

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 26(9) 2625-2938 (2026)



Cover
See Xiaoyun Ding *et al.*, pp. 2673–2683.
Image reproduced by permission of Xiaoyun Ding from *Lab Chip*, 2026, 26, 2673.



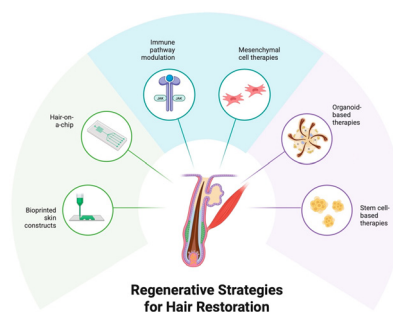
Inside cover
See Jialan Cao, Alexander Groß *et al.*, pp. 2684–2696.
Image reproduced by permission of Dr G. Alexander Groß.
Artwork generated with the assistance of AI from *Lab Chip*, 2026, 26, 2684.

PERSPECTIVE

2634

Human hair regeneration using organoids and hair-on-chip technologies

Imaan A. Ahmed and Abbas Shafiee*

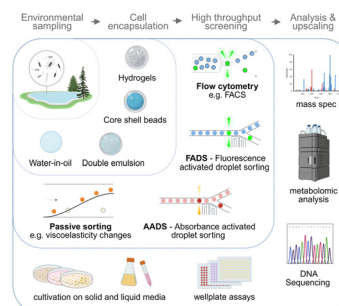


TUTORIAL REVIEW

2646

Ultra-high throughput droplet microfluidics for cultivation and functional screening of environmental microbial strains and consortia

Luca Potenza, Jozef Krzak, Maciej S. Andrzejewski, Adam Pyzik and Tomasz S. Kaminski*





Advance your career in science

with professional recognition that showcases your **experience, expertise and dedication**

Stand out from the crowd

Prove your commitment to attaining excellence in your field

Gain the recognition you deserve

Achieve a professional qualification that inspires confidence and trust

Unlock your career potential

Apply for our professional registers (RSci, RSciTech) or chartered status (CChem, CSci, CEnv)

Apply now

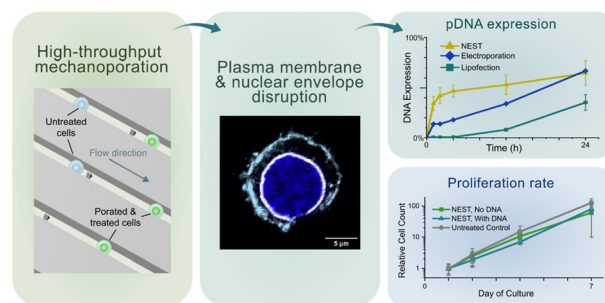
rsc.li/professional-development



2673

Vector-free DNA transfection by nuclear envelope mechanoporation

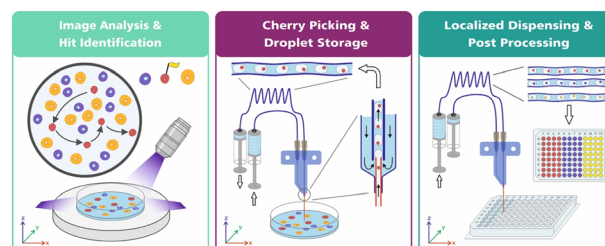
Leyla Akh, Apresio K. Fajrial, Sunwoo Sohn, Benjamin Seelbinder, Xin Xu, Wei Tan, Jill E. Slansky, Corey P. Neu and Xiaoyun Ding*



2684

Smarter cell sorting: droplet microfluidics meets pick-and-place sorting

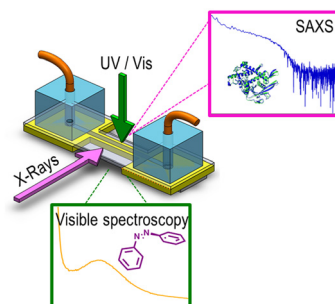
Olivia Gerhard, Steffen Schneider, Michaela Dehne, Janina Bahnemann, Klaus Palme, Ralf Welsch, Oleksandr Dovzhenko, Qiuju Yu, Michael Köhler, Jialan Cao* and Alexander Groß*



2697

Multi-wavelength transparent microfluidic device for UV-visible illumination and X-ray scattering studies of photoactive systems

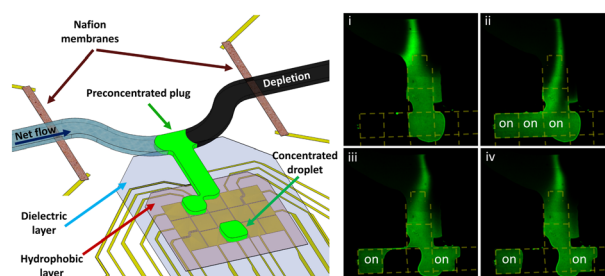
Benedetta Marmiroli,* Sumea Klokic,* Barbara Sartori, Marie Reißbüchel, Alessio Turchet and Heinz Amenitsch



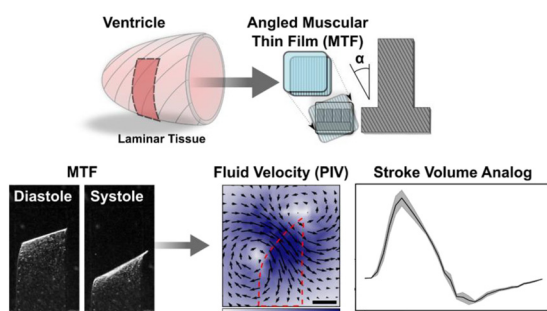
2709

Integration of continuous microfluidic electrokinetic bioparticle preconcentration with programmable extraction into a discrete microfluidic platform

Amir Hillman, Sinwook Park and Gilad Yossifon*



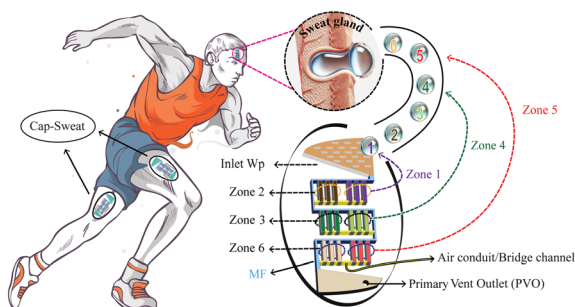
2720



Stroke volume analog on a chip – *in vitro* hydrodynamic model of cardiac pumping efficiency

John F. Zimmerman, Luke A. MacQueen, Douglas Henze, Daniel J. Drennan, Sean L. Kim, Herdeline Ann M. Ardoña, Suji Choi, Qianru Jin and Kevin Kit Parker*

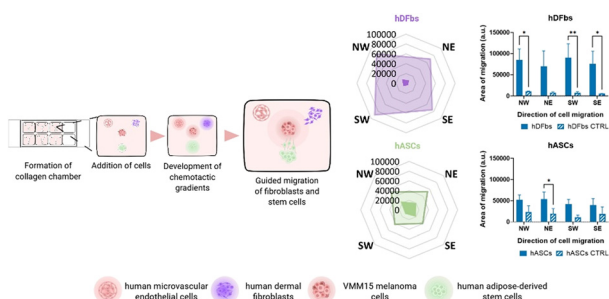
2734



Cap-Sweat: a capillary microfluidic platform for digitized sweat sampling and time-resolved biomarker analysis

Pezhman Jalali and Amir Sanati Nezhad*

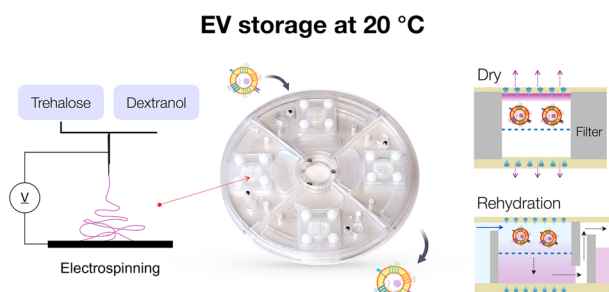
2747



A 3D model to evaluate cell chemotaxis within a heterogenic tumor microenvironment

Daniel B. Rodrigues, Daniela Cruz-Moreira, Luca Gasperini, Mariana Jarnalo, Ricardo Horta, Rui L. Reis and Rogério P. Pirraco*

2761



Rapid desiccation and on-disc rehydration of extracellular vesicles for non-cryogenic preservation

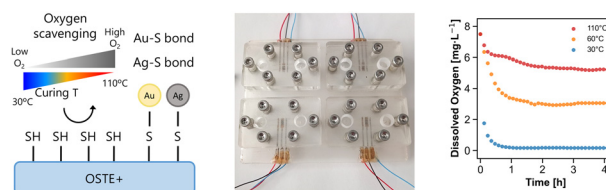
Hyun-Kyung Woo, Sangjin Seo, Advitiya Mahajan, Seoyoung Lee, Seoyoon Bae, Jeremy M. Quintana, Changhyun Kim, Alptekin Aksan* and Hakho Lee*



2775

Low-temperature inkjet-printed electrochemical sensors on OSTE+ microfluidics for oxygen monitoring and scavenging

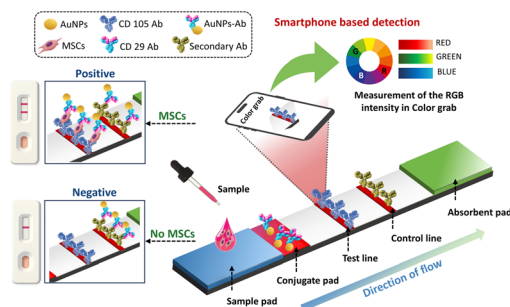
Denise Marrero, Ferran Pujol-Vila, Eva Tuset, Gemma Gabriel, Rosa Villa, Mar Alvarez* and Xavi Illa*



2789

A dual-antibody gold nanoparticle-based lateral flow assay for rapid and selective detection of mesenchymal stem cell stemness

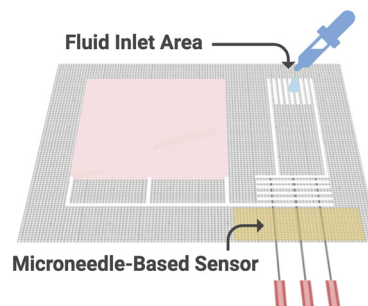
Drishya Prakashan, C. A. Amarnath, Shilpa N. Sawant, G. Taru Sharma and Sonu Gandhi*



2804

Lyocell-modal thread microfluidic platform integrated with a microneedle sensor for lactate detection in saliva

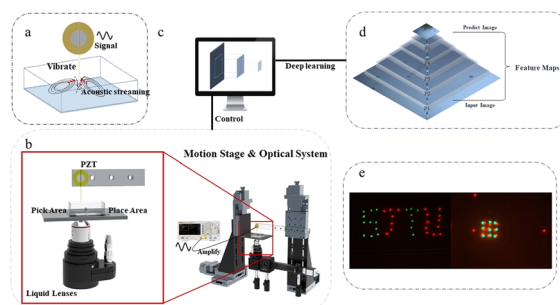
Ling Ding, Huizi Zhang, Yao Li and Jun Kameoka*



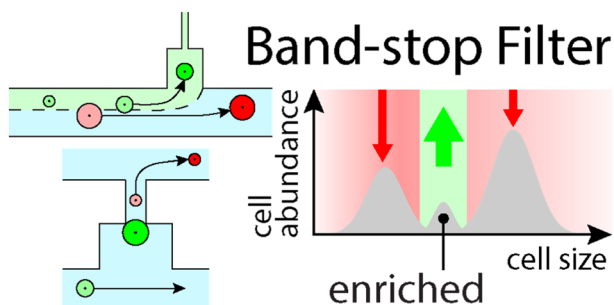
2820

Robotic acoustofluidic single-cell picking and placement platform

Wanqi Li, Qiu Yin,* Jiahui Wu, Chenfan Zhang, Xiaochen Li, Chongyang Zhou, Xianting Ding* and Xiang Chen*



2834

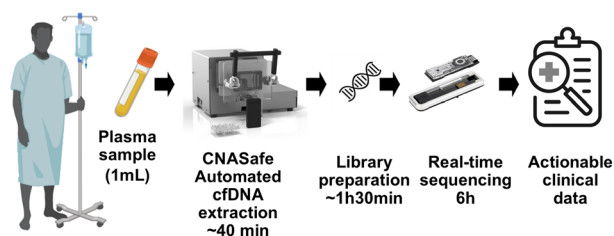


Band-stop microfluidics for high-purity, label-free enrichment of viable cancer cells from whole blood

Lewis Krzeczkowski, Georgios Nteliopoulos, Simak Ali, Paul Davey, R. Charles Coombes and Ali Salehi-Reyhani*

2849

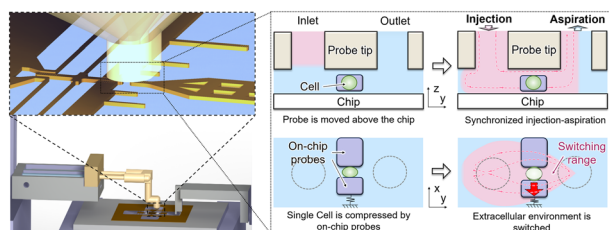
Patients presenting at hospital with signs of sepsis or febrility



An automated and portable platform for rapid cell-free DNA isolation and its application in microbial DNA metagenomic sequencing from human blood samples

Linda Marriott, Ana Martinez-Lopez, Antonio Liga, Kazuhiro Horiba, Amanda Warr, Jacob N. Phulusa, Radhe Shantha Kumar, Laura Carey, Yoshinori Ito, Benjamin J. Parcell, Nicholas R. Leslie, Nicholas A. Feasey, Shevin T. Jacob, Jamie Rylance and Mäiwenn Kersaudy-Kerhoas*

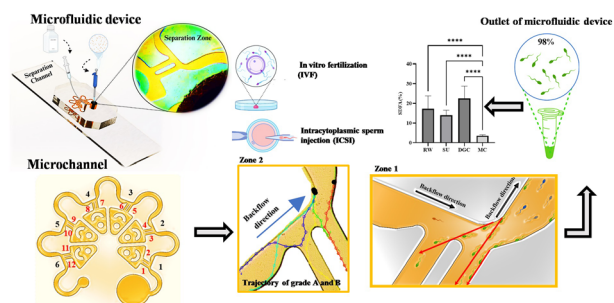
2861



High-speed liquid switching and on-chip force sensing reveal the transient mechanical response of MscL in *Synechocystis* sp. PCC 6803

Xu Du, Masaru Tsujii, Nobuyuki Uozumi and Fumihito Arai*

2872



Bioinspired quality-based sperm sorting in a spiral microfilter-enhanced microfluidic device: enhancing DNA integrity via rheotaxis and boundary dynamics

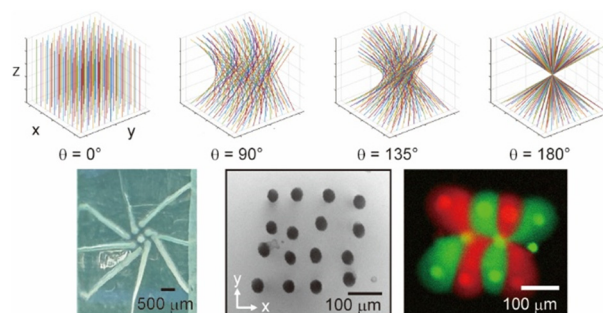
Donya Shahhoseini and Naser Naserifar*



2889

Facile fabrication of high-density two-dimensional micronozzle arrays using twisted thin-wire molds

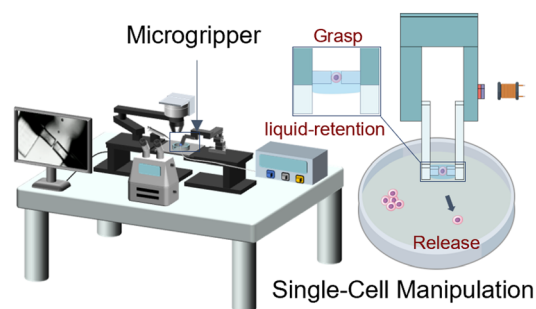
Koki Takahashi and Kyohei Terao*



2900

A 3D-printed electromagnetically actuated microgripper system for precision single-cell manipulation

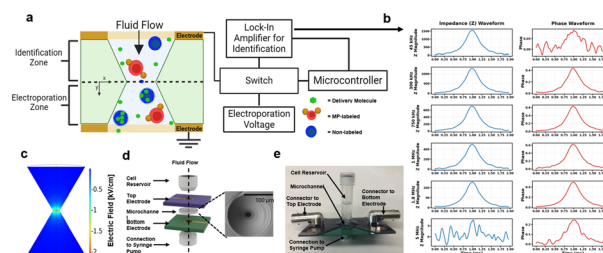
Xi Chen, Qingying Ren, Wenshuo Zhao, Minhao Wang, Yining Guo, Jing Huang, Xuhui Zhao, Xinyu Lu, Yuan Liu* and Haifeng Xu*



2909

Microparticle-enabled single cell multiparameter electronic immunophenotyping for selective electroporation

Madeline Hoyle, Josiah Rudge, Yuvraj Rallipalli and Aniruddh Sarkar*



2923

An automated modular microfluidic platform for end-to-end mRNA synthesis and purification

Vikas Sharma, Amirreza Mottafegh, Jeong-Un Joo and Dong-Pyo Kim*

