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¹KAIST, Republic of Korea, ²Samsung Medical Center, Republic of Korea,
³University of California, Berkeley, USA
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¹Keio University, Japan, ²Eindhoven University of Technology, The Netherlands
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- M078d Rotational Manifold for Sequential Reagent Delivery in a Paper-Based Salmonella Assay** 1026
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- M079d 3D-Printed Autonomous Microfluidics: Bioassay Development Towards the Point of Care** 1030
Henry Orduowski, Clement Achille, Agnese Piovesan, Francesco Dal Dosso, Cesar Parra Cabrera, Pierter Verboven, Bart Nicolai, Dragana Spasic, Rob Ameloot, Jeroen Lammertyn
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¹Council for Science and Industrial Research, South Africa, ²University of the Western Cape, South Africa, ³University of Pretoria, South Africa
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	Hsin-Po Wang ¹ , Tsung-Ting Tsai ² , Tse-Hao Huang ² , Chien-Fu Chen ¹ <i>¹National Taiwan University, Taiwan, ²Chang Gung Memorial Hospital and Chang Gung University College of Medicine, Taiwan</i>	
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	Yilian Wang ¹ , Soroush Kahkeshani ¹ , Dino Di Carlo ^{1,2} <i>¹University of California, Los Angeles, USA, ²California NanoSystems Institute, USA</i>	
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- M093d** Plasma Engineered Hydrophobicity of SOI-Based Microfluidic-Elasto-Filtration Chips to Significantly Enhance the Cancer-Cell Capture Efficiency 1159
Huahuang Luo¹, Cong Zhao¹, Yuee Cai², Rongxin Zhang³, Yuxiang Deng³,
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¹The Hong Kong University of Science and Technology, China, ²Guangzhou HKUST Fok Ying Tung Research Institute, China, ³Sun Yat-sen University, China
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¹National University of Singapore, Singapore, ²New York University Abu Dhabi, UAE,
³A*STAR, Singapore
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Hidehiro Oana², Shizu Takeda¹, Masao Washizu²
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¹ETH Zürich, Switzerland, ²Friedrich Miescher Institute for Biomedical Research, Switzerland,
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¹École Polytechnique de Montréal, Canada, ²Université de Montréal, Canada,
³Institut du cancer de Montreal, Canada
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	Kuang-Wei Wu, Zi-Ting Huang, Chiao-Yi Chiu, Ting-Yuan Tu <i>National Cheng Kung University, Taiwan</i>	
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	Artur Ruszczak¹, Ott Scheler^{1,2}, Pawel Jankowski¹, Michal Horka¹, Ladislav Derzsi¹, David Wareham³, Piotr Garstecki¹ <i>¹Polish Academy of Sciences, Poland, ²University of Tartu, Estonia, ³Queen Mary University of London, UK</i>	
T127e	Mechanistically Modulated Cardiomyocyte Alignment	1462
	Carina J. Lee, William J. Agnew, William C. Tang <i>University of California, Irvine, USA</i>	
T128e	Encapsulating Cancer Cells in Fibrin Microgels for Tissue Engineering Applications	1465
	Elisa M. Wasson^{1,4}, Melinda G. Simon², Monica L. Moya⁴, Rafael V. Davalos^{1,3}, Elizabeth K. Wheeler⁴ <i>¹Virginia Polytechnic Institute and State University, USA, ²San Jose State University, USA, ³Virginia-Tech Wake Forest University, USA, ⁴Lawrence Livermore National Laboratory, USA</i>	
T129e	Cell Proliferation on Common 3D Printing Materials used in Stereolithographic Patterning of Microfluidic Devices	1469
	Kati Piironen, Päivi Järvinen, Markus Haapala, Tiina Sikanen <i>University of Helsinki, Finland</i>	
T130e	Photolithography-Free Tumor-on-a-Chip to Study Nanoparticle Extravasation	1473
	Yuki Ichikawa, Tomomi Hayashi, Naoki Sasaki <i>Toyo University, Japan</i>	
T131e	Enhancement of iPSC-Derived Hepatocyte Function through 3D Culture using Cell Fiber Technique	1475
	Shogo Nagata, Fumisato Ozawa, Shoji Takeuchi <i>The University of Tokyo, Japan</i>	

T132e	Custom Microfluidic Printhead for 3D Bioprinting of Bi- and Tri-Layered Hollow Microchannels in Gels	1477
	Rana Attalla, Erin Puersten, Nidhi Jain, P. Ravi Selvaganapathy <i>McMaster University, Canada</i>	
W124e	Mechanical Stress Induced Astaxanthin Production on a Chip	1480
	Junyi Yao¹, Sangil Han², Hyun Soo Kim³, Younghak Cho⁴, Yoon-E Choi², Jaewon Park¹ <i>¹Southern University of Science and Technology, China, ²Korea University, Republic of Korea, ³Korea Institute of Machinery & Materials, Republic of Korea, ⁴Seoul National University of Science and Technology, Republic of Korea</i>	
W125e	Formation of Coaxial Hierarchical-Layered Cell-Laden Fiber	1482
	Yuya Morimoto¹, Mahiro Kiyosawa¹, Midori Kato-Negishi², Shoji Takeuchi¹ <i>¹The University of Tokyo, Japan, ²Musashino University, Japan</i>	
W126e	Paper based Microarrays for 3D Tumor Spheroid Modeling	1484
	Roaa Alnemari¹, Pavithra Sukumar¹, Muhammedin Deliorman¹, Mohammad A. Qasaimeh^{1,2} <i>¹New York University Abu Dhabi, UAE, ²New York University, USA</i>	
W127e	A 3D Perfusable Device to Evaluate Dynamic Islet Functions	1487
	Fumisato Ozawa, Jun Sawayama, Shoji Takeuchi <i>The University of Tokyo, Japan</i>	
W128e	Analysis of Protein Expression of Cells Cultured in a Folding Paper Culture System	1489
	Yu-Chen Ho^{1,2}, Kin Fong Lei^{2,3}, Yun-Ju Chuang¹ <i>¹Ming Chuan University, Taiwan, ²Chang Gung University, Taiwan, ³Chang Gung Memorial Hospital, Taiwan</i>	
W129e	Liquid Marble with Embedded Hydrogel: A Versatile Microbioreactor for Cell Biology Applications	1492
	Raja Vadivelu, Navid Kashaninejadand, Nam-Trung Nguyen <i>Griffith University, Australia</i>	
W130e	Wireless Optical Microscope on Disc for Cell Culture Monitoring	1496
	Edwin En-Te Hwu¹, Laura Seriola¹, Giaele Severini^{1,2}, Janus Anders Juul Haagenen¹, Sriram Thoppe Rajendran¹, Kinga Zór¹, Anja Boisen¹ <i>¹Technical University of Denmark, Denmark, ²Politecnico di Torino, Italy</i>	
W131e	A Microfluidic Approach for Characterizing Biofilm Growth by Microwave-Based Electrical Impedance Spectroscopy	1500
	Sönke Schmidt¹, Julia Bruchmann², Christiane Richter², Martin Schübler¹, Rolf Jakoby¹, Thomas Schwartz², Bastian E. Rapp² <i>¹Technische Universität Darmstadt, Germany, ²Karlsruhe Institute of Technology, Germany</i>	

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5.07 - Inter- and Intra-Cellular Signaling, Cell Migration

M131e	Separating Cell Subpopulations in 3-Dimensional Invasion Assays on Digital Microfluidics for Gene Expression Analysis	1504
	Bingyu B. Li, Shuailong Zhang, Erica Y. Scott, M. Dean Chamberlain, Aaron R. Wheeler <i>University of Toronto, Canada</i>	

M132e	Reduced Adherable Area of Nanotopographic Surfaces Regulates Cell Migration through the Reduction of Focal Adhesion	1507
	Hyung Woo Kim, Jiwon Lim, Andrew Choi, Dong Sung Kim <i>POSTECH, Republic of Korea</i>	
M134e	Chips-on-a-Plate System as a Cellular Migration Monitoring Model of Intestinal Follicle-Associated Epithelium	1511
	Young Lee, Soo Jee Kim, Je-Kyun Park <i>KAIST, Republic of Korea</i>	
T133e	Determining Mechanical Stimulation Responses of Primary Cilia with an Integrated Microfluidics Platform	1513
	Sheng-Han Chu ¹ , Li-Lun Lo ¹ , Richard Lee Lai ¹ , T. Tony Yang ² , Jung-Chi Liao ² , Nien-Tsu Huang ¹ ¹ National Taiwan University, Taiwan, ² Academia Sinica, Taiwan	
T134e	Cancer Stem Cell Migration in an Oxygen Gradient Characterized using a Microfluidic Device	1517
	Jelle J.F. Sleebom ¹ , Cecilia M. Sahlgren ^{1,2} , Jaap M.J. den Toonder ¹ ¹ Eindhoven University of Technology, The Netherlands, ² Åbo Akademi University, Finland	
T135e	Differential Binary Haptotaxis Choice Assays of Myoblasts on Alternating Nanodot Arrays of Netrin-1	1521
	Mcolisi Dlamini, Timothy E. Kennedy, David Juncker <i>McGill University, Canada</i>	
T136e	A Dual-Membrane Microfluidic Device for Cell Migration Assay	1525
	Marika Sugimoto, Fuka Nagatomi, Naoki Sasaki <i>Toyo University, Japan</i>	
W132e	Study Effects of Hypoxia-Inducible Factor (HIF) Inhibitor on Endothelial Cell Migration under Oxygen Gradients using Microfluidic Wound Healing Assay	1527
	Hsiu-Chen Shih, Tse-Ang Lee, Hsiao-Mei Wu, Ping-Liang Ko, Yi-Chung Tung <i>Academia Sinica, Taiwan</i>	
W133e	Effects of Hypoxia on Epithelial Cancer Cell Motility on Topography-Based Microsystems	1530
	Keiichiro Kushiro ¹ , Akihide Ryo ² , Madoka Takai ¹ ¹ The University of Tokyo, Japan, ² Yokohama City University, Japan	
W134e	Cigarette Smoke Extract Enhances the Invasion of Lung Cancer Cells Co-Cultured with Fibroblasts in 3D Cellular Spheroids	1533
	Huei-Jyuan Pan ¹ , Hsin-Han Hou ² , Yun-Ching Hung ³ , Wei-Yu Liao ² , Chong-Jen Yu ² , Chau-Hwang Lee ^{1,3} ¹ Academia Sinica, Taiwan, ² National Taiwan University Hospital, Taiwan, ³ National Yang-Ming University, Taiwan	

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5.08 - Organisms on Chip (c. *Elegans*, Zebrafish, *Arabidopsis*, etc.)

- M135e Automated Microfluidic-Based Platform for Longitudinal Healthspan Tracking of *Caenorhabditis Elegans*** 1536
Kim Le, Yongmin Cho, Mei Zhan, Dhaval Patel, Hang Lu
Georgia Institute of Technology, USA
- M136e An In Vivo Microfluidic Method for Study of Bacterial Digestion inside *C. Elegans* Roundworms** 1540
V. Viri, M. Cornaglia, M.A.M. Gijs
EPFL, Switzerland
- T137e Slow-Down of Huntington’s Disease Progression in a *Caenorhabditis Elegans* Worm Model by Decreasing Bacterial Food Supply On-Chip** 1543
H.B. Atakan, M. Cornaglia, L. Mouchiroud, J. Auwerx, M.A.M. Gijs
EPFL, Switzerland
- T138e In-Vivo Cardiovascular Screening Model using a Microfluidic Device for Localized Microinjection into Intact *Drosophila Melanogaster* Larval Heart Tube** 1546
Alireza Zabihhesari, Tanveer Akbar, Arthur J. Hilliker, Pouya Rezai
York University, Canada
- W136e Assessment of Bioenergetic Health Index of a Single Zebrafish Embryo under the Influence of an Antibacterial Agent via Real-Time Monitoring of Oxygen Consumption Rates in a Microfluidic Device** 1550
Yao-Te Hsu, Shih-Hao Huang
National Taiwan Ocean University, Taiwan
- W137e Neurotoxin-Induced Impairment and Neuroprotective-Based Recovery of Electrotactic Locomotion in Zebrafish Larvae as a Model for Neurobehavioral Studies in Parkinson’s Disease** 1553
Arezoo Khalili, Khaled Youssef, Georg Zoidl, Pouya Rezai
York University, Canada
- W138e A Single Pressure Pulse-Actuated 3D-Printed Microfluidic Tip for High throughput Dispensing of *C. Elegans* Worms** 1557
Nandita Chaturvedi¹, Navajit S. Baban^{1,2}, Samuel O. Sofela^{1,2}, Ajymurat Orozaliev¹, Nikolas Giakoumidis¹, Jongmin Kim¹, Kristin C. Gunsalus^{1,2}, Yong-Ak Song^{1,2}
¹*New York University Abu Dhabi, UAE*, ²*New York University, USA*

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5.09 - Organs on Chip

- M137e Microfluidic Bioprinter for In-Situ Formation of Engineered Skin Grafts for Burn Wound Treatment** 1560
Richard Cheng¹, Gertraud Eylert¹, Sijin He¹, Jean-Michel Gariépy¹, Navid Hakimi¹, Marc Jeschke^{1,2}, Axel Guenther¹
¹*University of Toronto, Canada*, ²*Sunnybrook Research Institute, Canada*

M138e	3D Fat Fiber on a Chip	1564
	Akiyo Yokomizo, Yuya Morimoto, Shoji Takeuchi <i>The University of Tokyo, Japan</i>	
M139e	Angiogenesis Induced by Low Oxygen Tension in a Vascularized Tissue-on-Chip Device	1566
	Da Zhao ¹ , Tao Yue ¹ , Duc T.T. Phan ¹ , Xiaolin Wang ² , Christopher C.W. Hughes ¹ , Abraham P. Lee ¹ ¹ <i>University of California, Irvine, USA, </i> ² <i>Shanghai Jiao Tong University, China</i>	
M140e	A 3D Biomimetic Lung-on-a-Chip Model to Probe PM2.5 Induced Pulmonary Injury	1569
	Cong Xu, Min Zhang, Lei Jiang, Jianhua Qin <i>Chinese Academy of Sciences, China</i>	
M141e	Recapitulation of Rat Hepatocellular Function Forming Oxygen Gradient in a Microfluidic Cell Culture Device	1573
	Satomi Matsumoto ¹ , Eric Leclerc ² , Astia Rizki Safitri ¹ , Mathieu Danoy ¹ , Toshiro Maekawa ¹ , Haruyuki Kinoshita ¹ , Marie Shinohara ¹ , Kikuo Komori ¹ , Yasuyuki Sakai ¹ , Teruo Fujii ¹ ¹ <i>The University of Tokyo, Japan, </i> ² <i>LIMMS/CNRS-IIS, Japan</i>	
M142e	Microfluidic Model of the Outer Blood-Retina-Barrier	1575
	Li-Jiun Chen, Shun Ito, Nobuhiro Nagai, Toshiaki Abe, Hirokazu Kaji <i>Tohoku University, Japan</i>	
M143e	Exploring Physical Determinants of Premetastatic Niche with Organotypic Metastasis-on-a-Chip	1579
	Chun-Wei Lee ¹ , Hsueh-Yao Chu ¹ , Ming-Hsuan Chiu ¹ , Yin-Ju Chen ² , Long-Sheng Lu ² , Fan-Gang Tseng ^{1,3} ¹ <i>National Tsing Hua University, Taiwan, </i> ² <i>Taipei Medical University Hospital, Taiwan, </i> ³ <i>Academia Sinica, Taiwan</i>	
M144e	A Microfluidic Platform for Developing a Vascularized Microtissue based on Filtration and Reabsorption Process	1582
	Wen-Chih Yang, Tung-Han Wu, Yu-Hsiang Hsu <i>National Taiwan University, Taiwan</i>	
M145e	A Micro Device Array for Mechanical Stimulation and Contractility Measurement of hiPSC-Cardiomyocytes	1586
	Wenkun Dou ¹ , Li Wang ¹ , Manpreet Malhi ² , Zhensong Xu ¹ , Haijiao Liu ¹ , Julia Plakhotnik ² , Jason T. Maynes ² , Yu Sun ¹ ¹ <i>University of Toronto, Canada, </i> ² <i>Hospital for Sick Children, Canada</i>	
M146e	High-Throughput Platform for Rapid TEER Measurement of Organ-on-a-Chip Endothelial and Epithelial Tubules	1589
	A. Nicolas ^{1,2} , H. Lanz ¹ , S.J. Trietsch ¹ , T. Hankemeier ² , J. Joore ¹ , P. Vulto ¹ ¹ <i>Mimetas B.V., The Netherlands, </i> ² <i>Leiden University, The Netherlands</i>	
M147e	A Physiological Gut on Chip Replicating Small Intestine Complexity	1593
	Marine Verhulsel ¹ , Anthony Simon ¹ , Davide Ferraro ¹ , Lauriane G�er�emie ¹ , Denis Krdnija ¹ , Laurence Talini ² , Jean-Louis Viovy ¹ , St�ephanie Descroix ¹ , Danijela Matic Vignjevic ¹ ¹ <i>Institut Curie, France, </i> ² <i>Sorbonne-Universit�es, France</i>	

T139e	Placental Barrier-on-a-Chip: Modeling Placental Inflammatory Responses to Bacterial Infection	1595
	Yujuan Zhu¹, Fangchao Yin¹, Hui Wang¹, Li Wang¹, Jingli Yuan², Jianhua Qin¹ <i>¹Chinese Academy of Sciences, China, ²Dalian University of Technology, China</i>	
T140e	Construction of a Multi-Organ Chip based on Microfluidic Droplet Chain Technique	1598
	Chao-Yu Chen, Yan Ma, Jian-Zhang Pan, Qun Fang <i>Zhejiang University, China</i>	
T141e	Evaluation of Brain-Blood Barrier Permeable Peptide using Microfluidic Reconstituted BBB Model	1601
	Bohye Chung, Jaehoon Kim, Hyunho Kim, Hyun Jeong Oh, Seok Chung <i>Korea University, Republic of Korea</i>	
T142e	Multitube Biomimetic System for the Study of Intertubular Cross-Talks in Chronic Renal Diseases	1604
	Sarah Myram^{1,2}, Bastien Venzac^{1,2}, Sylvie Coscoy², Stéphanie Descroix² <i>¹Univiversity UPMC Paris Sorbonne, France, ²PSL Research University, France</i>	
T143e	A Microfluidic Culture Model Capable of Maintaining Ex Vivo Thyroid Carcinoma Specimens	1607
	Andrew Riley¹, Vicky Green¹, James England², John Greenman¹ <i>¹University of Hull, UK, ²Hull and East Yorkshire Hospitals NHS Trust, UK</i>	
T144e	Hyaluronic Acid Alters the Tumor Angiogenesis Phenotype of CXCL12 Treated Microvessel Analogues	1611
	Chia-Wen Chang, Alex Seibel, Jonathan W. Song <i>The Ohio State University, USA</i>	
T145e	A Microfluidic Electrochemical Assay for the On-Chip Measurement of Endothelial Permeability	1614
	Jeremy Wong^{1,2}, Craig A. Simmons^{1,2} <i>¹University of Toronto, Canada, ²Ted Rogers Centre for Heart Research, Canada</i>	
T147e	Reconstitution of an Epithelial-Endothelial Bilayer by the Micromesh Culture Technique Employing an Artificial Matrigel Basement Membrane	1617
	Kennedy O. Okeyo¹, Kai Yamada², Osamu Kurosawa³, Hidehiro Oana², Masao Washizu² <i>¹Kyoto University, Japan, ²The University of Tokyo, Japan, ³RIKEN, Japan</i>	
T148e	Enhancing Nanomedicine Penetration in Tumor-on-a-Chip Models using Ultrasound-Mediated Microbubble Activation	1620
	A.M. Bokkers¹, J.-B. Blondé¹, I. Lentacker², M. Versluis¹, G. Lajoinie¹, S. Le Gac¹ <i>¹University of Twente, The Netherlands, ²Ghent University, Belgium</i>	
T149e	Stretchable Micropatterned Membrane Integrated in Microfluidic Devices for Pulmonary Artery Smooth Muscle Cell Culture	1622
	Kae Sato¹, Yuka Misawa¹, Kyojiro Morikawa², Kazuma Mawatari², Takehiko Kitamori² <i>¹Japan Women's University, Japan, ²The University of Tokyo, Japan</i>	
T150e	Development of a Microfluidic-Based Model of a Human Prostate Gland	1625
	Linan Jiang, Fernando Ivich, Meagan Tran, Sander B. Frank, Cindy K. Miranti, Yitshak Zohar <i>University of Arizona, USA</i>	

W139e	Directional On-Chip Control of Culture Conditions and Metabolic Monitoring of Tumor Organoids in Personalized Chemotherapy	1628
	Andreas Weltin ¹ , Johannes Dornhof ¹ , Julia Marzioch ¹ , Jochen Kieninger ¹ , Jochen Maurer ² , Gerald A. Urban ¹ <i>¹Albert-Ludwigs-Universität Freiburg, Germany, ²University Hospital Aachen, Germany</i>	
W140e	A Bioinspired Human Proximal Tubule-on-a-Chip with Both Epithelial and Endothelial Tissue Layers for Online Monitoring of Nephrotoxicity and Filtration Properties	1631
	Ramin Banan Sadeghian ¹ , Yoshiki Sahara ² , Yang Liu ¹ , Toshikazu Araoka ³ , Jun K. Yamashita ³ , Tatsuji Enoki ⁴ , Minoru Takasato ² , Ryuji Yokokawa ¹ <i>¹Kyoto University, Japan, ²RIKEN, Japan, ³CiRA, Japan, ⁴Takara Bio Inc., Japan</i>	
W141e	Microfluidic Channel Lid for Interconnection and Cultivation of Multiple Spheroids in the Conventional 96 Well Plate	1635
	Chae-won Jin, Hong-soo Choi, Jin-young Kim <i>DGIST, Republic of Korea</i>	
W142e	Micromesh Culture Technique Enabling Cell Maturation for the use of Organ on a Chip	1638
	Osamu Kurosawa, Takeshi Hori, Nobutaka Tani, Hiroo Iwata <i>RIKEN, Japan</i>	
W143e	Cytotoxicity Assay using Kidney Tubule-on-a-Chip Integrated with Trans-Epithelial Electrical Resistance Measurement System	1641
	Yusuke Tanaka, Hiroshi Kimura <i>Tokai University, Japan</i>	
W144e	Real-Time Monitoring of Biliary Transport in Precision-Cut Liver Slices	1644
	Maciej Grajewski, Gert I.J. Salentijn, Ruby E.H. Karsten, Peter Olinga, Elisabeth Verpoorte <i>University of Groningen, The Netherlands</i>	
W145e	3D Perfusable Liver-on-a-Chip Developed on a Pneumatic Pressure-Driven Circulation Culture Platform	1647
	T. Satoh ^{1,2} , R. Nagasaki ^{1,2} , S. Sugiura ¹ , A. Nagasaki ¹ , T. Kanamori ¹ <i>¹AIST, Japan, ²Stem Cell Evaluation Technology Research Association, Japan</i>	
W146e	Three-Dimensional Human Blood-Brain Barrier Model for Long-Term Analysis	1650
	Ai Shima, Shogo Nagata, Shoji Takeuchi <i>The University of Tokyo, Japan</i>	
W147e	96-Well Format-Based Microfluidic Platform and Tilting Tower System for Multi-Tissue Experiment in a High-Throughput Manner	1652
	Jin-young Kim, Chae-won Jin, Hongsoo Choi <i>DGIST, Republic of Korea</i>	
W148e	A Plug-n-Play Hydrostatic Pressure-Driven Pump Module for High-Throughput Organ-on-a-Chip Applications	1655
	Jianghua Pei, Qiyue Sun, Xiaolin Wang <i>Shanghai Jiao Tong University, China</i>	

- W149e Breast Cancer Cells with Distinct E-Cadherin Status Exhibit Different 3-D Invasion Behavior in a Novel Microfluidic System** 1658
H. Eslami Amirabadi¹, M. Tuerlings¹, S. SahebAli¹, R. Luttge¹, C.C. van Donkelaar¹, J.W.M. Martens², J.M.J. den Toonder¹
¹*Eindhoven University of Technology, The Netherlands,*
²*Erasmus University Medical Center, The Netherlands*

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5.10 - Bioinspired, Biomimetic and Biohybrid Devices

- M148e Anti-Fouling Surfaces: Removal of Micro-Particles by Magnetic Artificial Cilia** 1661
Shuaizhong Zhang^{1,2}, Ye Wang^{1,2}, Patrick R. Onck³, Jaap M.J. den Toonder^{1,2}
¹*Eindhoven University of Technology, The Netherlands,* ²*Institute for Complex Molecular Systems, The Netherlands,* ³*University of Groningen, The Netherlands*
- M149e Biohybrid Actuators with Patterned Skeletal Muscle Myoblasts in Assembled Hydrogels** 1664
Chu-Chi Lin, Yu-Hsuan Yang, Shih-Kang Fan
National Taiwan University, Taiwan
- M150e Biomimetic Structure Construction with Concurrent Particles/Cells and Hydrogels Manipulations** 1667
Kuan-Lun Ho, Szu-Chia Hsieh, Shih-Kang Fan
National Taiwan University, Taiwan
- M151e Mechanistic Approach to Mimic Lizard Tail Autonomy using Deformable Microstructures as Biological Interlock in the Soft Tissue** 1670
Navajit S. Baban^{1,2}, Ajymurat Orozaliev¹, Yong-Ak Song^{1,2}
¹*New York University Abu Dhabi, UAE,* ²*New York University, USA*
- T151e In Vitro Parasite Nanomaterial Delivery Microrobot using Nematodes** 1673
Keisei Niibo¹, Kosuke Chimbe¹, Kaoru Uesugi¹, Kotaro Kimura², Keisuke Morishima¹
¹*Osaka University, Japan,* ²*Nagoya City University, Japan*
- T152e Digital-Micromirror-Device Printed Scaffold for Vascularized Tissue** 1675
R. Samanipour^{1,4}, H. Rezaei Nejad², S.C. Chen³, Ali Khademhosseini⁴, Su Ryon Shin⁴, M. Hoorfar¹
¹*University of British Columbia, Canada,* ²*Tufts University, USA,* ³*University of California, San Diego, USA,* ⁴*Massachusetts Institute of Technology, USA*
- T153e Generation of Hollow Fiber-Based Neurovascular Scaffold as a Blood Brain Barrier** 1679
Thi Phuong Thuy Nguyen, Woori Chae, Buu Minh Tran, Nae Yoon Lee
Gachon University, Republic of Korea
- T154e Design and Fabrication of 3D Network of Perfusable Microchannels in Cell-Laden Hydrogel** 1682
Wei Huang Goh, Michinao Hashimoto
Singapore University of Technology and Design, Singapore
- W150e A Bioactuated Micropump using Peristaltic Locomotion Piston** 1686
Kazuma Toyoda, Kaoru Uesugi, Keisuke Morishima
Osaka University, Japan

W151e	Neuro-Hybrid System with Spiking Neural Network and Biomimetic Ionic Micro-Stimulation	1688
	Stephany Mai Nishikawa ¹ , Farad Khoystatee ^{1,2} , Zhongyue Luo ¹ , Toshiharu Shiraishi ³ , Kazuyuki Aihara ¹ , Yoshiho Ikeuchi ¹ , Soo Hyeon Kim ¹ , Teruo Fujii ¹ , Timothée Levi ¹ <i>¹The University of Tokyo, Japan, ²University of Bordeaux, France, ³Microfluidic System Works Inc., Japan</i>	
W152e	Pure Proteinaceous Microstructures Integrated in Glass Microfluidics by Photoinitiator-Free Femtosecond Laser Multi-Photon Cross-Linking	1692
	Daniela Serien, Koji Sugioka <i>RIKEN, Japan</i>	
W153e	Biopatterning of Stem/Progenitor Cells in Tissue-Mimicking Micro-Scaffold	1695
	Hon Son Ooi, Tak Keung Pang, Md Habibur Rahman, Chao Wan, Yi-Ping Ho <i>The Chinese University of Hong Kong, China</i>	

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5.11 - Others

M152e	Fabrication and Analysis of MCF-7 Spheroid-Collagen Array using Droplet Contact-Based Transfer	1699
	Hwisoo Kim, Chang Hyun Cho, Je-Kyun Park <i>KAIST, Republic of Korea</i>	
M153e	Chemical-Free Cell Lysis Enabled by Sharp-Edge-Based Acoustic Streaming Effects	1701
	Zeyu Wang, Po-Hsun Huang, Shuaiguo Zhao, Hunter Bachman, Tony Jun Huang <i>Duke University, USA</i>	
M154e	Plant Protoplast Cell Wall Regeneration Study by Characterizing the Mechanical and Electrical Properties using Microfluidic Impedance Device	1703
	Ziyu Han ¹ , Lincai Chen ¹ , Jiehua Wang ¹ , Yunhua Gao ² , Xuexin Duan ¹ <i>¹Tianjin University, China, ²National Institute of Metrology, China</i>	
M155e	A Microbial Domestication Pod for the Discovery of Natural Products	1707
	Tartela Alkayyali, Bradley Haltli, Russell Kerr, Ali Ahmadi <i>University of Prince Edward Island, Canada</i>	
T155e	In Vitro 3-Dimensional Microfluidic Assay for Studying Invasion of Cholangiocarcinoma	1711
	Jiheon Won ¹ , Youngkyu Cho ¹ , Yesl Jun ¹ , Jhangho Pak ² , Seok Chung ¹ <i>¹Korea University, Republic of Korea, ²University of Ulsan College of Medicine, Republic of Korea</i>	
T156e	Electrical Pulse Parameters for Isolating Vacuoles from Plant Cells in a Microfluidic System	1714
	Nitipong Panklang ¹ , Thapakorn Kaewlangka ¹ , Boonchai Techaumnat ¹ , Anurat Wisitsoraat ² <i>¹Chulalongkorn University, Thailand, ²National Electronics & Computer Technology Center, Thailand</i>	
T157e	Fluidic-Capacitor Integrated Microfluidic Platform to Mimic Heart Beating for Generation of Functional Liver Organoids	1718
	Jiaxu Wu, Yoshikazu Hirai, Ken-ichiro Kamei, Toshiyuki Tsuchiya, Osamu Tabata <i>Kyoto University, Japan</i>	

T158e	Micro Magnetic Resonance Imaging of Murine Liver Tissue Slices on a Microfluidic Perfusion Device	1722
	Manvendra Sharma ¹ , Bishnubrata Patra ¹ , William Hale ¹ , Ruby E.H. Karsten ² , Gert I.J. Salentijn ² , Maciej Grajewski ² , Erwin Fuhrer ³ , Anna Zakhurdaeva ³ , Dario Mager ³ , Jan Korvink ³ , Peter Olinga ² , Elisabeth Verpoorte ² , Marcel Utz ¹	
	¹ University of Southampton, UK, ² University of Groningen, The Netherlands, ³ Karlsruhe Institute of Technology, Germany	
W154e	Observation of Vertical Vibration-Induced Flow Towards On-Chip 3D Cell Manipulations	1725
	Shun Nishimura, Takeshi Hayakawa	
	Chuo University, Japan	
W155e	Density-Based Separation of Good Quality Oocytes using Microfluidic Chip	1727
	Wataru Iwasaki, Kenichi Yananaka, Daisuke Sugiyama, Yuki Teshima, Masatoshi Maeki, Maria Portia P. Briones-Nagata, Kenichi Yamashita, Masashi Takahashi, Masaya Miyazaki	
	¹ AIST, Japan, ² Saga University, Japan, ³ Kyushu University, Japan, ⁴ Hokkaido University, Japan, ⁵ Kyushu Institute of Technology, Japan	
W156e	A Simple Flow Cell for Label-Free Monitoring of Antibiotic Transport into Bacteria	1730
	Xuan Zhao, Charlie Gosse	
	¹ LPN-CNRS, France, ² Synchrotron SOLEIL, France	
W157e	Development of In Vitro Blood-Air Barrier Model for Studying Penetration of Particulate Matter	1734
	Tse-Ang Lee, Ping-Liang Ko, Chien-Chung Peng, Yi-Chung Tung	
	Academia Sinica, Taiwan	

06 - Diagnostics, Theranostics, and Medical Research

6.01 - Sample Preparation (Whole Blood, Saliva, Cells, Tissue, Food, etc.)

M156f	An Autonomous Blood Microsampling Device Enabling Metered Large-Volume Dried Plasma Spots (DPS)	1737
	Janosch Hauser, Göran Stemme, Niclas Roxhed	
	KTH Royal Institute of Technology, Sweden	
M158f	Nucleic Acid Purification using the Push-Button Actuated Microfluidic Pumping Units and Pneumatic Valves	1740
	Juhwan Park, Hyewon Roh, Je-Kyun Park	
	KAIST, Republic of Korea	
M159f	Expanding the Potential of Self-Powered Microfluidics by Combining Fluid Modules for Blood Sample Preparation, Drug Delivery and Complex Liquid Manipulation	1742
	Francesco Dal Dosso, Wout De Wispelaere, Jaroslav Belotserkovsky, Tadej Kokalj, Jeroen Lammertyn	
	KU Leuven, Belgium	
M160f	A Membrane-Type Microfluidic Device for Rapid Bacteria Detection in Clinical Samples	1746
	Wen-Bin Lee ¹ , Ting-Hang Liu ¹ , Yi-Sin Chen ¹ , Huey-Ling You ² , Mel S. Lee ² , Gwo-Bin Lee ¹	
	¹ National Tsing Hua University, Taiwan, ² Kaohsiung Chang Gung Memorial Hospital, Taiwan	

M161f	Cell Block Preparation from Pleural Fluid by an Ultrasound-Assisted Filtration	1750
	Tingyu Li ¹ , Yaoping Liu ¹ , Lianjun Lin ² , Eunhee Kim ³ , Xinmin Liu ² , Haichao Li ² , Hongsoo Choi ³ , Wei Wang ^{1,4}	
	¹ Peking University, China, ² Peking University First Hospital, China, ³ DGIST, Republic of Korea, ⁴ National Key Laboratory of Science and Technology on Micro/Nano Fabrication, China	
T159f	Diagnostics of Intestinal Parasites using a Portable Centrifuge Device Paired with a Smartphone-Based Microscope	1753
	Terry Juang, Wen-Bin Lee, Gwo-Bin Lee National Tsing Hua University, Taiwan	
T160f	Size Separation Method of Microparticles with Low Dead Volume based on Vibration-Induced Flow	1756
	Naoki Kitada, Takeshi Hayakawa Chuo University, Japan	
T161f	Improving the Sensitivity of Bacteria Detection and Quantification in Urine Samples via Sample Dilution and Filtration	1758
	Aniruddha M. Kaushik, Kuangwen Hsieh, Tza-Huei Wang Johns Hopkins University, USA	
T162f	Mobile-Labdisc for Point-of-Care Diagnostics at Resource Limited Settings	1762
	Noa Lapins, Amin Kazemzadeh, Indradumna Banerjee, Ahmad Saleem Akhtar, Aman Russom KTH Royal Institute of Technology, Sweden	
T163f	Rapid Bacterial Detection using a Microfluidic System Integrating Membrane Filtration and Surface-Enhanced Raman Scattering	1765
	Kai-Wei Chang ¹ , Ho-Wen Cheng ² , Jessie Shiue ² , Juan-Kai Wang ^{1,2} , Yuh-Lin Wang ^{1,2} , Nien-Tsu Huang ¹	
	¹ National Taiwan University, Taiwan, ² Academia Sinica, Taiwan	
W158f	A Novel Tissue Clearing Solution for One-Step Clearing of Micro-Tissues	1769
	S. Soroush Nasser, Erika Siren, Jayachandran Kizhakkedathu, Karen C. Cheung University of British Columbia, Canada	
W159f	Rapid Single-Cell Leukocyte Enzymatic Secretion Profiling from Whole Blood	1772
	Kerwin Kwek ¹ , Ri Lu ² , Shir Lynn Lim ³ , Guoyun Sun ² , Chwee Teck Lim ^{1,2} , Jongyoon Han ^{1,4} , Chia-Hung Chen ^{1,2}	
	¹ Singapore-MIT Alliance for Research and Technology, Singapore, ² National University of Singapore, Singapore, ³ National University Health System, Singapore, ⁴ Massachusetts Institute of Technology, USA	
W160f	An Electrothermal Bioprocessor with Centimeter-Scale Fluid Motion for Acute Bacterial Infection Diagnostics in Resource-Limited Settings	1775
	Yi Lu, Peter Torab, Pak Kin Wong The Pennsylvania State University, USA	
W161f	Ultrasound-Mediated Genomic DNA Extraction from Whole Blood using Magnetic Beads	1778
	Hyungbeen Lee, Min Tack Oh, Hye Won Seo, Byung Chul Lee, Nakwon Choi, Soo Hyun Lee KIST, Republic of Korea	

- W162f An Alternative Way to Make 2-Layer-Perfluoropolyether (PFPE) Chips** 1781
P.P.M.F.A. Mulder¹, N.N. Hamidon^{1,2}, E. Verpoorte¹
¹University of Groningen, The Netherlands, ²Universiti Malaysia Pahang, Malaysia

06 - Diagnostics, Theranostics, and Medical Research

6.02 - Nucleic Acid Analysis (Digital PCR, Next Generation Sequencing)

- M162f A New Method for Single Molecule Measurement of Absolute Telomere Length Distributions using Digital Quantitative Polymerase Chain Reaction** 1784
Yongqiang Luo^{1,2}, Ramya Viswanathan^{1,2}, Lih Feng Cheow^{1,2,3}
¹National University of Singapore, Singapore, ²Biomedical Institute for Global Health Research & Technology, Singapore, ³A*STAR, Singapore

- M163f Paper-Based Sample-to-Answer Rapid Detection of HIV from Blood** 1788
Taylor J. Moehling, Elizabeth A. Phillips, Laud Anthony Basing, Karin F.K. Ejendal, Lauren A. Jankowski, Kristin M. Byers, Jacqueline C. Linnes
Purdue University, USA

- M164f 3D-Paper-Based Device for Sample Preparation and Multiplexed Nucleic Acid Amplification** 1791
Pierre Garneret¹, Etienne Coz¹, Harry Daweson¹, Fabrice Monti¹, A. Kwasiborski², J. Vanhomwegen², Jean Claude Manuguerra², Patrick Tabeling¹
¹PSL University, France, ²Institut Pasteur, France

- M165f HIV-1 and HTLV-1 Multiplex Detection by Digital Mediator Displacement Loop-Mediated Isothermal Amplification (Digital MD Lamp)** 1794
Lisa Becherer¹, Martin Schulz², Hanna Kuhn², Mohammed Bakheit³, Sieghard Frischmann³, Friedrich Zitz⁴, Nadine Borst², Roland Zengerle^{1,2}, Felix von Stetten^{1,2}
¹Albert-Ludwigs-Universität Freiburg, Germany, ²Hahn-Schickard, Germany, ³Mast Diagnostica GmbH, Germany, ⁴E.L.T. Kunststofftechnik & Werkzeugbau GmbH, Austria

- M167f A Portable Loop-Mediated Isothermal Amplification-Based Microdevice for Multiplex Detection of Foodborne Pathogens** 1797
Thi Ngoc Diep Trinh, Nae Yoon Lee
Gachon University, Republic of Korea

- T164f Droptube for Centrifugal Droplet Generation: Design, Validation, and Application in Digital Lamp** 1800
Yanzhe Zhu, Xingyu Lin, Xiao Huang, Michael R. Hoffmann
California Institute of Technology, USA

- T165f MicroCAP: Microfluidic Centrifuge Assisted Precipitation for DNA Quantification on Lab-on-DVD** 1802
Indradumna Banerjee¹, Shambhu P.G. Aralaguppe², Noa Lapins¹, Amin Kazemzadeh¹, Ander Sönneborg², Ujjwal Neogi², Aman Russom¹
¹KTH Royal Institute of Technology, Sweden, ²Karolinska Institutet, Sweden

- T166f Physical Microarray Scanning, A New Technique for the Production and Replication of DNA Microarrays** 1806
Stefan D. Krämer, Johannes Wöhrle, Philipp Meyer, Christin Rath, Günter Roth
University Freiburg, Germany

T167f	Rapid Uropathogenic Bacterial Detection by Integrated Photonic PCR on Chip with Pathogenic Enrichment	1809
	Byungrae Cho ¹ , Jong-Hwan Lee ¹ , Sang Hun Lee ¹ , Saptati Bhattacharjee ¹ , Jeffrey Feng ¹ , SoonGweon Hong ¹ , Jihwan Song ¹ , Minsun Song ¹ , Doyeon Bang ¹ , Bowen Wang ¹ , Lee W. Riley ¹ , Luke P. Lee ^{1,2,3}	
	<i>¹University of California, Berkeley, USA, ²Biomedical Institute for Global Health Research & Technology, Singapore, ³Harvard Medical School, USA</i>	
T168f	Photothermal PCR Chip with Plasmonic Glass Nanopillar Arrays	1812
	Youngseop Lee ¹ , Byoung-Hoon Kang ¹ , Minhee Kang ² , Luke P. Lee ³ , Ki-Hun Jeong ¹	
	<i>¹KAIST, Republic of Korea, ²Samsung Medical Center, Republic of Korea, ³University of California, Berkeley, USA</i>	
T169f	Simple Polydisperse Droplet Emulsion PCR with a Statistical Volumetric Correction – Removing the Monodispersity Restriction of Microfluidic ddPCR	1815
	Samantha A. Byrnes, Tim C. Chang, Toan Huynh, Anna Astashkina, Bernhard H. Weigl, Kevin P. Nichols	
	<i>Intellectual Ventures Laboratory, USA</i>	
W163f	Simple One-Step Surface Modification to Graft DNA Codes on Paper Devices and its Biomedical Application	1819
	Wan Zhou, XiuJun Li	
	<i>University of Texas at El Paso, USA</i>	
W164f	Nanofluidic Optical DNA Mapping for Rapid Identification of Antibiotics Resistant Plasmids	1822
	Yii-Lih Lin ¹ , Tsegaye Sewunet ^{2,3} , Sriram KK ¹ , Christian G. Giske ^{3,4} , Fredrik Westerlund ¹	
	<i>¹Chalmers University of Technology, Sweden, ²Jimma University, Ethiopia, ³Karolinska Institutet, Sweden, ⁴Karolinska University Hospital, Sweden</i>	
W165f	Multicolor Super-Resolution Optical Mapping of Single-Molecule DNA in Size-Tunable Nanochannels	1826
	Miao Yu, Lujia Yu, Shengwang Du, Shuhuai Yao	
	<i>The Hong Kong University of Science and Technology, China</i>	
W166f	A Power-Free and Water-Loss-Free Chip for Low-Cost and Robust Digital PCR	1830
	Yongfeng Ning ¹ , Fengxiang Jing ² , Gang Li	
	<i>¹Chongqing University, China, ²Shanghai Turtle Technology Company Limited, China</i>	
W167f	An Integrated Microfluidic System for Genotyping Test using the Encoded Silicon Microchips	1833
	Li Fan, Shengquan Liu, Nana Wang, Fangzhou Zhang, Xiongdong Ma, Jiong Li, Hong Wang	
	<i>Chinese Academy of Sciences, China</i>	
W168f	Staphylococcus Aureus Sub-Typing and Detection of MRSA on a Microfluidic Lab-on-Foil Device	1835
	Anna Ohlander ^{1,3} , Sergey Zelenin ¹ , Flavia Huygens ² , Christoph Kutter ³ , Aman Russom ¹	
	<i>¹KTH Royal Institute of Technology, Sweden, ²Queensland University of Technology, Australia, ³Fraunhofer EMFT, Germany</i>	

06 - Diagnostics, Theranostics, and Medical Research

6.03 - Protein Analysis and Characterization (e.g., Proteomics)

- M168f** **Fast Algorithmic Optimization for Protein Crystal Quality** 1839
Sankhya Bhattacharya, Pijus Kundu, Fan-Gang Tseng
¹National Tsing Hua University, Taiwan, ²Academia Sinica, Taiwan
- M169f** **A Microfluidic Whole Blood Processing Platform Integrating Ion-Sensitive Field-Effect Transistor Sensor for Glycated Hemoglobin Detection** 1843
Yu-Hao Huang¹, Yu-Hao Chang¹, Da-Han Kuan¹, Jui-Cheng Huang², Yu-Jie Huang², Chih-Ting Lin¹, Nien-Tsu Huang¹
¹National Taiwan University, Taiwan, ²Taiwan Semiconductor Manufacturing Company, Taiwan
- M170f** **Quantitative MicroPADs: A Paper-Based Point-of-Care Diagnostic Device for the Detection of Human Immunodeficiency Virus (HIV)** 1847
E. Brandon Strong, Brittany A. Lore, Nicholas J. Tod, Emiliano Escamilla, Oscar Mercado, Robert Thiel, Andres W. Martinez, Nathaniel W. Martinez
California Polytechnic State University, San Luis Obispo, USA
- T170f** **Wash-Free Digital Protein Detection System based on Nanoparticle Motion Analysis** 1850
Kenji Akama^{1,2}, Hiroyuki Noji¹
¹The University of Tokyo, Japan, ²Systemex Corporation, Japan
- T171f** **Microfluidic Assisted Sample Preparation for the Analysis of Bimolecular Structure in Cryo-Electron Microscopy** 1853
Byungjin Lee¹, Radoslav Ivanov Enchev², Sung Sik Lee², Matthias Peter², Chang-Soo Lee¹
¹Chungnam National University, Republic of Korea, ²ETH Zürich, Switzerland
- T172f** **Electrode Nanogap-Enabled and Dielectrophoretically Assisted Electrical Auto-Correlation Spectroscopy of Low-Copy Number of Proteins** 1856
Alejandro Martínez-Brenes^{1,3}, Andrés Hernández-Jiménez¹, Jeremy Caldwell-Chacón¹, Katrin Vu³, Gerhard Blankenburg³, Li-Ling Yang³, Ming-Lee Chu³, Chia-Fu Chou³, Leonardo Lesser-Rojas¹
¹Universidad de Costa Rica, Costa Rica, ²Instituto Tecnológico de Costa Rica, Costa Rica, ³Academia Sinica, Taiwan
- W170f** **Fast Antimicrobial Enzymatic Assay by Nanoplasmonics-Based Optofluidic System** 1860
Jong-Hwan Lee¹, Tiffany Wu¹, SoonGweon Hong¹, Minsun Song¹, Byungrae Cho¹, Doyeon Bang¹, Lee W. Riley¹, Luke P. Lee^{1,2,3}
¹University of California, Berkeley, USA, ²Biomedical Institute for Global Health Research & Technology, Singapore, ³Harvard Medical School, USA
- W171f** **Rapid Immunoprecipitation of Target Peptide for Oral Cancer Screening by using Microfluidic Device** 1863
Wei-Ting Su¹, Ya-Yu Hsueh¹, Heng-Yun Chang¹, Chia-Chun Wu¹, Yung-Chin Hsiao^{1,2}, Jau-Song Yu^{1,2}, Yen-Heng Lin^{1,2}
¹Chang Gung University, Taiwan, ²Chang Gung Memorial Hospital, Taiwan
- W172f** **A Microfluidics based Platform for the Rapid, Multiplexed, Fully-Automated Detection System for Malaria and Dengue Fever using Embedded Hydrogel Sensors** 1866
Bhavna Goyal, Dhananjaya Dendukuri
Achira Labs Private Limited, India

06 - Diagnostics, Theranostics, and Medical Research

6.04 - Clinical Chemistry

- M171f** **Microfluidic Droplet-in-Oil Partitioning Device for Rapid Phenotypic AST in *Neisseria Gonorrhoea*** 1869
Fan-En Chen, Emily Chang, Dong Jin Shin, Liben Chen, Tza-Huei Wang
Johns Hopkins University, USA
- M172f** **Stiffness and ATP Recovery of Stored Human Red Blood Cells** 1873
Zhensong Xu¹, Wenkun Dou¹, Chen Wang², Yu Sun¹
¹*University of Toronto, Canada,* ²*Mount Sinai Hospital, Canada*
- T173f** **Dual Aptamer Assay for Bacterial Detection by using an Electromagnetic Microfluidic Platform** 1876
Chin-Heng Su, Min-Han Tsai, Chia-Ying Lin, Yu-Dong Ma, Chih-Hung Wang, Yi-Da Chung, Gwo-Bin Lee
National Tsing Hua University, Taiwan
- T174f** **Functionalized Graphene Nanoparticle Toward Rapidly Measurable and Easy-to-Use Immunoassay Microdevice** 1880
Akihiro Shirai, Kenji Sueyoshi, Tatsuro Endo, Hideaki Hisamoto
Osaka Prefecture University, Japan
- W173f** **A Fibrinogen Assay using Specific Aptamer on an Integrated Microfluidic Chip** 1882
Yi-Da Chung¹, Anirban Sinha¹, Priya Gopinathan¹, Hsin-Ying Lin², Shu-Chu Shiesh², Gwo-Bin Lee¹
¹*National Tsing Hua University, Taiwan,* ²*National Cheng Kung University, Taiwan*

06 - Diagnostics, Theranostics, and Medical Research

6.05 - Cancer Research

- M174f** **Microheater-Nanowires Device for Detection of Cell-Free Circulating Methylated DNA** 1886
Hiromi Takahashi¹, Takao Yasui^{1,2}, Keiko Shinjo¹, Noritada Kaji^{1,2}, Akimitsu Okamoto³, Yoshinobu Baba^{1,5}
¹*Nagoya University, Japan,* ²*PRESTO, Japan Science and Technology Agency, Japan,* ³*The University of Tokyo, Japan,* ⁴*AIST, Japan*
- M175f** **Resistive-Pulse Sensing Tumor-Derived Exosome Detection Device** 1889
Thomas R. Carey, Connie W. Yu, Jennifer Hall, Lydia L. Sohn
University of California, Berkeley, USA
- M176f** **Resource-Free Exosomal MIRNA Detection in Liquid Biopsy** 1893
Minjeong Jang¹, Jae-Ho Cheong², Pilnam Kim¹
¹*KAIST, Republic of Korea,* ²*Yonsei University, Republic of Korea*
- T175f** **The Utilization of an Accelerating Moving Light Image in an Optically-Induced Dielectrophoresis (ODEP)-Based Microfluidic System for the Isolation of Cancer Cells with Different Responses to the Cytotoxic Effect of Anti-Cancer Drugs** 1895
Po-Yu Chu, Chia-Jung Liao, Min-Hsien Wu
Chang Gung University, Taiwan

T176f	Tumor Capturing Microbeads for Postsurgical Care	1899
	Junghwa Cha, Pilnam Kim <i>KAIST, Republic of Korea</i>	
T177f	A ‘Spheroid-On-Chip’ Microfluidic Device for Modelling Tumour Metastasis and the Tumour Microenvironment	1902
	Thomas Collins, Alexander Iles, Nicole Pamme, Isabel Pires <i>University of Hull, UK</i>	
W174f	Spatially-Resolved MicroRNA Profiling from Fixed Tissue Sections using Nanoliter Well Arrays	1906
	Augusto M. Tentori ¹ , Maxwell B. Nagarajan ¹ , Wen Cai Zhang ² , Frank J. Slack ² , Patrick S. Doyle ¹ <i>¹Massachusetts Institute of Technology, USA, ²Harvard Medical School, USA</i>	
W175f	An Automatic Microfluidic System for Continuous Selection of Aptamers Targeting Surface Protein by using Cancer Tissue Samples	1910
	Wei-Ting Liu ¹ , Yi-Cheng Tsai ¹ , Wen-Bin Lee ¹ , Chien-Yu Fu ¹ , Yuan-Jhe Chuang ² , Keng-Fu Hsu ² , Gwo-Bin Lee ¹ <i>¹National Tsing Hua University, Taiwan, ²National Cheng Kung University, Taiwan</i>	
W176f	Real-Time, Label-Free Mapping of Cell Signalling using Photonic Resonant Imaging Technology	1914
	José Juan-Colás ¹ , Ian S. Hitchcock ¹ , Mark Coles ² , Steven Johnson ¹ , Thomas F. Krauss ¹ <i>¹University of York, UK, ²University of Oxford, UK</i>	

06 - Diagnostics, Theranostics, and Medical Research

6.06 - Personalized Medicine

M177f	Micro-Dissected Tissue Microarrays for Drug Discovery and Therapeutic Response Assays on Ex Vivo Tumor Samples	1917
	Kayla Simeone ^{1,2} , Robin Guay-Lord ^{2,3} , Abdul M. Lateef ^{1,2} , Benjamin Péant ^{1,2} , Euridice Carmona ^{1,2} , Jennifer Kendall-Dupont ^{1,2} , Adriana M. Orimoto ^{1,2} , Diane Provencher ^{1,2} , Fred Saad ^{1,2} , Anne-Marie Mes-Masson ^{1,2} , Thomas Gervais ^{1,2} <i>¹Université de Montréal, Canada, ²Institut du Cancer de Montréal, Canada, ³Polytechnique de Montréal, Canada</i>	
T178f	THErapeutic Agent Screening Microfluidic Electroporator (THEME) for Precision Medicine	1921
	Sung-Eun Choi, Chris H. Choi, Mengxing Ouyang, Nathan Scott, Soojung Claire Hur <i>¹Johns Hopkins University, USA, ²Harvard University, USA, ³UCLA, USA</i>	
T179f	Single-Cell Functional Proteomics Microchip for Profiling Circulating Hematopoietic Stem/Progenitor Cells and Early Detection of Myelofibrosis	1924
	Jonathan Chen ¹ , Dongjoo Kim ¹ , Zhuo Chen ¹ , Maria Kleppe ² , Ross Levine ² , Rong Fan ¹ <i>¹Yale University, USA, ²Memorial Sloan Kettering Cancer Center, USA</i>	
W177f	Biomimic Microwell Array Sensors to Identify Effective Chemotherapeutic Combinations In Vitro and In Vivo	1927
	Ching-Te Kuo ¹ , Jong-Yueh Wang ¹ , Siang-Rong Lu ^{1,2} , Yu-Sheng Lai ¹ , Hsiu-Hao Chang ² , Jer-Tsong Hsieh ³ , Andrew M. Wo ¹ , Benjamin P.C. Chen ³ , Hsin-yu Lee ¹ <i>¹National Taiwan University, Taiwan, ²National Taiwan University Hospital and National Taiwan University College of Medicine, Taiwan, ³University of Texas Southwestern Medical Center, USA</i>	

W178f Automated Microfluidic Systems of BEAMing (Beads, Emulsion, Amplification, and Magnetics) for Clinical Diagnosis 1931
K. Nakajima, K. Yamawaki, K. Nakanishi, K. Cai, H. Takei, Y. Kawamoto,
A. Matsuoka, A. Tagawa
Sysmex Corporation, Japan

W179f An Adaptive Microfluidic Device for Real-Time Monitoring of Cytokine Triggered Drug Delivery Towards Precision Bioelectronic Medicine in Inflammation 1935
Guozhen Liu^{1,2}, Chaomin Cao²
¹*The University of New South Wales, Australia,* ²*Central China Normal University, China*

06 - Diagnostics, Theranostics, and Medical Research

6.07 - Regenerative Medicine and Tissue Engineering

M179f Development of a Bioassay System to Evaluate the Pulsatile Function of Human Heart Tissue using a Cellular Micropump On-Chip and a Biomimetic Human iPS Cell-Derived Heart Tissue Sheet Technology 1938
Abulaiti Moshia, Kozue Murata, Yalikus Yaxiaer, Yo Tanaka, Hidetoshi Masumoto
RIKEN, Japan

M180f Preparation of Nerve Guidance Conduits with Porous and Micropatterned Surface for Sciatic Nerve Regeneration 1941
Jin Jeon, Hee Seok Yang
Dankook University, Republic of Korea

T180f An Integrated High-Throughput Microfluidic Platform to Fabricate Well Distributed Cell-Laden Gelatin Methacryloyl Microgels for Injectable Tissue Engineering 1944
Mohamed Gamaleldin, Sina Kheiri, Saidul Islam, Keekyoung Kim
University of British Columbia, Canada

T181f Accelerated Bone Regeneration by Nanotopographically Defined Biodegradable Patch 1948
Min Suk Lee, Hee Seok Yang
Dankook University, Republic of Korea

W180f 3D-Printing Enabled Micro-Assembling for Microfluidic Electrotransfection of 3D-Cultured Cells and Tissues 1951
Qingfu Zhu, Megan Hamilton, Mei He
University of Kansas, USA

06 - Diagnostics, Theranostics, and Medical Research

6.10 - Drug Development and Delivery

M181f In Vitro & In Vivo Studies of Intravitreal Implantable Magnetic Micropump for On-Demand Drug Delivery 1955
Cong Wang¹, Seung-Jun Seo², Jin-Seong Kim¹, Ki-Hong Kim², Jong-Ki Kim², Jungyul Park¹
¹*Sogang University, Republic of Korea,* ²*Catholic University of Daegu, Republic of Korea*

T182f Tumour-On-A-Chip Platform to Evaluate Nanoparticles Penetration in 3D Co-Culture Tumour Spheroids 1959
Jean-Baptiste Blondé, Dwi Priwitaningrum, Jai Prakash, Séverine Le Gac
University of Twente, The Netherlands

- T183f** **Designing Smart Microcapsules with Polarity-Selective and Temperature-Dependent Permeability for Drug Delivery Systems** 1961
Ji-Won Kim, Sang Seok Lee, Shin-Hyun Kim
KAIST, Republic of Korea
- T184f** **Three-Dimensional Poly(Lactic-Co-Glycolic Acid)/Silica Colloidal Crystal Microparticles for Sustained Drug Release and Visualized Monitoring** 1964
Rui Guo, Xiao-Ting Sun, Ying Zhang, Dan-Ni Wang, Chun-Guang Yang, Zhang-Run Xu
Northeastern University, China
- W181f** **Microfluidic Preparation of Polymer-Lipid Janus Microparticles for Staged Drug Release** 1967
Xiao-Ting Sun, Rui Guo, Dan-Ni Wang, Chun-Guang Yang, Zhang-Run Xu
Northeastern University, China
- W182f** **Temperature-Controlled Acoustofluidic Production of Microbubble Contrast Agents with Enhanced Stability and Monodispersity** 1970
Ida Iranmanesh¹, Shमित Shrivastava¹, Richard Browning¹, Dario Carugo^{1,2}, Eleanor Stride¹
¹*University of Oxford, UK, ²University of Southampton, UK*

06 - Diagnostics, Theranostics, and Medical Research

6.11 - Pharmaceutical Analysis

- M183f** **Drug Metabolism in Droplet Scale with On-Chip Metabolite Identification by Ambient Mass Spectrometry** 1973
Gowtham Sathyanarayanan, Markus Haapala, Tiina Sikanen
University of Helsinki, Finland
- W183f** **Protein Transport through a Separation Membrane in a Microfluidic Device** 1976
Timothy S. Frost, Victor Estrada, Linan Jiang, Yitshak Zohar
University of Arizona, USA

06 - Diagnostics, Theranostics, and Medical Research

6.12 - Others

- M184f** **Portable Single-Cell Analysis with the Micropeek Smartphone Adapter and COC Microfluidic Chips** 1979
Lucas Armbrecht^{1,2}, Martin Schmid², Andre Kling¹, Petra S. Dittrich¹
¹*ETH Zürich, Switzerland, ²Scrona AG, Switzerland*
- M185f** **Dx- Fidget Spinner, a Versatile Sample Enrichment Tool for Extreme Point of Care Testing** 1982
Issac Michael^{1,2}, Dongyoung Kim², Dong-Yeob Kim², Oleksandra Gulenko¹, Yoon-Kyoung Cho^{1,2}
¹*Institute for Basic Science, Republic of Korea, ²UNIST, Republic of Korea*
- M186f** **Reperfusion of Micro-Vascular Occlusion by Physical Stimuli of Electrically-Induced** 1985
D. Matsumura¹, M. Sumimoto¹, K. Miwa¹, Y. Moriizumi², H. Oh³, Y. Yamanishi¹
¹*Kyushu University, Japan, ²BEX Co., Ltd., Japan, ³Hyogo Prefectural Amagasaki General Medical Center, Japan*

- M187f** **A Microfluidic Platform to Restore the Angiogenic Balance in Preeclampsia** 1988
 L. Alexandre^{1,2,3}, L. Trapiella Alfonso⁴, N. Eilstein⁴, S. Dumas^{1,2,3}, J. Guibourdenche³,
 E. Lecarpentier⁶, V. Tsatsaris⁶, J.-L. Viovy^{1,2,3}, L. Malaquin⁷, S. Descroix^{1,2,3}
¹Institut Curie, France, ²Sorbonne Universités, France, ³Institut Pierre Gilles de Gennes, France,
⁴Université Paris Descartes, France, ⁵Groupe Hospitalier Universitaire Ouest, France,
⁶LAAS-CNRS, France
- T185f** **Gravity-Driven Step Emulsification Device for Single Bacterium Encapsulation and Determination of Minimum Inhibitory Concentration of Antibiotics** 1991
 Yu-Ting Kao^{1,2}, Tomasz S. Kaminski¹, Witold Postek¹, Jan Guzowski¹, Piotr Garstecki¹
¹Polish Academy of Sciences, Poland, ²Albert-Ludwigs-Universität Freiburg, Germany
- T186f** **On-Site Hormone Monitoring using an Electrochemical Microfluidic Biosensor for Lab-on-a-Bird Applications** 1995
 E. Grether¹, R. Bruch^{1,2}, H. Kutluk¹, I. Moser³, G. Jobst³, W. Goymann⁴, M. Gahr⁴,
 G. Urban¹, C. Dincer^{1,2,5}
¹Albert-Ludwigs-Universität Freiburg, Germany, ²Freiburg Center for Interactive Materials and
 Bioinspired Technologies, Germany, ³Jobst Technologies GmbH, Germany, ⁴Max Planck Institute
 for Ornithology, Germany, ⁵Royal School of Mines Imperial College London, UK
- T187f** **A pH and Temperature Sensing Needle for Muscle Tissue Ischemia Monitoring** 1999
 E.C. Liang¹, K.L. Tsou¹, Y.S. Huang¹, Y.T. Cheng¹, S.H. Chen², Y.S. Chen³, M.D. Chou³,
 P.W. Wu⁴, L.H. Lu⁵
¹National Chiao Tung University, Taiwan, ²Chang Gung Memorial Hospital, Taiwan,
³National Taiwan University Hospital, Taiwan, ⁴National Chiao Tung University, Taiwan,
⁵National Taiwan University, Taiwan
- T188f** **An Integrated Microfluidic System for the Detection of Live Mycobacterium Tuberculosis by using Heparan Sulfate Coated Beads** 2002
 Ka-U Ip¹, Jia-Ru Chang², Xin-Ren Huang³, Chih-Hung Wang¹, Shang-Cheng Hung³,
 Horng-Yunn Dou², Gwo-Bin Lee¹
¹National Tsing Hua University, Taiwan, ²National Health Research Institutes, Taiwan,
³Academia Sinica, Taiwan
- W184f** **Multiple Hemoprotein-Specific Aptamers in a Multiple-Layer Microfluidic Disc System for Hemodialysis** 2006
 Chih-Hung Wang, Gwo-Bin Lee
 National Tsing Hua University, Taiwan
- W185f** **Development of Repeatable ELISA on Thin-Layered Fluidics** 2010
 Emi Mori, Takako Asaoka, Tatsuro Nakao, Ayumi Yoshizaki, Hisashi Shimizu,
 Kazuma Mawatari, Takehiko Kitamori
 The University of Tokyo, Japan

07 - Separations and Reactions

7.01 - Electrophoretic Separations

- M188g** **Free-Flow Depletion Zone Isotachopheresis (FFdz-ITP)** 2013
 Vasileios A. Papadimitriou, Roelof van Zwol, Loes I. Segerink, Jan C.T. Eijkel
 University of Twente, The Netherlands

M189g	A Multi-Dimensional Fractionation Microdevice based on Digital Electrophoresis using Convex-Concave Cartridges	2016
	Yuki Uwagawa, Tatsuro Endo, Hideaki Hisamoto, Kenji Sueyoshi <i>Osaka Prefecture University, Japan</i>	
T189g	Quantitative and Multi-Species Determination of Isoelectric-Focused-Protein using Single-Point Microfluidic Contactless Conductivity Detection	2019
	Minh Khang Chau ¹ , Nebiyu Getachew Arega ¹ , Jin Song ¹ , Hwajin Lee ² , Jintae Kim ³ , Minsub Chung ² , Dohyun Kim ¹ ¹ Myongji University, Republic of Korea, ² Hongik University, Republic of Korea, ³ Konkuk University, Republic of Korea	
T190g	AC Dielectrophoresis for Cryptosporidium Parvum Separation based on Viability Status	2023
	Ameya Vaidya, John McGrath, Helinor Johnston, Helen Bridle <i>Heriot-Watt University, UK</i>	
W187g	Coupling Micro Free-Flow Electrophoresis to Mass Spectrometry	2027
	Matthias Jender, Pedro Novo, Dirk Janasek, Erik Feier <i>Leibniz-Institut für Analytische Wissenschaften - ISAS - e.V., Germany</i>	
W188g	Ultrafast Size Profiling of Kilo-Base to Mega-Base Paired DNA using Optonano-fluidic Device	2031
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	T. Adachi, T. Naito, T. Kubo, K. Otsuka <i>Kyoto University, Japan</i>	
T191g	Fast Analysis of Biothiol-Related Diseases Markers using a Liquid Chromatography Chip	2036
	Chunfang Chang, Muneki Isokawa, Hiroshi Kuroki, Takashi Funatsu, Makoto Tsunoda <i>The University of Tokyo, Japan</i>	
W189g	Development of 10⁵ Plate Number Liquid Chromatography using Extended-Nanofluidic Channel	2038
	Kyojiro Morikawa ¹ , Yutaka Kazoe ¹ , Hisashi Shimizu ¹ , Yusuke Shimizu ² , Kazuma Mawatari ¹ , Takehiko Kitamori ¹ ¹ The University of Tokyo, Japan, ² Hitachi High-Technologies Corporation, Japan	

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	Kyungyong Choi, Wei Ouyang, Hyunryul Ryu, Jongyoon Han <i>Massachusetts Institute of Technology, USA</i>	

M192g	Diffusion-Based Separation using Non-Uniform Electroosmotic Flow	2044
	Federico Paratore ^{1,2} , Vesna Bacheva ¹ , Shimon Rubin ² , Moran Bercovici ² , Govind V. Kaigala ¹ <i>¹IBM Research, Switzerland, ²Technion – Israel Institute of Technology, Israel</i>	
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M194g	Deformability-Induced Lift Force in Curvilinear Microchannels for Stem Cell-Derived Products Purification	2049
	E. Guzniczak ¹ , M. Jimenez ² , O. Otto ³ , N. Willoughby ¹ , H. Bridle ¹ <i>¹Heriot-Watt University, UK, ²University of Glasgow, UK, ³University of Greifswald, Germany</i>	
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	Bo Hoon Han ^{1,2} , Seok Chung ¹ , Ji Yoon Kang ² <i>¹Korea Institute of Science and Technology, Republic of Korea, ²Korea University, Republic of Korea</i>	
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M197g	Sheathless Particle Separation in Viscoelastic Solution Utilizing Viscoelastic Flow Induced Secondary Flow in a Spiral Channel	2059
	Haidong Feng, Bruce K. Gale <i>University of Utah, USA</i>	
T192g	Solving the DLD Boundary Problem using Iterative CFD	2063
	Shilun Feng, Alison M. Skelley, David Inglis <i>Macquarie University, Australia</i>	
T193g	A Microfluidic Device for Simultaneous Extraction of Plasma, Red Blood Cells and On-Chip White Blood Cells Trapping	2067
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	Nitipong Panklang ¹ , Boonchai Techaumnat ¹ , Anurat Wisitsoraat ² , Yuji Suzuki ³ <i>¹Chulalongkorn University, Thailand, ²National Electronics and Computer Technology Center, Thailand, ³The University of Tokyo, Japan</i>	
T196g	Motile Sperm Selection using Dean Flow in a Spiral Channel	2077
	Alexander R. Jafek ¹ , Haidong Feng ¹ , Dallin S. Broberg ² , Timothy G. Jenkins ² , Kenneth I. Aston ² , Bruce K. Gale ¹ , Raheel Samuel ^{1,2} <i>¹University of Utah, USA, ²University of Utah School of Medicine, USA</i>	

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	Reza Moloudi^{1,2}, Steve Oh³, Chun Yang¹, Kim Leng Teo³, Alan Tin-Lun Lam³, Majid Ebrahimi Warkiani⁴, May Win Naing² <i>¹Nanyang Technological University, Singapore, ²Singapore Institute of Manufacturing Technology, Singapore, ³Bioprocessing Technology Institute, Singapore, ⁴University of Technology Sydney, Australia</i>	
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	Jason P. Beech¹, Kevin Keim², Bao Dang Ho¹, Oskar Ström¹, Carlotta Guiducci², Jonas O. Tegenfeldt¹ <i>¹Lund University, Sweden, ²EPFL, Switzerland</i>	
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¹University of Twente, The Netherlands, ²Utrecht University, The Netherlands
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Andries D. van der Meer¹, Robert Passier¹, Albert van den Berg¹, Mathieu Odijk¹
¹*University of Twente, The Netherlands*, ²*Maastricht University, The Netherlands*,
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¹*The University of Tokyo, Japan*, ²*Hiroshima University, Japan*, ³*Akita Prefectural University, Japan*, ⁴*Japan Science and Technology Agency, Japan*

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W218k Application of Drug Infusion Balloons to Microfluidic Systems for In Situ Measurement 2281
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M222j Uniaxial 3D-Particle Tracking Velocimetry for Evaluating Single-Cell Analysis Chips 2288
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M223j Dynamic Microfluidic Blood-Brain Barrier Chip to Understand Cellular Interactions for Drug Screening 2290
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