Preliminary Technical Program

The Executive Committee reserves the right to amend the program if necessary.

All indicated times in the program are US Eastern times.
Monday, October 5

08:00 Opening Remarks – Welcome Address

CBMS President
Nicole Pamme, University of Hull, UK

MicroTAS 2020 Conference Chairs
Séverine Le Gac, University of Twente, THE NETHERLANDS
Hang Lu, Georgia Institute of Technology, USA

**Plenary Speaker Presentation I**

08:25 - 09:25
MP-01 ON-CHIP ROBOTICS: EMERGING FUNCTIONS IN MICROFLUIDIC ENVIRONMENT WITH INTEGRATION OF SENSORS & ACTUATORS
Fumihito Arai
University of Tokyo, JAPAN

09:25 - 09:30 Transition Break

**Poster Session M1**

09:30 - 10:30 Presentations are listed by topic category with their assigned number starting on page 9.

10:30 - 10:45 Coffee Break (offline)

**Panel Discussion I**

10:45 - 11:35 WOMEN CAREER IN ACADEMIA

**Panel Discussion II**

10:45 - 11:35 ETHICS IN SCIENCE

**Industrial Stage 1**

10:45 - 11:10 Zurich Instruments AG
11:10 - 11:35 microfluidic ChipShop GmbH
11:35 - 11:40 Transition Break

**Poster Session M2**

11:40 - 12:40 Presentations are listed by topic category with their assigned number starting on page 9.

12:40 Adjourn for the Day
Tuesday, October 6

**Plenary Speaker Presentation II**

08:00 - 09:00
TP-02  COVID-19: CHANGING DIRECTIONS OF A PERFECT STORM
       Herman Goossens
       *University of Antwerp, BELGIUM*

09:00 - 09:05  Transition Break

**Poster Session T3**

09:05 - 10:05  Presentations are listed by topic category with their assigned number starting on page 9.

10:05 - 10:20  Coffee Break (offline)

**Plenary Speaker Presentation III**

10:20 - 11:20
TP-03  CHEMICAL SYNTHESIS ENABLED BY MICROFLUIDICS, AUTOMATION, AND MACHINE LEARNING
       Klavs Jensen
       *Massachusetts Institute of Technology, USA*

11:20 - 11:25  Transition Break

**Poster Session T4**

11:25 - 12:25  Presentations are listed by topic category with their assigned number starting on page 9.

12:25 - 12:30  Transition Break

**Shark Tank**

12:30 - 13:30

13:30  *Adjourn for the Day*
Wednesday, October 7

Keynote Presentation I
08:00 - 08:30
WK-01 LIQUID MARBLE BASED DIGITAL MICROFLUIDICS: FUNDAMENTAL PHYSICS AND APPLICATIONS
Nam-Trung Nguyen, Chin Hong Ooi, Raja Vadivelu, Kamalalayam Rajan Sreejith, Jing Jin, Nhat-Khuong Nguyen, and Pradip Singha
Griffith University, AUSTRALIA

Keynote Presentation II
08:00 - 08:30
WK-02 ENGINEERING AND MEASURING SYSTEMIC MULTI-ORGAN INTERACTIONS FOR TRANSLATIONAL APPLICATIONS
Lor Huai Chong¹, Hsih Yin Tan², Louis Ong¹,², Christopher Tostado², and Yi-Chin Toh¹
¹Queensland University of Technology, AUSTRALIA and ²National University of Singapore, SINGAPORE

Keynote Presentation III
08:00 - 08:30
WK-03 INKJET-BASED HIGH THROUGHPUT SINGLE CELL DISPENSING
Karen C. Cheung
University of British Columbia, CANADA

Keynote Presentation IV
08:00 - 08:30
WK-04 MICROFLUIDICS FOR LIQUID BIOPSY
Chao Liu, Fei Tian, and Jiashu Sun
National Center for Nanoscience and Technology, CHINA

08:30 - 08:35 Transition Break

Poster Session W5
08:35 - 09:35 Presentations are listed by topic category with their assigned number starting on page 9.

09:35 - 09:40 Transition Break

Panel Discussion III
09:40 - 10:30 WOMEN CAREER IN INDUSTRY

Panel Discussion IV
09:40 - 10:30 EARLY ACADEMIC CAREER ADVICE
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<td>Zhenan Bao</td>
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<td>Stanford University, USA</td>
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Thursday, October 8

Plenary Speaker Presentation V

08:00 - 09:00
ThP-05  BIOCOMPATIBLE INTERFACES OF NANOSTRUCTURED POLYMER FOR ADVANCED MEDICAL AND HEALTHCARE DEVICES
Madoka Takai
University of Tokyo, JAPAN

09:00 - 09:05  Transition Break

Poster Session Th7

09:05 - 10:05  Presentations are listed by topic category with their assigned number starting on page 9.

10:05 - 10:20  Coffee Break (offline)

Panel Discussion V

10:20 - 11:10  PARENTING IN SCIENCE AND WORK LIFE BALANCE

Panel Discussion VI

10:20 - 11:10  PhD AND POSTDOC TRAINING ABROAD

Industrial Stage 3

10:20 - 11:10

11:10 - 11:15  Transition Break

Poster Session Th8

11:15 - 12:15  Presentations are listed by topic category with their assigned number starting on page 9.

Keynote Presentation V

12:15 - 12:45
ThK-05  EMERGING WATER TREATMENT TECHNOLOGIES
Matthew E. Suss, Shada Abu Khalla, Imri Atlas, Eric Guyes, and Amit Shocron
Technion - Israel Institute of Technology, ISRAEL
Keynote Presentation VI

12:15 - 12:45
ThK-06  NANOSTRUCTURES FOR PROBING AND TRANSFECTING LIVING CELLS
Christelle N. Prinz
Lund University, SWEDEN

Keynote Presentation VII

12:15 - 12:45
ThK-07  EXPANDING THE (i)SIMPLE MICROFLUIDIC TOOLBOX TOWARDS ADVANCED DIAGNOSTICS AND THERAPEUTICS
Dries Vloemans, Lorenz Van Hileghem, Henry Orditowski, Dragana Spasic, Francesco Dal Dosso, and Jeroen Lammertyn
KU Leuven, BELGIUM

Keynote Presentation VIII

12:15 - 12:45
ThK-08  SQUEEZING DNA IN NANOCHANNELS
Kevin D. Dorfman
University of Minnesota, USA

12:45  Adjourn for the Day
Friday, October 9

Plenary Speaker Presentation VI

08:00 - 09:00

FP-06  WATER-REPELLENT MATERIALS: A FEW TRICKS WE LEARNT FROM NATURE, AND BEYOND
David Quéré
ESPCI-Paris and École Polytechnique, FRANCE

09:00 - 09:05  Transition

Young Innovator Award and Presentation

09:05 - 09:20  Sponsored by Analytical Chemistry

Pioneers of Miniaturization Lectureship Award and Presentation

09:05 - 09:20  Sponsored by Lab on a Chip and Dolomite

09:40 - 09:45  Transition

Quiz

09:45 - 10:45

10:45 - 11:00  Coffee Break (offline)

Award Ceremony

11:00 - 11:10  CHEMINAS - Young Researcher Poster Awards
11:10 - 11:20  Lab on a Chip - Widmer Poster Award
11:20 - 11:30  IMT Masken und Teilungen AG - Microfluidics on Glass Poster Award
11:30 - 11:40  Sensors (MDPI) - Outstanding Sensors and Actuators, Detection Technologies Poster Award
11:40 - 11:50  NIST and Lab on a Chip - Art in Science Award
11:50 - 12:00  Micromachines (MDPI) and CBMS - Flash Poster Presentation Awards
12:00 - 12:10  Gamification Winners

12:10  Closing Remarks

MicroTAS 2020 Conference Chairs
Séverine Le Gac, University of Twente, THE NETHERLANDS
Hang Lu, Georgia Institute of Technology, USA

12:30  Conference Adjourns
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<td>DIELECTROPHORETIC EQUILIBRIUM OF COMPLEX PARTICLES</td>
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**ELECTROKINETIC WALL EFFECT MECHANISMS AND APPLICATIONS**
Jason P. Beech, Bao Dang Ho, Oskar Ström, and Jonas O. Tegenfeldt
*Lund University, SWEDEN*

**N-DEP ENHANCED LATERAL DISPLACEMENT IN DLD DEVICE TO FOR HIGH EFFICIENT CELL SORTING**
Chia-Hsin Chang and Fan-Gang Tseng
*National Tsing Hua University, TAIWAN*

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**a - Fundamentals in Microfluidics and Nanofluidics**

**Droplet Microfluidics**

**M1-102.a** A NOVEL PARTITIONING PLATFORM TOWARDS THE LOW-COST, RAPIDLY DEPLOYABLE, DIGITAL DETECTION OF SARS-COV-2
Maria Alvarez Amador, Yuhe Jiang, Ling Li, and Eric Brouzes
*Stony Brook University, USA*

**M1-103.a** DEFORMABILITY-BASED MICROFLUIDIC MICRODROPLET SORTING AS A SCREENING METHOD FOR SINGLE AGAROLYTIC BACTERIAL CELLS
Mikihisa Muta1, Kai Saito1, Ryo Iizuka1, Wataru Kawakubo2, Dong H. Yoon2, Mei Ito1, Yuji Hatada1, Tetsushi Sekiguchi2, Shuichi Shoji2, and Takashi Funatsu1
1University of Tokyo, JAPAN, 2Waseda University, JAPAN, and 3Saitama Institute of Technology, JAPAN

**M1-104.a** ENDOTHELIAL-CELL SPROUTING ASSAY WITH MULTIPLE INTERACTING SEEDS AS A PLATFORM TO STUDY ANGIogenesis
Katarzyna Rojek and Jan Guzowski
*Polish Academy of Sciences, POLAND*

**M1-105.a** IMAGE ANALYSIS EXPLORATION: CASE FOR DROPLET MICROFLUIDICS
Immanuel Sanka, Simona Bartkova, Pille Pata, Olli-Pekka Smolander, and Ott Scheler
*Tallinn University of Technology, ESTONIA*

**M1-106.a** PARALLEL DROPLET GENERATION OF LINEAR CONCENTRATION GRADIENT FOR ANTIBIOTIC SUSCEPTIBILITY TESTING OF E.COLI O157:H7
Jae Seong Kim1, Byungjin Lee1, Heon-Ho Jeong2, Dong-Ho Kim1, Kyoung Han Kim1, and Chang-Soo Lee1
1Chungnam National University, KOREA and 2Chonnam National University, KOREA

**M1-107.a** TOWARDS HIGH-THROUGHPUT SCREENING FOR DRUG DISCOVERY IN MULTI SPLITTING AND MERGING SYSTEM USING MICROVALVES
Sagar Narhari Agnishoti1, Mohammad Reza Raveshi1, Rajneesh Bhardwaj2, and Adrian Neild1
1Monash University, AUSTRALIA and 2Indian Institute of Technology, Bombay, INDIA

**M2-202.a** A SAMPLE INJECTION INTERFACE OF MASS SPECTROMETRY UTILIZING FEMTOLITER-DROPLET SHOOTER BY MICROFLUIDICS
Yuto Takagi1, Yutaka Kazoe1, and Takehiko Kitamori1,3
1University of Tokyo, JAPAN, 2Keio University, JAPAN, and 3National Tsing Hua University, TAIWAN

**M2-203.a** DROPLET GENERATOR IN A SINGLE TUBE FOR DNA AMPLIFICATION
Shaw-Hwa Parng, Ping-Jung Wu, Yu-Yin Tsai, Ruey-Shyan Hong, and Su-Jan Lee
*Industrial Technology Research Institute, TAIWAN*

**M2-204.a** FACILE EVAPORATION INDUCED ON SURFACE MANIPULATION OF AQUEOUS DROPLETS AND IT’S APPLICATION IN BIOLOGICAL CARGO TRANSPORT
Butunath Majhy and Ashis K.U. Sen
*Indian Institute of Technology, Madras, INDIA*
M2-205.a MANIPULATION OF DROPLETS IN NON-NEWTONIAN FLUID
Shamik Hazra1, Sushanta K. Mitra2, and Ashis Kumar Sen1
1Indian Institute of Technology, Madras, INDIA and 2University of Waterloo, CANADA

M2-206.a PERIODIC CONCENTRATION-POLARIZATION BASED FORMATION OF BIOMOLECULE PRECONCENTRATION
Sinwook Park, Ramadan Abu-Rjal, Keren Buchnik, Yechezkel Kashi, and Gilad Yossifon
Technion – Israel Institute of Technology, ISRAEL

T3-302.a ACTIVE GENERATION OF FEMTOLITER DROPLET IN MICROFLUIDICS USING TRADITIONAL INKJET NOZZLE
Dege Li1, Yi Cao1, Bingfang Huang1, Chao Zheng1, Yonghong Liu1, and Yanzhen Zhang12
1China University of Petroleum (East China), CHINA and 2Swinburne University of Technology, AUSTRALIA

T3-303.a DROPLET GENERATORS COMMUNICATION FOR A HIGH THROUGHPUT PRODUCTION
Ilyesse BIHI, Pierre Gelin, and Wim De Malsche
Vrije Universiteit Brussel, BELGIUM

T3-304.a FAST DROPLET ENRICHMENT USING SPONTANEOUS EMULSIFICATION
Piangrawee Santivongskul, Mao Fukuyama, and Akihide Hibara
Tohoku University, JAPAN

T3-305.a MICRO-MAGNETIC-TWEEZERS: A TOOL FOR BIOSEPARATION IN SUB-NANOLITER DROPLETS
Simon Dumas, Mathilde Richerd, Marco Serra, and Stéphanie Descroix
Institut Curie, FRANCE

T3-306.a PRODUCTION OF MONODISPERSE CAPSULES FOR CONTROLLED SPORE RELEASE
Iwona Ziemecka1, Ilyesse Bihi1, Pierre Gelin1, Guy V.A.N. Assche1, Suzy Vaupre2, Roberto Teixeira2, Dominique Maes1, and Wim D.E. Malsche1
1Vrije Universiteit Brussel, BELGIUM and 2Devan Chemicals NV, BELGIUM

T4-402.a AUTOMATED MICROFLUIDIC DROPLET GENERATION AND MERGING TO RESOLVE DYNAMICS OF UPTAKE AND SECRETION IN WHITE ADIPOSE TISSUE (WAT)
NA Nan Shi, Md Moniruzzaman, Yvette Kayirangwa, and Christopher J. Easley
Auburn University, USA

T4-403.a DROPLET MICROFLUIDIC BASED METHOD FOR IN-SITU CALIBRATION AND DETERMINATION OF RECOVERY RATE OF MICRODIALYSIS
Gareth W.H. Evans1, Jameelah Salahuddin1, Wahida T. Bhuiyan1, Brett Warren2, and Xize Niu12
1University of Southampton, UK and 2SouthWestSensor Ltd., UK

T4-404.a GENERATION OF AQUEOUS-DROplet-Filled HYDROgel FIBERS AS ORGANoids CARRIES USING ALL-IN-WATER MICROFLUIDIC SYSTEM
Hui Wang, Hai-Tao Liu, Ya-Qing Wang, Meng-Qian Zhao, Wen-Wen Chen, and Jian-Hua Qin
Chinese Academy of Sciences, CHINA

T4-405.a MICROFLUIDIC GENERATION OF WATER-IN-WATER-IN-WATER(-IN-WATER) DOUBLE AND TRIPLE EMULSIONS
Morteza Jeyhani12, Risavarshni Thevakumaran12, Niki Abbasi12, Dae Kun Hwang12, and Scott S. H. Tsai12
1Ryerson University, CANADA and 2St. Michael’s Hospital, CANADA

T4-406.a REAL-TIME IMAGE-BASED DROPLET MEASUREMENT
Sepehr Elahi1, Ali Kalantarifard1, Fatemeh Kalantarifard2, and Caglar Elbuke3
1Bilkent University, TURKEY, 2Bogazici University, TURKEY, and 3University of Oulu, FINLAND
W5-502.a BINARY CONSTRICIONS, TIP ELONGATION AND DUTY CYCLE: SHAPE BASED MECHANISMS FOR LABEL-FREE DETECTION IN DROPLETS
Afreen Fatima and Amar Basu
Wayne State University, USA

W5-503.a DROPLET MICROFLUIDIC PLATFORM FOR INTRACELLULAR PHASE SEPARATION EXPERIMENTS
Katherine Chan, Maryam Navi, Jennifer Kieda, and Scott Tsai
Ryerson University, CANADA

W5-504.a GENERATION OF COMPLEX EMULSIONS USING MONOLITHIC, DUAL-MATERIAL 3D-PRINTED MICROFLUIDIC DEVICES
Jin Li, Pantelitsa Dimitriou, Oliver Castell, and David Barrow
Cardiff University, UK

W5-505.a MOLECULAR REORIENTATION OF CHOLESTERIC DROPLET BY SENSITIVE STRAIN FOR FLEXIBLE CURVATURE SENSING
Shuting Xie, Mingliang Jin, Ruizhi Yang, Guofu Zhou, and Lingling Shui
South China Normal University, CHINA

W5-506.a SELF-EMULSIFICATION IN LIQUID CRYSTAL DROPLETS
Ruizhi Yang, Yueming Deng, Shuting Xie, Qi An, and Lingling Shui
South China Normal University, CHINA

W6-602.a COMPUTER VISION APPLIED TO MEMBRANE DISPLACEMENT TRAP ARRAYS FOR AUTOMATED DROPLET CONTROL AND MANIPULATION
Michael Yeh1,2, Jason Harriot1, Supriya Padmanabhan1, and Don L. DeVoe1
1University of Maryland, College Park, USA and 2National Cancer Institute, USA

W6-603.a DROPLET SQUEEZING FOR HIGHLY EFFECTIVE GENE DELIVERY INTO HUMAN T LYMPHOCYTES
Byeongju Joo, Hasung Lee, Seung Gyu Yun, and Aram Chung
Korea University, KOREA

W6-604.a GENERATION OF SPHEROIDS USING AN AQUEOUS TWO-PHASE SYSTEM DROPLET MICROFLUIDIC PLATFORM
Jennifer Kieda, Morteza Jeyhani, Maryam Navi, Katherine Chan, and Scott S.H. Tsai
Ryerson University, CANADA

W6-605.a MONITORING OF AMMONIA IN NATURAL WATERS USING A VERSATILE, PROGRAMMABLE DROPLET MICROFLUIDIC PLATFORM
Wahida T. Bhuiyan1, Evanthia Papadoupoulou2, Sharon Coleman2, Matthew Pearson2, Adrian M. Nightingale1, Gareth Evans1, and Xize Niu1
1University of Southampton, UK and 2SouthWestSensor Ltd., UK

W6-606.a SIMULTANEOUS DROPLET FORMATION VIA GRAVITY-INDUCED FLOW WITH IN-SERIES DROPLET GENERATING JUNCTIONS
Khashayar R. Bajgiran, Riad Elkhanoufi, James A. Dorman, and Adam T. Melvin
Louisiana State University, USA

Th7-702.a CONTINUOUS GENERATION OF CELL-LADEN MICROGELS THROUGH DETERMINISTIC LATERAL DISPLACEMENT ARRAYS
Naotomo Tottori and Takasi Nisisako
1Kyushu University, JAPAN and 2Tokyo Institute of Technology, JAPAN
Th7-703.a  DROPLET-ASSISTED PHASE SEPARATION BY INTEGRATED SILICON ELECTROSPRAY NANO-EMITTER FOR NEUROCHEMICAL SENSING
Yan Zhang, Weihua Shi, Insu Park, Sungho Kim, Christopher Brenden, Hrishikesh Iyer, Prasoon Jha, Rashid Bashir, and Yurii Vlasov
University of Illinois, Urbana-Champaign, USA

Th7-704.a  HIGH-THROUGHPUT SORTING OF NANOLITER DROPLETS USING AN ELECTRODE ARRAY WITH A SLANTED MICROCHANNEL
Mun Hong Loo1, Yuta Nakagawa1, Akihiro Isozaki1,2, and Keisuke Goda1,3,4
1University of Tokyo, JAPAN, 2Kanagawa Institute of Industrial Science and Technology, JAPAN, 3University of California, Los Angeles, USA, and 4Wuhan University, China

Th7-705.a  MONITORING OF REACTION KINETICS THROUGH THE SYNCHRONIZED RELEASE OF LIPOSOMAL CARGO IN DOUBLE EMULSIONS
Ariane Stucki, Petra Jusková, Nicola Nuti, and Petra S. Dittrich
ETH Zürich, Basel, SWITZERLAND

Th7-706.a  SPACE-FILLING OPEN MICROFLUIDICS FOR DROPLET COLLECTION: GENERALIZED DESIGN OF FRACTAL HYPERBRANCHED CHANNELS
Hiroyuki Kai
Tohoku University, JAPAN

Th8-801.a  A MICROFLUIDIC MAGNETIC EXTRACTOR FOR MAGNETIC BEAD SEPARATION IN DROPLETS
Junyue Chen1,2, Weiliang Shu1, Ying Tan2, Hongtao Feng1, Yimo Yan2, and Yan Chen1
1Chinese Academy of Sciences, CHINA and 2Tsinghua University, CHINA

Th8-802.a  CONTROLLED ACTUATION OF SELF-PROPELLED DROPLETS
Loic Coudron, Clement Lemenu, Kevin Lemaine, Daniel McCluskey, Christabel Tan, Ian Munro, Arne E. Holdo, Mark Tracey, and Ian Johnston
University of Hertfordshire, UK

Th8-803.a  ELECTROCOALESCENCE OF MICRODROPLETS WITH ACTIVE PAIRING
Kaijian Zhu1,2, Wen Yue1, and Dahai Ren2
1China University of Geosciences, CHINA and 2Tsinghua University, CHINA

Th8-804.a  HYBRID MICROGELS PRODUCED VIA DROPLET MICROFLUIDICS FOR NANOPARTICLE ENCAPSULATION AND DRUG DELIVERY
Bruna G. Carvalho1, Thiago B. Taketa1, Bianca B.M. Garcia2, Sang W. Han2, and Lucimara G. de la Torre1
1University of Campinas, BRAZIL and 2São Paulo Federal University, BRAZIL

Th8-805.a  OPTICAL ACCESSIBILITY IMPROVEMENTS FOR THE CHARACTERIZATION OF THE NANOPEDE
Edo A.G. de Kruiff1, Chris L. Kennedy2, Corentin B.M. Tregouet3, Alfons van Blaaderen2, Jan C.T. Eijkel1, and Mathieu Odijk1
1University of Twente, THE NETHERLANDS, 2Utrecht University, THE NETHERLANDS, and 3University of Rennes 1, FRANCE

Th8-806.a  SPRING-POWERED PORTABLE SYRINGE PUMP THAT PROVIDES CONSTANT FLOW RATE
Won Han and Joong Ho Shin
Pukyong National University, KOREA
**Digital Microfluidics**

**M2-207.a** ALL-IN-ONE DIGITAL MICROFLUIDIC SYSTEM FOR MOLECULAR DIAGNOSIS BASED ON THE LOOP-MEDIATED ISOTHERMAL AMPLIFICATION  
Siyi Hu\(^1\), Chao Yang\(^2\), Yuhua Jie\(^2\), Haifei Yang\(^2\), Yang Su\(^2\), and Hanbin Ma\(^1\)  
\(^1\)Chinese Academy of Sciences, CHINA and \(^2\)ACXEL TECH LTD, UK

**T3-307.a** OPEN SURFACE DROPLET MANIPULATION AND MIXING BY FERROFLUID INSTABILITIES  
Vahid Nasirimarekani\(^1\), Fernando Benito-Lopez\(^1\), and Lourdes Basabe-Desmonts\(^2\)  
\(^1\)University of the Basque Country, SPAIN and \(^2\)Basque Foundation of Science, IKERBASQUE, SPAIN

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**Centrifugal Microfluidics**

**M1-108.a** RELIABLE LIQUID REAGENT HANDLING AND ROTATIONAL RELEASE FOR CENTRIFUGAL SAMPLE-TO-ANSWER AUTOMATION  
Yao Lu, Darren McAuley, Rohit Mishra, David Boyle, and Jens Ducrée  
Dublin City University, IRELAND

**M2-208.a** VISCOSITY INDEPENDENT FLOW FOR PLANAR CHROMATOGRAPHIC IMMUNOASSAYS BY CENTRIFUGAL MICROFLUIDICS  
Daniel M. Kainz\(^1,2\), Susanna M. Früh\(^1,2\), Tobias Hutzenlaub\(^1,2\), Roland Zengerle\(^1,2\), and Nils Paust\(^1,2\)  
\(^1\)University of Freiburg, GERMANY and \(^2\)Hahn-Schickard, GERMANY

**T4-407.a** AUTOMATED CELL CULTURE AND ACTIVATION ASSAY USING CENTRIFUGAL MICROFLUIDIC PLATFORM  
Lidija Malic\(^1\), Liviu Clime\(^1\), Jamal Daoud\(^1\), Abdelrahman Elmanzalawy\(^1\), Ljubica Lukic\(^1\), Huailo Lee\(^2\), Yuh-Tyng Tsai\(^2\), Pei-Shin Jiang\(^2\), and Teodor Veres\(^1\)  
\(^1\)National Research Council, CANADA and \(^2\)Industrial Technology Research Institute, TAIWAN

**W5-507.a** AUTOMATED LIBRARY PREPARATION FOR NEXT GENERATION SEQUENCING OF IMMUNOGLOBULIN GENE REARRANGEMENTS BY CENTRIFUGAL MICROFLUIDICS  
Jacob F. Hess, Michaela Kotrová, Silvia Calabrese, Tobias Hutzenlaub, Roland Zengerle, Monika Brüggemann, and Nils Paust  
Hahn-Schickard, GERMANY

**W6-607.a** FULLY INTEGRATED LTA ASSAY ON CENTRIFUGAL MICROFLUIDIC DEVICE  
Jungmin Kim, Chi-Ju Kim, Jonathan Sabaté del Rio, and Yoon-Kyong Cho  
Ulsan National Institute of Science & Technology (UNIST), KOREA

**Th7-707.a** PNEUMATICALLY CONTROLLED DROPLET GENERATION ON A CENTRIFUGAL MICROFLUIDIC PLATFORM  
National Research Council, CANADA

**Th8-807.a** PURIFICATION OF DNA FRAGMENTS USING PNEUMATIC CONTROL COUPLED TO CENTRIFUGAL MICROFLUIDICS  
Daniel Brassard, Jimin Guo, Maxence Mounier, Jason Ferreira, Mojra Janta-Polczynski, and Teodor Veres  
National Research Council, CANADA
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1Rutgers University, USA, 2University of Minnesota, USA, and 3University of Pennsylvania, USA

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1Autonomous University of Barcelona, SPAIN and 2Sant Joan de Déu Hospital, SPAIN

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1Tsinghua University, CHINA and 2University of Minnesota, USA

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University of Illinois, Chicago, USA

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¹Hitachi, Ltd., JAPAN and ²Hitachi High-Tech Corporation, JAPAN |
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¹National Taiwan University of Science and Technology, TAIWAN and ²Japan Advanced Institute of Science and Technology, JAPAN |
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¹Nagoya University, JAPAN and ²University of Tokyo, JAPAN |
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¹Australian National University, AUSTRALIA and ²University of New South Wales, AUSTRALIA

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¹Tsinghua University, CHINA and ²University of Minnesota, USA

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\textsuperscript{1}National Institute of Standards and Technology (NIST), USA and \textsuperscript{2}Tulane University, USA

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\textsuperscript{1}UC Berkeley – UCSF Graduate Program in Bioengineering, USA, \textsuperscript{2}Stanford University, USA, and \textsuperscript{3}University of California, Berkeley, USA

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\textsuperscript{1}Sensific GmbH, GERMANY and \textsuperscript{2}University of Ulm, GERMANY
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1*Vrije Universiteit Brussel, BELGIUM and 2University of Twente, THE NETHERLANDS*

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1*University of California, Berkeley, USA and 2Friedrich Miescher Institute for Biomedical Research, SWITZERLAND*

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1*Brandenburg Medical School Theodor Fontane, GERMANY and 2German Federal Institute for Risk Assessment, GERMANY*

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¹University of Washington, USA and ²PATH, USA

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Ankur Kislaya, Daniel S.W. Tam, and Jerry Westerweel
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¹Nanyang Technological University, SINGAPORE, ²Tan Tock Seng Hospital, SINGAPORE, and ³Massachusetts Institute of Technology, USA

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¹Macquarie University, AUSTRALIA and ²University of Edinburgh, UK

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¹South China Normal University, CHINA and
²University of Electronic Science and Technology of China, CHINA

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¹Politecnico di Milano, ITALY and ²Istituto Italiano di Tecnologia, ITALY

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¹Indian Institute of Technology, Madras, INDIA and ²University of Waterloo, CANADA
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\(^1\)Hanbat National University, KOREA and \(^2\)Korea Institute of Machinery and Materials (KIMM), KOREA

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\(^1\)Singapore-MIT Alliance for Research and Technology (SMART) Centre, SINGAPORE,  
\(^2\)National University of Singapore, SINGAPORE, and \(^3\)Massachusetts Institute of Technology, USA

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¹University of Hull, UK and ²University of Bradford, UK

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¹University of the Basque Country, SPAIN and ²University of Barcelona, SPAIN

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University of California, Los Angeles, USA

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North Carolina State University, USA

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<td>¹National Tsing Hua University, TAIWAN and ²Academia Sinica, TAIWAN</td>
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<td>¹Technion – Israel Institute of Technology, ISRAEL, ²Rappaport Faculty of Medicine, ISRAEL, and ³Elisha Hospital, Haifa Israel, ISRAEL</td>
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1Indian Institute of Technology, Madras, INDIA and 2University of Waterloo, CANADA

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1Indian Institute of Technology, Hyderabad, INDIA, 2National University of Singapore, SINGAPORE, and  
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¹University of Lille, FRANCE, ²University of Tokyo, FRANCE, and ³University Valenciennes, FRANCE

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Md Ehtashamul Haque¹, Krystian Wlodarczyk¹, Duncan P. Hand¹, Miguel O. Bernabeu², and Maïwenn Kersaudy-Kerhoas¹, ²
¹Heriot Watt University, UK and ²Edinburgh University, UK

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École Polytechnique Fédérale de Lausanne (EPFL), SWITZERLAND

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¹Seoul National University, KOREA, ²Seoul National University Hospital, KOREA, ³Seoul National University College of Medicine, KOREA, and ⁴Celemics, Inc., KOREA

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¹Beijing University of Posts and Telecommunications, CHINA, ²Chinese Academy of Sciences, CHINA, and ³University of Colorado Boulder, USA

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¹National Tsing Hua University, TAIWAN and ²Université Paris Saclay, FRANCE

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¹Seoul National University, KOREA and ²Stockholm University, SWEDEN

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¹Monash University, AUSTRALIA and ²University of Melbourne, AUSTRALIA

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Kristen L. Cotner¹ and Lydia L. Sohn¹,²
¹UC Berkeley – UCSF Graduate Program in Bioengineering, USA, ²University of California, Berkeley, USA

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¹University of Tokyo, JAPAN, ²Kanagawa Institute of Industrial Science and Technology, JAPAN, ³University of California, Los Angeles, USA, and ⁴Wuhan University, JAPAN

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¹University of Rome Tor Vergata, ITALY and ²Italian National Research Council, ITALY
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1University of Twente, THE NETHERLANDS and
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1University of Lille, FRANCE, 2University of Valenciennes, FRANCE, 3University of Tokyo, JAPAN, 4JPARC, FRANCE, 5CANTHER, FRANCE

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1University of Rome Tor Vergata, ITALY and 2Italian National Research Council, ITALY

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Erika J. Fong1, Nick. R. Hum1, Kelly A. Martin1, Melinda Simon2, Gaby G. Loots1, and Ted J. Ognibene1
1Lawrence Livermore National Laboratory, USA and 2San Jose State University, USA

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1Seoul National University, KOREA and 2Celemics, Inc., KOREA

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1Indian Institute of Technology, Bombay, INDIA, 2KTH Royal Institute of Technology, SWEDEN, and 3Stockholm University, SWEDEN

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University of Illinois, Chicago, USA
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¹University of Virginia, USA and ²University of California, Irvine, USA

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ENS Paris-Saclay, FRANCE

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Korea Advanced Institute of Science and Technology (KAIST), KOREA

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1Lille University, FRANCE and 2University Polytechnique Hauts-de-France, FRANCE

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McMaster University, CANADA

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Chiba University, JAPAN

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Chongqing University, CHINA

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Venkanagouda S. Goudar1, Dr. Long Sheng Lu2, Manohar prasad Koduri1, and Fan-Gang Tseng1
1National Tsing Hua University, TAIWAN and 2Taipei Medical University Hospital, TAIWAN

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Yuya Morimoto, Shigenori Miura, and Shoji Takeuchi
University of Tokyo, JAPAN

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1University of Helsinki, FINLAND and 2Aalto University, FINLAND

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Adam Szmelter and David Eddington
University of Illinois, Chicago, USA

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Anke R. Vollertsen, Simone A. ten Den, Verena Schwach, Albert van den Berg, Robert Passier, Andries D. van der Meer, and Mathieu Odijk
University of Twente, THE NETHERLANDS

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Zeynep Malkoc, Stephanie E. McCalla, and Anja Kunze
Montana State University, USA

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Regeant Panday1, David A. Kukla1, Alexandra L. Crampton2, David K. Wood2, and Salman R. Khetani1
1University of Illinois, Chicago, USA and 2University of Minnesota, USA
**W6-646.e** INTEGRATED HEPATOCYTE SPHEROID FORMATION AND ENCAPSULATION FOR SYSTEMATIC STUDY OF EXTRACELLULAR MATRIX EFFECT
Shuai Deng, Yan lun Zhu, Xiao yu Zhao, and Hon fai Chan
*Chinese University of Hong Kong, CHINA*

**W6-647.e** SIMPLE CHEMICAL GRADIENT GENERATION FOR A SPHEROID CULTURE ARRAY
Panhui Yang, Lei Wu, Hongju Mao, and Janlong Zhao
*Chinese Academy of Sciences, CHINA*

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Miki Matsumoto¹, Yuya Morimoto¹, Toshiro Sato², and Shoji Takeuchi¹
¹University of Tokyo, JAPAN and ²Keio University School of Medicine, JAPAN

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Soo Jee Kim, Gihyun Lee, and Je-Kyun Park
*Korea Advanced Institute of Science and Technology (KAIST), KOREA*

**Th7-747.e** SKIN-EQUIVALENT CULTURE DEVICE FOR APPLYING VERTICAL COMPRESSION
Satoshi Inagaki, Keigo Nishimura, Yuya Morimoto, and Shoji Takeuchi
*University of Tokyo, JAPAN*

**Th8-845.e** A SIMPLE METHOD TO ANALYZE NATURAL HYPOXIA EXPRESSION IN JUMBO SPHEROIDS ON-CHIP
Elena Refet-Mollof¹,², Ouafa Najyb², Rodin Chermat¹,², Julie Lafontaine², Philip Wong², and Thomas Gervais¹,²
¹Polytechnique Montréal, CANADA and ²Centre Hospitalier de l’Université de Montréal, CANADA

**Th8-846.e** MODELING CTC CLUSTERS USING 3D-PRINTED AGAROSE MICROWELLS
Qiyue Luan, Jian Zhou, Celine Macaraniag, and Ian Papautsky
*University of Illinois, Chicago, USA*

**Th8-847.e** TIME-LAPSE IMAGING OF MOUSE EMBRYONIC STEM CELLS USING AN AUTOMATED MICROFLUIDIC DEVICE
Adam F. Laing¹, Venkat Tirumala¹, Evan Hegarty¹, Sudip Mondal¹, Peisen Zhao¹, William B. Hamilton², Joshua M. Brickman², and Adela Ben-Yakar¹
¹University of Texas, Austin, USA and ²University of Copenhagen, DENMARK

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**Inter-& Intracellular Signaling, Cell Migration**

**T3-349.e** A CIRCULATING CO-CULTURE MICROFLUIDIC DEVICE FOR THE DYNAMIC SAMPLING OF PARACRINE FACTORS
Emmaline F. Miller¹, Jacy C. Busboom², Joshua J. Clavin¹, Elizabeth C. Martin¹, and Adam T. Melvin¹
¹Louisiana State University, USA and ²University of Wyoming, Laramie, USA

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*University of Washington, USA*

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Yongjun Choi and Yoon-Kyoung Cho
*Ulsan National Institute of Science & Technology (UNIST), KOREA*
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Ryerson University, CANADA

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Jia Hwei Cheong, Xiao Qiu, Yang Liu, James Griffith, Jonathan Arnold, and Leidong Mao
University of Georgia, USA

Th8-848.e MULTIPLEXED END-POINT MICROFLUIDIC CHEMOTAXIS ASSAY USING CENTRIFUGAL ALIGNMENT
Pan Deng¹, Sampath Satti¹, Kerryn Matthews¹, Simon P. Duffy², and Hongshen Ma¹
¹University of British Columbia, CANADA and ²British Columbia Institute of Technology, CANADA

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Organisms on Chip (C. elegans, Zebrafish, Arabidopsis, etc.)

M1-150.e AN ULTRA-HIGH-DENSITY MICROFLUIDIC PLATFORM TO IMAGE C. ELEGANS FOR HIGH-CONTENT PHENOTYPIC SCREENS
Sudip Mondal, Evan Hegarty, Chris Martin, Sertan K. Gokce, and Adela Ben-Yakar
University of Texas, Austin, USA

M1-151.e MICROFLUIDIC DEVICE TO SCREEN THE ELECTRIC INDUCED BEHAVIORAL RESPONSE OF MULTIPLE ZEBRAFISH LARVAE
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M2-249.e CONTROLLABLE MICROFLUIDIC ROTATION OF CAENORHABDIS ELEGANS
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University of Toronto, CANADA

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Khaled Youssef¹, Daphne Archonta¹, Terrance J. Kubiseski¹, Anurag Tandon², and Pouya Rezai¹
¹York University, CANADA and ²University of Toronto, CANADA

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¹New York University, UAE, ²New York University Abu Dhabi, UAE, and ³Indian Institute of Technology Guwahati, INDIA

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Tanja Hamacher¹, Johanna T. W. Berendsen¹, Stella A. Kruijt¹, Marleen L.W. J. Broekhuijse²,³, and Loes I. Segerink¹
¹University of Twente, THE NETHERLANDS, ²CRV, THE NETHERLANDS, and ³Topigs Norsvin, THE NETHERLANDS
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1Catholic University of America, USA and 2ADA Science and Research Institute, USA

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1National Institute of Advanced Industrial Science and Technology (AIST)
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1University of Tokyo, JAPAN and 2Musashino University, JAPAN

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1Keio University, JAPAN and 2Japan Advanced Institute of Science and Technology (JAIST), JAPAN

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1National Chung-Hsing University, TAIWAN and 2Queensland University of Technology, AUSTRALIA

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1University of Tokyo, JAPAN and 2Osaka University, JAPAN

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*University of Victoria, CANADA*

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*University of Twente, THE NETHERLANDS*
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1BEOnChip S.L., SPAIN and 2University of Zaragoza, SPAIN

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University of Michigan, Ann Arbor, USA

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1McGill University, CANADA and 2Institut Curie, CANADA

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1University of Kansas, USA and 2Shanghai Jiaotong University School of Medicine, CHINA

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KU Leuven, BELGIUM

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CFD Research Corporation, USA

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1KTH Royal Institute of Technology, SWEDEN and 2Vironova AB, SWEDEN

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University of Michigan, Ann Arbor, USA
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¹University of Tokyo, JAPAN and ²National Tsing Hua University, TAIWAN

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¹University of Tokyo, JAPAN and ²National Tsing Hua University, TAIWAN

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1Massachusetts General Hospital, USA, 2Harvard Medical School, USA, 3Shriners Hospitals for Children, USA, 4MicroMedicine, Inc., USA, 5Howard Hughes Medical Institute, USA

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1Centre Hospitalier de l’Université de Montréal, CANADA, 2Université de Montréal, CANADA, and 3Polytechnique Montréal, CANADA

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f - Diagnostics, Drug Testing & Personalized Medicine
Neurobiology/Neuroscience

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¹University of Roma "La Sapienza", ITALY, ²University of Twente, THE NETHERLANDS, and ³Eindhoven University of Technology, THE NETHERLANDS

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¹ETH Zürich, Basel, SWITZERLAND and ²University Children's Hospital Zürich, SWITZERLAND

f - Diagnostics, Drug Testing & Personalized Medicine
Pathogen Detection & Antibiotics

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¹Warsaw University of Technology, POLAND, ²University of Warsaw, POLAND, and ³Centre of Advanced Materials and Technologies CEZAMAT, POLAND

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¹Stanford University, USA, ²Infectious Diseases Research Collaboration, UGANDA, and ³University of California, San Francisco, USA

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¹Toyohashi University of Technology, JAPAN and ²Jikei University School of Medicine, JAPAN

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¹McGill University, CANADA and ²University of Toronto, CANADA

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1University of Glasgow, UK and 2University of Oxford, UK

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1Hahn-Schickard, GERMANY and 2University of Freiburg, GERMANY

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1CREA-DC Research Centre for Plant Protection and Certification, ITALY and 2Sapienza University of Rome, ITALY

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1National Tsing Hua University, TAIWAN, 2Mongolian University of Science and Technology, MONGOLIA, and 3Academia Sinica, TAIWAN

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f - Diagnostics, Drug Testing & Personalized Medicine
Testing for COVID-19, Rapid Virus Testing, Pandemic Management

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McGill University, CANADA

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Stanford University, USA

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1Hokkaido University, JAPAN, 2Obihiro University of Agriculture and Veterinary Medicine, JAPAN, 3Tianma Japan, Ltd., JAPAN, and 4Tohoku University, JAPAN

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1Colorado State University, USA, 2Universitat Autònoma de Barcelona, SPAIN, and 3Srinakharinwirot University, THAILAND

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1Institut Pierre-Gilles de Gennes, FRANCE and 2Institut Pasteur, FRANCE
**Diagnostics, Drug Testing & Personalized Medicine**

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Arian Jaberi, Amir Monemian Esfahani, Ali Tamayol, and Ruiguo Yang  
*University of Nebraska, Lincoln, USA*

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*University of Helsinki, FINLAND*

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*University of Washington, USA*

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¹*Draper Laboratory, USA* and ²*Brown University, USA*

**Th7-768.f**  
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Tamás Vermes¹, Thomas Henkel², Helmut Buschmann³, Miquel A. Pericàs¹, Esther Alza¹, Thomas Goldner³, and Andreas Urban³  
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Kyungwon Park, Yong Hun Jung, and Seok Chung  
*Korea University, KOREA*

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*Warsaw University of Technology, POLAND*

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*Warsaw University of Technology, POLAND*

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¹*Ulsan National Institute of Science and Technology (UNIST), KOREA* and ²*Institute for Basic Science (IBS), KOREA*
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¹University of Leeds, UK and ²St James’ University Hospital, UK

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¹Toyohashi University of Technology, JAPAN, ²University of Cambridge, UK, and ³Indian Institute of Technology Madras, INDIA

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¹Northeast Normal University, CHINA and ²Jingke-Oude Science and Education Instruments Co., Ltd, CHINA

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¹Stony Brook University, USA and ²Georgia State University, USA
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TOWARDS ASTROBIOLOGICAL NANOSATELLITE MISSION – LOC INSTRUMENTATION FOR CELL CULTIVATION RESEARCH IN SPACE

Agnieszka Podwin¹, Patrycja Sniadek¹, Adrianna Graja¹², Bartosz Kawa¹, Marcin Bialas¹, Wojciech Kubicki¹, Marta Jurga³, Agata Kaczmarek³, Krzysztof Matkowski³, Rafal Walczak¹, and Jan Dziuban¹

¹Wroclaw University of Science and Technology, POLAND, ²SatRevolution S.A., POLAND, and ³Wroclaw University of Environmental and Life Sciences, POLAND