Bio-mc:423
バイオフロンティア・シンポジウム 2022 開催のお知らせ

日本機械学会バイオエンジニアリング部門
メーリングリスト登録者各位

バイオエンジニアリング部門
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第 33 回バイオフロンティア講演会の会期中に同会場にて，下記の通り**バイオフロンティア・シンポジウム 2022** を開催し，バイオエンジニアリング分野を牽引されている著名な研究者 2 名にご講演頂きますのでご案内いたします。

参加費は無料，事前の登録も不要ですので，ぜひ奮ってご参加下さいますようお願い申し上げます。詳細については
https://www.jsme.or.jp/conference/biofrconf22/doc/symposium.html
をご覧下さい。

記

1. 開催日:
2022 年 12 月 18 日（日）9:00~10:00，16:15~17:15

2. 会場:
神戸大学 六甲台第二キャンパス 工学研究科棟 5 階 戎ホール（LR501 室）

3. 参加費:
無料

4. 講演者:

----- 12 月 18 日（日）9:00~10:00 -----

Prof. Roger D Kamm,
Massachusetts Institute of Technology, USA
http://web.mit.edu/meche/mb

Title:
Microphysiological models of neurological disease: Their potential and limitations

Abstract:
The toll from neurodegenerative disorders such as Alzheimer's and Parkinson's Disease continues to rise with our aging populations, and there remains little hope for a cure. Indeed, even the fundamental bases for these progressive diseases remain largely a mystery despite continuing efforts. One reason for the lack of progress is that we are lacking in models, either animal or in vitro, that can be used both to study disease onset and progression, or that are suitable for screening effective preventative or palliative therapies. In vitro microphysiological systems (MPS) are now being developed, however, that can recapitulate certain aspects of these disease states and are responsive to some known treatments in humans. These MPS can be produced using either primary or pluripotent cells, and in the latter case, with cells obtained from patients having a variety of genetic backgrounds. In this presentation I will describe recent advances from our lab to produce models of the blood-brain barrier and Alzheimer's Disease, using cells from various human sources. Functional assays will be described such as BBB permeability along with assessment of amyloid beta plaque accumulation in long-term studies.

----- 12 月 18 日（日）16:15~17:15 -----

Prof. Amy Shen,
Okinawa Institute of Science and Technology, Japan
https://groups.oist.jp/mbnu/amy-chen

Title:
New opportunities to study population genetics and detect diseases by employing microfluidics and lab-on-a-chip devices

Abstract:
Microfluidics and lab-on-a-chip devices have emerged as powerful platforms to advance our knowledge and open up new possibilities in biophysics and biotechnology research. In this talk, I will showcase two examples of using microfluidics for microbial population genetics and disease diagnosis research.
1) A microfluidic device with controlled microenvironment is developed to study population genetics: many microbial populations proliferate in small channels. In such environments, reproducing cells organize in parallel lanes. Reproducing cells shift these lanes, potentially expelling other cells from the channel. We combine theory and experiments to understand how these dynamics affects the diversity of a microbial population. We theoretically predict that genetic diversity is quickly lost along lanes of cells. Our experiments confirm that a population of proliferating Escherichia coli in a microchannel organizes into lanes of genetically identical cells within a few generations.
2) An optomicrofluidic sensing platform is developed to rapidly detect antibodies against the SARS-CoV-2 spike protein in diluted human plasma within 30 minutes, at the limit of detection of ~0.5 pM (0.08 ng/mL). The sensing principle is based on localized surface plasmon resonance (LSPR) involving gold nanospikes (fabricated by electrodeposition) in a microfluidic device, coupled with an optical probe. This diagnostic platform demonstrates potential to complement existing serological assays and improve COVID-19 diagnosis.

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5. お問い合わせ先:

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以上