



**72<sup>nd</sup> TOBACCO SCIENCE RESEARCH CONFERENCE**  
**September 16-19, 2018**  
**Memphis, Tennessee USA**

**Preliminary Program (10 July 2018)**

**Sunday, September 16, 2018**

**3:00 PM** - University of Kentucky CTRP Proficiency Program Workshop

**6:30 PM** – Welcome Reception hosted by American Snuff Company and RAI Services Company

**Monday Morning, September 17, 2018**

**General Session**

**8:45 WELCOME:** Christopher Junker, RAI Services Company, 72<sup>nd</sup> TSRC Chair

**8:55 SYMPOSIUM: "Building Science and Evidence in The Regulated Tobacco Landscape"**  
Chair: Kathy Humphries, Enthalpy Analytical, Durham, NC, USA

**9:00 1. IMPORTANCE OF SCIENCE TO FDA'S CENTER FOR TOBACCO PRODUCTS.**  
Matthew R. HOLMAN; U.S. Food & Drug Administration, Silver Spring, MD USA

**9:30 2. A RISK-BASED APPROACH TO TOBACCO PRODUCT DEVELOPMENT & CONTROL.**  
Katherine CIAMBRONE; ITG Brands, Greensboro, NC USA

**10:00 Break**

**10:30 3. THE ROLE OF NON-COMBUSTED PRODUCTS IN TOBACCO HARM REDUCTION.**  
Jason W. FLORA, Maria Gogova and Mohamadi Sarkar; Altria Client Services LLC, Richmond, VA USA

**11:00 4. THE IMPACT OF FDA REGULATION, A CRO'S PERSPECTIVE ON CHANGES IN THE INDUSTRY.**  
I. Gene GILLMAN; Enthalpy Analytical LLC, Durham, NC USA

**11:30 Panel discussion with all symposium speakers**

**12:00 Lunch**

**1:00 Poster Session**

**5. EFFECT OF THE ADDITION OF SBA-15 IN THE PYROLYSIS OF A REFERENCE TOBACCO UNDER INERT AND OXIDIZING ATMOSPHERE.** Emilio CALABUIG, Antonio Marcilla and Maria Isabel Beltrán; University of Alicante, San Vicente del Raspeig, Spain

**6. QUALITATIVE ASSESSMENT OF FLAVOR INGREDIENTS IN MARKET ELECTRONIC NICOTINE DELIVERY SYSTEMS.** Amanda G. HUDSON; R. J. Reynolds Tobacco Company and Courtney G. Culbert; RAI Services Company, Winston-Salem, NC, USA

**7. OPTIMIZATION OF CARBONYL DERIVATIZATION CONDITIONS FOR THE ANALYSIS OF E-LIQUIDS AND E-VAPOR AEROSOL SAMPLES.** Kathleen SPRANGLER, John H. Miller IV and Yezdi Pithawalla; Altria Client Services, Richmond, Virginia, USA

**8. USE OF CILIA BEAT FREQUENCY IN AN IN VITRO AIRWAY MODEL (EPIAIRWAY-FT) AS A TOOL FOR ASSESSING VIABILITY.** Amber WOODHAMS, Darren Kidd and M Hollings; Covance, Harrogate, UK



**9. TOXICOLOGICAL ASSESSMENT OF E-LIQUID FORMULATIONS USING IN VITRO GENOTOXICITY AND CYTOTOXICITY ASSAYS.** Bonnie G. COFFA, Utkarsh Doshi, Jingjie Zhang, Willie J. McKinney and K. Monica Lee; Altria Client Services LLC, Richmond, VA, USA

**10. EVALUATION OF NOVEL, ORAL TOBACCO-DERIVED NICOTINE PRODUCTS FOR HPHCS.** Timothy L. DANIELSON, Christopher B. McFarlane, Anthony P. Brown, Xiaohong Jin, Celeste T. Wilkinson, Yezdi B. Pithawalla and Willie J. McKinney Jr.; Altria Client Services LLC, Richmond VA USA

**11. QUANTIFICATION OF NICOTINE RELATED IMPURITIES IN NOVEL, ORAL TOBACCO-DERIVED NICOTINE PRODUCTS.** Timothy L. DANIELSON, Christopher B. McFarlane, Michael R. Noe, Yezdi B. Pithawalla and Willie J. McKinney Jr.; Altria Client Services LLC, Richmond VA USA

**12. EQUIVALENCE TESTING IN DEMONSTRATING SUBSTANTIAL EQUIVALENCE FOR NEW TOBACCO PRODUCTS.** Kimberly FROST-PINEDA<sup>1</sup>, Leanne R. Campbell<sup>1</sup>, Michael Polster<sup>2</sup> and Geoffrey M. Curtin<sup>1</sup>; <sup>1</sup>RAI Services Company, Winston Salem, NC, USA, <sup>2</sup>Naxion, Philadelphia, PA, USA

**13. METHOD DEVELOPMENT FOR PH ANALYSIS OF ENDS AEROSOL AND E-LIQUID.** Tracy HEFNER<sup>1</sup>, F. Kelley St.Charles<sup>2</sup>, and Justin Anderson<sup>3</sup>; <sup>1</sup>R.J. Reynolds Tobacco Company, <sup>2</sup>St.Charles Consultancy, <sup>3</sup>Eurofins Lancaster Labs, Winston Salem, NC

**14. GENOTOXICITY EVALUATION OF TOBACCO AND NICOTINE DELIVERY PRODUCTS: PART 1. MOUSE LYMPHOMA ASSAY.** Robert LEVERETTE, Betsy Bombick, Kathy Fowler; RAI Services Company, Winston-Salem, NC USA, Damien Breheny, Marianna Gaca, David Thorne; British American Tobacco (Investments) Ltd., Southampton, UK, Julie Clements, Mel Lloyd, Stephen McEnaney; Covance Laboratories Ltd, Harrogate, UK

**15. GENOTOXICITY EVALUATION OF TOBACCO AND NICOTINE DELIVERY PRODUCTS: PART 2. IN VITRO MICRONUCLEUS ASSAY.** Robert LEVERETTE, Betsy Bombick, Kathy Fowler; RAI Services Company, Winston-Salem, NC USA, Damien Breheny, Marianna Gaca, David Thorne; British American Tobacco (Investments) Ltd., Southampton, UK, Julie Clements, Stephen McEnaney, James Whitwell; Covance Laboratories Ltd, Harrogate, UK

**16. CHARACTERIZATION OF THE VITROCELL® HIGH THROUGHPUT EXPOSURE MODULES USING DIFFERENT TOBACCO PRODUCT TYPES.** Robert LEVERETTE, Brian Keyser, Betsy Bombick; RAI Services Company, Winston-Salem, NC USA, Michael Hollings, Adam Seymour; Covance Laboratories Ltd, Harrogate, UK

**17. DEVELOPMENT OF A 3D HUMAN ORAL TISSUE MODEL FOR ORAL PERMEATION OF SMOKELESS MOIST SNUFF.** Brian KEYSER<sup>1</sup>, Jannell Rowe<sup>2</sup>, Randy Weidman<sup>2</sup> and Wanda Fields<sup>1</sup>; <sup>1</sup>RAI Services Company, <sup>2</sup>R.J. Reynolds Tobacco Company, Winston-Salem, NC, USA

**18. DEVELOPMENT OF A SMALL AIRWAY LUNG MODEL USING MICROFLUIDIC LUNG-ON-A-CHIP DEVICE.** Patrudu MAKENA, GL.Prasad; RAI Services Company, Winston Salem, NC USA, D. Gordon, D. Haithcock, B. Prabhakarandian, K. Pant; SynVivo Inc., Huntsville, AL USA

**19. MICROFLUIDIC SMALL AIRWAY LUNG MODEL FOR TOXICITY SCREENING OF TOBACCO PRODUCTS.** Patrudu MAKENA, GL.Prasad; RAI Services Company, Winston Salem, NC USA, D. Gordon, D. Haithcock, B. Prabhakarandian, K. Pant; SynVivo Inc., Huntsville, AL USA

**20. MECHANISMS FOR WSCM INDUCED CYTOTOXICITY TO HUMAN AORTIC ENDOTHELIAL CELLS.** OM MAKWANA<sup>1</sup>, Hannah Flockton<sup>2</sup>, Gina Smith<sup>2</sup>, Gary Watters<sup>2</sup>, Rizwan Nisar<sup>2</sup>; <sup>1</sup>Wanda Fields and <sup>1</sup>Betsy Bombick; <sup>1</sup>RAI Services Company, Winston-Salem, NC USA, <sup>2</sup>Covance Laboratories Ltd, Harrogate,UK

**21. NON-TARGETED ANALYSIS FOR DIFFERENTIAL SCREENING OF TOBACCO SAMPLES.** John H. MILLER IV, Yezdi Pithawalla, Timothy L. Danielson, and Dongmei Xu; Altria Client Services, Richmond, Virginia, USA



**22. THERMAL PROFILING METHODS FOR THE EVALUATION OF ELECTRONIC NICOTINE DELIVERY SYSTEMS (ENDS).** Rebecca ROGERS, David T. Szabo, Josef Strasser; RAI Services Co., and Cory Reynolds; RJ Reynolds Tobacco Company, Winston-Salem, NC USA

**23. A NOVEL APPROACH TO THE ASSESSMENT OF ELECTRONIC CIGARETTE TOPOGRAPHY CHARACTERISTICS.** Jeffrey S. SMITH; RAI Services Company, and Steven Alderman; RAI Innovations Company, Winston-Salem, NC USA

**24. LOW COST ELECTROCHEMICAL SENSOR AS A MEANS FOR DETERMINING DRY WICK CONDITIONS IN TANK ENDS DEVICES.** Ian TINDALL and Timothy Mason; Cerulean, Milton Keynes, UK

**25. APPLICATION AND USE OF E-CIGARETTES HPHC METHODS FOR THE ANALYSIS OF HEATED TOBACCO PRODUCTS.** Gene GILLMAN, Kathy Humphries, Alexandra Martin, Sarah Lassiter and Jacob Hilldrup; Enthalpy Analytical LLC, Durham, NC USA

**26. BENCHMARK DOSE MODELING OF GENOMIC DATA TO ASSESS THE FUNCTIONAL EFFECTS OF CIGARETTE SMOKE EXPOSURE ON PERIPHERAL BLOOD MONONUCLEAR CELLS.** Gang LIU, Quynh T. Tran and GL Prasad; RAI Services Company, Winston Salem, NC, USA

**27. EFFECTS OF SMOKING ON SEMINAL CYTOKINE NETWORK.** Alexander Emeakpor OMU and Florence Emadinwe Omu; University of Kuwait, Safat, Kuwait

**28. ANALYSIS OF TRIMETHYLAMINE IN MAINSTREAM CIGARETTE SMOKE.** Jeff ZHU, Charles Brooks, Natalie Boyd and Rana Tayyarah; ITG Brands, LLC Greensboro NC USA

**29. ANALYSIS OF FURFURAL IN MAINSTREAM CIGARETTE SMOKE BY GC-MS.** Jeff ZHU, Charles Brooks, David Zich and Natalie Boyd; ITG Brands, LLC Greensboro NC USA

**30. COMPARISONS OF DEPENDENCE ON CIGARETTES AND E-CIGARETTES: DATA FROM THE PATH STUDY.** Mimi M. KIM<sup>1</sup>, Saul Shiffman<sup>2</sup> and Mark Sembower<sup>2</sup>; <sup>1</sup>RAI Services Company, Winston-Salem, NC USA, <sup>2</sup>PinneyAssociates, Inc., Pittsburgh PA USA

**31. USE PATTERNS AND TOBACCO USE HISTORIES AMONG USERS OF DIVERSE VAPOR PRODUCTS: CIGALIKES, TANKS, AND OTHER VAPOR PRODUCTS.** Mimi M. KIM<sup>1</sup>, Saul Shiffman<sup>2</sup> and Mark Sembower<sup>2</sup>; <sup>1</sup>RAI Services Company, Winston-Salem, NC USA, <sup>2</sup>PinneyAssociates, Inc., Pittsburgh PA USA

**32. DETERMINATION OF INDOGENOUS AND LEACHABLE METALS BY ICPMS.** Donald C. STOGNER, Benjamin Stevenson, Jamil Gray, Danielle N. Benner, Carl Adams and Salem Chouchane; Eurofins Lancaster Laboratories PSS, Winston-Salem, NC, USA

**33. WATER ANALYSIS BY VOLUMETRIC KARL FISCHER TITRATION USING DIRECT HEATING AND TRANSFER TO THE KARL FISCHER TITRATOR.** Donald C. STOGNER, Danielle N. Benner, Benjamin Stevenson, Carl Adams and Salem Chouchane; Eurofins Lancaster Laboratories PSS, Winston-Salem, NC, USA

**34. INFLUENCE OF THE TIME OF SYNTHESIS OF SBA-15 ON ITS EFFECT AS A CATALYST REDUCING TOXICANT CONCENTRATION IN TOBACCO SMOKE.** Nerea JUÁREZ-SERRANO, Antonio Marcilla and María Isabel Beltrán; University of Alicante, San Vicente del Raspeig, Spain

**35. DETERMINATION OF SELECT LEACHABLE COMPOUNDS IN ELECTRONIC CIGARETTE AEROSOL AND LIQUID BY LCMSMS.** Kamal J. RASHMAWI, Nolan Spann; Aldonis Porter, Carl Adams and Salem Chouchane; Eurofins Lancaster Laboratories PSS, Winston-Salem, NC, USA



**36. TRENDS IN US SMOKERS' PERCEPTIONS OF THE RELATIVE RISKS OF NON-COMBUSTIBLE TOBACCO PRODUCTS VERSUS CIGARETTES.** Geoffrey M CURTIN<sup>1</sup>, Saul Shiffman<sup>2</sup>, Jeff Rohay<sup>2</sup> and Steve Pype<sup>2</sup>; <sup>1</sup>RAI Services Company, Winston-Salem, NC USA, <sup>2</sup>PinneyAssociates, Pittsburgh, PA USA

**37. MULTI-DIMENSIONAL TIPPING POINT ANALYSES: ASSESSING SIMULTANEOUS SHIFTS IN TOBACCO USE PATTERNS FROM A HIGHER TO A LOWER RISK PRODUCT.** Geoffrey M CURTIN<sup>1</sup>, Annette Bachand<sup>2</sup> and Sandra Sulsky<sup>2</sup>; <sup>1</sup>RAI Services Company, Winston-Salem, NC USA, <sup>2</sup>Ramboll US Corporation, Amherst, MA USA

**38. COMPARING DIRECT AND INDIRECT ASSESSMENTS OF PERCEPTIONS OF REDUCED RISK FOR A MODIFIED-RISK TOBACCO PRODUCT.** Saul SHIFFMAN<sup>1</sup> and Geoffrey M Curtin<sup>2</sup>: <sup>1</sup>PinneyAssociates, Pittsburgh, PA USA, <sup>2</sup>RAI Services Company, Winston Salem, NC USA

**39. CONSUMERS' PERCEPTIONS OF DISEASE-SPECIFIC MODIFIED-RISK CLAIMS ARE BEST EVALUATED IN A DISEASE-SPECIFIC MANNER.** Saul SHIFFMAN<sup>1</sup> and Geoffrey M Curtin<sup>2</sup>: <sup>1</sup>PinneyAssociates, Pittsburgh, PA USA, <sup>2</sup>RAI Services Company, Winston Salem, NC USA

**40. DETERMINATION OF SELECT LEACHABLE COMPOUNDS IN ELECTRONIC CIGARETTE AEROSOL BY GCMS.** Nathan WEISNER, Carl J. Adams and Salem Chouchane; Eurofins Lancaster Laboratories PSS, Winston-Salem, NC, USA

**41. ANALYSIS OF TOBACCO SPECIFIC NITROSAMINES IN ELECTRONIC CIGARETTE LIQUID BY LCMSMS.** Nolan D. SPANN, Angela Seamans, Carl J. Adams and Salem Chouchane; Eurofins Lancaster Laboratories PSS, Winston-Salem, NC, USA

**42. IDENTIFICATION OF HARMFUL AND POTENTIALLY HARMFUL CONSTITUENTS IN TOBACCO SMOKE PRODUCED FROM LOW- AND HIGH-NICOTINE CIGARETTE TOBACCO FILLERS.** Walter B. WILSON and Lane C. Sander; National Institute of Standards and Technology, Gaithersburg, MD, USA

**43. EFFECT OF SBA-15 ON THE THERMAL DECOMPOSITION OF NNK AND NNN TOBACCO SPECIFIC NITROSAMINES.** J. ASENSIO, A. Marcilla and M. I. Beltrán; University of Alicante, San Vicente del Raspeig, Spain

**44. COMPARATIVE MEASUREMENTS OF PUFF AEROSOL SIZE AND CONCENTRATION OF COMBUSTION, HEATED TOBACCO, AND LIQUID E-CIGARETTES BY LIGHT SCATTERING METHOD.** Donald J HOLVE<sup>1</sup> and Jaap Hoornstra<sup>2</sup>; Envirometrix Instruments LLC, <sup>1</sup>Berkeley, CA, USA, <sup>2</sup>Sint Maartensbrug, Netherlands

**45. A STREAMLINED MEANS OF OUTLIER DETECTION IN COLLABORATIVE AND PROFICIENCY STUDIES.** Stacey SLONE, Brent Shelton, Andrew Shearer and Socrates Canete; University of Kentucky, Lexington, KY, USA

**46. THE QUANTITATION OF VOLATILE NITROSAMINES IN MAINSTREAM TOBACCO SMOKE BY GAS CHROMATOGRAPHY-TANDEM MASS SPECTROMETRY (GC-MS/MS) USING DIRECT SAMPLE BAG COLLECTION.** Elizabeth A. COWAN, W. Rucks Winkeljohn, Joseph G. Lisko and Liza Valentin-Blasini; Centers for Disease Control and Prevention, Atlanta, GA, USA

**47. CUMULATIVE PROBABILISTIC RISK ASSESSMENT TO CHARACTERIZE RISK OF COMBUSTIBLE TOBACCO PRODUCTS.** Karshak KOSARAJU, Felix Ayala-Fierro, Ed Robinson and Ashley Turner; ITG Brands, Greensboro, NC USA

**48. SURVEY OF NICOTINE, NNK, NNN, PH AND PHYSICAL PROPERTIES OF LITTLE CIGARS IN THE US MARKET PLACE.** Youbang LIU<sup>1</sup>, Matthew D. Hassink<sup>1</sup>, Kenneth M. Taylor<sup>1</sup>, Cliff Watson<sup>2</sup>, Dana Chafin<sup>2</sup>, Tameka Lawler<sup>2</sup>, Liza Valentin-Blasini<sup>2</sup>, Brett Kimbrall<sup>2</sup>; <sup>1</sup>U.S. Food and Drug Administration, Silver Spring, MD USA, <sup>2</sup>Centers for Disease Control and Prevention, Atlanta, GA USA



**49. ASSESSMENT OF IN VITRO TOXICITY/GENOTOXICITY OF ENDS AND COMBUSTIBLE PRODUCTS.** Kristen JORDAN<sup>1</sup>, Betsy Bombick<sup>1</sup>, Bethany Cooper<sup>1</sup>, Robert Leverette<sup>1</sup>, Tom Shutsky<sup>1</sup>, Casandra West<sup>1</sup>, Josef Strasser<sup>1</sup>, Elaine Round<sup>1</sup>, Kristin Marano<sup>1</sup>, Rafik Momin<sup>2</sup>, Amit Trivedi<sup>2</sup>, Wendy Wagstaff<sup>2</sup>, Shannon Bruce<sup>3</sup>, Emily Dakoulas<sup>3</sup>, Shambhu Roy<sup>3</sup>; <sup>1</sup>RAI Services Company, Winston-Salem, NC USA, <sup>2</sup>Labstat International ULC, Kitchener, ON, Canada, BioReliance Corp, Rockville, MD USA

**50. ESTABLISHMENT OF THE METHOD FOR THE ANALYSIS OF PHTHALATES IN E-CIGARETTE REFILL SOLUTION AND AEROSOL.** Hoil KANG, Hyoung Joon Park, Seok Heo, Jin Hee Lee, Dong Gu Lee and Seongsoo Park; Ministry of Food and Drug Safety, Chungcheongbuk-do, Republic of Korea

**51. EVALUATION OF FILTER DENSITY VS FILTER PRESSURE DROP FOR CHARACTERIZING CELLULOSE ACETATE FILTERS.** Kevin R. NORFLEET and Ray Robertson; Celanese Corporation, Narrows, VA USA

**52. ABUSE LIABILITY ASSESSMENT OF THREE NON-MENTHOL ENDS PRODUCTS RELATIVE TO COMBUSTIBLE CIGARETTES AND NICOTINE GUM.** Christine CAMPBELL, Tao Jin, Megan J. Whelen, Erin H. Evans and Sarah Baxter; RAI Services Company, Winston-Salem, NC, USA

**53. NEUTRAL RED UPTAKE (NRU) CYTOTOXICITY ANALYSIS OF AEROSOL GENERATED FROM A TEMPERATURE-REGULATED NICOTINE-SALT BASED ENDS PRODUCT.** Manoj MISRA<sup>1</sup>, Gene Gilman<sup>2</sup> and Pooja Desai<sup>2</sup>; <sup>1</sup>JUUL Labs, San Francisco, CA USA, <sup>2</sup>Enthalpy Analytical, Inc. Richmond, VA, USA

**54. CHALLENGES AND OPPORTUNITIES IN CIGAR SCIENCE.** Jennifer H. SMITH<sup>1</sup>, Shamina M. Aubuchon<sup>1</sup>, Karl A. Wagner<sup>1</sup>, Willie J. McKinney<sup>1</sup>, Gene Gillman<sup>2</sup>, Rob Stevens<sup>3</sup>; <sup>1</sup>Altria Client Services LLC, Richmond, VA, USA, <sup>2</sup>Enthalpy Analytical, Henrico, VA, USA, <sup>3</sup>ITG Brands LLC, Greensboro, NC, USA

**55. EFFECT OF CHANGES IN CIGARETTE INPUT PARAMETERS AND DISTRIBUTIONS ON PROBABILISTIC RISK ASSESSMENT.** Edward ROBINSON, Felix Ayala-Fierro, Karshak Kosaraju and Ashley Turner; ITG Brands, Greensboro, NC, USA

**56. ESTIMATION OF CORROSION OF METAL WIRES IN E-LIQUIDS.** E. Kate THORN and Mark J. Rusyniak; Altria Client Services, LLC, Richmond, VA USA

**57. NICOTINE UPTAKE IN NAÏVE, SHORT-TERM AND EXPERIENCED ENDS USERS COMPARED TO NICOTINE UPTAKE IN SMOKERS.** Bobbette A. JONES, Sarah Baxter-Wright, Tao Jin and Leanne Campbell; RAI Services Company, Winston-Salem, NC, USA

**58. REAL-TIME AUTHENTICATION OF FOOD, BEVERAGES AND BOTANICALS USING DART-QDA LIVEID ANALYSIS.** Emily BRITTON<sup>1</sup>, Kari Organtini<sup>1</sup>, Naren Meruva<sup>1</sup>, and Sara Stead<sup>2</sup>; Waters Corporation, <sup>1</sup>Milford MA USA, <sup>2</sup>Wilmslow UK

**59. ANALYSIS OF CASCADE IMPACTOR SIZE DISTRIBUTION FOR ELECTRONIC NICOTINE DELIVERY SYSTEM AEROSOLS.** CHEN Song; RAI Innovations Company, Winston-Salem, NC USA

**60. COMPARTMENTAL ANALYSIS OF INORGANIC AND ORGANIC CONSTITUENTS AND THE DITHIOTHREITOL-MEASURED OXIDATIVE POTENTIAL OF WATERPIPE TOBACCO SMOKE.** Cindy DeForest HAUSER, Parker Conquest, Andrew Jensen, Anna Merritt, Olivia Pelaez, Coco Peng, Nick Pohl, Emma Tayloe, Steffaney Wood and Karen Bernd; Davidson College, Davidson, NC USA

**61. EVALUATION OF TOTAL PARTICULATE MATTER AND WHOLE AEROSOL FROM COMBUSTIBLE AND NEXT GENERATION TOBACCO PRODUCTS (NGPS) IN IN VITRO LUNG MODELS.** Wanda FIELDS, Brian Keyser and Betsy Bombick; RAI Services Company, Winston-Salem, NC USA



**62. CHANGING FILTER REQUIREMENTS FOR TOBACCO HEATED PRODUCTS (THPs).** Amanda PERIMAN, Ann Treadaway and Elizabeth Gerringe; Essentra Filter Products, Greensboro, NC, USA

**63. OBSERVATION OF WICKING BEHAVIOR OF AN ENDS DEVICE USING WEIGHT-TIME MEASUREMENTS.** Sean P. PLATT, E. Kate Thorn; Robert B. Ragland; and Mark J. Rusyniak; Altria Client Services LLC, Richmond, VA, USA

**64. NON-TARGETED ANALYSIS USING GAS CHROMATOGRAPHY MASS SPECTROMETRY TO EVALUATE STABILITY OF E-VAPOR PRODUCTS.** Mark CROSSWHITE, Niti Shah, Mike Noe, Chris Suarez, John H. Miller IV, Yezdi B. Pithawalla and William P. Gardner; Altria Client Services, Richmond, VA, USA

**65. RISK PERCEPTION OF E-VAPOR AND THE IMPACT OF PROMOTIONAL MATERIALS.** Jessica Parker ZDINAK, Maria Gogova, Jenna Leighty and Stephanie Plunkett; Altria Client Services, LLC, Richmond, VA, USA

**66. DISTINCT GENE EXPRESSION CHANGES IN PERIPHERAL BLOOD MONONUCLEAR CELLS EXPOSED TO COMBUSTIBLE VERSUS NON-COMBUSTIBLE TOBACCO PRODUCT PREPARATIONS.** Nhu Quynh TRAN<sup>1</sup>, Subhashini Arimilli<sup>2</sup>, Behrouz Madahian<sup>3</sup>, Ramin Homayouni<sup>3</sup> and GL Prasad<sup>1</sup>; <sup>1</sup>RAI Services, Winston-Salem, NC USA, <sup>2</sup>Wake Forest University, Winston Salem, NC, USA <sup>3</sup>Quire Inc., Memphis, TN, USA

**Monday Afternoon, September 17, 2018**

**Session A**

**2018 FDA-ANPRM Special Session**

*Session Chair:* Summer Hanna

**Session B**

**Toxicology/Human Smoking**

*Session Chair:* Candice K. Cunningham

**2:20 PM**

**67. A SCIENCE AND EVIDENCE BASED NICOTINE TOBACCO PRODUCT STANDARD.** Willie J. MCKINNEY, Amy Brannan and Donna Smith; Altria Client Services, Richmond, VA USA

**2:40 PM**

**68. TOBACCO INDUSTRY EFFORTS TO REDUCE NICOTINE.** Lionel DELOACH; Altria Client Services, Richmond, VA USA

**3:00 PM**

**69. POTENTIAL ADVERSE EFFECTS OF ANPRM'S ON SMALL TOBACCO PRODUCT MANUFACTURERS.** John H. LAUTERBACH; Lauterbach & Associates, LLC, Macon, GA USA

**2:20 PM**

**74. URINARY LEUKOTRIENE E4 AND 2,3-DINOR THROMBOXANE B2 ARE POTENTIAL BIOMARKERS OF EFFECT FOR TOBACCO PRODUCT EVALUATIONS.** Patrudu MAKENA, Gang Liu, Nasrin Nouri, Peter Chen, and G.L. Prasad; RAI Services Company, Winston-Salem, NC USA

**2:40 PM**

**75. TOBACCO PRODUCTS – A CYTOTOXICITY AND GENETIC TOXICOLOGY TESTING PARADIGM.** Shannon BRUCE, Emily Dakoulas, Aparajita Dutta, Kamala Pant Shambhu Roy and Megan Young; MilliporeSigma, Rockville, MD USA

**3:00 PM**

**76. DO LEVELS OF MENTHOL IN MAINSTREAM CIGARETTE SMOKE INFLUENCE DEPENDENCE? DATA FROM NHANES 2007-2014.** Tiffany PARMS<sup>1</sup>, Cynthia Van Landingham<sup>2</sup>, and Kristin M Marano<sup>1</sup>; <sup>1</sup>RAI Services Company, Winston-Salem, NC, USA, <sup>2</sup>Ramboll, Monroe, LA, USA

**3:20 Break**



**3:50 PM**

**70. PRODUCTION OF VERY LOW NICOTINE BURLEY TOBACCO: SHORT TERM FEASIBILITY FROM AN AGRONOMY VIEWPOINT.** Anne JACK and Colin Fisher; University of Kentucky, Lexington, KY USA

**4:10 PM**

**71. AGRICULTURAL PRACTICES AND ENVIRONMENTAL FACTORS THAT AFFECT ALKALOID ACCUMULATION IN TOBACCO.** Marvin G. RIDDICK; R. J. Reynolds Tobacco Company, Winston-Salem, NC USA

**4:30 PM**

**72. FDA ADVANCE NOTICE OF PROPOSED RULEMAKING FOR NICOTINE LEVEL OF COMBUSTED CIGARETTES – FEASIBILITY FOR COMPLIANCE VIA TOBACCO PLANT GENETICS?** Ernie HIATT; R. J. Reynolds Tobacco Company, Winston-Salem, NC USA

**4:50 PM**

**73. MODIFICATION OF STANDARDIZED METHODS FOR THE MEASUREMENT OF NICOTINE IN VERY LOW NICOTINE CONTENT CIGARETTES.** Anthony P. BROWN<sup>1</sup>, Matt S. Melvin<sup>1</sup>, Yezdi B. Pithawalla<sup>1</sup>, Jennifer H. Smith<sup>1</sup>, Karl A. Wagner<sup>1</sup>, Hui Liu<sup>2</sup>, Kiana Mason<sup>2</sup>, Jay Pierotti<sup>2</sup> and Kerry Stutt<sup>2</sup>; <sup>1</sup>Altria Client Services LLC, Richmond, VA USA <sup>2</sup>Eurofins Lancaster Professional Scientific Staffing, Richmond, VA USA

**3:50 PM**

**77. REDUCTION IN URINARY AND BLOOD BIOMARKERS OF TOBACCO EXPOSURE IN SMOKERS SWITCHED TO AN ELECTRONIC NICOTINE DELIVERY SYSTEM PRODUCT.** Milly N. KANOBE, Bobbette A. Jones, Xiaoming Chen, Schmidt Eckhardt, John Darnell; RAI Services Company, Winston-Salem, NC, USA and Buddy G. Brown, Durham, NC, USA

**4:10 PM**

**78. CHALLENGES IN THE ADMINISTRATION OF VISUAL ANALOG SCALES (VAS) DURING CLINICAL PHARMACOLOGY TRIALS OF ENDS PRODUCTS.** Lorraine RUSCH, Melanie Fein and Mark Pearson; High Point Clinical Trials Center, High Point, NC USA

**4:30 PM**

**79. SENSITIVITY ANALYSIS OF EXPOSURE PARAMETERS IN QUANTITATIVE RISK ASSESSMENT FOR SUBSTANTIAL EQUIVALENCE EVALUATION.** Tiffany PARMS, Charlene Liu and Kristin Marano, RAI Services Company, Winston-Salem, NC USA

**4:50 PM**

**80. DIFFERENTIAL GENE EXPRESSION AND FUNCTIONAL RESPONSES IN PERIPHERAL BLOOD MONONUCLEAR CELLS PRETREATED WITH COMBUSTIBLE AND NON-COMBUSTIBLE TOBACCO PRODUCTS.** Quynh T. TRAN<sup>1</sup>, Subhashini Arimilli<sup>2</sup>, Gang Liu<sup>1</sup>, Patrudu Makena<sup>1</sup> and GL Prasad<sup>1</sup>; <sup>1</sup>RAI Services Company, Winston-Salem, NC USA, <sup>2</sup>Wake Forest School of Medicine, Winston-Salem, NC USA

**Adjourn**

**Tuesday Morning, September 18, 2018**

**Session A  
eCigarettes**

*Session Chair: Jason Flora*

**Session B**

**Manufacturing & Smokeless Tobacco**

*Session Chair: Jeremi Johnson*

**8:30 AM**

**81. DETERMINATION OF THE LEVELS OF SHORT CHAIN ORGANIC ACIDS IN TOBACCO AND LIQUIDS USED IN ELECTRONIC CIGARETTES.** Serban MOLDOVEANU, Karen B. Kilby and Amanda G. Hudson, R.J. Reynolds Tobacco Co. Winston-Salem, N USA.

**8:30 AM**

**90. ARE ALL FSC BANDING AGENTS INERT?** John H. LAUTERBACH; Lauterbach & Associates, LLC, Macon, GA USA



**8:50 AM**

**82. PYROLYSIS OF GLYCERIN AT DIFFERENT TEMPERATURES AND HEATING RATES.** Serban MOLDOVEANU and Ching-En Chou R.J. Reynolds Tobacco Co. Winston-Salem, NC USA

**9:10 AM**

**83. ONE MORE TIME: UNPROTONATED NICOTINE IN E-CIGARETTE AEROSOLS: IS IT REALLY THERE.** John H. LAUTERBACH; Lauterbach & Associates, LLC, Macon, GA USA

**9:30 AM**

**84. EVALUATION OF THE FORMALDEHYDE HEMIACETALS AND ACETALS RELEVANT TO ELECTRONIC CIGARETTES.** Xiaohong Cathy JIN, Karen C. Avery, Regina M. Ballentine, William P. Gardner, Willie J. McKinney, Matt S. Melvin, Yezdi B. Pithawalla, Donna C. Smith, and Karl A. Wagner; Altria Client Services LLC, Richmond, VA USA

**9:50 AM**

**85. SURVEY OF CARBONYLS IN AEROSOLS FROM ELECTRONIC NICOTINE DELIVERY SYSTEMS.** Courtney G. CULBERT<sup>1</sup> and Randy A. Weidman<sup>2</sup>; <sup>1</sup>RAI Services Company, <sup>2</sup>R.J. Reynolds Tobacco Company, Winston-Salem, NC, USA

**10:40 AM**

**86. CHARACTERIZATION OF A TEMPERATURE REGULATED E-CIGARETTE FOR POTENTIAL USE AS A REFERENCE DEVICE.** Alexander PENNINGTON and I Gene Gillman; Enthalpy Analytical, Durham, NC USA

**11:00 AM**

**87. STRUCTURE-ACTIVITY RELATIONSHIPS OF PROPYLENE GLYCOL, GLYCERIN, AND SELECT ANALOGS FOR CARBONYL THERMAL DEGRADATION PRODUCTS.** Matt S. MELVIN, Regina M. Ballentine, William P. Gardner, Willie J. McKinney, Yezdi B. Pithawalla, Donna C. Smith and Karl A. Wagner, Altria Client Services LLC, Richmond, VA USA

**8:50 AM**

**91. FUNCTIONAL FILTER WRAPPING MATERIALS AND THEIR IMPACTS ON SPECIFIC PROPERTIES OF FACTORY MADE CIGARETTES AND HEATED TOBACCO PRODUCTS.** Michael LINDNER; TANNPAPIER GmbH, Traun, Austria

**9:10 AM**

**92. A STUDY ON THE TRANSFER OF CIGARETTE PAPER INGREDIENTS INTO MAINSTREAM SMOKE.** Joseph WANNA<sup>1</sup>, Cai Chen<sup>2</sup>, Xiaoping Wang<sup>3</sup> and Cuicui Xiao<sup>3</sup>; <sup>1</sup>SWM, Alpharetta, GA USA, <sup>2</sup>SWM Shanghai Representative Office, Shanghai, China,; <sup>3</sup>China Tobacco Mauduit, Jiangmen, Guangdong, China

**9:30 AM**

**93. THE IMPACT OF WATERPIPE CONFIGURATION AND SMOKING REGIME ON THE CONCENTRATION AND SIZE DISTRIBUTION OF WATERPIPE TOBACCO SMOKE.** Cindy DeForest HAUSER, Dylan Carmack, Ronnae Mailig, Tiffany Onia and Karen Bernd; Davidson College, Davidson, NC USA

**9:50 AM**

**94. ARE AVAILABLE TEST METHODS FOR THE DETERMINATION OF AMMONIA IN MAINSTREAM CIGARETTE SMOKE FIT FOR THE ANALYSIS OF CIGARS? – PART 2.** Yevgeniya PREPELITSKAYA, John Miller, Mark Rusyniak, Franklin Higgins, Karen Avery, Mark Crosswhite, Sandy Spicer-Glave and Niti Shah; Altria Client Services, Richmond, VA USA

**Break**

**10:40 AM**

**95. CHARACTERIZATION OF MICROBIAL COMMUNITIES ASSOCIATED WITH THREE SMOKELESS TOBACCO REFERENCE PRODUCTS AND CORRELATION WITH CHEMICAL CHARACTERISTICS.** Luke MOE, Isaac Greenhut and Huihua Ji; University of Kentucky, Lexington, KY, USA

**11:00 AM**

**96. COMPARISON OF SEQUENCING PLATFORMS FOR MICROBIAL PROFILING IN SMOKELESS TOBACCO.** Simon LI, Anthony Gerardi and Joya Brown; R. J. Reynolds Tobacco Company, Winston-Salem, NC USA





**11:20 AM**

**88. THE RELATIONSHIP BETWEEN WATER CONTENT AND RELATIVE HUMIDITY FOR E-LIQUIDS.** F. Kelley ST.CHARLES; St.Charles Consultancy, Lewisville, NC USA

**11:40 AM**

**89. DETERMINATION AND DELIVERY OF FIBERGLASS IN THE AEROSOL OF ELECTRONIC CIGARETTES.** FAN Meijuan, Wang Hongbo, Zhao Le, Chen Li, Guo Junwei, Pan Lining, Cui Huapeng, Qiao Liangjun, Liu Huimin; Zhengzhou Tobacco Research Institute of CNTC, Zhengzhou, P. R. China

**11:20 AM**

**97. STABILITY OF CERTIFIED SMOKELESS TOBACCO REFERENCE PRODUCTS.** Siqi GUAN, Huihua Ji and Lowell Bush; University of Kentucky, Lexington, KY USA

**11:40 AM**

**98. CTP SUBMISSIONS – TIPS AND INSIGHT FOR PREPARING AN ELECTRONIC SUBMISSION.** Deborah SHOLTES<sup>1</sup>, Jeffrey K. Smith<sup>1</sup> and Glenn Angermeier<sup>2</sup>; <sup>1</sup>Food & Drug Administration, Silver Spring, MD USA <sup>2</sup>WiseDesign, McLean, VA USA

**Lunch**

**1:00 PM – Poster Session** – See Poster Numbers 5-66 on Monday afternoon

**1:00 PM – 99. CIGAR LEAF AND CIGAR PRODUCT ROUNDTABLE.** Rob Stevens, ITG Brands, Greensboro, NC USA; Gene Gillman, Enthalpy Labs, Durham, NC USA; Jennifer Smith and Karl Wagner, Altria Client Services, Richmond, VA USA; Michael Hartley and Fritz Bossert, Universal Dark Air-Cured Group

**Tuesday Afternoon, September 18, 2018**

**Session A**  
**eCigarettes**

*Session Chair:* Karen Carter

**Session B**

**Smokeless Tobacco**

*Session Chair:* Tiffany Parmis

**2:40 PM**

**100. COMPARISON OF HYDROPHILIC INTERACTION LIQUID CHROMATOGRAPHY AND REVERSED-PHASE SEPARATION IN UNTARGETED LC/MS ANALYSIS OF 3D CELL CULTURES EXPOSED TO CIGARETTE SMOKE AND AEROSOLS FROM A NOVEL TOBACCO VAPOR PRODUCT.** Yuichiro TAKANAMI, Nobumasa Kitamura and Shigeaki Ito; Japan Tobacco Inc., Yokohama, Japan

**3:00 PM**

**101. FTIR CHEMOMETRICS APPLIED TO E-LIQUIDS QUANTITATIVE ANALYSIS.** Frank S. HIGGINS, E. Kate Thorn, and Mark J. Rusyniak; Altria Client Services LLC, Richmond, VA USA

**2:40 PM**

**106. EVALUATION OF BENZO[A]PYRENE (BAP) TRANSFER FROM MOIST SNUFF TO ARTIFICIAL SALIVA.** Serban MOLDOVEANU, Jerry Marshall, F. Kelley St. Charles and Thomas Poole; R.J. Reynolds Tobacco Co. Winston-Salem, NC USA

**3:00 PM**

**107. COMPARISONS OF PARTICLE SIZE DISTRIBUTIONS AND NICOTINE DISSOLUTION PROFILES IN SMOKELESS TOBACCO PRODUCTS.** Candice K. CUNNINGHAM<sup>1</sup>, Summer N. Hanna<sup>1</sup>, Christopher L. Keller<sup>1</sup> and Thomas R. Meadows<sup>2</sup>; <sup>1</sup>RAI Services Company, <sup>2</sup>R. J. Reynolds Tobacco Company, Winston-Salem, NC, USA



**3:20 PM**

**102. ADAPTATIONS OF MAINSTREAM CIGARETTE SMOKE METHODS TO OTHER PRODUCT CATEGORIES.** Peter JOZA, William Rickert, Mingliang Bao and Mehran Sharifi; Labstat International ULC, Kitchener, OH Canada

**4:10 PM**

**103. COMPARISON OF POTENTIAL HEALTH RISKS OF COMBUSTIBLE, HEAT-NOT-BURN, AND ELECTRONIC CIGARETTES.** Charlene LIU and Kristin Marano; RAI Services Company, Winston-Salem, NC, USA

**4:30 PM**

**104. TEMPORAL VARIABILITY OF ANALYTICAL TESTING FOR E-VAPOR PRODUCTS AND IMPACT ON NUMBER OF REPLICATES.** Michael J. MORTON, William P. Gardner, Kimberly A. Agnew-Heard and John H. Miller IV; Altria Client Services, Richmond, VA USA

**4:50 PM**

**105. E-VAPOR PRODUCT APPEAL AMONG TOBACCO USERS AND NON-USERS AND THE ROLE OF FLAVORS IN TOBACCO HARM REDUCTION.** Jessica Parker ZDINAK, Andrea Vansickel, Maria Gogova and Stephanie Plunkett; Altria Client Services, LLC, Richmond, VA, USA

**3:20 PM**

**108. TOXICITY VALUE SELECTION FOR QUANTITATIVE RISK ASSESSMENT OF HARMFUL AND POTENTIALLY HARMFUL CONSTITUENTS IN SMOKELESS TOBACCO PRODUCTS.** Adams AMANTANA, Satin G. Sawant, Wei Xie, Shuang Liu, Kristin Marano and David T. Szabo; RAI Services Company, Winston-Salem, NC, USA

**Break**

**4:10 PM**

**109. AN IMPROVED METHOD FOR THE DETERMINATION OF SODIUM PROPIONATE IN TOBACCO PRODUCTS.** Fraser WILLIAMSON and Jessica Bailey; Global Laboratory Services, Wilson, NC USA

**4:30 PM**

**110. RAPID MEASUREMENT OF PHYTOCHEMICALS IN TOBACCO LEAVES USING FLUORESCENCE FINGERPRINT ANALYSIS.** Hiroataka NAITO<sup>1</sup>, Mizuki Tsuta<sup>2</sup>, and Takumi Koike<sup>1</sup>; <sup>1</sup>Japan Tobacco Inc., <sup>2</sup>National Agriculture and Food Research Organization/ Food Research Institute, Yokohama, Japan

**4:50 PM**

**111. CHARACTERIZATION AND CERTIFICATION OF SMOKELESS TOBACCO REFERENCE PRODUCTS.** Stacey SLONE, Socrates Canete, Huihua Ji, Anne Jack, Lowell Bush, Orlando Chambers and Brent Shelton; University of Kentucky, Lexington, KY, USA

**Adjourn**

**5:15 PM** – TSRC Business Meeting – All attendees are encouraged to attend.

**6:30 PM** – Pre-banquet Reception



Wednesday Morning, September 19, 2018

**Combined Session**  
**Regulation & Agronomy**  
*Session Chair: Anne Jack*

**8:30 AM**

**112. DEVELOPMENT AND VERIFICATION OF A BLACK SHANK RACE 0 QPCR ASSAY DERIVED FROM RAPD MARKER ASSAY.** Michael F. LESNIAK<sup>1</sup> and David Shew<sup>2</sup>; <sup>1</sup>R. J. Reynolds Tobacco Company, Winston-Salem, NC USA, <sup>2</sup>North Carolina State University, Raleigh, NC USA

**8:50 AM**

**113. INFLUENCE OF MALEIC HYDRAZIDE ON TRANSCRIPTOME LANDSCAPE OF CHEMICALLY TOPPED BURLEY TOBACCO.** Sitakanta PATTANAIK, Sanjay Kumar Singh, Mitchell Richmond, Bob Pearce, Andy Bailey and Ling Yuan; University of Kentucky, Lexington, KY USA

**9:10 AM**

**114. EFFECT OF LIGHT IRRADIATION ON METABOLITE DYNAMICS IN TOBACCO LEAVES DURING CURING.** Takumi KOIKE and Atsushi Nagai; Japan Tobacco Inc, Yokohama, Japan

**9:30 AM**

**115. KEY FACTORS IN ENZYME DEACTIVATION DURING PRESERVATION UNDER LOW-MOISTURE CONDITIONS.** Kei KOBAYASHI<sup>1</sup> and Yutaka Kuroda<sup>2</sup>; <sup>1</sup>Japan Tobacco Inc., Yokohama, Japan, <sup>2</sup>Tokyo University of Agriculture and Technology, Tokyo, Japan

**Break**

**10:20 AM**

**116. ANALYSIS OF NTGGPPS1 FUNCTION IN NICOTIANA TABACUM BY OVEREXPRESSION TECHNOLOGY.** Li Feng, Wu Mingzhu, Zheng Qingxia, WANG Zhong, Liu Pingping, Wang Ran, Luo Zhaopeng, Jin Lifeng, Yang Jun and Wei Pan; Zhengzhou Tobacco Research Institute of CNTC, Zhengzhou, China

**10:40 AM**

**117. ANALYSIS OF EMISSION LEVEL OF SEVEN TOXICANTS IN CIGARETTE MAINSTREAM SMOKE AFFECTED BY VARIABLE TOBACCO LEAF CONSTITUENTS.** CAI Bin<sup>1</sup>, Li Zhitao<sup>2</sup>, Wang Rengang<sup>1</sup>, Geng Zhaoliang<sup>1</sup>, Shi Yuewei<sup>1</sup>, Xie Shengdong<sup>1</sup>, Wang Zhihong<sup>1</sup>, Yang Zhixiao<sup>1</sup>, and Ren Xueliang<sup>1</sup>; <sup>1</sup>Guizhou Academy of Tobacco Science, <sup>2</sup>China Tobacco Guizhou Import and Export Co., Guiyang, Guizhou, P.R. China

**11:00 AM**

**118. SCALE DEVELOPMENT FOR MEASURING CIGARETTE DEPENDENCE: THE CIGARETTE DEPENDENCE TEST.** Li Xiangyu, CHEN Huan, Fu Yaning, Liu Tong, Wang Hongjuan, Chen Jian, Hou Hongwei and Hu Qingyuan; China National Tobacco Quality Supervision & Test Center, Zhengzhou, Henan P.R. China

**11:20 AM**

**119. STUDY ON THE NICOTINE METABOLISM GENE POLYMORPHISM IN CHINESE POPULATION.** WANG Hongjuan, Chen Huan, Fu Yaning, Liu Tong, Li Xiangyu, Han Shulei, Hou Hongwei and Hu Qingyuan; China National Tobacco Quality Supervision & Test Center, Henan, P.R.China

**Adjourn**