



## **PRELIMINARY PROGRAM – V. 6 August 2019**

### **73<sup>rd</sup> Tobacco Science Research Conference**

**SUNDAY, SEPTEMBER 15, 2019**

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

**6:30PM** Welcome Reception hosted by Altria Client Services

**MONDAY MORNING, SEPTEMBER 16, 2019**

#### **Symposium**

**8:45 WELCOME & OPENING REMARKS:** Karl Wagner, Altria Client Services, 73<sup>rd</sup> TSRC Chair and Maria Gogova, Altria Client Services

**9:00 SYMPOSIUM: "Tobacco Harm Reduction: Addressing Complexities Across the Risk Continuum"** Chair: Summer Hanna, British American Tobacco, Southampton UK

**9:05 1. IS CIVIL DIALOGUE AND ENGAGEMENT BETWEEN DIVERSE STAKEHOLDERS WITH RESPECT TO TOBACCO HARM REDUCTION FEASIBLE? A REVIEW OF THE PAST. PRESENT AND FUTURE.** Scott D. BALLIN; Health Policy Consultant, Washington, DC USA

**9:35 2. FDA REGULATING TOBACCO PRODUCTS ALONG A CONTINUUM OF RISK.** Deirdre Lawrence KITTNER; FDA, Center for Tobacco Products, Calverton, MD USA

**10:05 Break**

**10:35 3. TOBACCO HARM REDUCTION: WEIGHING THE EVIDENCE.** Brian E. ERKKILA; Foundation for a Smoke-Free World, Washington, DC USA

**11:05 4. TOBACCO HARM REDUCTION: ADDRESSING COMPLEXITIES ACROSS THE RISK CONTINUUM.** Willie J. MCKINNEY; JUUL Labs, San Francisco, CA USA

**11:35 Panel discussion with all symposium speakers**

**12:05 Lunch**

**1:00 Poster Session**

**5. INCORPORATING ANALYTICAL VARIANCE INTO A COMPARATIVE QUANTITATIVE RISK ASSESSMENT (QRA) APPROACH FOR TOBACCO PRODUCTS.** Chastain A. ANDERSON, Vanessa Haase, Kimberly D. Ehman, Paige N. Wicinski and Donna C. Smith; Altria Client Services, Richmond, VA, USA

- 6. IN VITRO TESTING OF AN ETHANOL COLLECTION METHOD COMBINING PARTICULATE AND GAS-VAPOR PHASE COMPONENTS: BACTERIAL REVERSION MUTATION (AMES) ASSAY.** Sanjay Kumar BHARTI, Bhagyalaxmi Sukka Ganesh, Mariano J. Scian and I. Gene Gillman; Enthalpy Analytical, Henrico, VA USA
- 7. CONVERSION OF A PHARMACEUTICAL SALT-SCREENING ROBOT PLATFORM TO AN AUTOMATED STATION FOR UNATTENDED WEIGHING E-CIGARETTES AND SMOKING MACHINE FILTERS.** J. Anthony COX and Justin Lu; Sirius Automation Group, Buffalo Grove, IL USA
- 8. WORKSHOP SERIES TO IDENTIFY, DISCUSS AND DEVELOP RECOMMENDATIONS FOR THE OPTIMAL GENERATION AND USE OF IN VITRO GENOTOXICITY ASSAY DATA FOR TOBACCO AND NICOTINE PRODUCTS.** Martha M. MOORE<sup>1</sup> and Rodger Curren<sup>2</sup>; <sup>1</sup>Ramboll US Corporation, Little Rock, AR USA, <sup>2</sup>Institute for In Vitro Sciences, Gaithersburg, MD USA
- 9. VOLATILE ORGANIC COMPOUNDS IN ENDS AEROSOL: COLLECTION ON ACTIVATED CARBON.** Kathy HUMPHRIES, Mitch Zimmerman, Trevor Lott and Gene Gillman; Enthalpy Analytical, Durham, NC USA
- 10. QUALIFICATION OF CELL LINE A549 FOR THE NEUTRAL RED UPTAKE (NRU) ASSAY.** Shannon BRUCE, Khushbu Garala, Deepa Srinivasan, Sandra Springer, Douglass Dey, Kayla Campasino and Rohan Kulkarni; MilliporeSigma (BioReliance® Toxicology Testing Services), Rockville, MD USA
- 11. COMPARISON OF VEHICLE CONTROLS FOR CELL LINE A549 IN THE NEUTRAL RED UPTAKE (NRU) ASSAY.** Shannon BRUCE, Khushbu Garala, Deepa Srinivasan, Sandra Springer, Douglass Dey, Kayla Campasino and Rohan Kulkarni; MilliporeSigma (BioReliance® Toxicology Testing Services), Rockville, MD USA
- 12. REAL-TIME MONITORING OF VOLATILE ORGANIC COMPOUNDS AND AEROSOL IN EXHALED BREATH FROM INHALATION OF VAPOR PRODUCTS AND COMBUSTIBLE CIGARETTES.** Devon C. O'REGAN<sup>1</sup>, Adam M. Ozvald<sup>1</sup>, Nadja Heine<sup>1</sup>, Rene Gutmann<sup>2</sup> and Bea Rosenkranz<sup>2</sup>; <sup>1</sup>JUUL Labs, San Francisco, CA, USA, <sup>2</sup>Ionicon, Innsbruck, Austria
- 13. SIMULTANEOUS DETERMINATION ANALYSIS OF GLYCEROL, PROPLYLENE GLYCOL, NICOTINE, MENTHOL AND WATER BY DISCHARGE IONIZATION DETECTOR ON GAS CHROMATOGRAPHY.** Akihito SHIMAZU and Fumihito Omori; Japan Tobacco, Tokyo Japan
- 14. DETERMINATION OF DICARBONYLS AND CROTONALDEHYDE IN E-VAPOR PRODUCTS.** David ZICH; ITG Brands, Greensboro, NC USA
- 15. LEVELS OF ENDOTHELIAL PROGENITOR CELLS (EPCS) IN SMOKERS AND MOIST SNUFF CONSUMERS.** Subhashini ARIMILLI<sup>1</sup>, Peter Chen<sup>2</sup> and G. L. Prasad<sup>2</sup>; <sup>1</sup>Eurofins Professional Scientific Services, Winston Salem, NC USA, <sup>2</sup>RAI Services Company, Winston Salem, NC USA.
- 16. BELIEFS, PERCEPTIONS, AND BEHAVIORAL INTENTIONS RELATED TO NICOTINE, LOW NICOTINE CIGARETTES, AND REDUCED RISK PRODUCTS AMONG U.S. ADULTS.** Tiffany PARMS and Kimberly Frost-Pineda; RAI Services Company, Winston-Salem, NC USA
- 17. BELIEFS AND PERCEPTIONS ABOUT NICOTINE AND “MINIMALLY ADDICTIVE” CIGARETTES AMONG ADULT CURRENT, FORMER, AND NEVER SMOKERS.** Tiffany PARMS, Kimberly Frost-Pineda and Geoffrey Curtin; RAI Services Company, Winston-Salem, NC, USA
- 18. TOBACCO FLASH PYROLYSIS. EFFECT OF THE ADDITION OF MESOPOROUS CATALYSTS.** Emilio CALABUIG, Antonio Marcilla and Maria Isabel Beltrán; University Institute of Chemical Process Engineering, San Vicente del Raspeig, Spain

- 19. SIMULATED LEACHABLES ASSESSMENT FOR CRITICAL COMPONENTS USED IN CARTRIDGES OF ELECTRONIC NICOTINE DELIVERY SYSTEMS.** Courtney CULBERT<sup>1</sup> and Randy Weidman<sup>2</sup>; <sup>1</sup>RAI Services Company, Winston-Salem, NC USA, <sup>2</sup>R.J. Reynolds Tobacco Company, Winston-Salem, NC USA
- 20. NEUTRAL RED UPTAKE (NRU) CYTOTOXICITY ANALYSIS OF AEROSOL GENERATED FROM A TEMPERATURE-REGULATED NICOTINE SALT BASED PRODUCT UTILIZING COTTON WICKING MATERIAL** Bryant HIRAKI, David Cook and Manoj Misra; JUUL Labs, San Francisco, CA USA
- 21. INFLUENCE OF THE TIME OF AND STIRRING RATE DURING THE FIRST STEP OF SYNTHESIS OF SBA-15 ON ITS CATALYTIC EFFECT FOR REDUCING TOXICANTS CONCENTRATION IN TOBACCO SMOKE.** Nerea JUÁREZ-SERRANO, Javier Asensio-Morant, Isabel Martínez-Castellanos, Desiré Berenguer, Inmaculada Blasco, María Isabel Beltrán, and Antonio Marcilla; University of Alicante, Alicante, Spain
- 22. A SEVEN-MONTH SYSTEMS TOXICOLOGY INHALATION STUDY IN C57BL/6 MICE DEMONSTRATES REDUCED PULMONARY INFLAMMATION AND EMPHYSEMA FOLLOWING SMOKING CESSATION OR SWITCHING TO E-VAPOR AEROSOL EXPOSURES.** Ashutosh KUMAR<sup>1</sup>, Ulrike Kogel<sup>2</sup>, Marja Talikka<sup>2</sup>, Julia Hoeng<sup>2</sup>, Manuel Peitsch<sup>2</sup>, Anthony Skowronek<sup>3</sup> and K Monica Lee<sup>1</sup>; <sup>1</sup>Altria Client Services, Richmond, VA, USA, <sup>2</sup>Philip Morris International, Neuchâtel, Switzerland, <sup>3</sup>Battelle, West Jefferson, OH USA
- 23. EFFECT OF SBA-15 MORPHOLOGY IN THE COMPOSITION OF THE MAINSTREAM TOBACCO SMOKE.** Isabel MARTÍNEZ-CASTELLANOS, Antonio Marcilla, María Isabel Beltrán, Desiré Berenguer, Inmaculada Blasco, Nerea Juarez, Javier Asensio, Emilio Calabuig; University of Alicante, Alicante, Spain
- 24. DETERMINATION OF AEROSOL PARTICLE SIZE DISTRIBUTION FOR SEVERAL ELECTRONIC NICOTINE DELIVERY SYSTEM PRODUCTS.** Chen SONG; R.J. Reynolds Tobacco Company, Winston Salem, NC USA
- 25. IN VITRO TESTING OF AN ETHANOL COLLECTION METHOD COMBINING PARTICULATE AND GAS-VAPOR PHASE COMPONENTS: IN VITRO MICRONUCLEUS ASSAY.** Bhagyalaxmi SUKKA GANESH, Sanjay K. Bharti, Mariano J. Scian and I. Gene Gillman; Enthalpy Analytical, Henrico, VA USA
- 26. NICOTINE DISSOLUTION IN SMOKELESS TOBACCO PRODUCTS.** Nancy QIAN, Tracy Derry, Carl J. Adams and Salem Chouchane; Eurofins Professional Scientific Services, Winston-Salem, NC USA
- 27. TOXICITY REFERENCE VALUES: RELEVANCE FOR THE EVALUATION OF TOXICITY AND RISK.** Felix AYALA-FIERRO and Ashley Turner; ITG Brands, Greensboro NC USA
- 28. GLYCIDOL IN HEATED TOBACCO PRODUCTS.** Norman E FRALEY, Elizabeth Anderson, Chris Almond, Carl J. Adams and Salem Chouchane; Eurofins Professional Scientific Services, Winston-Salem, NC USA
- 29. COMPREHENSIVE INSIGHTS INTO TOBACCO SMOKE USING FLOW-MODULATED GCXGC-TOF MS.** Mark LEMONS<sup>1</sup>, Laura McGregor<sup>2</sup>, Bob Green<sup>2</sup>, Anthony Buchanan<sup>2</sup> and Matthew Edwards<sup>3</sup>; <sup>1</sup>Markes International, Sacramento, CA USA, <sup>2</sup>SepSolve Analytical, Peterborough UK, <sup>3</sup>SepSolve Analytical, Ontario, Canada

**30. IDENTIFICATION OF PREDICTIVE CLINICAL BIOMARKERS FOR DEVELOPING CHRONIC OBSTRUCTIVE PULMONARY DISEASE USING REAL WORLD EVIDENCE DATA.** Gang Michael LIU, Patrudu Makena, Kyung Soo Hong, Eric Scott and G. L. Prasad; RAI Services Company, Winston Salem, NC USA

**31. IN VITRO TESTING OF AN ETHANOL COLLECTION METHOD COMBINING PARTICULATE AND GAS-VAPOR PHASE COMPONENTS: NEUTRAL RED ASSAY.** Mariano J. SCIAN, Bhagyalaxmi Sukka-Ganesh, Sanjay K. Bharti and I. Gene Gillman; Enthalpy Analytical, Henrico, VA USA

**32. A SIMPLIFIED METHOD FOR THE ANALYSIS OF MONO-CARBONYL COMPOUNDS IN E-CIGARETTE AEROSOLS BY LC-MS.** Jeff ZHU and Aaron Heredia; ITG Brands, Greensboro, NC USA

**33. A QUICKER METHOD FOR THE ANALYSIS OF AMMONIA IN E-CIGARETTE AEROSOLS AND E-LIQUIDS BY ION CHROMATOGRAPHY.** Jeff ZHU, Brittany Moore and Aaron Heredia; ITG Brands, Greensboro, NC USA

**34. COMPARISON OF A FLAME IONIZATION DETECTOR (GC/FID) TO A NITROGEN-PHOSPHORUS DETECTOR (GC/NPD) FOR GAS CHROMATOGRAPHIC DETERMINATION OF NICOTINE IN CONVENTIONAL AND ULTRA-LOW NICOTINE TOBACCO BLENDS.** Darren STEELMAN, Andy Stinson and T. Jeffrey Clark; Liggett Group, Mebane, NC USA

**MONDAY AFTERNOON, SEPTEMBER 16, 2019**

**Session A  
e-cigarettes**

*Session Chair:* Rob Stevens

**2:20 PM**

**35. FINGERPRINTING OF E-LIQUIDS BY THE DETERMINATION OF UNTARGETED COMPOUNDS USING TWO MODERN ANALYTICAL APPROACHES.** Paulina BIERNACKA, Kenneth Chalcraft, Peter Joza and David Li; Labstat International, Kitchener, ON Canada

**2:40 PM**

**36. REAL-TIME CHEMICAL PUFF PROFILING OF VAPOR PRODUCT AEROSOL WITH PROTON TRANSFER REACTION - MASS SPECTROMETRY.** Luca CAPPELLIN<sup>1</sup> and Nadja Heine<sup>2</sup>; <sup>1</sup>University of Padua and Tofwerk AG, Padova Italy, <sup>2</sup>JUUL Labs, San Francisco, CA USA

**Session B**

**Human Smoking & Toxicology and *in vitro* Studies**  
*Session Chair:* Rana Tayarrah

**2:20 PM**

**43. AN OPEN-LABEL, RANDOMIZED, PARALLEL-GROUP, CONTROLLED STUDY TO EVALUATE CHANGES IN BIOMARKERS OF CIGARETTE SMOKE EXPOSURE AND BIOMARKERS OF POTENTIAL HARM IN ADULT SMOKERS WHO COMPLETELY SWITCH TO USING E-VAPOR PRODUCTS FOR 12 WEEKS.** Jeff EDMISTON, Douglas Oliveri, Qiwei Liang and Mohamadi Sarkar; Altria Client Services, Richmond, VA USA

**2:40 PM**

**44. ABUSE LIABILITY OF VERY LOW NICOTINE CONTENT CIGARETTES WITH CHARACTERIZATION OF NICOTINE EXPOSURE PROFILES IN ADULT SMOKERS.** Naama LEVY-COOPERMAN<sup>1</sup>, Megan J. Shram<sup>1</sup>, Debra Kelsh<sup>2</sup>, Bradley Vince<sup>2</sup>, and Ed Carmines<sup>3</sup>; <sup>1</sup>Altros Research Partners, Toronto, ON Canada, <sup>2</sup>Altasciences/Vince and Associates, Overland Park, KS USA, <sup>3</sup>Carmines Consulting, Scottsdale, AZ USA.

**3:00 PM**

**37. IMPACT OF DEVICE VARIABILITY ON THE DETERMINATION OF ALDEHYDE COMPOUNDS IN E-CIGARETTE**

**EMISSIONS.** I. Gene GILLMAN, Alexander S.C. Pennington and Kathy E. Humphries; Enthalpy Analytical, Durham, NC USA

**3:00 PM**

**45. ADVANCING THE COMMERCIAL AND PUBLIC HEALTH GOALS OF POTENTIALLY REDUCED-RISK PRODUCTS THROUGH THE ASSESSMENT OF CONSUMER SATISFACTION.**

Neil SHERWOOD; Neil Sherwood Consulting, Nyon, Switzerland

**3:20 PM**

**38. OPTIMIZATION AND COMPARISON OF 2,4-DINITROPHENYLHYDRAZINE (DNPH) DERIVATIZATION CONDITIONS FOR THE DETERMINATION OF CARBONYL**

**COMPOUNDS.** Lena JEONG<sup>1</sup>, John H. Miller IV<sup>2</sup> and Niti Shah<sup>2</sup>; <sup>1</sup>Eurofins Lancaster Laboratories, Richmond, VA USA, <sup>2</sup>Altria Client Services, Richmond, VA USA

**3:20 PM**

**46. CHARACTERIZATION OF ADULT CIGARETTE SMOKERS' BEHAVIOR DURING SHORT AND LONGER-TERM USE OF REDUCED NICOTINE CONTENT**

**CIGARETTES.** Andrea VANSICKEL, Mingda Zhang and Jan Angel; Altria Client Services, Richmond, VA USA

**Break**

**4:10 PM**

**39. GLYCIDOL BEHAVIOR IN GC SYSTEMS.**

Norman E FRALEY; Eurofins Professional Scientific Services, Winston-Salem, NC USA

**4:10 PM**

**47. ELECTRONIC NICOTINE DELIVERY SYSTEM PUFFING TOPOGRAPHY CHARACTERISTICS FROM HUMAN STUDIES.**

Ian M. FEARON<sup>1</sup> and Elaine K. Round<sup>2</sup>; <sup>1</sup>whatIF? Consulting Ltd, Harwell, UK, <sup>2</sup>RAI Services Company, Winston Salem, NC USA

**4:30 PM**

**40. I STEEP MY TEA, SO DO I NEED TO STEEP MY E-LIQUIDS?** John H.

LAUTERBACH; Lauterbach & Associates, Macon, GA USA

**4:30 PM**

**48. A BLOOD-BASED SMOKING-RELATED GENE EXPRESSION SIGNATURE USING A MACHINE LEARNING APPROACH.** Gang

Michael LIU and G. L. Prasad; RAI Services Company, Winston Salem, NC USA

**4:50 PM**

**41. ANALYSIS OF E-LIQUIDS OF ELECTRONIC CIGARETTES CONTAINING NICOTINE SALTS.** HAN Shulei, Fu Yaning, Liu

Tong, Wang Hongjuan, Chen Huan and Hou Hongwei; China National Tobacco Quality Supervision and Test Center, Henan China

**4:50 PM**

**49. HIGH THROUGHPUT AIR LIQUID INTERFACE EXPOSURE MODULES: CHARACTERIZATION OF SMOKE/AEROSOL DOSIMETRY AND IN VITRO MUTAGENICITY AND CYTOTOXICITY OF TWO TOBACCO**

**PRODUCT TYPES.** Robert LEVERETTE<sup>1</sup>, Brian Keyser<sup>1</sup>, Michael Hollings<sup>2</sup> and Adam Seymour<sup>2</sup>; <sup>1</sup>RAI Services Company, Winston-Salem, NC USA, <sup>2</sup>Covance Laboratories, North Yorkshire UK

**5:10 PM**

**42. DETERMINATION OF AMOUNTS OF HARMFUL SUBSTANCES MIGRATING FROM PLASTIC ASSEMBLIES IN ELECTRONIC CIGARETTES.** Fan Meijuan<sup>1</sup>, Pan Lining<sup>1</sup>, Cui Huapeng<sup>1</sup>, Duan Yuanxing<sup>2</sup>, Liu Yibo<sup>3</sup>, Niu Jiajia<sup>1</sup>, Mao Youan<sup>4</sup>, Chen Li<sup>1</sup>, Guo Junwei<sup>1</sup>, Liu Shaofeng<sup>1</sup>, Wang Hongbo<sup>1</sup>, Liu Huimin<sup>1</sup> and ZHAO Le<sup>1</sup>; <sup>1</sup>Zhengzhou Tobacco Research Institute of CNTC, Zhengzhou, China, <sup>2</sup>Technology Center of China Tobacco Yunnan Industrial, Kunming, China, <sup>3</sup>Technology Center of China Tobacco Guangdong Industrial, Guangzhou, China, <sup>4</sup>Technology Center of China Tobacco Hunan Industrial, Changsha, China

**5:10 PM**

**50. CYTOTOXICITY AND ACUTE TOXICITY ASSESSMENT OF SEVERAL TYPICAL NICOTINE SALTS.** WANG Hongjuan, Chen Huan, Han Shulei, Fu Yaning, Liu Tong, Hou Hongwei and Hu Qingyuan; China National Tobacco Quality Supervision & Test Center, Henan, China

**Adjourn**

**TUESDAY MORNING, SEPTEMBER 17, 2019**

**Session A**

**Agronomy and Method Development**

*Session Chair: Jason Flora*

**Session B**

**Method Development**

*Session Chair: Candice Cunningham*

**9:00 AM**

**51. THE EFFECT ON TSNAS OF STICK SPACING IN THE BARN.** Anne Jack FISHER, Colin Fisher and Huihua Ji; University of Kentucky, Lexington, KY USA

**9:00 AM**

**57. CTP SUBMISSIONS – TIPS AND INSIGHT FOR PREPARING AN ELECTRONIC SUBMISSION.** Jeffrey K. SMITH<sup>1</sup>, Deborah Sholtes<sup>1</sup>, Seth Glatstein<sup>1</sup> and Glenn Angermeier<sup>2</sup>; <sup>1</sup>US FDA, Silver Spring, MD USA, <sup>2</sup>WiseDesign, McLean, VA USA

**9:20 AM**

**52. RELATIONSHIP OF ALKALOIDS, PON, TSNAS, NITRATE AND NITRITE: A TWO-YEAR FIELD ANALYSIS.** Ying WU, Huihua Ji, Anne Fisher, Franklin Fannin, Nabanita Chattopadhyay and Lowell Bush; University of Kentucky, Lexington, KY USA

**9:20 AM**

**58. USP ELEMENTAL IMPURITIES: LIMIT TEST FOR METALS IN NICOTINE BY ICP-MS.** Hamid LOTFI and Margaret Arroyo; Wilson, NC USA  
Global Laboratory Services

**9:40 AM**

**53. OPTIMIZED METHOD FOR DETERMINATION OF SELECTIVE PHENOLIC COMPOUNDS IN CIGARETTE AND CIGAR SMOKE BY UHPLC-FLD.** Xiaohong Cathy JIN, Thomas J. Hurst and Karl A. Wagner; Altria Client Services, Richmond, VA USA

**9:40 AM**

**59. ANALYSIS OF COUMARIN IN ELECTRONIC CIGARETTE LIQUIDS AND SMOKELESS TOBACCO PRODUCTS BY UHPLC-MS/MS.** Jingcun WU<sup>1</sup>, Xia Geng<sup>2</sup> and Feng Qin<sup>1</sup>; <sup>1</sup>PerkinElmer, Woodbridge, ON Canada, <sup>2</sup>PerkinElmer, Shanghai, China

**10:00 AM**

**54. VARIATION OF SUGAR LEVELS IN TOBACCO UPON HEATING.** Serban C. MOLDOVEANU and Karen Kilby; R.J. Reynolds Tobacco, Winston-Salem, NC USA

**10:00 AM**

**60. METHOD OPTIMIZATION ON ANALYSIS OF TSNA IN ELECTRONIC CIGARETTE LIQUIDS AND NSAR IN SMOKELESS TOBACCO PRODUCTS BY UHPLC-MS/MS.** Jingcun WU and Feng Qin; PerkinElmer, Woodbridge, ON Canada

**Break**

**10:50 AM**

**55. VARIATION OF TSNAS LEVELS IN TOBACCO UPON HEATING.** Serban C. MOLDOVEANU and Marlene Adams; R.J. Reynolds Tobacco, Winston-Salem, NC USA

**10:50 AM**

**61. HPHC MARKET MAP STUDY FOR US MACHINE-MADE CIGARS – PART 1 PHYSICAL PROPERTIES, FILLER AND SMOKE HPHC VARIABILITY.** Karl A. WAGNER, Michael J. Morton, Raquel M. Olegario, Lara L. Baker and Jennifer H. Smith; Altria Client Services, Richmond, VA USA

**11:10 AM**

**56. PREDICTION OF TOTAL AMOUNT OF TOBACCO-SPECIFIC NITROSAMINES IN TOBACCO LEAVES BY FLUORESCENCE EXCITATION-EMISSION MATRIX.** Hiroataka NAITO and Takumi Koike; Japan Tobacco, Yokohama, Kanagawa Japan

**11:10 AM**

**62. HPHC MARKET MAP STUDY FOR US MACHINE-MADE CIGARS – PART 2 PREDICTIVE MODELS.** Michael J MORTON, Karl A. Wagner, Raquel M. Olegario, Lara L. Baker and Jennifer H. Smith; Altria Client Services, Richmond, VA USA

**11:30 AM**

**63. TOBACCO HEATING PRODUCTS (THP) : EXPERIMENTAL CONSIDERATIONS FOR ACHIEVEING REPRESENTATIVE YIELDS.** Ian TINDALL<sup>1</sup>, Linda Crumpler<sup>2</sup> and James Okpeh<sup>1</sup>; <sup>1</sup>Cerulean, Milton Keynes UK, <sup>2</sup>Cerulean, Richmond, VA USA

**11:50 AM**

**64. COMPARISON OF TWO DIFFERENT HIGH-RESOLUTION MASS SPECTROMETERS FOR UNTARGETED LC/MS ANALYSIS OF CIGARETTE SMOKE EXTRACTS.** Yuichiro TAKANAMI, Nobumasa Kitamura, Norimichi Orikata and Tetsuya Tobita; Japan Tobacco, Yokohama, Kanagawa Japan

**12:00 PM – Lunch**

**1:00 PM – Poster Session**

**65. EFFECT OF SBA-15 MORPHOLOGY ON THE THERMAL DECOMPOSITION OF NICOTINE.** Javier ASENSIO, Antonio Marcilla, Maria Isabel Beltrán and Nera Juárez; Alicante University, Alicante Spain

**66. ANALYSIS OF BENZO[A]PYRENE IN TOBACCO AND RELATED PRODUCTS BY UHPLC-MS/MS.** Jingcun WU<sup>1</sup>, Xia Geng<sup>2</sup>, Lizhong Yang<sup>2</sup> and Feng Qin<sup>1</sup>; <sup>1</sup>PerkinElmer Inc., Ontario, Canada, <sup>2</sup>PerkinElmer Management (Shanghai) Co, Shanghai China

**67. CHARACTERIZATION OF SMOKELESS TOBACCO PRODUCTS EXTRACTED WITH DIFFERENT SOLVENTS FOR IN VITRO TESTING.** Jingjie ZHANG<sup>1</sup>, Doshi Utkarsh<sup>1</sup>, Jyoti Thaikootathil<sup>1</sup>, Monica K. Lee<sup>1</sup> and Russell L. Wolz<sup>2</sup>; <sup>1</sup>Altria Client Services, Richmond, VA USA, <sup>2</sup>Enthalpy Analytical, Richmond, VA USA

**68. TRACE METALS ANALYSIS OF TOBACCO HEATED PRODUCT BY ICP-MS.** Danielle BENNER, Donald Stogner, Jamil Gray, Carl J. Adams and Salem Chouchane; Eurofins Professional Scientific Services, Winston Salem, NC USA

- 69. APPLICATION OF ISOTHERMAL MICROCALORIMETRY TO MST PRODUCTS - - A NEW METHOD TO MONITOR AGING.** Robert B. RAGLAND and Mark J. Rusyniak; Altria Client Services, Richmond, VA USA
- 70. COMPARATIVE LEVELS OF CARBONYL DELIVERY BETWEEN MASS-MARKET CIGARS AND CIGARETTES.** Joseph J. JABLONSKI, J. Hunter Maines, Andrew G. Cheetham, Alexandra M. Martin and I. Gene Gillman; Enthalpy Analytical, Richmond, VA USA
- 71. NICOTINE VARIABILITY OF LOW NICOTINE CULTIVARS VERSUS NORMAL NICOTINE CULTIVARS.** Kenny LION, Andrew Adams, Whit Morris, Emily Brown, Brittany Irving, Marcos Lusso and Dongmei Xu; Altria Client Services, Richmond, VA USA
- 72. A COMPARISON OF QUARTZ FILTER COLLECTION VERSUS ELECTROSTATIC PRECIPITATION COLLECTION IN E-CIGARETTE AEROSOL SAMPLES.** I. Gene GILLMAN, Alexandra Martin, Samuel Hochstetler, Justin Lata, Nicholas Race, Darybelle Collins And Patrick Kelly; Enthalpy Analytical, Richmond, VA USA
- 73. COLLECTION AND CHARACTERIZATION OF MAINSTREAM CIGARETTE SMOKE CONDENSATES USING A GLASS FIBER FILTER AND ETHANOL CONTAINING IMPINGER.** I. Gene GILLMAN, Jacob P. Hilldrup, Sarah R. Packett and Jacqueline M. Collins; Enthalpy Analytical, Henrico, VA USA
- 74. DETERMINATION OF PRIMARY AROMATIC AMINES IN SMOKELESS TOBACCO PRODUCTS.** Andrew G. CHEETHAM and Alexandra M. Martin; Enthalpy Analytical, Richmond, VA USA
- 75. ANALYSIS OF NICOTINE, MENTHOL, WATER, PROPYLENE GLYCOL, AND GLYCERIN IN TOBACCO HEATED PRODUCT.** Tiffany LANDINGHAM, Michael Siemos, Corey Posten, Chris Almond, David D. Mickey, Carl J. Adams and Salem Chouchane; Eurofins Professional Scientific Services, Winston-Salem, NC USA
- 76. NICOTINE IN VIVO EXTRACTION AND PHARMACOKINETICS OF NON-TOBACCO-BASED NICOTINE POUCHES (ZYN®) COMPARED WITH TOBACCO-BASED SWEDISH SNUS AND AMERICAN MOIST SNUFF.** Mikael STAAF, Trygve Ljung and Robert Pendrill; Swedish Match, Stockholm, Sweden
- 77. COMPARISON OF METHODS FOR MEASURING THE PARTICLE SIZE DISTRIBUTION OF SMOKELESS TOBACCO PRODUCTS.** Sean P. PLATT, Charnise Jackson, Kathryn Dill and Mark Rusyniak; Altria Client Services, Richmond, VA USA
- 78. PROBABILISTIC RISK ASSESSMENT TO COMPARE HEALTH RISKS OF ORAL TOBACCO PRODUCTS.** Annette B. SANTAMARIA<sup>1</sup>, Marshall E. Krotenberg<sup>2</sup>, Scott M. Drouin<sup>1</sup>, Kimberly D. Ehman<sup>3</sup>, Chastain A. Anderson<sup>3</sup>, Vanessa Haase<sup>3</sup> and Donna C. Smith<sup>3</sup>; <sup>1</sup>Rimkus Consulting Group, Houston, TX USA, <sup>2</sup>Rimkus Consulting Group, Phoenix, AZ USA, <sup>3</sup>Altria Client Services, Richmond, VA USA
- 79. COMPARISON OF THE ACETALDEHYDE, FORMALDEHYDE, AND ACROLEIN YIELDS IN CIGARS UNDER DIFFERENT SMOKING REGIMENS USING A LINEAR CIGARETTE SMOKING MACHINE.** Mimmy YOUNG, Todd L. Cecil, Tricia Johnson and Shixia Feng; Food and Drug Administration, Calverton, MD USA
- 80. USE OF THE BENCHMARK DOSE APPROACH IN CARCINOGENIC RISK ASSESSMENT FOR NNK.** Ashley TURNER and Felix Ayala-Fierro; ITG Brands, Greensboro NC USA



- 81. REVIEW OF RELEVANT TOXICOLOGICAL DATA USING BMDS TO ESTIMATE INHALATION UNIT RISK FOR RISK ASSESSMENT PRACTICES.** Ashley TURNER and Felix Ayala-Fierro; ITG Brands, Greensboro NC USA
- 82. HPHC ANALYSIS OF SEVEN FLAVORS OF A TEMPERATURE-REGULATED NICOTINE SALT-BASED POD SYSTEM.** David COOK, Bryant Hiraki and Manoj Misra; JUUL Labs, San Francisco, CA USA
- 83. TOBACCO EMISSIONS FOR CANADIAN CIGARETTES: A LOOK BACK ON 10 YEARS.** Dilara JAKUPOVIC, Huda Masoud, Nemanja Mladjenovic and Trevor Mischki; Health Canada, Ottawa, ON Canada
- 84. ALTERED LUNG BARRIER FUNCTION IS A PHYSIOLOGICALLY-RELEVANT BIOMARKER OF POTENTIAL HARM.** Patrudu MAKENA, Sarah Baxter-Wright, Peter Chen, and G. L. Prasad; RAI Services Company, Winston Salem, NC USA
- 85. ESTABLISHMENT OF THE METHOD FOR THE ANALYSIS OF GASEOUS COMPOUNDS IN E-CIGARETTE EMISSION USING A SORBENT CARTRIDGE.** Seok HEO, Hoil Kang, Hyoung Joon Park, Jin Hee Lee, Dong Gu Lee and Seongsoo Park; Ministry of Food and Drug Safety, Chungju-Si, Chungcheongbuk-do, Republic of Korea
- 86. DETERMINATION OF TOBACCO ALKALOIDS IN CONSUMER PRODUCTS BY UPLC-MS/MS USING A MODIFIED QUECHERS METHOD.** John R. SHIFFLETT, James B. Wittenberg and Dawit Z. Bezabeh; Alcohol and Tobacco Tax and Trade Bureau, Beltsville, MD USA
- 87. ASSESSMENT OF IN VITRO TOXICITIES DEMONSTRATED BY TOTAL PARTICULATE MATTER (TPM) AND GAS VAPOR PHASE (GVP) SAMPLES GENERATED FROM TOBACCO HEATING PRODUCTS (THPS) COMPARED WITH A COMBUSTIBLE CIGARETTE.** Thomas J. SHUTSKY, Casandra K. West, Kristen G. Jordan and Christopher S. Junker; RAI Services Company, Winston-Salem, NC USA
- 88. HOW DID WE MOVE FROM SMOKING TOPOGRAPHY TO VAPING TOPOGRAPHY?** Elise POULIN-DELORME, Kevin Menager and Florian Lozano; SODIM, Saint Jean de Braye, France
- 89. DETERMINATION OF NICOTINE, TOBACCO-SPECIFIC NITROSAMINES, AND POLYCYCLIC AROMATIC HYDROCARBONS IN CANDIDATE REFERENCE MATERIAL 8112 TOBACCO SMOKE CONDENSATE SOLUTION.** Walter B. WILSON and Lane C. Sander; National Institute of Standards and Technology, Gaithersburg, MD USA
- 90. DIFFERENTIAL REGULATION OF ION CHANNEL FUNCTION FROM EXPOSURES TO CIGARETTE SMOKE AND ENDS PREPARATIONS.** Rachael E. RAYNER<sup>1</sup>, Patrudu Makena<sup>2</sup>, G. L. Prasad<sup>2</sup> and Estelle Cormet-Boyaka<sup>1</sup>; <sup>1</sup>The Ohio State University, Columbus OH USA. <sup>2</sup>RAI Services Company, Winston Salem, NC USA
- 91. TOBACCO-SPECIFIC NITROSAMINES IN THE MAINSTREAM SMOKE OF COMMERCIAL LITTLE CIGARS.** Selvin H. EDWARDS<sup>1</sup>, Matthew Hassink<sup>1</sup>, Kenneth M. Taylor<sup>1</sup>, Cliff Watson<sup>2</sup>, Peter Kuklenyik<sup>2</sup>, Ruth Wang<sup>2</sup>, Patrick Chen<sup>2</sup>, Liza Valentin-Blasini<sup>2</sup> and Brett Kimbrell<sup>2</sup>; <sup>1</sup>Food and Drug Administration, Silver Spring, MD USA, <sup>2</sup>Centers for Disease Control and Prevention, Atlanta, GA USA
- 92. WITHIN BRAND AND ACROSS BRAND CONTENT AND VARIABILITY OF NICOTINE AND TOBACCO-SPECIFIC NITROSAMINES IN 8 COMMERCIAL US CIGAR BRANDS.** Jacob P. HILLDRUP, I. Gene Gillman and Katilyn N. L. Brooks; Enthalpy Analytical, Henrico, VA USA

**93. CIGAR USAGE PATTERNS AMONG ADULT TOBACCO USERS: RESULTS OF A LARGE, NATIONALLY REPRESENTATIVE SURVEY.** Susan MORRIS; Altria Client Services, Richmond, VA USA

**94. A BUY NEW METHOD OF TOBACCO FOR SUSTAINABLE TOBACCO CROP IN IRAN (MAZANDARAN PROVINCE) AND TOBACCO GROWERS RESPONSIBILITY.** Mohsenzadeh REZA; Iranian Tobacco Company, Behshahr, Iran

**95. EFFECT OF PLANT GROWTH REGULATORS ON MATURATION, AND QUALITY OF ORIENTAL TOBACCO.** Mohsenzadeh REZA; Iranian Tobacco Company, Behshahr, Iran

**96. DESIGN AND MANUFACTURE OF MODERN BARN AND RACK FOR CURING TOBACCO.** Mohsenzadeh REZA, Ahmadi Mojtaba and Moravveji Majid; Iranian Tobacco Company, Behshahr, Iran

**TUESDAY AFTERNOON, SEPTEMBER 17, 2019**

**Session A**

**Smokeless Tobacco Products**

*Session Chair:* Felix Ayala-Fierro

**Session B**

**e-cigarettes**

*Session Chair:* Fraser Williamson

**2:30 PM**

**97. METHODOLOGY TO DETERMINE THE PARTICLE SIZE DISTRIBUTION, MEAN, AND STANDARD DEVIATION FROM SIEVE DATA.** F. Kelley ST. CHARLES<sup>1</sup> and Walter T. Morgan<sup>2</sup>; <sup>1</sup>St. Charles Consultancy, Lewisville, NC USA, <sup>2</sup>RAI Services, Winston-Salem, NC USA

**2:50 PM**

**98. IN VITRO DISSOLUTION TESTING OF NICOTINE RELEASE FROM SMOKELESS TOBACCO PRODUCTS.** Fadi ALDEEK, John H. Miller IV, Tim L. Danielson, Yezdi B. Pithawalla, Celeste T. Wilkinson, Anthony P. Brown and Karl A. Wagner; Altria Client Services, Richmond, VA USA

**3:10 PM**

**99. EXTRACTION OF BAP IN WATER FROM MOIST SNUFF.** Serban C. MOLDOVEANU and Andrew Harrison, R.J. Reynolds Tobacco, Winston-Salem, NC USA

**2:30 PM**

**102. NOVEL APPLICATION OF DIFFERENTIAL ION MOBILITY SPECTROMETRY-TANDEM MASS SPECTROMETRY FOR IMPROVED ASSAY SELECTIVITY AND SENSITIVITY IN THE QUANTITATIVE DETERMINATION OF TOTAL NNN, TOTAL NNAL AND 2- / 3-HPMA IN HUMAN URINE.** Jeff PLOMLEY; Altasciences, Laval, Canada

**2:50 PM**

**103. PRECLINICAL TESTING OF FLAVORS IN E-VAPOR PRODUCTS, PART 1: SELECTION OF REPRESENTATIVE FLAVOR MIXTURES FOR TOXICOLOGICAL EVALUATIONS USING A STRUCTURAL GROUPING APPROACH.** Kimberly D. EHMAN<sup>1</sup>, Timothy B. Langston<sup>1</sup>, Ashutosh Kumar<sup>1</sup>, Monica Lee<sup>1</sup>, Davide Sciuscio<sup>2</sup>, Patrick Vanscheeuwijk<sup>2</sup> and Julia Hoeng<sup>2</sup>; <sup>1</sup>Altria Client Services, Richmond, VA USA, <sup>2</sup>PMI R&D, Neuchâtel, Switzerland

**3:10 PM**

**104. PRECLINICAL TESTING OF FLAVORS IN E-VAPOR PRODUCTS, PART 2: PREPARATION AND STABILITY CHARACTERIZATION OF REPRESENTATIVE FLAVOR MIXTURES.** Cameron R. SMITH<sup>1</sup>, John H. Miller IV<sup>1</sup>, Niti Shah<sup>1</sup>, Ashutosh Kumar<sup>1</sup>, Monica Lee<sup>1</sup>, Felix Frauendorfer<sup>2</sup>, Philippe Guy<sup>2</sup>, Pierrick Diana<sup>2</sup> and Anneke Glabasnia<sup>2</sup>; <sup>1</sup>Altria Client Services, Richmond, VA USA, <sup>2</sup>PMI R&D, Neuchâtel, Switzerland

**Break**

**4:00 PM**  
**100. EVALUATION OF CONSTITUENTS RELEASED FROM SMOKELESS TOBACCO PRODUCTS TO HUMAN SALIVA.** Siqi GUAN, Huihua Ji and Lowell Bush; University of Kentucky, Lexington, KY USA

**4:00 PM**  
**105. PRECLINICAL TESTING OF FLAVORS IN E-VAPOR PRODUCTS, PART 3: IN VITRO CYTOTOXICITY AND GENOTOXICITY OF REPRESENTATIVE FLAVOR MIXTURES.** Utkarsh B. DOSHI, Jingjie Zhang, Ashutosh Kumar and K. Monica Lee; Altria Client Services, Richmond, VA USA

**4:20 PM**  
**101. CHARACTERIZATION OF THE BACTERIAL COMMUNITY ASSOCIATED WITH SMOKELESS TOBACCO REFERENCE PRODUCTS UNDER DIFFERENT STORAGE CONDITIONS.** Shuang LIU, Isaac Greenhut and Luke Moe; University of Kentucky, Lexington, KY USA

**4:20 PM**  
**106. PRECLINICAL TESTING OF FLAVORS IN E-VAPOR PRODUCTS, PART 4: FLAVOR TRANSFER FROM THE LIQUID TO THE AEROSOL FOR INHALATION EXPOSURE.** Jingjie ZHANG, Cameron Smith, Chase Anderson, Nicholas McCutcheon, John Miller and K. Monica Lee; Altria Client Services, Richmond, VA USA

**4:40 PM**  
**107. PREDICTED IMPACTS OF E-CIGARETTES ON US MORTALITY AND HEALTH CARE COSTS.** Bill POLAND<sup>1</sup> and Sylvain Larroque<sup>2</sup>; <sup>1</sup>Certara USA, Menlo Park, CA USA, <sup>2</sup>JT International, Geneva, Switzerland

**Adjourn**

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

**6:30 PM** – Pre-banquet Reception

**Wednesday Morning, September 18, 2019**  
**Combined Session**  
**Materials, Manufacturing and Finished Product**  
*Session Chair: Ian Fearon*

**9:00 AM**  
**108. ADULT CIGARETTE SMOKERS' EXPECTATIONS, PERCEPTIONS AND REACTIONS TO REDUCED NICOTINE CONTENT CIGARETTE PROTOTYPES.** Andrea VANSICKEL and Jan Angel; Altria Client Services, Richmond VA USA

**9:20 AM**  
**109. FUNCTIONAL FILTER PLUG WRAP PAPER FOR THE CONTROL OF THE THERMAL ENERGY OF THE AEROSOL FROM HEATED TOBACCO PRODUCTS.** Michael LINDNER<sup>1</sup> and Nadine Leichsenring<sup>2</sup>; <sup>1</sup>TANNPAPIER, Traun Austria, <sup>2</sup>Hauni Maschinenbau, Hamburg Germany

**9:40 AM**  
**110. WHAT IS ACID ABOUT ACID CIGARS?** John H. LAUTERBACH; Lauterbach & Associates, Macon, GA USA

**10:00 AM**

**111. PREPARATION OF AMINO ACID IONIC LIQUIDS FOR REDUCING HCN AND CROTONALDEHYDE FROM SMOKE AND EVALUATION OF CIGARETTE APPLICATION.**

SUN Xuehui<sup>1</sup>, Dong Lu<sup>1</sup>, Wang Hongwei<sup>2</sup>, Yang Song<sup>1</sup>, Sun Peijian<sup>1</sup>, Guo Ge<sup>1</sup>, Pan Lining<sup>1</sup>, Sun Zhitao<sup>2</sup>, Zhang Xiaobing<sup>1</sup>, Tian Haiying<sup>2</sup> and Nie Cong<sup>1</sup>; <sup>1</sup>Zhengzhou Tobacco Research Institute of CNTC, Zhengzhou, China, <sup>2</sup>Technology Center, China Tobacco Henan Industrial, Zhengzhou, China

**Adjourn**