



## 19<sup>th</sup> 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

##### Session1: Nanotoxicology

- 9:00 – 9:25 AM:** *Biokinetics of inhaled nanoparticles and health effects: an overview*  
**Wolfgang Kreyling**, Helmholtz Center Munich, DE
- 9:30 – 9:55 AM:** *Health Effects of Manufactured Nanomaterials (Carbon Nanotubes and Nano-sized Metal Catalysts)*  
**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*  
**Peter Mack, 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 Ramsey<sup>1</sup>, C Kelly<sup>2</sup>, AB Yadav<sup>1</sup>, NG McElvaney<sup>4</sup>, D Small<sup>3</sup>, C Taggart<sup>3</sup>, SA Cryan<sup>1</sup>

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<sup>3</sup> *Centre for Infection and Immunity, Queen's University Belfast, Belfast, United Kingdom*

<sup>4</sup> *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 Mikheev<sup>1</sup>, WC Forsythe<sup>1</sup>, W Wang<sup>2</sup>, PD Nallathamby<sup>2</sup>, KR Minard<sup>3</sup>, JG Teegarden<sup>3</sup>, BD Thrall<sup>3</sup>, KM Waters<sup>3</sup>, N Karin<sup>3</sup>, H Enright<sup>4</sup>, M Malfatti<sup>4</sup>, K Turteltaub<sup>4</sup>

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<sup>2</sup> *Oak Ridge National Laboratory, OAK RIDGE, TN, United States of America*

<sup>3</sup> *Pacific Northwest National Laboratory, RICHLAND, WA, United States of America*

<sup>4</sup> *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 Hanif<sup>1</sup>, D Raghuvanshi<sup>1</sup>; P Durham<sup>2</sup>, AJ Hickey<sup>2</sup>, L Garcia Contreras<sup>1</sup>

<sup>1</sup> *The University of Oklahoma Health Sciences Center, Oklahoma City, OK, United States of America*

<sup>2</sup> *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 Hanif<sup>1</sup>, AJ Hickey<sup>2</sup>, L Garcia Contreras<sup>1</sup>

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<sup>2</sup> *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 Chand<sup>1</sup>, PJ Kuehl<sup>1</sup>, JD McDonald<sup>1</sup> and C Leach<sup>1</sup>

<sup>1</sup> *Lovelace Respiratory Research Institute, Albuquerque, NM, United States of America*

### **P-008 Aerosol Generation And Deposition In The Human Lung**

SH Hsu<sup>1</sup>, SH Huang<sup>1</sup>, CW Lin<sup>1</sup>, HD Wu<sup>2</sup>, CW Chen<sup>3</sup>, YM Kuo<sup>4</sup>, CC Chen<sup>1</sup>

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<sup>3</sup> *Institute of Occupational Safety and Health, NEW TAIPEI CITY, Taiwan*

<sup>4</sup> *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 Hashish<sup>1</sup>, TJ Williams<sup>2</sup>

<sup>1</sup> *Dept of Physics, Faculty of Science, UAE University, Al-Ain, P.O.Box: 17551, United Arab Emirates*

<sup>2</sup> *Department of Electrical Engineering, University of Southampton, Southampton SO17 1BJ, United Kingdom*

### **P-022 In Vitro Comparison Of Aerosol Deposition In Nasal Cavities**

S Le Guellec<sup>1,2</sup>, D Le Pennec<sup>2</sup>, S Gatier<sup>3</sup>, L Leclerc<sup>4,5</sup>, J Pourchez<sup>4,5</sup>, P Diot<sup>2,6</sup>, G Reychler<sup>7</sup>, L Pitance<sup>7</sup>, M Durand<sup>5,8</sup>, F Jamar<sup>9</sup> and L Vecellio<sup>1,2</sup>

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<sup>9</sup>*Service de Médecine Nucléaire, Cliniques Universitaires Saint-Luc, UCL, 1200 Brussels, Belgium.*

### **P-030 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*

### **P-033 Modified Beta-Cyclodextrin-siRNA Nanoparticles Successfully Transfect Bronchial Epithelial Cells Following Nebulization**

A Hibbitts<sup>1</sup>, A O'Mahony<sup>2</sup>, L Nolan<sup>1</sup>, J Ogier<sup>3</sup>, S Desgrange<sup>3</sup>, R MacLoughlin<sup>4</sup>, R Darcy<sup>3</sup>, C O'Driscoll<sup>2</sup>, SA Cryan<sup>1</sup>

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### **P-036 Magnetic Core-Shell Nanoparticles For Drug Delivery By Nebulization**

NK Verma<sup>1,2</sup>, K Crosbie-Staunton<sup>1,2</sup>, A Satti<sup>2,3</sup>, S Gallagher<sup>2,3</sup>, KB Ryan<sup>4</sup>, T Doody<sup>4</sup>, C McAtamney<sup>5</sup>, CS Burke<sup>5</sup>, P Galvin<sup>6</sup>, Y Volkov<sup>1,2</sup>, YK Gun'ko<sup>2,3</sup> and R MacLoughlin<sup>7</sup>

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**P-044 Spatial Distribution Of Aerosols In Healthy Rat Lungs: Findings From Numerical And Experimental Models**

JM Oakes<sup>1</sup>, C Darquenne<sup>2</sup>, Celine Grandmont<sup>4</sup>, Miriam Scadeng<sup>3</sup>, Ellen Breen<sup>2</sup>, I Vignon-Clementel<sup>4</sup>, AL Marsden<sup>1</sup>

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<sup>4</sup>*INRIA, Paris-Roquencourt, Le Chesnay CEDEX, France*

**P-067 Development Of A New High Performance DPI**

S Behara<sup>1,2</sup>, DR Farkas<sup>1</sup>, PW Longest<sup>1,2</sup> and M Hindle<sup>2</sup>

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<sup>2</sup>*Department of Pharmaceutics, Virginia Commonwealth University, Richmond, VA, United States of America*

**P-070 Impact Of MMAD, Acoustic Airflow And Breathing Patterns On Intranasal Drug Deposition In A Realistic Nasal Cast**

L Leclerc<sup>1</sup>, J Pourchez<sup>1</sup>, G Aubert<sup>1</sup>, L Vecellio<sup>2</sup>, M Durand<sup>1,3</sup>

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**P-082 Convergent Pegylated Nanoparticle-Nebulizer Platform For Respiratory Delivery Of siRNA**

A Hibbitts<sup>1</sup>, L Nolan<sup>1</sup>, J Barlow<sup>1,2</sup>, R MacLoughlin<sup>3</sup>, SA Cryan<sup>1</sup>

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**P-121 Development Of A Human Lung Co-Culture Model System For Hazard Identification Of Aerosolized Particles**

CS West<sup>1</sup>, P Durham<sup>1</sup>, AJ Hickey<sup>1</sup>, CM Sayes<sup>1</sup>

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