Electrostatic Forces And Deposition Mechanisms Of Charged Aerosol Particles In Lung Airways: “Image” And Space-Charge Effects
AH Hashish¹, TJ Williams²
¹ Dept of Physics, Faculty of Science, UAE University, Al-Ain, P.O.Box: 17551, United Arab Emirates
²Department of Electrical Engineering, University of Southampton, Southampton SO17 1BJ, United Kingdom
In Vitro Comparison Of Aerosol Deposition In Nasal Cavities
S Le Guellec1,2, D Le Pennec2, S Gatier3, L Leclerc4,5, J Pourchez4,5, P Diot2,6, G Reychler7, L Pitance7, M Durand3,8, F Jamar9 and L Vecellio1,2
1DTF-Aerodrug, Faculté de médecine, F-37032 Tours, France.
2EA6305, CEPR, Faculté de médecine, Université François Rabelais F-37032 Tours, France.
3DTF-medical, F-42003 Saint Etienne, France.
4Ecole Nationale Supérieure des Mines, Centre ingénierie et santé, F-42003 Saint Etienne, France.
5Université Jean Monnet, LINA EA4624, IFR143, F-42003 Saint Etienne, France.
6Service de Pneumologie, CHRU de Tours, F-37044 Tours, France.
7Service de pneumologie, Cliniques Universitaires Saint-Luc, UCL, 1200 Brussels, Belgium.
8Service d’ORL et de chirurgie cervico-faciale, Centre hospitalier Emile-Roux, F-43012 Le Puy-en-Velay, France.
9Service de Médecine Nucléaire, Cliniques Universitaires Saint-Luc, UCL, 1200 Brussels, Belgium.

Biodistribution And Trafficking Of Intranasally Administered Monodisperse Biodegradable Particles
TM Brenza, LK Petersen, Y Zhang, L Huntimer, AE Ramer-Tait, MJ Wannemuehler, B Narasimhan
Iowa State University, AMES, IA, United States of America

Modified Beta-Cyclodextrin-siRNA Nanoparticles Successfully Transfect Bronchial Epithelial Cells Following Nebulization
A Hibbitts1, A O’Mahony2, L Nolan1, J Ogier3, S Desgrange3, R MacLoughlin4, R Darcy3, C O’Driscoll5, SA Cryan1
1School of Pharmacy, Royal College of Surgeons in Ireland, Dublin 2
2School of Pharmacy, University College Cork, Cork, Ireland
3Centre for Synthesis and Chemical Biology, School of Chemistry, University College Dublin, Dublin 4, Ireland
4Aerogen Ltd., Galway Business Park, Galway, Ireland

Magnetic Core-Shell Nanoparticles For Drug Delivery By Nebulization
NK Verma1,2, K Crosbie-Staunton1,2, A Satt2,3, S Gallagher2,3, KB Ryan4, T Doody4, C McAtamney5, CS Burke5, P Galvin6, Y Volkov1,2, YK Gun’ko2,3 and R MacLoughlin,7
1Department of Clinical Medicine, Trinity College Dublin, Ireland
2Centre for Research on Adaptive Nanostructures and Nanodevices, Trinity College Dublin, Dublin, Ireland
3Department of Chemistry, Trinity College Dublin, Dublin Ireland
4School of Pharmacy, University College Cork, Cork, Ireland
5Dublin City University, Dublin, Ireland
6Tyndall National Institute, University College Cork, Cork, Ireland
7Aerogen, IDA Business Park, Dangan, Galway, Ireland
P-044 Spatial Distribution Of Aerosols In Healthy Rat Lungs: Findings From Numerical And Experimental Models
JM Oakes1, C Darquenne2, Celine Grandmont4, Miriam Scadeng3, Ellen Breen2, I Vignon-Clementel4, AL Marsden1
1,2,3Dept. of Mechanical and Aerospace Engineering, Medicine and Radiology, University of California at San Diego, La Jolla, CA, United States of America
4INRIA, Paris-Roquencourt, Le Chesnay CEDEX, France

P-067 Development Of A New High Performance DPI
S Behara1,2, DR Farkas1, PW Longest1,2 and M Hindle2
1Department of Mechanical and Nuclear Engineering, Virginia Commonwealth University, Richmond, VA, United States of America
2Department of Pharmaceutics, Virginia Commonwealth University, Richmond, VA, United States of America

P-070 Impact Of MMAD, Acoustic Airflow And Breathing Patterns On Intrasinus Drug Deposition In A Realistic Nasal Cast
L Leclerc1, J Pourchez1, G Aubert1, L Vecellio2, M Durand1,3
1LINA, EA 4624, CIS-EMSE, F-42023, Saint-Etienne, France
2INSERM U1100-EA6305, DTF Aerodrug, Tours, France
3Centre Hospitalier Emile Roux, F-43012, Le Puy en Velay, France

P-082 Convergent Pegylated Nanoparticle-Nebulizer Platform For Respiratory Delivery Of siRNA
A Hibbitts1, L Nolan1, J Barlow1,2, R MacLoughlin3, SA Cryan1
1School of Pharmacy, Royal College of Surgeons in Ireland, Dublin 2,
2Department of Pharmaceutical and Medicinal Chemistry, Royal College of Surgeons in Ireland, Dublin 2
3Aerogen Ltd., Galway Business Park, Galway, Ireland

P-121 Development Of A Human Lung Co-Culture Model System For Hazard Identification Of Aerosolized Particles
CS West1, P Durham1, AJ Hickey1, CM Sayes1
1Center for Aerosol & Nanomaterials Engineering, RTI International, Research Triangle Park, NC, United States of America