

Lab on a Chip

Devices and applications at the micro- and nanoscale rsc.li/loc

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Cover
See Wei Li *et al.*,
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Inside cover
See W. Russ Algar *et al.*,
pp. 884–955.
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PERSPECTIVES

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Point-of-need diagnostics in a post-Covid world: an opportunity for paper-based microfluidics to serve during syndemics

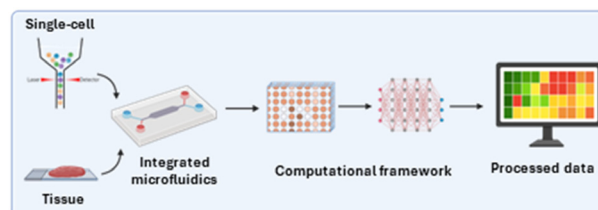
Maria-Nefeli Tsaloglou,* Dionysios C. Christodouleas, Jonathan Milette, Kendall Milkey, Isabelle C. Romine, Judy Im, Shefali Lathwal, Duraipandian Thava Selvam, Hadley D. Sikes and George M. Whitesides*



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Microfluidics for morphometrics and spatial omics applications

Nishanth Venugopal Menon, Jeeyeon Lee, Tao Tang and Chwee Teck Lim*



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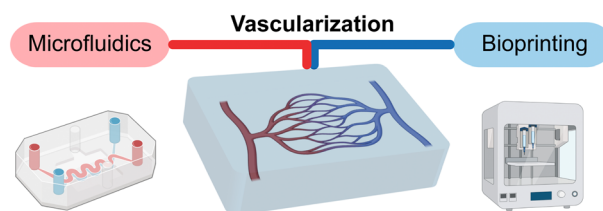
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Integrating microfluidic and bioprinting technologies: advanced strategies for tissue vascularization

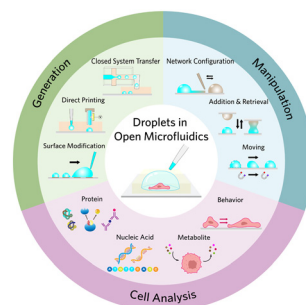
Xuan Mei, Ziyi Yang, Xiran Wang, Alan Shi, Joel Blanchard, Fanny Elahi, Heemin Kang,* Gorka Orive* and Yu Shrike Zhang*



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Droplets in open microfluidics: generation, manipulation, and application in cell analysis

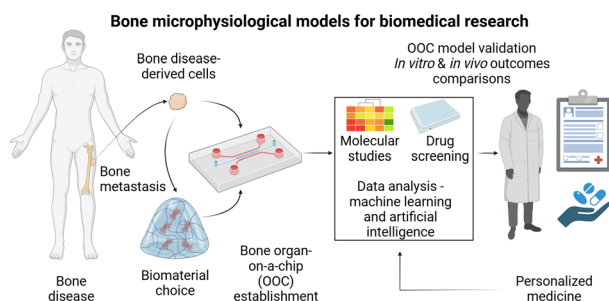
Jiaxu Lin, Ying Hou, Qiang Zhang and Jin-Ming Lin*



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Bone microphysiological models for biomedical research

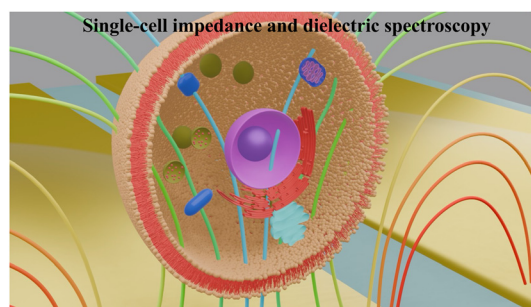
Francisco Verdugo-Avello,* Jacek K. Wychowaniec, Carlos A. Villacis-Aguirre, Matteo D'Este and Jorge R. Toledo



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Tutorial on impedance and dielectric spectroscopy for single-cell characterisation on microfluidic platforms: theory, practice, and recent advances

Fatemeh Dadkhah Tehrani, Michael D. O'Toole* and David J. Collins



Tumor Cell Isolation

Heterogeneous Tumor Cell Population

Liquid Biopsy

Tumor Cells in PBS

Tumor Cells in Blood

Microfluidics Assisted Phenotyping

Mechanical

Surface Antigen

Chemotactic

Genetic

Metabolic

Electrical

Clinical Translation

Survival

Time

Low-risk

Intermediate-risk

High-risk

Cancer Prognosis

Chemotherapeutic Response

Treatment Guidance

Rutwik Joshi, Hesaneh Ahmadi, Karl Gardner,
Robert K. Bright, Wenwen Wang and Wei Li*

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Daina V. Baker, Jasmine Bernal-Escalante,
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Jinghong Su and Guoqing Hu*

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The diagram illustrates the process of placental microphysiological systems. It begins with a circular inset labeled "Pregnancy" showing a fetus in the uterus. An arrow points from this to a larger circular inset showing a placenta. Another arrow points from the placenta to a circular inset labeled "Placental Microphysiological systems", which shows a 3D model of a placenta on a chip with microfluidic channels and cells.

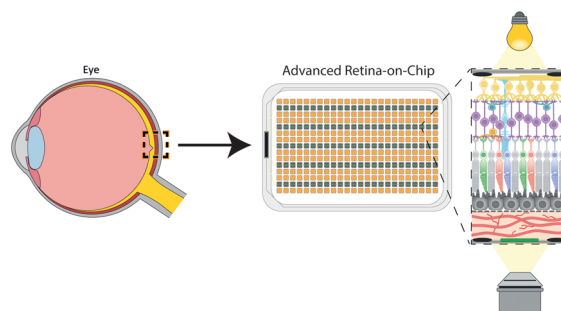
Inês M. Gonçalves, Muhammad Afzal, Nithil Kennedy,
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Yuji Nashimoto and Hirokazu Kaji*

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Retina-on-chip: engineering functional *in vitro* models of the human retina using organ-on-chip technology

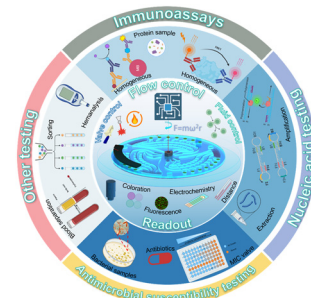
Tarek Gensheimer, Devin Veerman, Edwin M. van Oosten, Loes Segerink, Alejandro Garanto and Andries D. van der Meer*



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Recent advances in centrifugal microfluidics for point-of-care testing

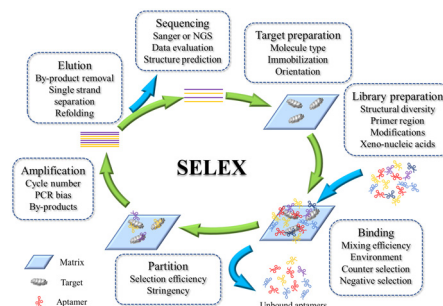
Huijuan Yuan, Zeyu Miao, Chao Wan, Jingjing Wang, Jinzhi Liu, Yiwei Li, Yujin Xiao,* Peng Chen* and Bi-Feng Liu*



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Aptamer selection *via* versatile microfluidic platforms and their diverse applications

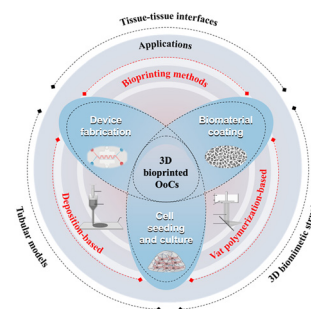
Yi-Da Chung, Yi-Cheng Tsai, Chi-Hung Wang and Gwo-Bin Lee*



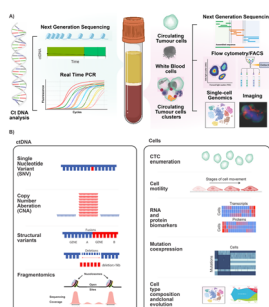
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Developing 3D bioprinting for organs-on-chips

Zhuhao Wu, Rui Liu, Ning Shao and Yuanjin Zhao*



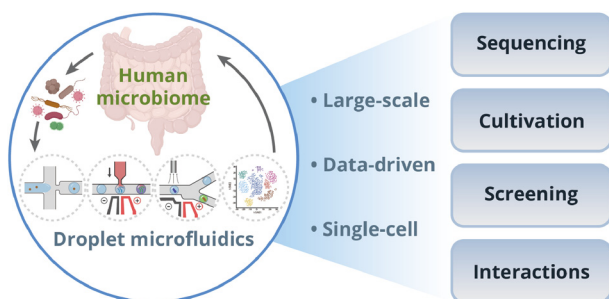
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Challenges in blood fractionation for cancer liquid biopsy: how can microfluidics assist?

Robert Salomon,* Sajad Razavi Bazaz, Kirk Mutafoopoulos, David Gallego-Ortega, Majid Warkiani, David Weitz and Dayong Jin

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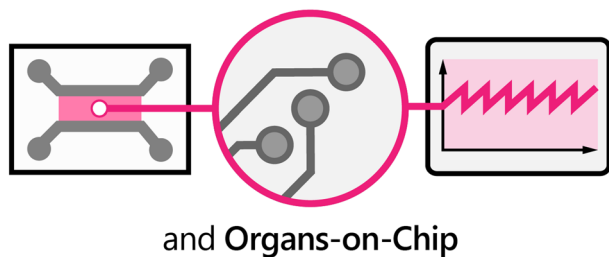


Droplet microfluidics: unveiling the hidden complexity of the human microbiome

Yibin Xu, Zhiyi Wang, Caiming Li, Shuiquan Tian and Wenbin Du*

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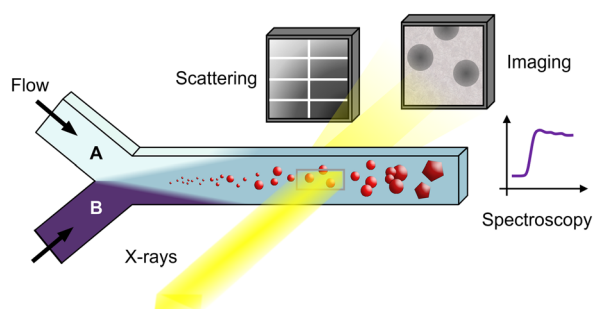
Microsensors for Cell Cultures



Microsensor systems for cell metabolism – from 2D culture to organ-on-chip (2019–2024)

Johannes Dornhof, Jochen Kieninger, Stefan J. Rupitsch and Andreas Weltin*

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Micro- and milli-fluidic sample environments for *in situ* X-ray analysis in the chemical and materials sciences

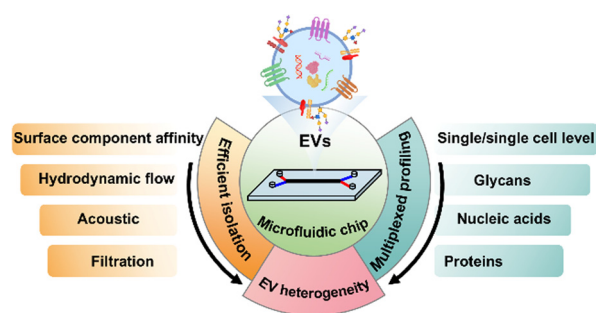
Mark A. Levenstein,* Corinne Chevallard, Florent Malloggi, Fabienne Testard and Olivier Taché



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Demystifying EV heterogeneity: emerging microfluidic technologies for isolation and multiplexed profiling of extracellular vesicles

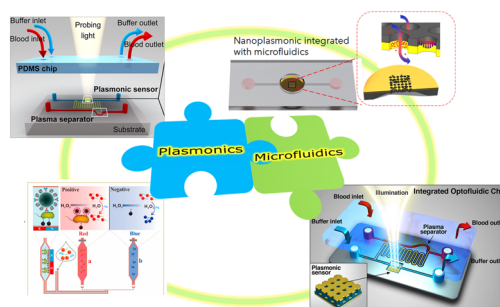
Guihua Zhang, Xiaodan Huang, Sinong Liu, Yiling Xu, Nan Wang, Chaoyong Yang and Zhi Zhu*



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Synergizing microfluidics and plasmonics: advances, applications, and future directions

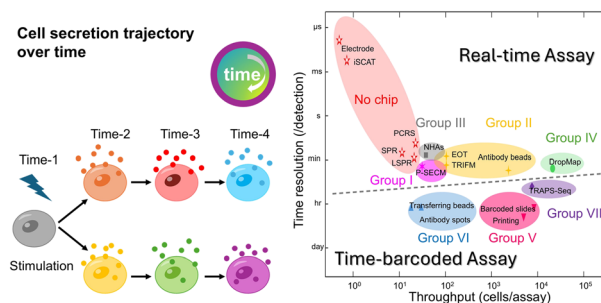
C. Escobedo* and A. G. Brolo*



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Time-resolved single-cell secretion analysis via microfluidics

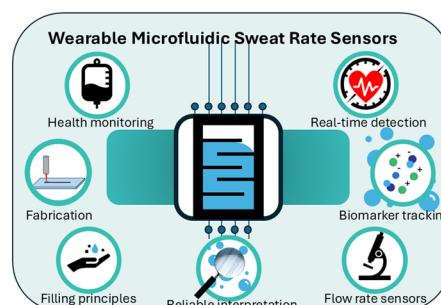
Ying Xu, Mei Tsz Jewel Chan, Ming Yang, Heixu Meng and Chia-Hung Chen*



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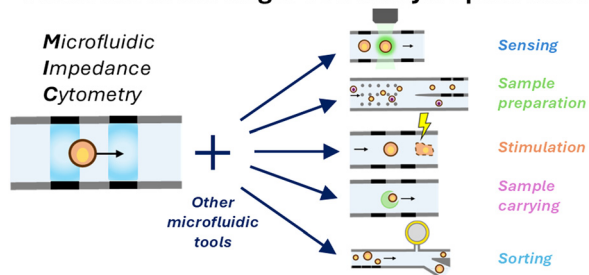
Worth your sweat: wearable microfluidic flow rate sensors for meaningful sweat analytics

R. F. R. Ursem, A. Steijlen,* M. Parrilla,* J. Bastemeijer, A. Bossche and K. De Wael*



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Multifunctional single-cell analysis platforms

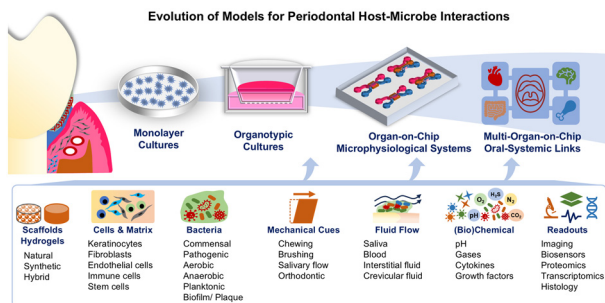


Integrating impedance cytometry with other microfluidic tools towards multifunctional single-cell analysis platforms

Marta Righetto, Cristian Brandi, Riccardo Reale and Federica Caselli*

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Evolution of Models for Periodontal Host-Microbe Interactions



Advances in modeling periodontal host-microbe interactions: insights from organotypic and organ-on-chip systems

Hardik Makkar and Gopu Sriram*

