

# Lab on a Chip

Devices and applications at the micro- and nanoscale  
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ISSN 1473-0197 CODEN LCAHAM 25(7) 1617-1890 (2025)



**Cover**  
See Marina Musa, Zetao Zhu, Yoshinobu Baba, Takao Yasui *et al.*, pp. 1637-1646.  
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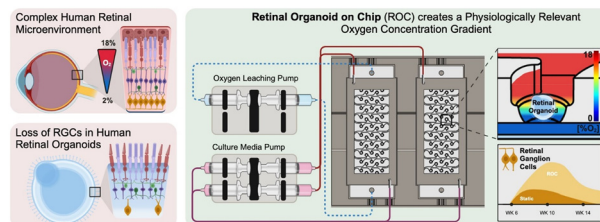
**Inside cover**  
See Emma Drabbe *et al.*, pp. 1626-1636.  
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## COMMUNICATION

1626

### Retinal organoid chip: engineering a physiomimetic oxygen gradient for optimizing long term culture of human retinal organoids

Emma Drabbe, Daniel Pelaez\* and Ashutosh Agarwal\*

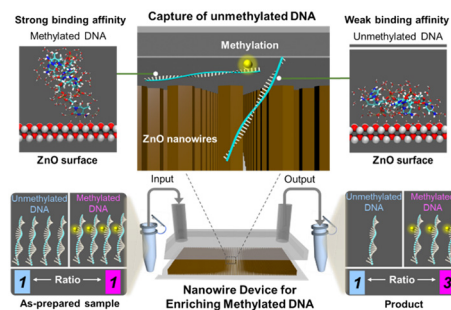


## PAPERS

1637

### Selective adsorption of unmethylated DNA on ZnO nanowires for separation of methylated DNA

Marina Musa,\* Zetao Zhu,\* Hiromi Takahashi, Wataru Shinoda, Yoshinobu Baba\* and Takao Yasui\*





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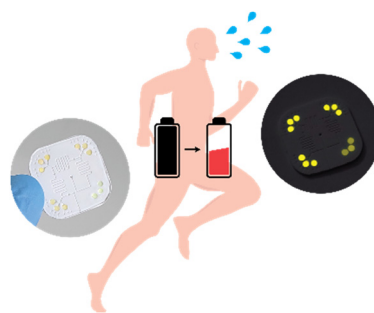
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1647

## Soft, wearable, microfluidic system for fluorometric analysis of loss of amino acids through eccrine sweat

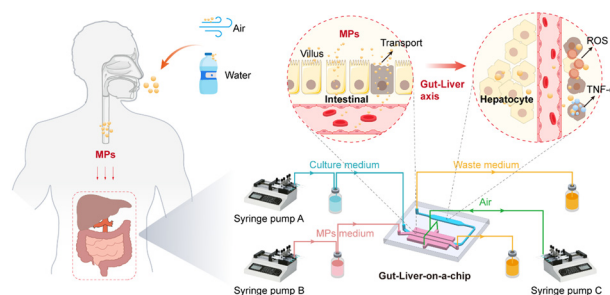
Seunghee H. Cho, Soongwon Cho, Zengyao Lv, Yurina Sekine, Shanliangzi Liu, Mingyu Zhou, Ravi F. Nuxoll, Evangelos E. Kanatzidis, Roozbeh Ghaffari, Donghwan Kim, Yonggang Huang and John A. Rogers\*



1656

## Revealing transport, uptake and damage of polystyrene microplastics using a gut-liver-on-a-chip

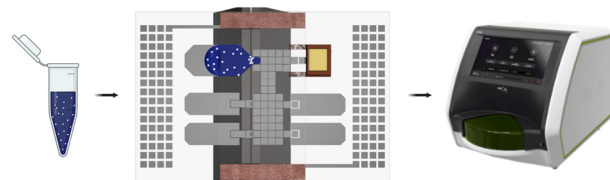
Yushen Wang, Junlei Han, Wenteng Tang, Xiaolong Zhang, Jiemeng Ding, Zhipeng Xu, Wei Song, Xinyu Li\* and Li Wang\*



1669

## A digital microfluidic approach to increasing sample volume and reducing bead numbers in single molecule array assays

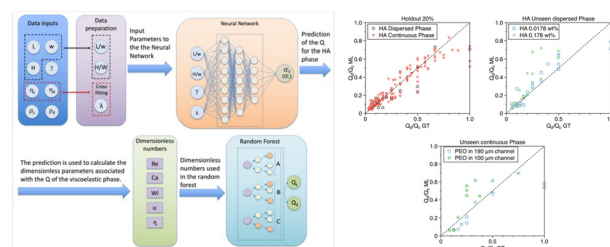
Alinaghi Salari, Jose Gilberto Camacho Valenzuela, Nguyen Le, Joshua Dahmer, Alexandros A. Sklavounos, Cheuk W. Kan, Ryan Manning, David C. Duffy, Nira R. Pollock and Aaron R. Wheeler\*



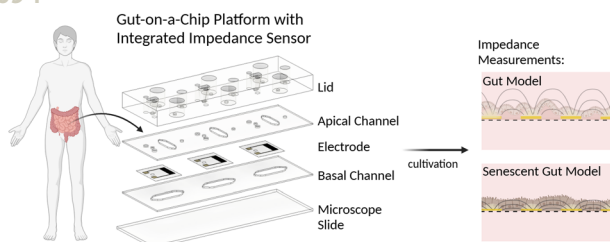
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## Dimensional analysis meets AI for non-Newtonian droplet generation

Farnoosh Hormozinezhad, Claire Barnes, Alexandre Fabregat, Salvatore Cito and Francesco Del Giudice\*



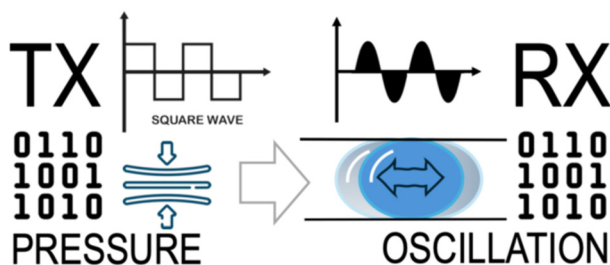
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### Sensor-integrated gut-on-a-chip for monitoring senescence-mediated changes in the intestinal barrier

Konstanze Brandauer, Alexandra Lorenz, Silvia Schobesberger, Patrick Schuller, Martin Frauenlob, Sarah Spitz and Peter Ertl\*

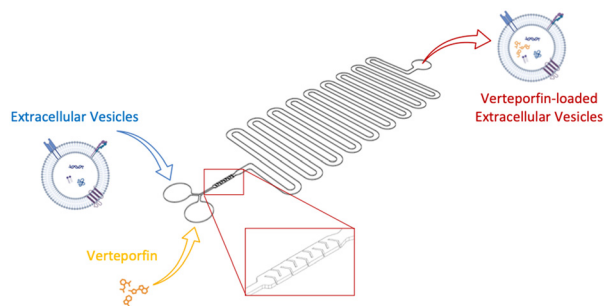
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### Synthetic molecular communication through microfluidic oscillating droplets for intrabody physiological data transmission

Fabrizio Pappalardo, Carla Panarello, Salvo Quattropiani, Laura Galluccio, Antonino Licciardello, Roberta Ruffino, Giovanni Li-Destri, Alfio Lombardo, Giacomo Morabito and Nunzio Tuccitto\*

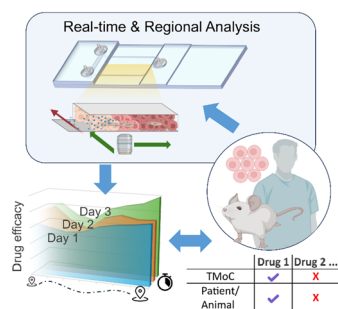
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### Microfluidic loading of verteporfin into extracellular vesicles for neuroblastoma therapy

Caterina Piunti, Sara Micheli, Sara Giancaterino, Pina Fusco, Cristiana Boi and Elisa Cimetta\*

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### Real-time and regional analysis of the efficacy of anticancer drugs in a patient-derived intratumoral heterogeneous tumor microenvironment

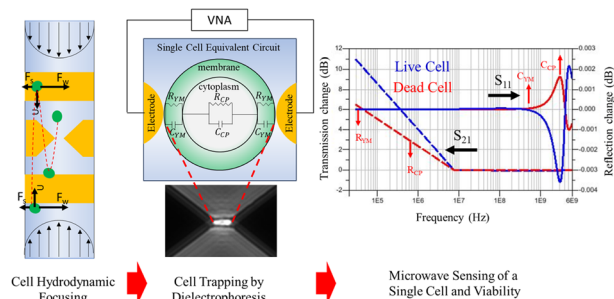
Ya-Hui Lin, Chiao-Min Lin, Kee-Ming Man, Chih-Chiang Hung, Hsin-Ling Hsu, Yunching Chen, Hsuan-Yu Mu,\* Tzu-Hung Hsiao\* and Jen-Huang Huang\*



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## Label-free differentiation of living versus dead single yeast cells using broadband electrical impedance spectroscopy

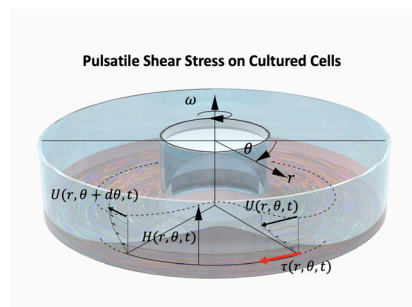
Amirhossein Favakeh, Amir Mokhtare, Mohammad Javad Asadi, James C. M. Hwang and Alireza Abbaspourrad\*



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## Pulsatile-flow culture: a novel system for assessing vascular-cell dynamics

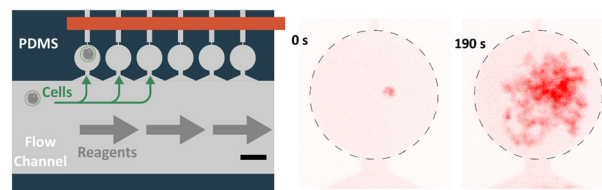
Neda Salimi-Afjani,\* Robert Rieben and Dominik Obrist



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## A microfluidic platform for extraction and analysis of bacterial genomic DNA

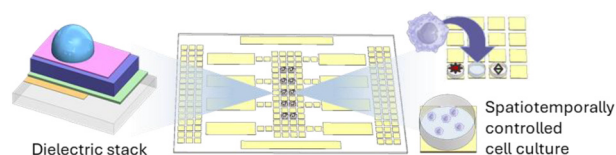
Alex Joesaar, Martin Holub, Leander Lutze, Marco Emanuele, Jacob Kerssemakers, Martin Pabst and Cees Dekker\*



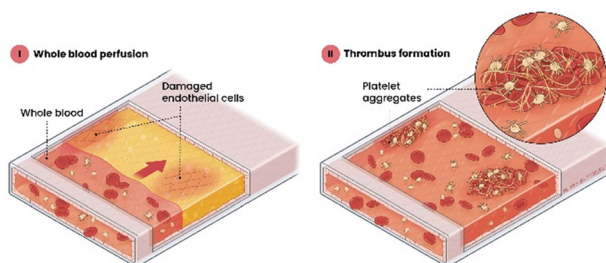
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## Long-term digital microfluidic chips for regulating macrophage cellular interactions in inflammation

Oksana K. Savchak and Burcu Gumuscu\*



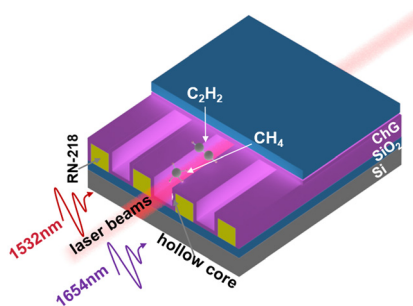
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### Blood-perfused Vessels-on-Chips stimulated with patient plasma recapitulate endothelial activation and microthrombosis in COVID-19

Huub J. Weener,\* Thijs F. van Haaps, Ruben W. J. van Helden, Hugo J. Albers, Rozemarijn Haverkate, Heleen H. T. Middelkamp, Milan L. Ridderikhof, Thijs E. van Mens, Albert van den Berg, Christine L. Mummery, Valeria V. Orlova, Saskia Middeldorp, Nick van Es and Andries D. van der Meer

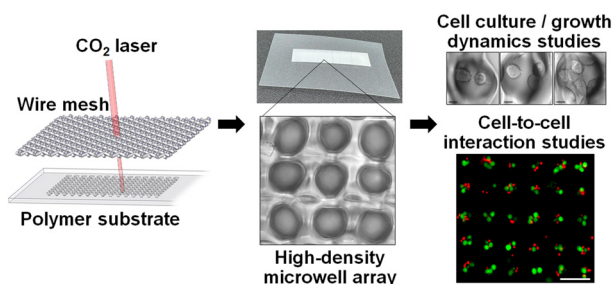
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### On-chip near-infrared multi-gas sensing using chalcogenide anti-resonant hollow-core waveguides

Yuting Min, Mingquan Pi, Zihang Peng, Gangyun Guan, Lei Liang, Fang Song, Yiding Wang, Yu Zhang, Xue Bai\* and Chuantao Zheng\*

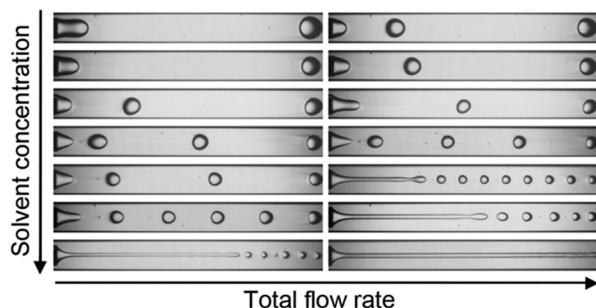
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### Rapid laser ablation-based fabrication of high-density polymer microwell arrays for high-throughput cellular studies

Desh Deepak Dixit, Kavya L. Singampalli, Amit S. Niyogi, Amanda Montoya, Alexandre Reuben and Peter B. Lillehoj\*

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### Droplet microfluidic method for measurement of ultralow interfacial tension in ternary fluid systems

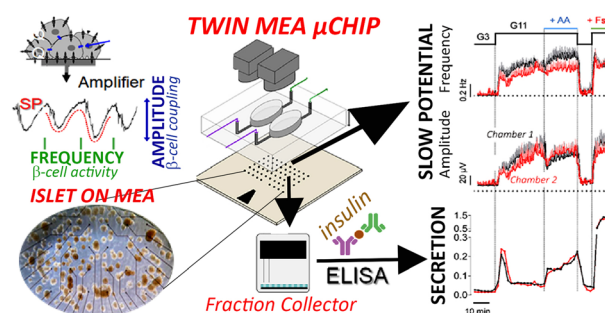
Thai Dinh, Robert Casal and Thomas Cubaud\*



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### A microfluidic twin islets-on-chip device for on-line electrophysiological monitoring

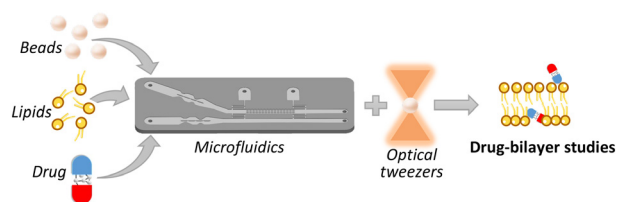
Marie Lallouet, Loic Olçomendy, Julien Gaitan, Killian Montière, Marie Monchablon, Antoine Pirog, Dorian Chapeau, Emilie Puginier, Sylvie Renaud, Matthieu Raoux and Jochen Lang\*



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### Microfluidic system for efficient molecular delivery to artificial cell membranes

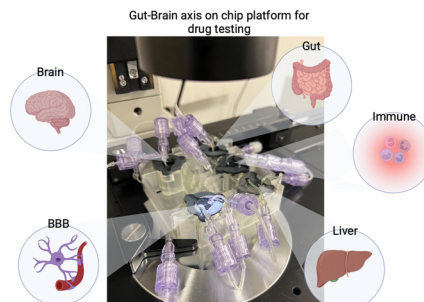
Arash Yahyazadeh Shourabi, Martina Iacona and Marie-Eve Aubin-Tam\*



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### A gut-brain axis on-a-chip platform for drug testing challenged with donepezil

Francesca Fanizza, Simone Perottoni, Lucia Boeri, Francesca Donnalaja, Francesca Negro, Francesca Pugli, Gianluigi Forloni, Carmen Giordano\* and Diego Albani



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### Suppressing parasitic flow in membraneless diffusion-based microfluidic gradient generators

Vahid Khandan, Ryan C. Chiechi, Elisabeth Verpoorte and Klaus Mathwig\*

