

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(16) 3755–3998 (2024)



Cover

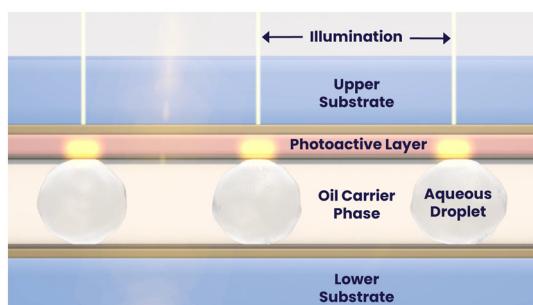
See Lawrence G. Welch,
Emma L. Talbot *et al.*,
pp. 3763–3774.
Image reproduced by
permission of Lightcast
Discovery from *Lab Chip*,
2024, 24, 3763.
The authors acknowledge
KISS Communications, the
agency that helped to
generate the artwork.

PAPERS

3763

A programmable and automated optical electrowetting-on-dielectric (oEWOD) driven platform for massively parallel and sequential processing of single cell assay operations

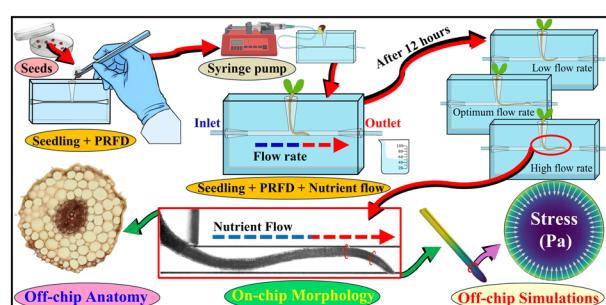
L. G. Welch,* J. Estranero, P. Tourlomousis,
R. C. R. Wootton, V. Radu, C. González-Fernández,
T. J. Puchtler, C. M. Murzeau, N. M. G. Dieckmann,
A. Shibahara, B. W. Longbottom, C. E. Bryant
and E. L. Talbot*



3775

Unveiling nutrient flow-mediated stress in plant roots using an on-chip phytofluidic device

Kaushal Agarwal, Sumit Kumar Mehta
and Pranab Kumar Mondal*





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%**

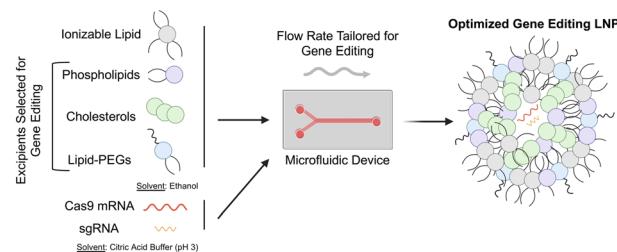


PAPERS

3790

Optimized microfluidic formulation and organic excipients for improved lipid nanoparticle mediated genome editing

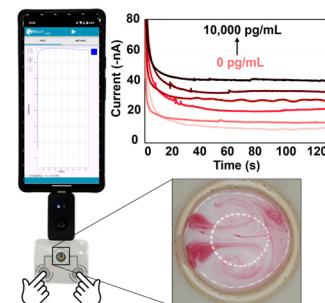
Rohan Palanki, Emily L. Han, Amanda M. Murray, Rohin Maganti, Sophia Tang, Kelsey L. Swingle, Dongyo Kim, Hannah Yamagata, Hannah C. Safford, Kaitlin Mrksich, William H. Peranteau* and Michael J. Mitchell*



3802

Microfluidic finger-actuated mixer for ultrasensitive electrochemical measurements of protein biomarkers for point-of-care testing

Benjamin Utzinger, Desh Deepak Dixit and Peter B. Lillehoj*



3810

Multioxide combinatorial libraries: fusing synthetic approaches and additive technologies for highly orthogonal electronic noses

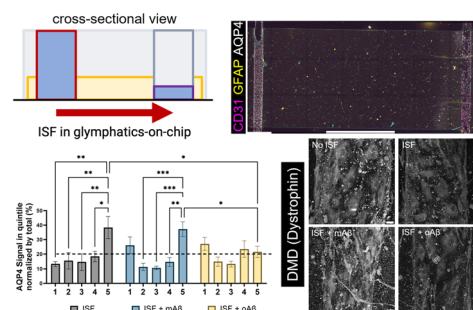
Vishalkumar Rajeshbhai Gohel, Margarita Chetyrkina, Andrey Gaev, Nikolay P. Simonenko, Tatiana L. Simonenko, Philipp Yu. Gorobtsov, Nikita A. Fisenko, Darya A. Dudorova, Valeriy Zaytsev, Anna Lantsberg, Elizaveta P. Simonenko, Albert G. Nasibulin and Fedor S. Fedorov*



3826

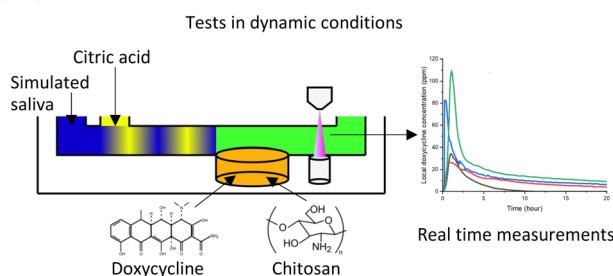
Monomeric and oligomeric amyloid- β cause distinct Alzheimer's disease pathophysiological characteristics in astrocytes in human glymphatics-on-chip models

Aria R. Yslas, Rena Park, Nozomi Nishimura and Esak Lee*



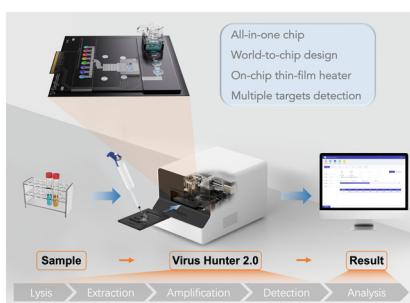
PAPERS

3840


A novel microfluidic tool for the evaluation of local drug delivery systems in simulated *in vivo* conditions

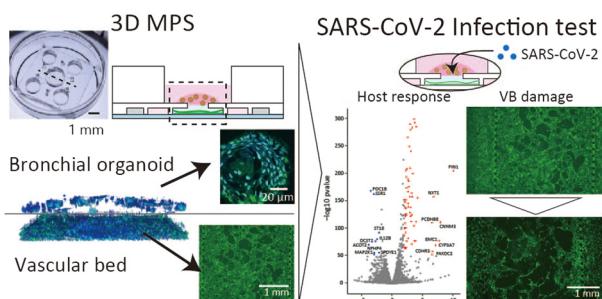
William A. Oates and Antonios D. Anastasiou*

3850


A syndromic diagnostic assay on a macrochannel-to-digital microfluidic platform for automatic identification of multiple respiratory pathogens

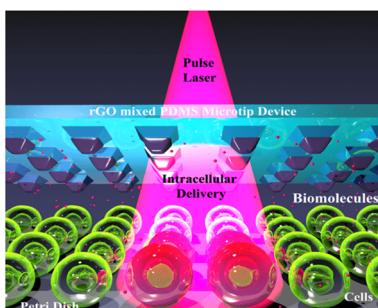
Cheng Dong, Fei Li, Yun Sun, Dongling Long, Chunzhao Chen, Mengyan Li, Tao Wei, Rui P. Martins, Tianlan Chen* and Pui-In Mak*

3863


SARS-CoV-2-induced disruption of a vascular bed in a microphysiological system caused by type-I interferon from bronchial organoids

Kazuya Fujimoto, Yoshikazu Kameda, Yuta Nagano, Sayaka Deguchi, Takuya Yamamoto, Rafal P. Krol, Peter Gee, Yasufumi Matsumura, Toru Okamoto, Miki Nagao, Kazuo Takayama* and Ryuji Yokokawa*

3880


Ultra-low intensity light pulses for large cargo delivery into hard-to-transfect cells using an rGO mixed PDMS microtip device

Hima Harshan Padma, Kavitha Illath, Donia Dominic, Hwan-You Chang, Moeto Nagai, Rajdeep Ojha, Srabani Kar and Tuhin Subhra Santra*

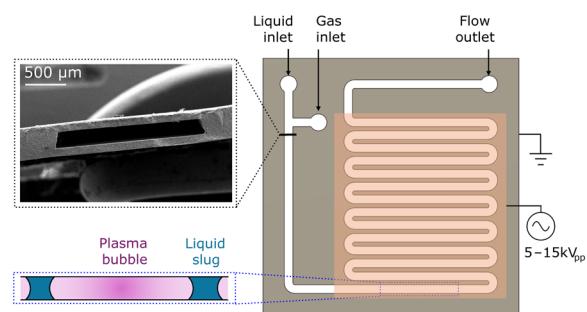


PAPERS

3898

Microreactor designed for efficient plasma–liquid segmented flows

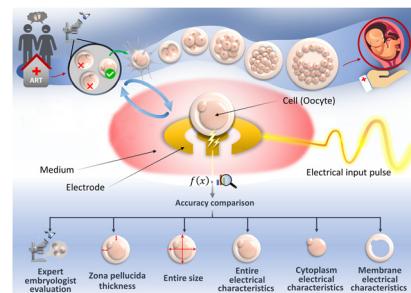
Pierre Dedieu, Gabriel Morand, Karine Loubière, Stéphanie Ognier* and Michael Tatoulian



3909

Simple bioelectrical microsensor: oocyte quality prediction via membrane electrophysiological characterization

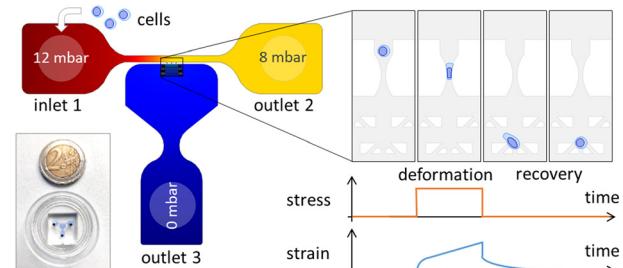
Peyman Palay, Davood Fathi,* Hassan Saffari, Fatemeh Hassani, Samira Hajiaghahlu and Rouhollah Fathi*



3930

Deformation under flow and morphological recovery of cancer cells

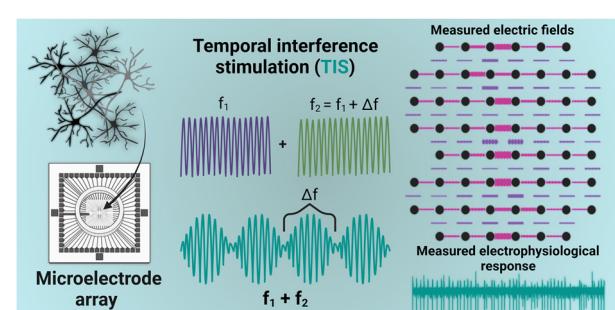
Emile Gasser,* Emilie Su, Kotryna Vaidžiulytė, Nassiba Abbade, Hamizah Cognart, Jean-Baptiste Manneville, Jean-Louis Viovy, Matthieu Piel, Jean-Yves Pierga, Kyohei Terao* and Catherine Villard*



3945

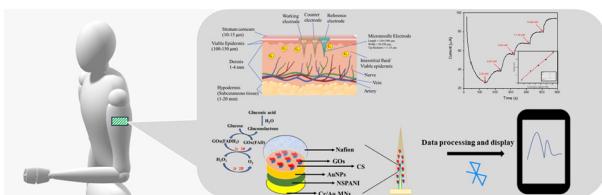
Electric field temporal interference stimulation of neurons *in vitro*

Annika Ahtiainen,* Lilly Leydolph, Jarno M. A. Tanskanen, Alexander Hunold, Jens Haueisen and Jari A. K. Hyttinen



PAPERS

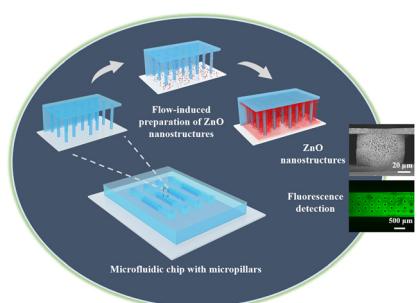
3958



Early detection of hypo/hyperglycemia using a microneedle electrode array-based biosensor for glucose ultrasensitive monitoring in interstitial fluid

Samar H. Tawakey, Mohammad Mansour, Ahmed Soltan and Alyaa I. Salim*

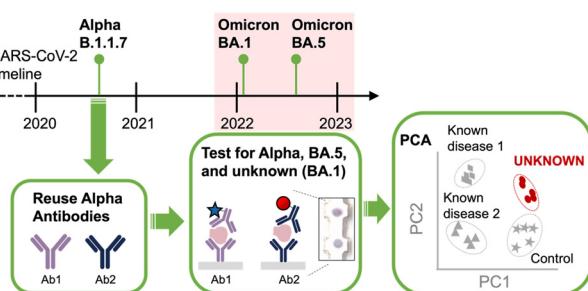
3973



Flow-induced fabrication of ZnO nanostructures in pillar-arrayed microchannels

Ruyi Xu, Siyu Li, Sai-Xi Yu, Yan-Jun Liu, Wenhui Xie, Qingfeng Zhan, Zhenjie Zhao* and Xin Li*

3985



A novel immunoassay technique using principal component analysis for enhanced detection of emerging viral variants

Josselyn Mata Calidonio, Arianna I. Maddox and Kimberly Hamad-Schifferli*

