

Xinqi Kang

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Bioengineering Department, Northeastern University, Boston, Massachusetts, USA

Education

Ph.D. student, Bioengineering Department, Northeastern University 2018 – PRESENT

B.Sc.: Department of life sciences, Jilin University 2013– 2017

Thesis title: Mapping binding region of BCCIP (BRCA2 and CDKN1A-interacting protein) for transcription factor Yin Yang 1.

Skills

- Nanopore sensing, Oxford nanopore direct RNA sequencing
 - Nucleic acid chemistry, Rolling circle amplification
 - Python, Matlab, PyMOL
 - Protein purification, Fast protein liquid chromatography,
 - Mammalian cell culture, RT-qPCR, RNAi knockdown, Fluorescent in situ hybridization (FISH)
 - Consumables fabrication (Microfabrication, SU-8 molding and PDMS casting)
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Research Experience

Ph.D. candidate (Research Assistant), Nanoscale Biophysics Laboratory, Northeastern University
July 2018 – Present

- Nanopore-Based Fingerprint Immunoassay based on Rolling Circle Amplification and DNA Fragmentation
- Single-cell analysis of TRUB1-mediated, pseudouridine-modified transcripts in human cells
- Development of nanopore-based voltage-stable bilayer platform for biosensing application

Ph.D. student (Research Assistant), College of Pharmacy, The Ohio state University *Aug 2017 – May 2018*

- Development of T7 pore as novel protein nanopore for differentiation of peptides with single amino acid difference
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Patents

1. M. Wanunu, M. A. Alibakhshi, X. Kang, **Molecule Sensor Component and Method for Manufacturing Same.** WO2021108780A1
 2. Meni Wanunu, Mohammadamin Alibakhshi, Xinqi Kang, Zhuoyu Zhang, **Method and apparatus for sensing a molecule.** US20210123884A1
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Publications

Journal Papers

1. X. Kang, C. Wu, M.A. Alibakhshi, X. Liu, L. Yu, D. R. Walt, M. Wanunu, **Nanopore-based sensitive biomarker quantification using antibody-based rolling circle amplification.** *ACS nano* 2023, DOI:doi.org/10.1021/acsnano.2c09889.

2. L. Yu, X. Kang, F. Li, B. Mehrafrouz, A. Makhamreh, A. Fallahi, A. Aksimentiev, M. Chen, M. Wanunu, **Unidirectional Single-File Transport of Full-Length Proteins Through a Nanopore.** *Nature biotechnology* 2023, DOI: 10.1038/s41587-022-01598-3.
3. M.A. Alibakhshi, X. Kang, D. Clymer, Z. Zhang, A. Vargas, V. Meunier, M. Wanunu, **Scaled-up Synthesis of Freestanding Molybdenum Disulfide Membranes for Nanopore Sensing.** *Advanced Materials* 2022, DOI: 10.1002/adma.202207089.
4. L. Yu, X. Kang, M.A. Alibakhshi, M. Pavlenok, M. Niederweis, M. Wanunu, **Stable Polymer Bilayers for Protein Channel Recordings at High Guanidinium Chloride Concentrations.** *Biophysical Journal*, 120, 1537-1541, 2021.
5. X. Kang, M.A. Alibakhshi, and M. Wanunu, **One-Pot Species Release and Nanopore Detection in a Voltage-Stable Lipid Bilayer Platform.** *Nano Letters*, 19 (12), 9145-9153, 2019.
6. Z. Ji, X. Kang, S. Wang, and P. Guo, **Nano-channel of viral DNA packaging motor as single pore to differentiate peptides with single amino acid difference.** *Biomaterials*, 182, 227-233, 2018.

Conferences

7. X. Kang, K. Nian, M. Wanunu, and S. Rohanifard **Single-cell analysis and subcellular localization of TRUB1-mediated, pseudouridine-modified transcripts in human cells.** 2023 BMES CMBE Conference.
8. X. Kang, C. Wu, M.A. Alibakhshi, D. R. Walt, M. Wanunu, **Nanopore-based multiplexed, sensitive biomarker quantification using antibody-based rolling circle amplification.** 66th Biophysical Society Annual Meeting, San Diego, CA, 2020.
9. X. Kang, M.A. Alibakhshi, and M. Wanunu, **Multiplexed Molecular Counters using a High-Voltage Transmembrane Pore Platform.** 64th Biophysical Society Annual Meeting, San Diego, CA, 2020.
10. L. Yu, X. Kang, M.A. Alibakhshi, and M. Wanunu, **Stable Hybrid Polymer-Lipid Membrane for High Voltage Biological Nanopore Experiments.** 64th Biophysical Society Annual Meeting, San Diego, CA, 2020.
11. X. Kang, M.A. Alibakhshi, and M. Wanunu, **Improved Bilayer Membrane Stability for Nanopore Sensing Applications.** 63th Biophysical Society Annual Meeting, Baltimore, MD, 2019.
12. H. Yamazaki, Y. Qiu, X. Kang, and M. Wanunu, **Photothermally-Assisted Lipid Bilayer Coating on a Sin Nanopore for High-Throughput Protein Channel Formation.** 63th Biophysical Society Annual Meeting, Baltimore, MD, 2019.
13. M. Mojtavavi, S. Greive, B. Cressiot, X. Kang, A. Anston, and M. Wanunu, **Stable Hybrid Nanopores for Biomolecule Sensing.** 63th Biophysical Society Annual Meeting, Baltimore, MD, 2019.

Graduate Level Courses

Pharmacokinetics and Drug Metabolism • Advanced Drug Delivery System • Concepts in Pharmaceutical Science • Biological Physics I • Medical Physiology • Biomaterials • Principles of Bioengineering • Cellular Engineering • Math Methods in Bioengineering • Biomedical Optics

References

- Meni Wanunu
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- Sara Rohanifard
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Senior Scientist, Apton biosystems
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