

Lab on a Chip

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

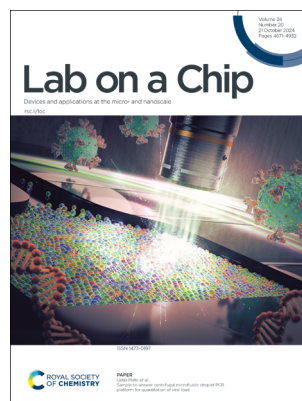
The Royal Society of Chemistry is the world's leading chemistry community. Through our high impact journals and publications we connect the world with the chemical sciences and invest the profits back into the chemistry community.

IN THIS ISSUE

ISSN 1473-0197 CODEN LCAHAM 24(20) 4671-4932 (2024)



Cover
See Ainara Vallejo-Illarramendi, Jacobo Paredes *et al.*, pp. 4741-4754.
Image reproduced by permission of Jacobo Paredes from *Lab Chip*, 2024, 24, 4741.



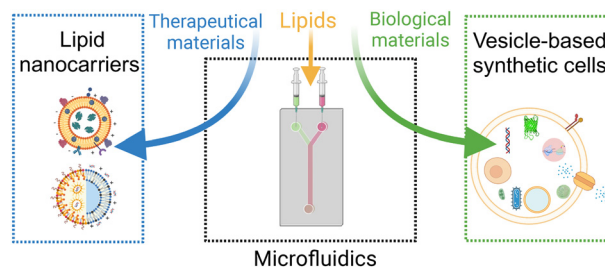
Inside cover
See Lidija Malic *et al.*, pp. 4755-4765.
Image reproduced by permission of Lidija Malic and Matthias Geissler from *Lab Chip*, 2024, 24, 4755.

TUTORIAL REVIEW

4679

Microfluidic technologies for lipid vesicle generation

Yu Cheng, Callum D. Hay, Suchaya M. Mahuttanatan, James W. Hindley,* Oscar Ces* and Yuval Elani*



CRITICAL REVIEW

4717

CRISPR for companion diagnostics in low-resource settings

Xu Qian,* Qiang Xu, Christopher J. Lyon and Tony Y. Hu*



Royal Society of Chemistry approved training courses

Explore your options.
Develop your skills.
Discover learning
that suits you.

**Courses in the classroom,
the lab, or online**

Find something for every
stage of your professional
development. Search our
database by:

- subject area
- location
- event type
- skill level

Members get at least 10% off

Visit rsc.li/cpd-training



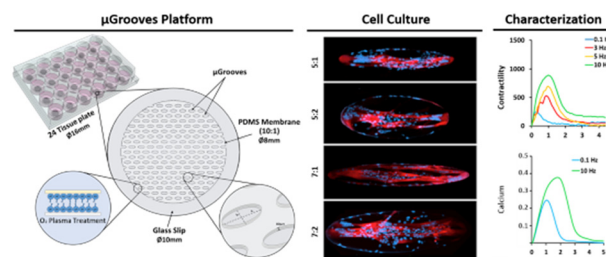
**SAVE
10%**



4741

Development of an *in vitro* platform for the analysis of contractile and calcium dynamics in single human myotubes

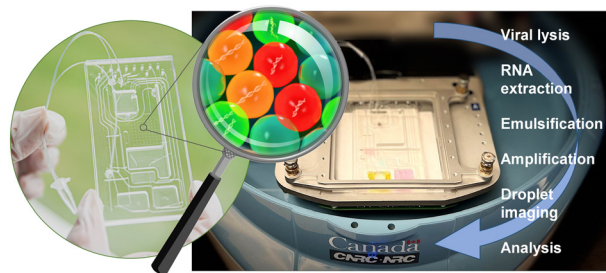
Camila Vesga-Castro, Laura Mosqueira-Martín, Paul Ubiria-Urkola, Pablo Marco-Moreno, Klaudia González-Imaz, Jorge Rendon-Hinestroza, Ainara Vallejo-Illarramendi* and Jacobo Paredes*



4755

Sample-to-answer centrifugal microfluidic droplet PCR platform for quantitation of viral load

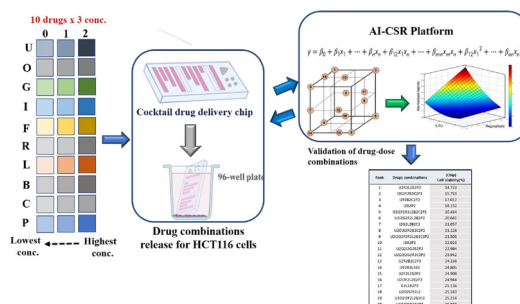
Lidija Malic,* Liviu Clime, Byeong-Ui Moon, Christina Nassif, Dillon Da Fonte, Daniel Brassard, Ljuboje Lukic, Matthias Geissler, Keith Morton, Denis Charlebois and Teodor Veres



4766

Selectively cross-linked hydrogel-based cocktail drug delivery micro-chip for colon cancer combinatorial drug screening using AI-CSR platform for precision medicine

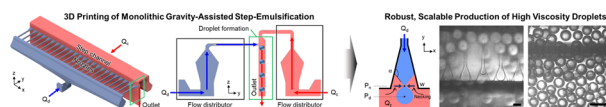
Kiran Kaladharan, Chih-Hsuan Ouyang, Hsin-Yu Yang and Fan-Gang Tseng*



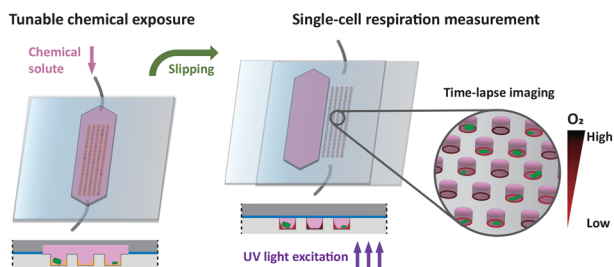
4778

3D printing of monolithic gravity-assisted step-emulsification device for scalable production of high viscosity emulsion droplets

Yoon-Ho Hwang, Je Hyun Lee, Taewoong Um and Hyomin Lee*



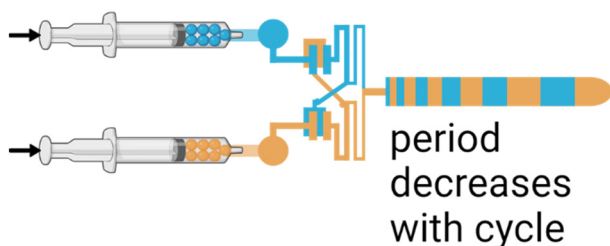
4786



SlipO₂Chip – single-cell respiration under tuneable environments

Yuan Cui, Milena De Albuquerque Moreira, Kristen E. Whalen, Laurent Barbe, Qian Shi, Klaus Koren, Maria Tenje and Lars Behrendt*

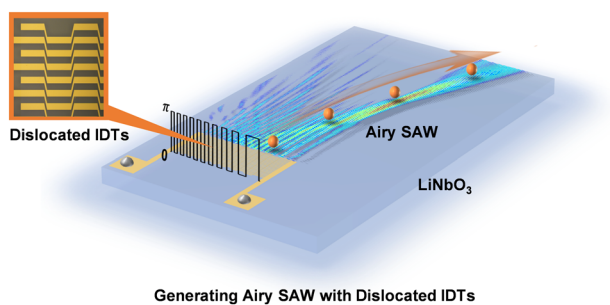
4798



Forced air oscillations – pneumatic capacitance in microfluidic oscillators produces non-linear responses and emergent behaviors

Sasha Cai Leshner-Pérez, Vishwa Vasani, Jihye So and Shuichi Takayama*

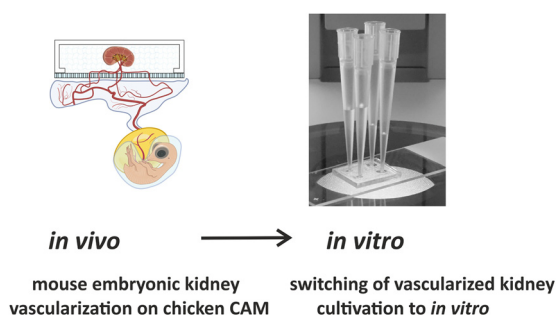
4808



Generating Airy surface acoustic waves with dislocated interdigital transducers

Zongjun Ma, Delai Kong, Wenfeng Cai, Zhenming Wang, Ming Cheng, Zixuan Wu, Xueqian Zhao, Mengjia Cen, Haitao Dai, Shifeng Guo and Yan Jun Liu*

4816



From *ex ovo* to *in vitro*: xenotransplantation and vascularization of mouse embryonic kidneys in a microfluidic chip

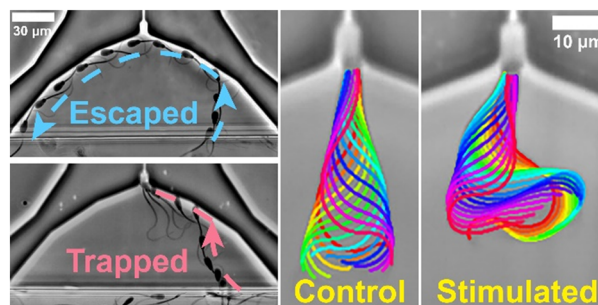
Micaela Oliveira, Partha Protim Sarker, Ilya Skovorodkin, Ali Kalantarifard, Tugce Haskavuk, Jonatan Mac Intyre, Elizabeth Nallukunnel Raju, Samin Noorian, Hiroki Shioda, Masaki Nishikawa, Yasuyuki Sakai, Seppo J. Vainio,* Caglar Elbuken* and Irina Raykhel*



4827

Microfluidic sperm trap array for single-cell flagellar analysis with unrestricted 2D flagellar movement

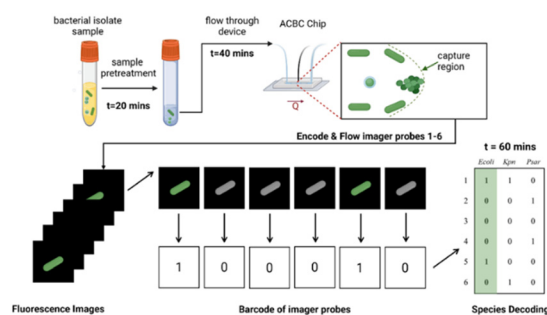
Kaiyu Wang, Antai Tao, Rongjing Zhang* and Junhua Yuan*



4843

Rapid identification of bacterial isolates using microfluidic adaptive channels and multiplexed fluorescence microscopy

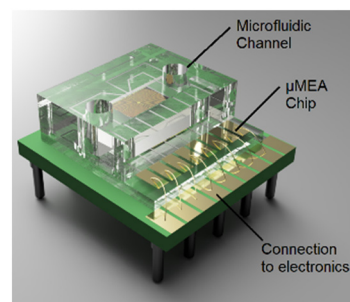
Stelios Chatzimichail,* Piers Turner, Conor Feehily, Alison Farrar, Derrick Crook, Monique Andersson, Sarah Oakley, Lucinda Barrett, Hafez El Sayyed, Jingwen Kyropoulos, Christoffer Nellåker, Nicole Stoesser and Achillefs N. Kapanidis*



4859

Integrated microfluidic multiple electrode aggregometry for point-of-care platelet function analysis

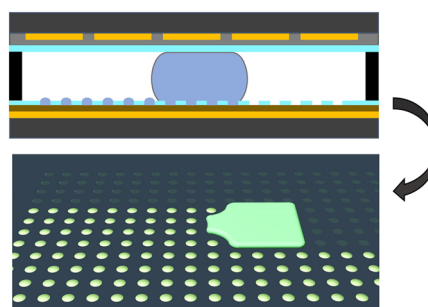
X. Zhao,* V. R. Gopal, F. Lozano-Juan, K. Kolandaivelu, A. Sarkar, D. Wu, J. Su, Q. Cheng, R. Pang and L.-S. Wu



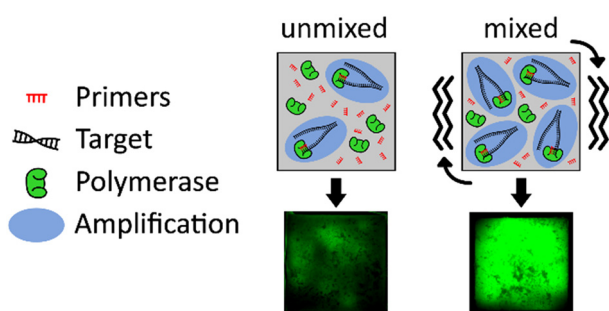
4869

Improved Teflon lift-off for droplet microarray generation and single-cell separation on digital microfluidic chips

Chuanjie Shen, Zhaoduo Tong, Xin Xu and Hongju Mao*



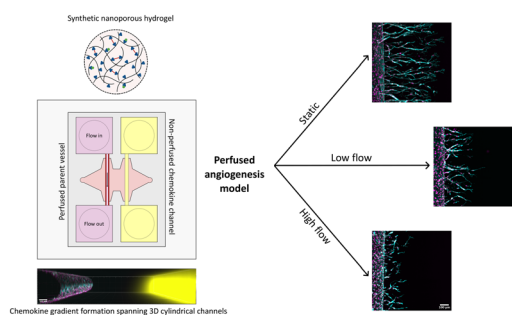
4879



Vibration mixing for enhanced paper-based recombinase polymerase amplification

Kelli N. Shimazu, Andrew T. Bender, Per G. Reinhall and Jonathan D. Posner*

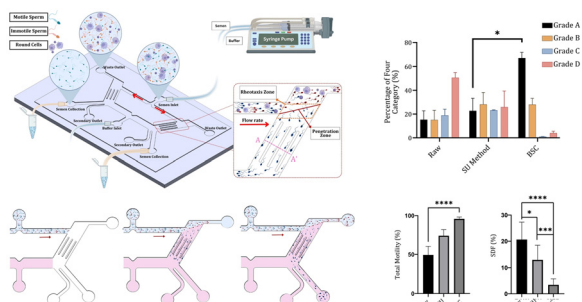
4892



A nanoporous hydrogel-based model to study chemokine gradient-driven angiogenesis under luminal flow

Nidhi Mote, Sarah Kubik, William J. Polacheck, Brendon M. Baker and Britta Trappmann*

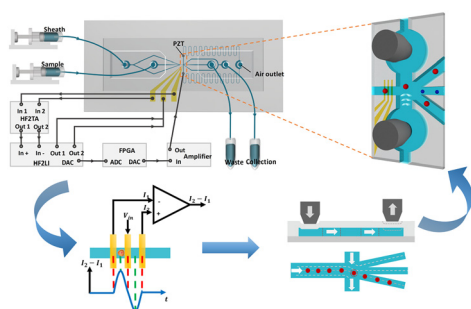
4907



High-throughput selection of sperm with improved DNA integrity and rapidly progressive motility using a butterfly-shaped chip compared to the swim-up method

Ali Sharafatdoust Asl, Mohammad Zabetian Targhi,* Soroush Zeaei, Iman Halvaei and Reza Nosrati*

4918



Label-free high-throughput impedance-activated cell sorting

Kui Zhang, Ziyang Xia, Yiming Wang, Lisheng Zheng, Baoqing Li* and Jiaru Chu*

