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<sup>1</sup>University of Tokyo, JAPAN, <sup>2</sup>Japan Science and Technology Agency (JST), JAPAN and <sup>3</sup>Keio University, JAPAN

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<sup>1</sup>University of Tokyo, JAPAN and <sup>2</sup>Kyoto University, JAPAN

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<sup>1</sup>Osaka University, JAPAN, <sup>2</sup>RIKEN, JAPAN, and <sup>3</sup>University of Tokyo, JAPAN

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<sup>1</sup>Université Paris Sud, FRANCE and <sup>2</sup>CNRS, FRANCE

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<sup>1</sup>Nagaoka University of Technology, JAPAN and <sup>2</sup>National Institute of Advanced Industrial Science and Technology (AIST), JAPAN

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<sup>1</sup>*University of Freiburg - IMTEK, GERMANY*, <sup>2</sup>*Jobst Technologies GmbH, GERMANY*, and <sup>3</sup>*Bionas GmbH, GERMANY*

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<sup>1</sup>*Japan Women's University, JAPAN*, <sup>2</sup>*Toyo University, JAPAN*, <sup>3</sup>*Gunma University, JAPAN*, and <sup>4</sup>*Hamamatsu University School of Medicine, JAPAN*

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<sup>1</sup>Lund University, SWEDEN, <sup>2</sup>Labmedicin Skåne, SWEDEN, and <sup>3</sup>Dongguk University, SOUTH KOREA

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<sup>1</sup>Nagoya University, JAPAN, <sup>2</sup>Osaka University, JAPAN, and <sup>3</sup>National Institute of Advanced Industrial Science and Technology (AIST), JAPAN

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<sup>1</sup>Nagoya University, JAPAN, <sup>2</sup>Stockholm University, SWEDEN, <sup>3</sup>Hokkaido University, JAPAN, and <sup>4</sup>National Institute for Materials Science, JAPAN, and <sup>5</sup>National Institute of Advanced Industrial Science and Technology (AIST), JAPAN

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<sup>1</sup>*imec, BELGIUM*, <sup>2</sup>*Alexandria University, EGYPT*,  
<sup>3</sup>*Centre of Excellence for Nano-manufacturing Applications (CENA), SAUDI ARABIA*, and  
<sup>4</sup>*Panasonic Corporation, JAPAN*

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<sup>1</sup>*Istituto G. Gaslini, ITALY* and <sup>2</sup>*University of Napoli, ITALY*

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<sup>1</sup>*Siloam Biosciences Inc., USA* and <sup>2</sup>*University of Cincinnati, USA*

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<sup>1</sup>*École Polytechnique Fédérale de Lausanne (EPFL), SWITZERLAND* and  
<sup>2</sup>*Universitaire Vaudois, and Université de Lausanne, SWITZERLAND*

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*Dublin City University, IRELAND*



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<sup>1</sup>University of Hull, UK, <sup>2</sup>University of Leiden, THE NETHERLANDS, <sup>3</sup>Cankaya University, TURKEY, and  
<sup>4</sup>MIMETAS VB, THE NETHERLANDS

## Poster Session Medical Research & Applications - Cancer Research

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<sup>1</sup>Singapore-MIT Alliance for Research and Technology (SMART), SINGAPORE,  
<sup>2</sup>National University of Singapore, SINGAPORE, <sup>3</sup>National Cancer Centre Singapore, SINGAPORE,  
<sup>4</sup>ClearbridgeBioMedics Pte Ltd., SINGAPORE, and <sup>5</sup>Massachusetts Institute of Technology, USA

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<sup>1</sup>University of Maryland, Baltimore, USA, <sup>2</sup>University of Maryland, College Park, USA, and  
<sup>3</sup>National Institute of Standards and Technology (NIST), USA

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E. Lartigau<sup>2</sup>, T. Fujii<sup>1</sup>, F. Cleri<sup>3</sup>, H. Fujita<sup>1</sup>, and D. Collard<sup>1,4</sup>  
<sup>1</sup>University of Tokyo, JAPAN, <sup>2</sup>University of Lille 2, FRANCE, and <sup>3</sup>University of Lille 1, FRANCE,

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<sup>1</sup>Hokkaido University, JAPAN, <sup>2</sup>Nagoya University, JAPAN, <sup>3</sup>The Priority Research Project, JAPAN

### T.152h

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<sup>1</sup>University of Maryland, College Park, USA and <sup>2</sup>University of Maryland School of Medicine, USA

## Poster Session Medical Research & Applications - Drug Delivery Systems

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<sup>1</sup>Nagoya University, JAPAN, <sup>2</sup>Hokkaido University, JAPAN, and  
<sup>3</sup>National Institute of Advanced Industrial Science and Technology (AIST), JAPAN
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T. Higashiyama<sup>1</sup>, S. Sakuma<sup>3</sup>, F. Arai<sup>1</sup>, and Y. Yamanishi<sup>2</sup>  
<sup>1</sup>Nagoya University, JAPAN, <sup>2</sup>Shibaura Institute of Technology, JAPAN, and <sup>3</sup>Osaka University, JAPAN

## Poster Session Medical Research & Applications - Regenerative Medicine & Tissue Engineering

- T.155h**  
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<sup>1</sup>McGill University, CANADA, <sup>2</sup>Harvard-MIT Division of Health Sciences and Technology, USA, and  
<sup>3</sup>Brigham and Women's Hospital, Harvard Medical School, USA
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<sup>1</sup>*Peking University, CHINA* and  
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<sup>1</sup>Nara Institute of Science and Technology, JAPAN, <sup>2</sup>University of Tokyo, JAPAN, and  
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<sup>1</sup>University of Tokyo, JAPAN and <sup>2</sup>Japan Science and Technology Agency (JST), JAPAN

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<sup>1</sup>*Seoul National University, SOUTH KOREA* and <sup>2</sup>*Korea University, SOUTH KOREA*

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<sup>2</sup>*University of Freiburg – IMTEK, GERMANY,* and <sup>3</sup>*University of Freiburg – BIOSS, GERMANY*

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<sup>1</sup>*Hiroshima University, JAPAN*, <sup>2</sup>*Kyushu Institute of Technology, JAPAN*, <sup>3</sup>*Toyohashi University of Technology, JAPAN*, and <sup>4</sup>*University of Tokyo, JAPAN*

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<sup>1</sup>*Institute for Micromachining and Information Technology (HSG-IMIT), GERMANY* and <sup>2</sup>*Diarect AG, GERMANY*

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<sup>1</sup>Meijo University, JAPAN, <sup>2</sup>Osaka University, JAPAN, <sup>3</sup>Nagoya University, JAPAN, and  
<sup>4</sup>NARO Institute of Livestock and Grassland Science, JAPAN

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<sup>1</sup>University of British Columbia, CANADA and <sup>2</sup>Vancouver General Hospital, CANADA

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<sup>1</sup>Osaka University, JAPAN and <sup>2</sup>Microjet Corporation, JAPAN

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<sup>1</sup>Pennsylvania State University, USA and <sup>2</sup>Ascent Bio-Nano Technologies Inc., USA

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<sup>1</sup>Nagoya University, JAPAN, <sup>2</sup>Aichi Science and Technology Foundation, JAPAN, and <sup>3</sup>Aichi Cancer Center Research Institute, JAPAN
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<sup>1</sup>National University of Singapore, SINGAPORE, <sup>2</sup>ClearBridge Biomedics Pte. Ltd., SINGAPORE, and <sup>3</sup>Singapore Institute for Neurotechnology (SiNAPSE), SINGAPORE
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<sup>1</sup>Royal Institute of Technology (KTH), SWEDEN and <sup>2</sup>Uppsala University, SWEDEN
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<sup>1</sup>Wroclaw University of Technology, POLAND and <sup>2</sup>Poznan University of Life Sciences, POLAND
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<sup>1</sup>ETH Zürich, SWITZERLAND and <sup>2</sup>Zurich Instruments AG, SWITZERLAND
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<sup>1</sup>Institute of Physical and Chemical Research (RIKEN), JAPAN, <sup>2</sup>Kyoto University, JAPAN, and <sup>3</sup>Waseda University, JAPAN

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*Stanford University, USA*

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*<sup>1</sup>University of Maryland, College Park, USA and <sup>2</sup>National Institute of Standards and Technology (NIST), USA*

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*<sup>1</sup>Kanagawa Academy of Science and Technology, JAPAN, <sup>2</sup>University of Tokyo, JAPAN, and <sup>3</sup>Japan Science and Technology Agency (JST), JAPAN*

**Poster Session Cells & Liposomes on Chip - Stem Cells**

**W.115e**  
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**Poster Session Cells & Liposomes on Chip - Cell-Surface Interaction**

**W.116e**  
**CELL-SURFACE AFFINITY OF THE REFERENCE SURFACE IS KEY TO**  
**OBSERVE SPECIFIC CELL RESPONSES TO SUBSTRATE-BOUND CUES** ..... 1704  
S.G. Ricoult, G.H. Thompson-Steckel, J.P. Correia, T.E. Kennedy, and D. Juncker  
*McGill University, CANADA*

**W.117e**  
**MICROSTRUCTURED THERMORESPONSIVE POLYMER COATINGS**  
**AS A PROMISING TOOL FOR CONTROLLING NEURITE OUTGROWTH**  
**IN ARTIFICIAL NEURONAL NETWORKS** ..... 1707  
M. Kirschbaum, G. Boerner, K. Uhlig, and C. Duschl  
*Fraunhofer IBMT, GERMANY*

## Poster Session Cells & Liposomes on Chip - Cell-Culturing & Perfusion (2D & 3D)

- W.118e**  
**ALGINATE ENCAPSULATION OF CELL-LADEN BEADS FOR MICROFLUIDIC TUMOR SPHEROID CULTURE** ..... 1710  
C. Bayly, L. Yu, and K.C. Cheung  
*University of British Columbia, CANADA*
- W.119e**  
**COMPARATIVE MICROFLUIDIC CULTURING OF IMMOBILIZED SINGLE CELLS WITH ON-SITE FLUORESCENT-PROTEIN INDUCTION** ..... 1713  
Z. Zhu, O. Frey, D. Ottoz, F. Rudolf, and A. Hierlemann  
*ETH Zürich, SWITZERLAND*
- W.120e**  
**MATRIGEL-ALGINATE CORE-SHELL BEADS FOR CONTROLLED TUMOR SPHEROID FORMATION** ..... 1716  
L. Yu, C. Bayly, and K. Cheung  
*University of British Columbia, CANADA*
- W.121e**  
**MONO-, CO- AND MIXED CULTURE OF CELLS IN THE MICROSYSTEM FOR PHOTODYNAMIC THERAPY PROCEDURES** ..... 1719  
E. Jastrzebska, N. Bajkowska, K. Zukowski, M. Chudy, A. Dybko, and Z. Brzozka  
*Warsaw University of Technology, POLAND*
- W.122e**  
**RECONSTRUCTION OF CAPILLARY NETWORKS IN HUVEC-MSC COCULTURE CULTURED IN STATIC/FLOW CONDITIONS IN A MICROFLUIDIC PLATFORM** ..... 1722  
K. Tanimura, K. Yamamoto, and R. Sudo  
*Keio University, JAPAN*

## Poster Session Cells & Liposomes on Chip - Inter- & Intracellular Signaling, Cell Migration

- W.123e**  
**A PDMS-SEALED HYDROGEL DEVICE FOR RAPID AND ACCUARATE GENERATION OF VARIOUS CONCENTRATION GRADIENTS** ..... 1725  
M. Kim, M. Jia and T. Kim  
*Ulsan National Institute of Science and Technology (UNIST), SOUTH KOREA*
- W.124e**  
**IN-SITU MONITORING TO MECHANOSTRESS RESPONSES USING MICROFLUIDIC DEVICE** ..... 1728  
Y. Nakashima<sup>1</sup>, Y. Yang<sup>2</sup>, and K. Minami<sup>2</sup>  
*<sup>1</sup>Kumamoto University, JAPAN and <sup>2</sup>Yamaguchi University, JAPAN*
- W.125e**  
**ON-CHIP IMMUNOELECTROPHORESIS FOR EVALUATING SURFACE PROTEINS OF EXOSOMES AT SINGLE-PARTICLE LEVEL FOR DIAGNOSTIC APPLICATION** ..... 1731  
T. Akagi<sup>1</sup>, K. Kato<sup>1</sup>, N. Hanamura<sup>1</sup>, N. Kosaka<sup>2</sup>, T. Ochiya<sup>2</sup>, and T. Ichiki<sup>1</sup>  
*<sup>1</sup>University of Tokyo, JAPAN and <sup>2</sup>National Institute Cancer Center, JAPAN*

## Poster Session Cells & Liposomes on Chip - Others

- W.126e**  
**DIRECT ELECTROPORATION OF ADHERENT CELLS BY HYDROGEL-BASED MICROELECTRODES** ..... 1734  
M. Nishizawa<sup>1</sup> and K. Nagamine<sup>2</sup>  
*<sup>1</sup>Tohoku University, JAPAN and <sup>2</sup>Japan Science and Technology Agency (JST), JAPAN*



**W.127e**  
**PARALLEL cDNA SYNTHESIS FROM THOUSANDS OF INDIVIDUALLY ENCAPSULATED CANCER CELLS – TOWARDS LARGE SCALE SINGLE CELL GENE EXPRESSION ANALYSIS** ..... 1737  
L.M. Soderberg, H.N. Joensson, and H. Andersson Svahn  
*Royal Institute of Technology (KTH), SWEDEN*

**W.128e**  
**TIME-LAPSE SCREENING BY PARALLELIZED LENSFREE IMAGING** ..... 1740  
V. Haguët<sup>1,2,3</sup>, P. Obeïd<sup>1,2,3</sup>, R. Griffin<sup>1,2,3,4</sup>, D. Freida<sup>1,2,3</sup>, L. Guyon<sup>1,2,3</sup>, and X. Gidrol<sup>1,2,3</sup>  
<sup>1</sup>Commissariat à l'énergie atomique (CEA), FRANCE, <sup>2</sup>INSERM, FRANCE,  
<sup>3</sup>University Grenoble-Alpes, FRANCE, and <sup>4</sup>CNRS, FRANCE

#### Poster Session Organs & Organisms - Organs on Chip

**W.129f**  
**HUMAN SPLEEN-ON-A-CHIP: DESIGN AND VALIDATION OF A MICROFLUIDIC MODEL RESEMBLING THE INTERSTITIAL SLITS AND THE FAST AND SLOW MICROCIRCULATIONS** ..... 1743  
L.G. Rigat-Brugarolas<sup>1</sup>, M. Bernabeu<sup>2</sup>, A. Elizalde<sup>2</sup>, M. de Niz<sup>2</sup>, L. Martin-Jaular<sup>2</sup>, C. Fernandez-Becerra<sup>2</sup>, A. Homs-Corbera<sup>1</sup>, H.A. del Portillo<sup>2</sup>, and J. Samitier<sup>1</sup>  
<sup>1</sup>Institute for Bioengineering of Catalonia (IBEC), SPAIN, <sup>2</sup>Centro de Investigación Biomédica en Red de Bioingeniería, Biomateriales y Nanomedicina, SPAIN, <sup>3</sup>Barcelona Centre for International Health Research (CRESIB), SPAIN, <sup>4</sup>Barcelona University, SPAIN and <sup>5</sup>Institució Catalana de Recerca i Estudis Avançats (ICREA), SPAIN

**W.130f**  
**ON-CHIP ABSORPTION AND METABOLISM MODEL FOR PHARMACOKINETIC STUDIES** 1746  
H. Kimura<sup>1</sup>, T. Ikeda<sup>2</sup>, Y. Sakai<sup>2</sup>, and T. Fujii<sup>2</sup>  
<sup>1</sup>Tokai University, JAPAN and <sup>2</sup>University of Tokyo, JAPAN

#### Poster Session Organs & Organisms - Organisms on Chip (C. elegans, Zebrafish, Arabidopsis, etc.)

**W.131f**  
**ELECTROPHYSIOLOGICAL ANALYSIS OF NEMATODE LARVAE WITH AN INTEGRATED MICROFLUIDIC PLATFORM** ..... 1749  
C. Hu, V. O'Connor, L. Holden-Dye, and H. Morgan  
*University of Southampton, UK*

**W.132f**  
**ON-CHIP CHEMOTAXIS ASSAY OF PLANT-PARASITIC NEMATODE TOWARDS INCREASING GLOBAL CROP PRODUCTIVITY** ..... 1752  
H. Hida<sup>1,4</sup>, H. Nishiyama<sup>2</sup>, S. Sawa<sup>2</sup>, T. Higashiyama<sup>1,3</sup>, and H. Arata<sup>1</sup>  
<sup>1</sup>Japan Science and Technology Agency (JST), JAPAN, <sup>2</sup>Kumamoto University, JAPAN,  
<sup>3</sup>Nagoya University, JAPAN, and <sup>4</sup>Kobe University, JAPAN

#### Poster Session Diagnostics & Analytics - Sample Preparation (Whole blood, Saliva, Cells, Tissue, Food, etc.)

**W.133g**  
**A NUCLEIC ACID EXTRACTION MEMBRANE FOR POINT OF CARE DEVICES** ..... 1755  
R.E. Mackay, N. Garg, P. Craw, J.C. Ahern, and W. Balachandran  
*Brunel University, UK*

**W.134g**  
**AUTOMATED WHOLE BLOOD PROCESSING WITH A PORTABLE MICROFLUIDIC DEVICE FOR POINT-OF-CARE DIAGNOSIS** ..... 1758  
H. Li, H. Jayamohan, C. Lambert, S. Mohanty, and B.K. Gale  
*University of Utah, USA*

**W.135g**  
**MICROFLUIDIC IMMUNOPHENOTYPING ASSAY PLATFORM FOR IMMUNOMONITORING OF SUBPOPULATIONS OF IMMUNE CELLS** ..... 1761  
W. Chen, N. Huang, B. Oh, T.T. Cornell, T.P. Shanley, K. Kurabayashi, and J. Fu  
*University of Michigan, USA*

**W.136g**  
**PORTABLE DIGITAL MICROFLUIDIC/MASS SPECTROMETRY METHOD FOR QUANTIFICATION OF DRUGS OF ABUSE IN URINE** ..... 1764  
N.M. Lafrenière<sup>1</sup>, A.E. Kirby<sup>1,4</sup>, B. Seale<sup>1</sup>, E. Gritzan<sup>1</sup>, J.T. Shelley<sup>2</sup>, P.I. Hendricks<sup>2</sup>,  
R.G. Cooks<sup>2</sup>, and A.R. Wheeler<sup>1</sup>  
<sup>1</sup>*University of Toronto, CANADA and* <sup>2</sup>*Purdue University, USA*

**Poster Session Diagnostics & Analytics - Nucleic Acid Analysis (e.g. Digital PCR, Next Generation Sequencing)**

**W.137g**  
**DETECTION OF OIL-UTILIZING MICROORGANISMS BY NUCLEIC ACID SEQUENCE-BASED AMPLIFICATION IN A TOTAL ANALYSIS LAB-ON-A-CHIP DEVICE** .... 1767  
B.K. Honsvall<sup>1,2</sup>, A. Ezkerra<sup>3,4</sup>, A. Gulliksen<sup>5</sup>, T. Dong<sup>1</sup>, and F. Karlsen<sup>1,5</sup>  
<sup>1</sup>*Vestfold University College, NORWAY,* <sup>2</sup>*Trilobite Microsystems AS, NORWAY,*  
<sup>3</sup>*CIC MicroGUNE, SPAIN,* <sup>4</sup>*IK4-Ikerlan, SPAIN, and* <sup>5</sup>*NorChip AS, NORWAY*

**W.138g**  
**FOIL-BASED DNA MELTING CURVE ANALYSIS PLATFORM FOR LOW-COST POINT-OF-CARE MOLECULAR DIAGNOSTICS** ..... 1770  
A. Ohlander<sup>1</sup>, S. Bauer<sup>1</sup>, H. Ramachandraiah<sup>2</sup>, A. Russom<sup>2</sup>, and K. Bock<sup>1,3</sup>  
<sup>1</sup>*Fraunhofer Research Institution for Modular Solid State Technologies EMFT, GERMANY,*  
<sup>2</sup>*KTH Royal Institute of Technology, SWEDEN, and* <sup>3</sup>*Technical University Berlin, GERMANY*

**W.139g**  
**LEVERAGING PEPTIDE NUCLEIC ACID PROBES AND ISOTACHOPHORESIS FOR ON-CHIP HIGH SENSITIVITY DETECTION OF DNA** ..... 1773  
N. Ostromohov, O. Schwartz, and M. Bercovici  
*Technion – Israel Institute of Technology, ISRAEL*

**W.140g**  
**ON-CHIP MULTIPLEX PCR AMPLIFICATION DIRECTLY FROM WHOLE BLOOD** ..... 1776  
R.S. Wiederkehr<sup>1,2</sup>, B. Jones<sup>1</sup>, S. Peeters<sup>1</sup>, T. Stakenborg<sup>1</sup>, O. Ibrahim<sup>3,4</sup>, P. Fiorini<sup>1</sup>, H. Tanaka<sup>5</sup>,  
I. Yamashita<sup>5</sup>, T. Matsuno<sup>5</sup>, and L. Lagae<sup>1,2</sup>  
<sup>1</sup>*imec, BELGIUM,* <sup>2</sup>*Katholieke Universiteit Leuven, BELGIUM,* <sup>3</sup>*Alexandria University, Alexandria, EGYPT,*  
<sup>4</sup>*Consortium Centre of Excellence for Nano-manufacturing Applications (CENA), SAUDI ARABIA, and*  
<sup>5</sup>*Panasonic Corporation, JAPAN*

**W.141g**  
**THERMALLY-MULTIPLEXED MICROFLUIDIC PCR** ..... 1779  
C.R. Phaneuf<sup>1</sup>, N. Pak<sup>1</sup>, D.C. Saunders<sup>1</sup>, E. Popler<sup>2</sup>, N. Nagpal<sup>1</sup>, R. Jerris<sup>3</sup>, A. Shane<sup>2</sup>, and C.R. Forest<sup>1</sup>  
<sup>1</sup>*Georgia Institute of Technology, USA,* <sup>2</sup>*Emory University, USA, and* <sup>3</sup>*Children's Healthcare of Atlanta, USA*

**Poster Session Diagnostics & Analytics - Protein Analysis & Characterization (e.g. Proteomics)**

**W.142g**  
**INTEGRATED MICROFLUIDIC FEMTOLITER ARRAY FOR QUANTITATIVE ELISA AT THE ATTOMOLAR LEVEL** ..... 1782  
Y. Zeng and T. Wang  
*University of Kansas, USA*

**W.143g**  
**MICROFLUIDICS TO ISOLATE UNTAGGED PROTEINS FROM CELL EXTRACTS FOR VISUAL ANALYSIS BY ELECTRON MICROSCOPY** ..... 1785  
D. Giss, S. Kemmerling, V. Dandey, H. Stahlberg, and T. Braun  
*University of Basel, SWITZERLAND*

**W.144g**  
**TOWARDS A HIGH-THROUGHPUT, DROPLET-BASED VIRAL-FUSION ASSAY WITH SINGLE-PARTICLE SENSITIVITY** ..... 1788  
S. Mashaghi and A.M. van Oijen  
*University of Groningen, THE NETHERLANDS*

#### Poster Session Diagnostics & Analytics - Clinical Chemistry

**W.145g**  
**AN OPTICAL LAB-ON-A-CHIP SYSTEM BASED ON SPR SENSOR FOR CONTINUOUS GLUCOSE MONITORING** ..... 1791  
D. Li, H. Yu, J. Wu, D. Yang, and K. Xu  
*Tianjin University, CHINA*

**W.146g**  
**QUANTITATIVE DETERMINATION OF BRANCHED-CHAIN AMINO ACIDS IN HUMAN PLASMA USING PRESSURE-DRIVEN LIQUID CHROMATOGRAPHY WITH PILLAR ARRAY COLUMNS** ..... 1794  
Y. Song<sup>1</sup>, K. Takatsuki<sup>2</sup>, M. Isokawa<sup>1</sup>, T. Sekiguchi<sup>2</sup>, J. Mizuno<sup>2</sup>, T. Funatsu<sup>1</sup>, S. Shoji<sup>2</sup>, and M. Tsunoda<sup>1</sup>  
<sup>1</sup>University of Tokyo, JAPAN and <sup>2</sup>Waseda University, JAPAN

#### Poster Session Diagnostics & Analytics - Drug Development

**W.147g**  
**ELECTRICAL IMPEDANCE SPECTROSCOPY FOR LABEL-FREE, CONTINUOUS MONITORING OF DRUG IMPACT ON 3D TISSUE SPHEROIDS** ..... 1797  
S.C. Bürgel, J.Y. Kim, A. Hierlemann, and O. Frey  
*ETH Zürich, SWITZERLAND*

#### Poster Session Diagnostics & Analytics - Others

**W.148g**  
**KINETIC MEASUREMENTS USING THE FREQUENCY RESPONSE OF INTERACTING BIOMOLECULES SUBJECTED TO A THERMAL MODULATION** ..... 1800  
K. Bournine, X. Zhao, and C. Gosse  
*CNRS, FRANCE*

**W.149g**  
**RAPID AND HIGH SENSITIVITY MALARIA DIAGNOSIS: A MICROFLUIDICS APPROACH** ..... 1803  
T.F. Kong<sup>1,2</sup>, W.K. Peng<sup>1</sup>, H.W. Hou<sup>4</sup>, Marcos<sup>2</sup>, N.T. Nguyen<sup>1,2,3</sup>, and J. Han<sup>1,4</sup>  
<sup>1</sup>Singapore-MIT Alliance for Research and Technology (SMART), SINGAPORE, <sup>2</sup>Nanyang Technological University, SINGAPORE, <sup>3</sup>Griffith University, AUSTRALIA, and <sup>4</sup>Massachusetts Institute of Technology, USA

## Poster Session Medical Research & Applications - Cancer Research

### W.150h

**DETECTION AND QUANTIFICATION OF MINORITY KRAS SUBCLONES IN TUMORS USING DROPLET-BASED MICROFLUIDICS: CLINICAL IMPLICATION** ..... 1806  
D. Pekin<sup>1,2</sup>, C. Normand<sup>1</sup>, S. Kotsopoulos<sup>3</sup>, X. Li<sup>3</sup>, L. Benhaim<sup>1</sup>, O. Bouché<sup>4</sup>, T. Lecomte<sup>5</sup>, D. Le Corre<sup>1</sup>, T. Hor<sup>1</sup>, Z. El Harrak<sup>1</sup>, P. Nizard<sup>1</sup>, D. Link<sup>3</sup>, J.B. Hutchison<sup>3</sup>, P. Laurent-Puig<sup>1</sup>, and V. Taly<sup>1</sup>  
<sup>1</sup>University Paris Descartes, FRANCE, <sup>2</sup>Université de Strasbourg, FRANCE, <sup>3</sup>Raindance Technologies, USA, <sup>4</sup>Centre Hospitalier Universitaire de Reims, FRANCE, and <sup>5</sup>Université de Tours, FRANCE

### W.151h

**INVESTIGATION OF ENDOTHELIAL GROWTH USING A POLYCARBONATE BASED MICROFLUIDIC CHIP AS ARTIFICIAL BLOOD CAPILLARY VESSEL WITH INTEGRATED IMPEDANCE SENSORS FOR APPLICATION IN CANCER RESEARCH** ..... 1809  
T. Rajabi<sup>1</sup>, V. Huck<sup>2</sup>, R. Ahrens<sup>1</sup>, Ch. Bassing<sup>1</sup>, J. Fauser<sup>1</sup>, S.W. Schneider<sup>2</sup>, and A.E. Guber<sup>1</sup>  
<sup>1</sup>Karlsruhe Institute of Technology, GERMANY and <sup>2</sup>Heidelberg University, GERMANY

### W.152h

**STREAMLINING CELL BIOLOGY WORKFLOWS: INTEGRATING SUSPENSION CULTURE, CELL LYSIS, PROTEIN EXTRACTION AND NUCLEIC ACID EXTRACTION** ..... 1812  
T.E. de Groot, B.P. Casavant, K.S. Vesperat, L.N. Strotman, S.M. Berry, and D.J. Beebe  
University of Wisconsin, USA

## Poster Session Medical Research & Applications - Personalized Medicine

### W.153h

**MULTIPLY DETECTION OF KRAS POINT MUTATIONS FROM TUMOR CELL DNA ON A CENTRIFUGAL MICROFLUIDIC CARTRIDGE (GENESLICE) FOR CHOICE OF PERSONALIZED CANCER THERAPY** ..... 1815  
O. Strohmeier<sup>1,2</sup>, S. Laßmann<sup>3,4,5,6</sup>, B. Riedel<sup>3,6</sup>, M. Werner<sup>3,5,6</sup>, D. Mark<sup>1</sup>, R. Zengerle<sup>1,2,4</sup>, and F. von Stetten<sup>1,2</sup>  
<sup>1</sup>Institute for Micromachining and Information Technology (HSG-IMIT), GERMANY, <sup>2</sup>University of Freiburg - IMTEK, GERMANY, <sup>3</sup>University Medical Center Freiburg, GERMANY, <sup>4</sup>University of Freiburg - BIOS, GERMANY, <sup>5</sup>Comprehensive Cancer Center Freiburg, GERMANY, and <sup>6</sup>German Cancer Consortium (DKTK) and German Cancer Research Center (DKFZ), GERMANY

## Poster Session Medical Research & Applications - Drug Delivery Systems

### W.154h

**CHARACTERIZATION OF NANOPARTICLE PERMEABILITY ON A MEMBRANE-INTEGRATED MICROFLUIDIC DEVICE** ..... 1818  
N. Sasaki<sup>1</sup>, M. Tatanou<sup>2</sup>, Y. Anraku<sup>3</sup>, A. Kishimura<sup>4</sup>, K. Kataoka<sup>3</sup>, and K. Sato<sup>2</sup>  
<sup>1</sup>Toyo University, JAPAN, <sup>2</sup>Japan Women's University, JAPAN, <sup>3</sup>University of Tokyo, JAPAN, and <sup>4</sup>Kyushu University, JAPAN

### W.155h

**MICROFLUIDIC DEVICE FOR MICROINJECTION OF CAENORHABDITIS ELEGANS** ..... 1821  
R. Ghaemi, J. Tong, P.R. Selvaganapathy, and B.P. Gupta  
McMaster University, CANADA

### W.156h

**SINGLE-STEP DRUG CRYSTALLIZATION AND FORMULATION - 'DESIGNER' PHARMACEUTICALS ENABLED BY MICROFLUIDICS** ..... 1824  
R.A.L. Leon<sup>1</sup>, W.Y. Wan<sup>1</sup>, A.Z.M. Badruddoza<sup>1</sup>, T.A. Hatton<sup>2,3</sup>, and S.A. Khan<sup>1,2</sup>  
<sup>1</sup>National University of Singapore, SINGAPORE, <sup>2</sup>Singapore-MIT Alliance for Research and Technology (SMART), SINGAPORE and <sup>3</sup>Massachusetts Institute of Technology, USA

**Poster Session Medical Research & Applications - Regenerative Medicine & Tissue Engineering**

**W.157h**  
**ENGINEERING OF THREE-DIMENSIONAL LIVER MICRO-TISSUE CONTAINING SINUSOIDAL ULTRASTRUCTURE THROUGH HETEROTYPIC CELL-CELL INTERACTIONS** ..... 1827  
D.Y. No, S.A. Lee, and S.H. Lee  
*Korea University, SOUTH KOREA*

**W.158h**  
**MATHEMATICAL MODELING FOR THE SELF-ORGANIZATION OF CELLS** ..... 1830  
N. Kojima<sup>1</sup>, Y. Ogata<sup>2</sup>, S. Nakaoka<sup>3</sup>, and Y. Sakai<sup>1</sup>  
*<sup>1</sup>Yokohama City University, JAPAN, <sup>2</sup>University of Tokyo, JAPAN, and <sup>3</sup>Riken Yokohama Institute, JAPAN*

**W.159h**  
**SKIN PRINTER: MICROFLUIDIC APPROACH FOR SKIN REGENERATION AND WOUND DRESSINGS** ..... 1833  
L. Leng<sup>1</sup>, S. Amini-Nik<sup>1,2</sup>, Q. Ba<sup>1</sup>, M. Jeschke<sup>1,2</sup>, and A. Günther<sup>1</sup>  
*<sup>1</sup>University of Toronto, CANADA and <sup>2</sup>Sunnybrook Health Sciences Centre, CANADA*

**Poster Session Medical Research & Applications - Implantable and Surgical Microdevices**

**W.160h**  
**LONG-TERM IMPLANTATION OF PRIMARY ISLET CELL-ENCAPSULATING HYDROGEL MICROFIBERS IN DIABETIC MICE** ..... 1836  
H. Onoe<sup>1,2</sup>, T. Okitsu<sup>1,2</sup>, A. Itou<sup>1,2</sup>, and S. Takeuchi<sup>1,2</sup>  
*<sup>1</sup>University of Tokyo and <sup>2</sup>Japan Science and Technology Agency (JST), JAPAN*

**Poster Session Medical Research & Applications - Devices for Better Quality-of-Life (QOL)**

**W.161h**  
**AUTONOMOUS IMPLANTABLE DEVICE WITH APPLICATION IN LATE-PHASE HEMORRHAGIC SHOCK PREVENTION** ..... 1839  
V. Oncescu, S. Lee, A. Gumus, K. Karlsson, and D. Erickson  
*Cornell University, USA*

**W.162h**  
**SKIN-EMITTED ACETONE DETECTION TOWARD SELF-MONITORING OF FAT METABOLISMS** ..... 1842  
Y. Yamada<sup>1</sup>, S. Hiyama<sup>1</sup>, T. Toyooka<sup>1</sup>, H. Onoe<sup>2</sup>, and S. Takeuchi<sup>2</sup>  
*<sup>1</sup>NTT DOCOMO, Inc., JAPAN and <sup>2</sup>University of Tokyo, JAPAN*

**Poster Session Medical Research & Applications - Others**

**W.163h**  
**A NOVEL MICROFLUIDIC “CELL-BASED” BLOOD DIALYSIS PLATFORM FOR MURINE MODEL OF SEPSIS** ..... 1845  
H.W. Hou<sup>1</sup>, M.P. Vera<sup>2</sup>, B.D. Levy<sup>2</sup>, R.M. Baron<sup>2</sup>, and J. Han<sup>1</sup>  
*<sup>1</sup>Massachusetts Institute of Technology, USA and <sup>2</sup>Brigham and Women’s Hospital, and Harvard Medical School, USA*

**Poster Session Separation Technologies - Electrophoretic Separations**

**W.164i**  
**CHARACTERIZATION OF SIALYLATED GLYCANS BY COVALENT DERIVATIZATION AND MICROCHIP ELECTROPHORESIS** ..... 1848  
I. Mitra, C.M. Snyder, W.R. Alley, M.V. Novotny, and S.C. Jacobson  
*Indiana University, USA*

**W.165i**  
**DROPLET-BASED COMPARTMENTALIZATION**  
**AFTER ISOELECTRIC FOCUSING IN A SLIPCHIP** ..... 1851  
Y. Zhao<sup>1</sup>, F. Pereira<sup>2</sup>, A. de Mello<sup>2</sup>, H. Morgan<sup>1</sup>, and X. Niu<sup>1</sup>  
<sup>1</sup>University of Southampton, UK, and <sup>2</sup>ETH Zürich, SWITZERLAND

**W.166i**  
**ELECTROSMOTICALLY ACTUATED ON-CHIP SOLID-PHASE**  
**EXTRACTION WITH MICROCHIP ELECTROPHORESISELECTROSPRAY**  
**IONIZATION MASS SPECTROMETRY** ..... 1854  
N. Nordman<sup>1</sup>, B. Barrios-Lopez<sup>1</sup>, S. Laurén<sup>2</sup>, P. Suvanto<sup>2</sup>, T. Kotiaho<sup>1</sup>,  
S. Franssila<sup>2</sup>, R. Kostianen<sup>1</sup>, and T. Sikanen<sup>1</sup>  
<sup>1</sup>University of Helsinki, FINLAND and <sup>2</sup>Aalto University, FINLAND

**W.167i**  
**HYDRODYNAMIC CONTROL FOR NON-BIASED INJECTION AND**  
**SIMULTANEOUS COMPLEMENTARY ANALYSIS** ..... 1857  
A.J. Gaudry, M.C. Breadmore, and R.M. Guijt  
University of Tasmania, AUSTRALIA

**W.168i**  
**MEASURING THE EFFECT OF CRYSTALLINE ORDER ON**  
**DNA ELECTROPHORESIS IN COLLOIDAL CRYSTALS** ..... 1860  
S.B. King and K.D. Dorfman  
University of Minnesota, USA

**W.169i**  
**TUNING THE MOBILITY OF FLUORESCENT, DNA-TEMPLATED, SILVER**  
**NANOCCLUSERS FOR ELECTROPHORETIC SEPARATIONS IN MICROCHANNELS** ..... 1863  
J.T. Del Bonis-O'Donnell, D. Fygenon, and S. Pennathur  
University of California, Santa Barbara, USA

#### Poster Session Separation Technologies - Chromatographic Separations

**W.170i**  
**DEVELOPMENT OF MILLION PLATES LIQUID CHROMATOGRAPHY**  
**USING EXTENDED-NANO CHANNEL** ..... 1866  
Y. Liu<sup>1,2</sup>, H. Shimizu<sup>1,2</sup>, A. Smirnova<sup>1,2</sup>, K. Mawatari<sup>1,2</sup>, and T. Kitamori<sup>1,2</sup>  
<sup>1</sup>University of Tokyo and <sup>2</sup>Japan Science and Technology Agency (JST), JAPAN

#### Poster Session Separation Technologies - Particle Separations

**W.171i**  
**A LOW-POWER AND SMALL-VOLUME PARTICLE SEPARATION DEVICE**  
**BASED ON CIRCULAR TRAVELLING-WAVE ELECTROSMOSIS** ..... 1869  
S.-C. Lin<sup>1</sup>, Y.-L. Sung<sup>1</sup>, Y.-C. Tung<sup>2</sup>, and C.-T. Lin<sup>1</sup>  
<sup>1</sup>National Taiwan University, TAIWAN and <sup>2</sup>Academia Sinica, TAIWAN

**W.172i**  
**HAND-HELD BLOOD SEPARATION MICROFLUIDIC CHIP** ..... 1872  
L. Xu, H. Lee, and K.W. Oh  
University of Buffalo, State University of New York, USA

**W.173i**  
**LOW CONCENTRATION OIL SEPARATION AND DETECTION FROM**  
**ENVIRONMENTAL WATER SAMPLES THROUGH ACOUSTOPHORESIS** ..... 1875  
H. Wang<sup>1</sup>, S. Kim<sup>1</sup>, C. Koo<sup>1</sup>, Y. Cho<sup>2</sup>, Y.-J. Kim<sup>1</sup>, and A. Han<sup>1</sup>  
<sup>1</sup>Texas A&M University, USA and <sup>2</sup>Seoul National University of Science and Technology, SOUTH KOREA

## Poster Session Microreaction Technology & Synthesis - Microreactors & Micromixers

**W.174j**  
**AN ULTRA-LOW CONSUMPTION PLATFORM FOR MEASURING FAST CHEMICAL REACTIONS** ..... 1878  
E. Fradet, P. Abbyad, and C.N. Baroud  
*Ecole Polytechnique, FRANCE*

**W.175j**  
**LOGIC OPERATION IN DNA NANO DEVICE: ELECTRICAL INPUT/OUTPUT THROUGH BIOLOGICAL NANOPORES** ..... 1881  
K. Inoue<sup>1,3</sup>, R. Kawano<sup>1</sup>, H. Yasuga<sup>1,3</sup>, M. Takinoue<sup>4</sup>, T. Osaki<sup>1,2</sup>, K. Kamiya<sup>1</sup>, N. Miki<sup>1,3</sup>, and S. Takeuchi<sup>1,2</sup>  
<sup>1</sup>Kanagawa Academy of Science and Technology, JAPAN, <sup>2</sup>University of Tokyo, JAPAN, <sup>3</sup>Keio University, JAPAN, and <sup>4</sup>Tokyo Institute of Technology, JAPAN

**W.176j**  
**TRANSPARENT P(VDF-TRFE) TRANSDUCER-BASED ACOUSTIC STREAMING FOR MICROFLUIDIC APPLICATIONS** ..... 1884  
V.F. Cardoso, L. Rebouta, S. Lanceros-Méndez, and G. Minas  
*University of Minho, PORTUGAL*

## Poster Session Microreaction Technology & Synthesis - Filtering & Separation

**W.177j**  
**NANOWIRE DEVICES FOR EXOSOMAL MICRORNA EXTRACTION** ..... 1887  
S. Ito<sup>1</sup>, T. Yasui<sup>1</sup>, H. Yong<sup>2</sup>, T. Yanagida<sup>2</sup>, S. Rahong<sup>2</sup>, M. Kanai<sup>2</sup>, K. Nagashima<sup>2</sup>, H. Yukawa<sup>1</sup>, N. Kaji<sup>1</sup>, T. Kawai<sup>2</sup>, and Y. Baba<sup>1,3</sup>  
<sup>1</sup>Nagoya University, JAPAN, <sup>2</sup>Osaka University, JAPAN, and <sup>3</sup>National Institute of Advanced Industrial Science and Technology, (AIST), JAPAN

## Poster Session Microreaction Technology & Synthesis - Chemical Synthesis

**W.178j**  
**COPPER COMPLEXATION OF MACROCYCLIC MOLECULES: TOWARDS ON-CHIP RADIOMETALLIC LABELLING OF PET RADIOTRACERS** ..... 1890  
M.D. Tarn, B. Lu, R. Smith, B.P. Burke, S.J. Archibald, and N. Pamme  
*University of Hull, UK*

**W.179j**  
**MULTI-PASS NANOCRYSTAL PROCESSOR** ..... 1893  
M. Abolhasani, Y. Hassan, E. Kumacheva, G. Scholes, and A. Günther  
*University of Toronto, CANADA*

## Poster Session Microreaction Technology & Synthesis - Particle Synthesis

**W.180j**  
**POLYPLEX SYNTHESIS BY "MICROFLUIDIC DRIFTING" BASED THREE-DIMENSIONAL HYDRODYNAMIC FOCUSING METHOD** ..... 1896  
M. Lu<sup>1</sup>, Y.-P. Ho<sup>2,3</sup>, C.L. Grigsby<sup>2</sup>, A.A. Nawaz<sup>1</sup>, P.-H. Huang<sup>1</sup>, K.W. Leong<sup>2</sup>, and T.J. Huang<sup>1</sup>  
<sup>1</sup>Pennsylvania State University, USA, <sup>2</sup>Duke University, USA, and <sup>3</sup>Interdisciplinary Nanoscience Center (iNANO), DENMARK



**Poster Session Applications to Green & Environmental Technologies - Fuel Cells**

- W.181k**  
**DEVELOPMENT OF A MICRO FUEL CELL DEVICE**  
**BASED ON THE MICROFLUIDIC CHIP** ..... 1899  
Y. Pihosh<sup>1,2</sup>, H. Chinen<sup>1</sup>, K. Mawatari<sup>1,2</sup>, and T. Kitamori<sup>1,2</sup>  
<sup>1</sup>University of Tokyo, JAPAN and <sup>2</sup>Japan Science and Technology Agency (JST), JAPAN

**Poster Session Applications to Green & Environmental Technologies - Water/Air/Soil Management**

- W.182k**  
**LOW-COST PAPER MICROFLUIDICS FOR ECOTOXICOLOGICAL ANALYSIS** ..... 1902  
J. Petr, P. Svobodová, L. Vojtková, A. Suchomelová, A. Příbylka, and R. Knob  
Palacký University, Olomouc, CZECH REPUBLIC

**Poster Session Applications to Green & Environmental Technologies - Other Energy/Power Devices**

- W.183k**  
**GATE CONTROLLED HIGH EFFICIENCY**  
**BALLISTIC ENERGY CONVERSION SYSTEM** ..... 1905  
Y. Xie, D. Bos, H. de Boer, A. van den Berg, and J.C.T. Eijkel  
MESA+, University of Twente, THE NETHERLANDS

**Poster Session MicroTAS for Other Applications - Synthetic Biology**

- W.184i**  
**PATTERNING AND FUNCTIONALIZATION OF THERMOPLASTIC MICROCHIP**  
**FOR AUTOMATED HIGH-THROUGHPUT MICROARRAY GENE SYNTHESIS** ..... 1908  
S. Ma, I.A. Saaem, and J. Tian  
Duke University, USA

**Poster Session MicroTAS for Other Applications - Integrative Biology, Systems Biology**

- W.185i**  
**FATE MANIPULATION OF PC-12 CELL USING MICROFLUIDIC DEVICE** ..... 1911  
H. Ryu<sup>1</sup>, M. Chung<sup>1</sup>, S.S. Lee<sup>2</sup>, N.L. Jeon<sup>1</sup>, and O. Pertz<sup>3</sup>  
<sup>1</sup>Seoul National University, SOUTH KOREA, <sup>2</sup>ETH Zürich, SWITZERLAND, and  
<sup>3</sup>University of Basel, SWITZERLAND

**Poster Session MicroTAS for Other Applications - Bioinspired, Biomimetic & Biohybrid Devices**

- W.186i**  
**DROPLET-BOX: A PLATFORM FOR BIOLOGICAL-NANOPORE-BASED**  
**LOGICAL OPERATION USING LIPID-COATED DROPLET NETWORK** ..... 1914  
H. Yasuga<sup>1,3</sup>, R. Kawano<sup>1</sup>, M. Takinoue<sup>4</sup>, Y. Tsuji<sup>1</sup>, T. Osaki<sup>1,2</sup>, K. Kamiya<sup>1</sup>, N. Miki<sup>1,3</sup>, and S. Takeuchi<sup>1,2</sup>  
<sup>1</sup>Kanagawa Academy of Science and Technology, JAPAN, <sup>2</sup>University of Tokyo, JAPAN,  
<sup>3</sup>Keio University, JAPAN, and <sup>4</sup>Tokyo Institute of Technology, JAPAN

- W.187i**  
**NATURAL LEAF REPLICAS TO STUDY CELL CONTACT GUIDANCE** ..... 1917  
L. MacQueen, Z. Gong, B. Chen, J. Liu, H. Liu, C. Simmons, and Y. Sun  
University of Toronto, CANADA



## Poster Session MicroTAS for Other Applications - Bioprocess Technology

**W.1881**

- MICROALGAL CULTURE, LIPID PRODUCTION AND EXTRACTION USING AN INTEGRATED MICROFLUIDIC SYSTEM** ..... 1920  
H.S. Lim, J.Y.H. Kim, H.S. Kwak, and S.J. Sim  
*Korea University, SOUTH KOREA*

## Poster Session MicroTAS for Other Applications - Food & Nutrition

**W.1891**

- AUTOMATED ON-SITE DETECTION OF ORGANOPHOSPHOROUS PESTICIDES IN REAL FOOD SAMPLES** ..... 1923  
L. Drechsel<sup>1</sup>, M. Schulz<sup>1</sup>, F. von Stetten<sup>1,2</sup>, R. Zengerle<sup>1,2,3</sup>, and N. Paust<sup>1,2</sup>  
<sup>1</sup>*Institute for Micromachining and Information Technology (HSG-IMIT), GERMANY,*  
<sup>2</sup>*University of Freiburg – IMTEK, GERMANY, and* <sup>3</sup>*University of Freiburg – BIOS, GERMANY*

## Session 3A3 - Single Cell Processing and Analysis 2

- TOWARDS A MICROFLUIDIC SINGLE-CELL IMMUNE CHIP** ..... 1926  
M. Junkin, A. Kaestli, and S. Tay  
*ETH Zürich, SWITZERLAND*

- OPTICAL CELL PICKING IN PHOTODEGRADABLE HYDROGELS BASED ON CELLULAR MORPHOLOGY IN 3D CULTURE ENVIRONMENT** ..... 1929  
M. Tamura<sup>1</sup>, F. Yanagawa<sup>2</sup>, S. Sugiura<sup>2</sup>, T. Takagi<sup>2</sup>, K. Sumaru<sup>2</sup>, H. Matsui<sup>1</sup>, and T. Kanamori<sup>2</sup>  
<sup>1</sup>*University of Tsukuba, JAPAN and*  
<sup>2</sup>*National Institute of Advanced Industrial Science and Technology (AIST), JAPAN*

- CIRCUMFERENTIAL MOLECULAR DELIVERY INTO SINGLE CELLS VIA CELL-ROLLING MEDIATED ELECTROPORATION IN MICROFLUIDIC CHANNELS** ..... 1932  
M. Zheng, J.W. Shan, H. Lin, D.I. Shreiber, and J.D. Zahn  
*Rutgers, USA*

- LIPID SCREENING IN SINGLE MICROALGAE USING HYDROGEL MICROCAPSULE ARRAYS** ..... 1935  
D.-H. Lee, J.-I. Han, and J.-K. Park  
*Korea Advanced Institute of Science and Technology (KAIST), SOUTH KOREA*

## Session 3B3 - Droplets & Plugs

- SHAKEN, AND STIRRED** ..... 1938  
M. Abolhasani, A. Oskooei, E. Kumacheva, and A. Günther  
*University of Toronto, CANADA*

- DROPLET INCUBATION CHAMBER ARRAY: JOURNEY OF DROPLETS ON A CHIP** ..... 1941  
H.S. Rho, and H. Gardeniers  
*MESA+, University of Twente, THE NETHERLANDS*

- AUTOSIZING, CLOSED-LOOP DROP GENERATOR USING MORPHOMETRIC IMAGE FEEDBACK** ..... 1944  
R. Kebriaei and A.S. Basu  
*Wayne State University, USA*

- CHARACTERIZATION OF DYE LEAKAGE IN MICROFLUIDIC DROPLETS** ..... 1947  
Y. Chen, M. Pan and S.K.Y. Tang  
*Stanford University, USA*

**Session 3C3 - Tools for Cancer Analysis**

- MICROENGINEERED HYDROGEL FIBERS FOR EVALUATING  
CANCER CELL INVASION UNDER 3D COCULTURE CONDITIONS** ..... 1950  
Y. Kitagawa, M. Yamada, and M. Seki  
*Chiba University, JAPAN*
- CANCER CELL-SPECIFIC OLIGOPEPTIDE SELECTED BY MICROFLUIDIC SYSTEM  
FROM A PHAGE DISPLAY LIBRARY FOR OVARIAN CANCER DIAGNOSIS** ..... 1953  
C.H. Wang<sup>1</sup>, C.-H. Weng<sup>2</sup>, Y.-J. Che<sup>1</sup>, K. Wang<sup>3</sup>, and G.-B. Lee<sup>1,2</sup>  
<sup>1</sup>*National Tsing Hua University, TAIWAN*, <sup>2</sup>*National Cheng Kung University, TAIWAN*, and  
<sup>3</sup>*Academia Sinica, TAIWAN*
- UNDERSTANDING TUMOR HETEROGENEITY AS AN ENCOURAGER FOR  
CANCER METASTASIS (IN VITRO MODEL OF TUMOR HETEROGENEITY)** ..... 1956  
Y. Shin and S. Chung  
*Korea University, SOUTH KOREA*
- MULTIPLEX REAL-TIME MONITORING OF CELLULAR METABOLIC  
ACTIVITY USING A REDOX-REACTIVE NANOWIRE BIOSENSOR** ..... 1959  
L.C. Hsiung, V. Krivitsky, V. Naddaka, Y.K. Conroy, H. Peretz-Soroka, and F. Patolsky  
*Tel Aviv University, ISRAEL*

## Day 4 - Thursday 31 October

### Plenary Presentation VIII

- FROM SINGLE CELLS TO ARTIFICIAL CELLS: HOW MICROFLUIDICS CAN CONTRIBUTE TO A BETTER UNDERSTANDING OF CELLULAR PROCESSES** ..... 1962  
Petra S. Dittrich  
*ETH Zürich, SWITZERLAND*

### Session 4A1 - Micromixers and Gradient Generators

- COAXIAL TURBULENT JET MIXER FOR CONTROLLED SYNTHESIS OF NANOPARTICLES** ..... 1965  
J.-M. Lim<sup>1</sup>, L.M. Gilson<sup>1</sup>, S. Chopra<sup>1</sup>, R.S. Langer<sup>1</sup>, O.C. Farokhzad<sup>2</sup>, and R. Karnik<sup>1</sup>  
<sup>1</sup>*Massachusetts Institute of Technology, USA and*  
<sup>2</sup>*Brigham and Women's Hospital-Harvard Medical School, USA*

- TUNABLE MICROFLUIDIC GRADIENT GENERATOR VIA ACOUSTICALLY OSCILLATED SHARP EDGES** ..... 1968  
P.H. Huang<sup>1</sup>, C.Y. Chan<sup>1</sup>, D. Ahmed<sup>1</sup>, Y. Xie<sup>1</sup>, L. Wang<sup>2</sup>, and T.J. Huang<sup>1</sup>  
<sup>1</sup>*Pennsylvania State University, USA and* <sup>2</sup>*Ascent Bio-Nano Technologies Inc., USA*

- PARTICLE SEPARATION, CHEMICAL GRADIENT CONTROL AND MICROMIXING VIA FOCUSED TRAVELLING SURFACE ACOUSTIC WAVES (F-TSAW)** ..... 1971  
G. Destgeer<sup>1</sup>, S. Im<sup>1</sup>, J.H. Jung<sup>1</sup>, B.H. Ha<sup>1</sup>, H.W. Kang<sup>1</sup>, K.H. Lee<sup>1</sup>, M.A. Ansari<sup>1</sup>, A. Alazzam<sup>2</sup>, and H.J. Sung<sup>1</sup>  
<sup>1</sup>*Korea Advanced Institute of Science and Technology (KAIST), SOUTH KOREA and*  
<sup>2</sup>*Khalifa University of Science, Technology & Research (KUSTAR), UAE*

### Session 4B1 - Molecular Separation

- DEVELOPMENT OF SUBSECOND TIME-SCALE LIQUID-LIQUID EXTRACTION PROCESSES UTILIZING MONODISPERSE MICROFLUIDIC DROPLETS** ..... 1974  
S. Kakegawa, M. Yamada, M. Mizuno, N. Nakajima, and M. Seki  
*Chiba University, JAPAN*

- ULTRA HIGH FLEXIBLE UV-VIS RADIATION SOURCE AND NOVEL DETECTION SCHEMES FOR SPECTROPHOTOMETRIC HPLC DETECTION** ..... 1977  
K. Kraiczek<sup>1</sup>, R. Bonjour<sup>2</sup>, Y. Salvadé<sup>2</sup>, and R. Zengerle<sup>3,4</sup>  
<sup>1</sup>*Agilent Technologies, GERMANY,* <sup>2</sup>*University of Applied Sciences, SWITZERLAND, and*  
<sup>3</sup>*University of Freiburg - IMTEK, GERMANY*

- CUSTOMIZED HPLC IN GLASS CHIPS** ..... 1980  
S. Thürmann, and D. Belder  
*Universität Leipzig, GERMANY*

### Session 4C1 - Neurobiology

- CONTACTLESS THREE-DIMENSIONAL GUIDANCE OF AXONAL GROWTH** ..... 1983  
T. Honegger, M. Thielen, and J. Voldman  
*Massachusetts Institute of Technology, USA*

- MOBILE MICROPLATES FOR HANDLING MORPHOLOGICALLY CONTROLLED SINGLE NEURAL CELLS** ..... 1986  
S. Yoshida<sup>1</sup>, T. Teshima<sup>1</sup>, K. Kuribayashi-Shigetomi<sup>1</sup>, and S. Takeuchi<sup>1,2</sup>  
<sup>1</sup>*University of Tokyo, JAPAN and* <sup>2</sup>*Japan Science and Technology Agency (JST), JAPAN*

- ANALYSIS OF AXON GUIDANCE IN SINGLE NEURONS USING A LARGE ARRAY OF MICROFLUIDIC GRADIENT GENERATORS** ..... 1989  
N. Bhattacharjee, and A. Folch  
*University of Washington, USA*

## Session 4A2 - Nucleic Acid Processing

- ISOTHERMAL AMPLIFICATION OF DNA ON TIPS OF SILICON NANOTWEEZERS AND ITS ELECTRICAL AND MECHANICAL CHARACTERIZATION** ..... 1992  
M. Kumemura<sup>1</sup>, S.L. Karsten<sup>2</sup>, N. Lafitte<sup>1</sup>, H. Guillou<sup>3</sup>, L. Jalabert<sup>1</sup>, H. Fujita<sup>1</sup>, and D. Collard<sup>1</sup>  
<sup>1</sup>University of Tokyo, JAPAN, <sup>2</sup>NeuroInDx. Inc., USA, and <sup>3</sup>CNRS and University Joseph Fourier, FRANCE
- NON-INVASIVE HANDLING OF CHROMATIN FIBERS ISOLATED FROM INDIVIDUAL CELLS IN A MICROCHANNEL UTILIZING AN OPTICALLY DRIVEN MICROTOOL – TOWARD DIRECT EPIGENETIC ANALYSIS BY MICROSCOPY–** ..... 1995  
H. Oana<sup>1</sup>, K. Nishikawa<sup>1</sup>, H. Matsuhara<sup>2</sup>, A. Yamamoto<sup>2</sup>, T.G. Yamamoto<sup>3</sup>, T. Haraguchi<sup>3</sup>, Y. Hiraoka<sup>4</sup>, and M. Washizu<sup>1</sup>  
<sup>1</sup>University of Tokyo, JAPAN, <sup>2</sup>Shizuoka University, JAPAN, <sup>3</sup>National Institute of Information and Communications Technology (NICT), JAPAN, and <sup>4</sup>Osaka University, JAPAN
- DRY SAMPLE PRESERVATION USING A SLIPCHIP** ..... 1998  
S. Begolo<sup>1</sup>, F. Shen<sup>2</sup> and R.F. Ismagilov<sup>1</sup>  
<sup>1</sup>California Institute of Technology, USA and <sup>2</sup>Slipchip LLC, USA
- MICROFLUIDICS TO EXPLORE SPATIAL BEHAVIOR OF SYNTHETIC BIOCHEMICAL NETWORKS** ..... 2001  
A. Estévez-Torres<sup>1</sup>, L. Mzali<sup>1</sup>, A. Kalley<sup>1</sup>, A. Zadorin<sup>1</sup>, Y. Rondelez<sup>2</sup>, and J.-C. Galas<sup>1</sup>  
<sup>1</sup>LPN-CNRS, FRANCE and <sup>2</sup>University of Tokyo, JAPAN

## Session 4B2 - Cell Biology

- HYDROGEL DROPLET PLATFORM FOR HIGH-THROUGHPUT, HIGH-RESOLUTION IMAGING AND SORTING OF EARLY LARVAL CAENORHABDITIS ELEGANS** ..... 2004  
G. Aubry, M. Zhan, and H. Lu  
Georgia Institute of Technology, USA
- NEUTROPHILS MIGRATE LONGER DISTANCES IN MOVING MICROFLUIDIC CONCENTRATION GRADIENTS COMPARED TO STATIC ONES** ..... 2007  
M.A. Qasaimeh, M. Astolfi, M. Pyzik, S. Vidal, and D. Juncker  
McGill University, CANADA
- DISPOSABLE MICROFLUIDIC CHIP WITH INTEGRATED LIGHT SHEET ILLUMINATION ENABLES DIAGNOSTICS BASED ON MEMBRANE VESICLES** ..... 2010  
H. Deschout<sup>1</sup>, K. Raemdonck<sup>1</sup>, S. Stremersch<sup>1</sup>, P. Maoddi<sup>2</sup>, G. Mernier<sup>2</sup>, P. Renaud<sup>2</sup>, S. Jiguet<sup>2</sup>, A. Hendrix<sup>3</sup>, M. Bracke<sup>3</sup>, R. Van den Broecke<sup>3</sup>, M. Röding<sup>4</sup>, M. Rudemo<sup>4</sup>, J. Demeester<sup>1</sup>, S. De Smedt<sup>1</sup>, F. Strubbe<sup>1</sup>, K. Neyts<sup>1</sup>, and K. Braeckmans<sup>1</sup>  
<sup>1</sup>Ghent University, BELGIUM, <sup>2</sup>Ecole Polytechnique Fédérale de Lausanne, SWITZERLAND, <sup>3</sup>Ghent University Hospital, BELGIUM, and <sup>4</sup>Chalmers University of Technology, SWEDEN
- PULSED STIMULATION VIA MICROFLUIDICS REVEALS SHORT AND LONG-TERM MEMORIES IN MAST CELLS** ..... 2013  
Y. Liu<sup>1</sup>, W.S. Hlavacek<sup>3</sup>, B.R. Schudel<sup>1</sup>, A. Mahajan<sup>3</sup>, C.H. Hayden<sup>1</sup>, D.S. Lidke<sup>2</sup>, B.W. Wilson<sup>2</sup>, and A.K. Singh<sup>1</sup>  
<sup>1</sup>Sandia National Laboratory, USA, <sup>2</sup>Los Alamos National Laboratory, USA, and <sup>3</sup>University of New Mexico, USA

## Session 4C2 - Tissue Engineering

- HANGING MICROFLUIDICS: A HIGHLY VERSATILE PLATFORM FOR PRODUCTION AND CULTIVATION OF 3D SPHERICAL MICROTISSUES** ..... 2016  
O. Frey, P.M. Misun, and A. Hierlemann  
ETH Zürich, SWITZERLAND

<b>MICROFLUIDIC TISSUE: A BIODEGRADABLE SCAFFOLD WITH BUILT-IN VASCULATURE FOR CARDIAC TISSUE VASCULARIZATION AND SURGICAL VASCULAR ANASTOMOSIS</b> .....	2019
B. Zhang <sup>1</sup> , M. Montgomery <sup>1</sup> , A. Pahnke <sup>1</sup> , L. Reis <sup>1</sup> , S.S. Nunes <sup>1,2</sup> , and M. Radisic <sup>1</sup> <sup>1</sup> University of Toronto, CANADA and <sup>2</sup> University Health Network, CANADA	
<b>CURVATURE-INDUCED SPONTANEOUS DETACHMENT OF VASCULAR SMOOTH MUSCLE CELL SHEETS: TOWARDS VASCULAR SELF ASSEMBLY IN MICROCHANNELS</b> .....	2022
T. Yamashita <sup>1</sup> , P. Kollmannsberger <sup>2</sup> , K. Mawatari <sup>1,3</sup> , V. Vogel <sup>2</sup> , and T. Kitamori <sup>1,3</sup> <sup>1</sup> University of Tokyo, JAPAN, <sup>2</sup> ETH Zürich, SWITZERLAND, and <sup>3</sup> Japan Science and Technology Agency (JST), JAPAN	
<b>MICROFLUIDIC PERFUSION CULTIVATION SYSTEM FOR A MULTILAYER STRUCTURED TUBULAR TISSUES</b> .....	2025
Y. Yamagishi <sup>1</sup> , T. Masuda <sup>1</sup> , N. Takei <sup>1</sup> , M. Matsusaki <sup>2</sup> , M. Akashi <sup>2</sup> , and F. Arai <sup>1</sup> <sup>1</sup> Nagoya University, JAPAN and <sup>2</sup> Osaka University, JAPAN	