

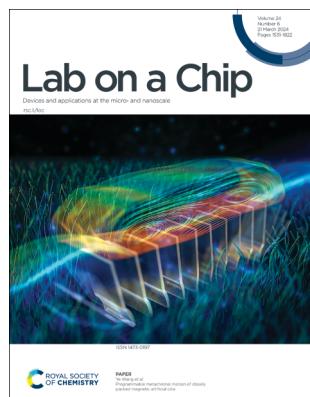
# Lab on a Chip

Devices and applications at the micro- and nanoscale  
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### Cover

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pp. 1557–1572.  
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## EDITORIAL

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The evolution of miniaturization, automation, and integration – a new scope for *Lab on a Chip*

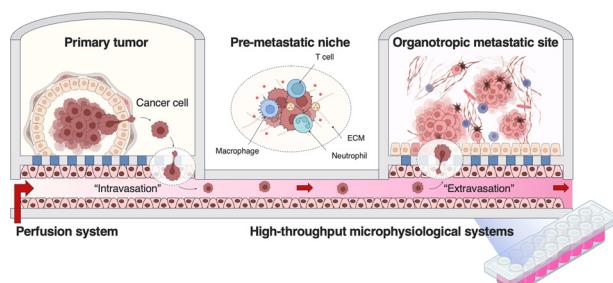


## CRITICAL REVIEW

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Understanding organotropism in cancer metastasis using microphysiological systems

Jihoon Ko,\* Jiyoung Song, Yedam Lee, Nakwon Choi and Hong Nam Kim\*





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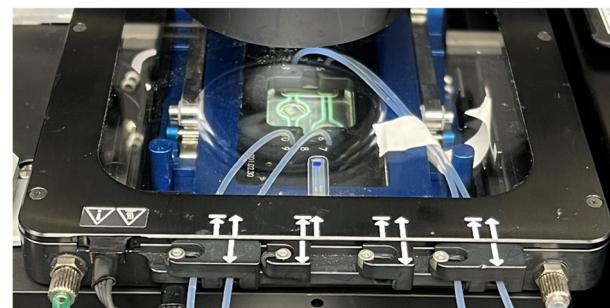


## COMMUNICATION

1557

**SliceChip: a benchtop fluidic platform for organotypic culture and serial assessment of human and rodent pancreatic slices**

Charles G. Alver, Silvia Álvarez-Cubela, Isabella Altilio, Emily Hutchison, Emma Warrner, Mariana E. Viso, Giana Vitale, David Oliver, Ricardo L. Pastori,\* Juan Dominguez-Bendala\* and Ashutosh Agarwal\*

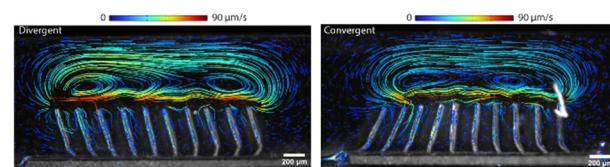


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**Programmable metachronal motion of closely packed magnetic artificial cilia**

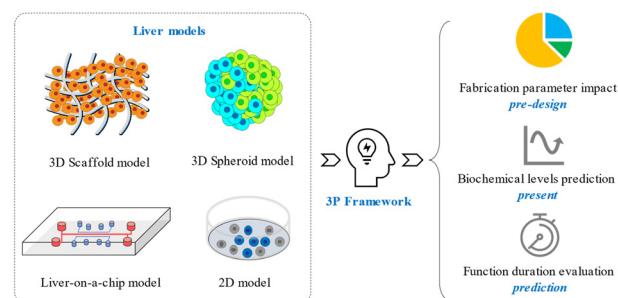
Tongsheng Wang, Tanveer ul Islam, Erik Steur, Tess Homan, Ishu Aggarwal, Patrick R. Onck, Jaap M. J. den Toonder and Ye Wang\*



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**Assessing bioartificial organ function: the 3P model framework and its validation**

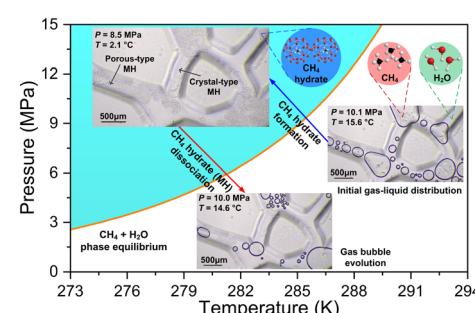
Jingmin An, Shuyu Zhang, Juan Wu, Haolin Chen, Guoshi Xu, Yifan Hou, Ruoyu Liu, Na Li, Wenjuan Cui, Xin Li,\* Yi Du\* and Qi Gu\*



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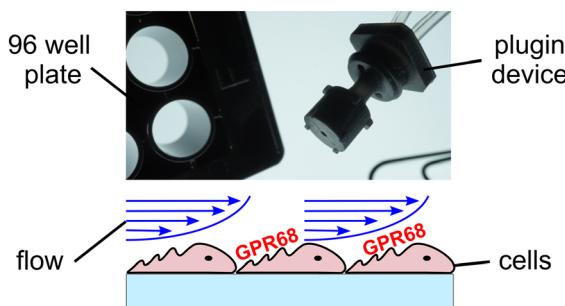
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Jidong Zhang, Zhenyuan Yin,\* Saif A. Khan, Shuxia Li, Qingping Li, Xiaohui Liu and Praveen Linga



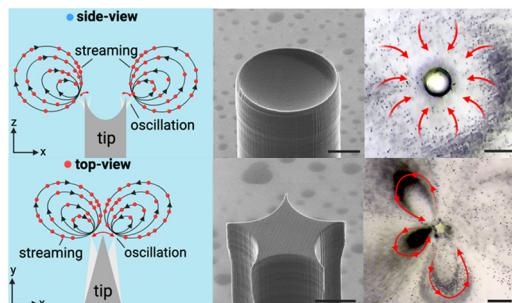
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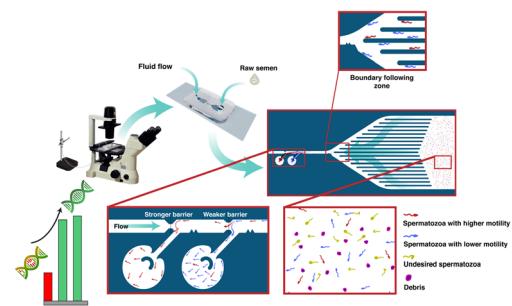
Philipp Segeritz, Kirill Kolesnik, Daniel J. Scott\* and David J. Collins\*

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**Enhanced acoustic streaming effects via sharp-edged 3D microstructures**

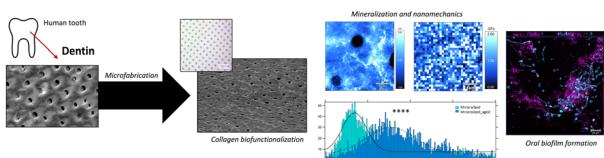
William S. Harley, Kirill Kolesnik, Daniel E. Heath and David J. Collins\*

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**Bio-inspired progressive motile sperm separation using joint rheotaxis and boundary-following behavior**

Mohammadjavad Bouloorchi Tabalvandani, Saeed Javadizadeh and Majid Badieirostami\*

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**Microfabrication-based engineering of biomimetic dentin-like constructs to simulate dental aging**

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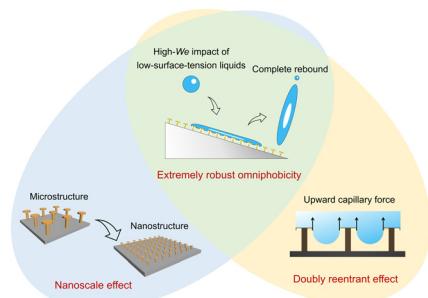


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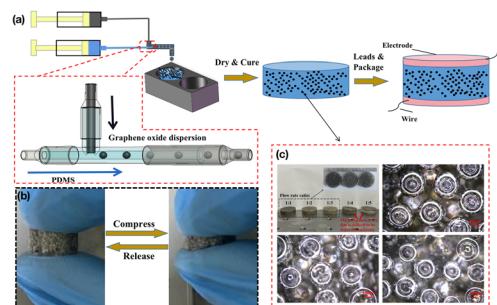
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## Fabrication of a high performance flexible capacitive porous GO/PDMS pressure sensor based on droplet microfluidic technology

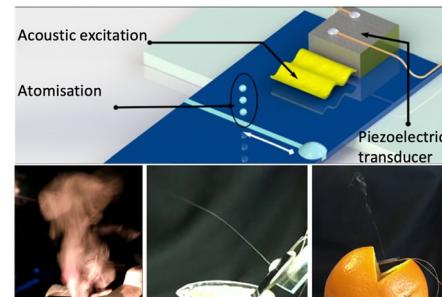
ShengYuan Pan, Tao Zhang, Cheng Zhang,\* Ningbo Liao, Miao Zhang and Tianchen Zhao



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## Oscillating high aspect ratio micro-channels can effectively atomize liquids into uniform aerosol droplets and dial their size on-demand

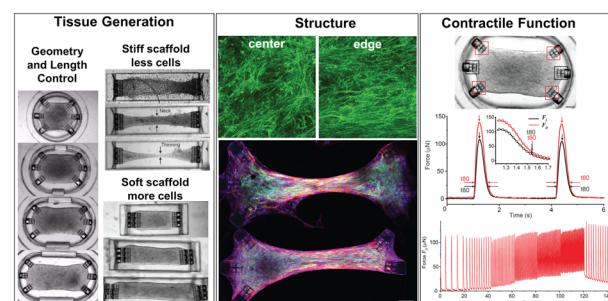
Nguyen Hoai An Le, Jason Brenker, Abanoub Shenoda, Zara Sheikh, Jackson Gum, Hui Xin Ong, Daniela Traini and Tuncay Alan\*



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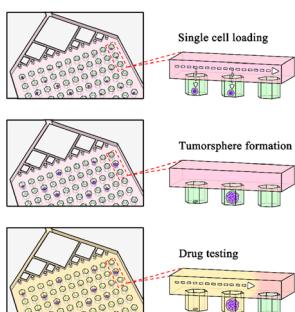
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M. Çağatay Karakan, Jourdan K. Ewoldt, Addianette J. Segarra, Subramanian Sundaram, Miranda C. Wang, Alice E. White, Christopher S. Chen and Kamil L. Ekinci



## PAPERS

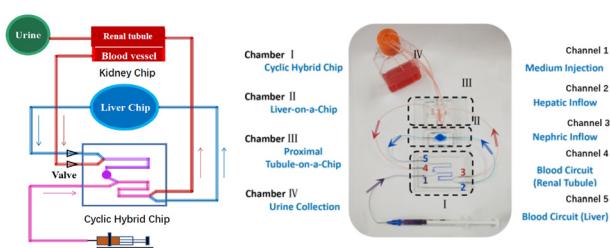
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### Selective expansion of renal cancer stem cells using microfluidic single-cell culture arrays for anticancer drug testing

Xiaogang Wang, Tao He, Zihe Chen, Jueming Chen, Yanzhang Luo, Dongguo Lin, Xiancheng Li\* and Dayu Liu

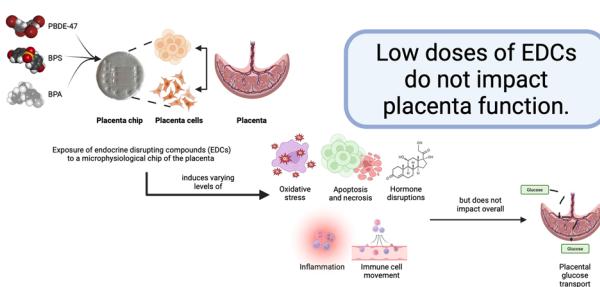
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### A three-dimensional (3D) liver–kidney on a chip with a biomimicking circulating system for drug safety evaluation

Qihong Huang, Tianhao Yang, Yunpeng Song, Wenxuan Sun, Jian Xu,\* Ya Cheng,\* Ruixue Yin, Lili Zhu, Mengting Zhang, Lei Ma, Honglin Li and Hongbo Zhang\*

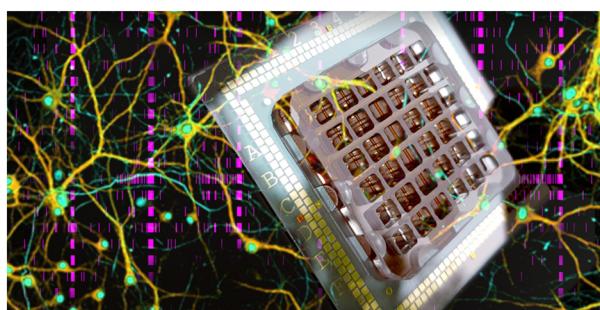
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### Endocrine-disrupting compounds and their impact on human placental function: evidence from placenta organ-on-chip studies

Manuel S. Vidal Jr., Lauren S. Richardson, Ananth Kumar Kammala, Sungjin Kim, Po Yi Lam, Rahul Cherukuri, Tilu Jain Thomas, Mohammed Bettayeb, Arum Han, Ivan Rusyn and Ramkumar Menon\*

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### A microphysiological system for parallelized morphological and electrophysiological read-out of 3D neuronal cell culture

Peter D. Jones,\* Beatriz Molina-Martínez, Anita Niedworok and Paolo Cesare\*

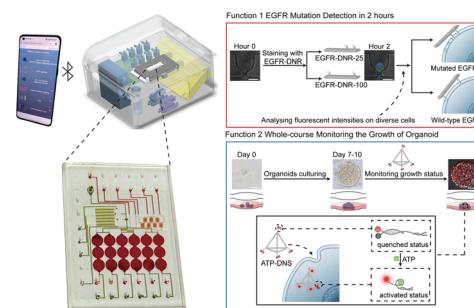


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**A dual-functional microfluidic chip for guiding personalized lung cancer medicine: combining EGFR mutation detection and organoid-based drug response test**

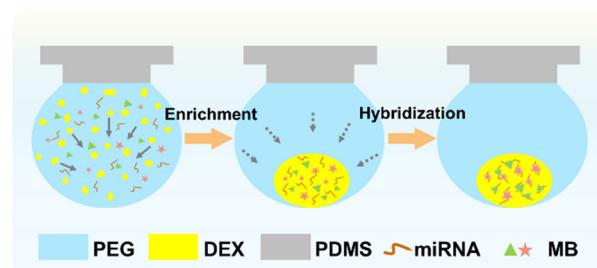
Kexin Zhang, Jiyu Xi, Huiting Zhao, Yadong Wang, Jianchao Xue, Naixin Liang\* and Zewen Wei\*



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**Integrated phase separation in microliter droplets for ultratrace-enriching biomarker analysis**

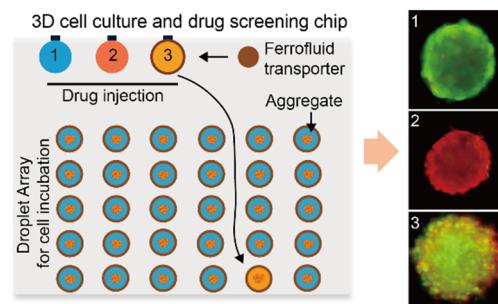
Qihao Zha, Yong Luo, Conghui Liu\* and Tailin Xu



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**On-chip droplet analysis and cell spheroid screening by capillary wrapping enabled shape-adaptive ferrofluid transporters**

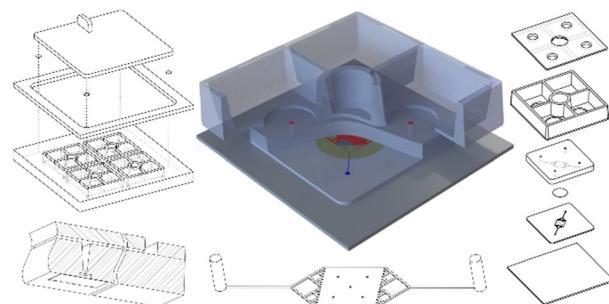
Xuejiao Wang, Xin Li, Aoyang Pu, Ho Bak Shun, Cien Chen, Liqing Ai, Zhaoling Tan, Jilin Zhang, Kai Liu, Jun Gao,\* Kiwon Ban\* and Xi Yao\*



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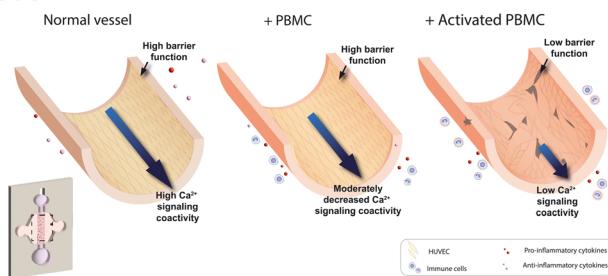
**Gravity-perfused airway-on-a-chip optimized for quantitative BSL-3 studies of SARS-CoV-2 infection: barrier permeability, cytokine production, immunohistochemistry, and viral load assays**

Shannon L. Faley, Niloufar A. Boghdeh, David K. Schaffer, Eric C. Spivey, Farhang Alem, Aarthi Narayanan, John P. Wikswo\* and Jacquelyn A. Brown



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## Immune cells and inflammatory mediators cause endothelial dysfunction in a vascular microphysiological system

Aishwarya Rengarajan, Hannah E. Goldblatt, David J. Beebe, María Virumbrales-Muñoz and Derek S. Boeldt\*

