JIWOOK SHIM, Ph.D.

CONTACT INFORMATION:

Work address: 229 Engineering Hall
Department of Biomedical Engineering
Henry M. Rowan College of Engineering
Rowan University
201 Mullica Hill Road, Glassboro, NJ 08028 USA

Telephone numbers: (856) 256-5393

Email: shimj@rowan.edu

PROFESSIONAL EXPERIENCE:

Assistant Professor
Department of Biomedical Engineering, Rowan University 2016-present

Research Scientist
Micro and Nanotechnology Laboratory, University of Illinois at Urbana – Champaign 2015-2016

Postdoctoral Research Associate
Micro and Nanotechnology Laboratory, University of Illinois at Urbana - Champaign 2011-2015
Beckman Institute, University of Illinois at Urbana – Champaign; University of Notre Dame 2009-2011
Dalton Cardiovascular Research Center, University of Missouri at Columbia 2008-2009

Graduate Research Assistant
Bioengineering, University of Missouri at Columbia 2004-2008
Electrical & Computer Engineering, University of Missouri at Columbia 2002-2004

EDUCATION:

Ph. D. in Bioengineering, 2008
University of Missouri, Columbia, MO
Dissertation title: Single-Molecule Investigation and Nanopore-Integrated Biochip

M.S. in Electrical and Computer Engineering, 2004
University of Missouri, Columbia, MO
Thesis title: Development of 32-Channel Electrotactile Stimulation System

B.S. in Electrical and Computer Engineering, 2000
Hankuk University of Foreign Studies, Seoul, Korea
Thesis title: Recognition of voiced and unvoiced sound using DSP board

PUBLICATIONS: (note: ‡ denote contribution equally, * denote the corresponding author)

JOURNALS:

32. **J. Shim***, Q. Tan, and L.Q. Gu, "Revealing Ion-Regulated Stability of the G-Quadruplex Aptamer using Nanopore-Based Single-Molecule Study", 2018 (In preparation)
31. T. Vu, J. Borgesi, J. Soyring, M. D'Alia, S.-L. Davidson, and **J. Shim***, "Detecting DNA Cytosine Methylation with LiCl Salt Gradient in the Wild-Type α-Hemolysin Nanopore", *Analytical Chemistry*, 2018 (submitted)
30. J. Bello, M. Mowla, N. Troise, J. Soyring, J. Borgesi, and **J. Shim***, "Increased Dwell Time and Occurrence of dsDNA Translocation Events Through Solid-State Nanopores by LiCl Concentration Gradients", *Microchimica Acta*, 2018 (submitted)
29. J. Park, M-C. Lim, H. Ryu, **J. Shim**, S.M. Kim, Y-R. Kim, and T-J. Jeon, "Nanopore Based Detection

of Bacillus Thuringiensis HD-73 Spores Using Aptamers and Versatile DNA Hairpins", *Nanoscale*, 2018, 10; 11955-11961

28. J. Bello and **J. Shim***, "Solid-State Nanopore Fabrication in LiCl by Controlled Dielectric Breakdown", *Biomedical Microdevices*, 2018, 20: 38. https://doi.org/10.1007/s10544-018-0281-9
27. T. Vu, S.-L. Davidson, and **J. Shim***, "Investigation of Compacted DNA Structures Induced by Na+ and K+ Monovalent Cations using Biological Nanopore", *Analyst*, 2018, 148, 906-913
26. T. Vu, S.-L. Davidson, J. Borgesi, M. Maksudul, and **J. Shim***, "Piecing Together the Puzzle: Nanopore Technology in Detection and Quantification of Cancer Biomarkers", *RSC Advances*, 2017, 7, 42653-42666
25. **J. Shim***‡, S. Banerjee‡, H. Qiu, K. Smithe, D. Estrada, J. Bello, E. Pop, K. Schulten, and R. Bashir, "Detection of Methylation on dsDNA using Nanopores in MoS_2 membrane", *Nanoscale*, 2017, 9; 14836-14845 **(Cover Article)**
24. J. Bello, Y-R. Kim, S-M. Kim, T-J. Jeon, and **J. Shim***, "Lipid Bilayer Membrane Technologies: A Review on Single-molecule Studies of DNA Sequencing by using Membrane Nanopores", *Microchimica Acta*, 2017, 184; 1883-1897
23. E. Krueger, **J. Shim**, N. Chang, K. Livingston, P. Davis, E. Graugnard, F. Khalili-Araghi, R. Bashir, D. Estrada, and D. Fologea, "Modeling and Analysis of Intercalant Effects on Circular DNA Conformation", *ACS Nano*, 2016, 10; 8910-8917
22. S. Shim, **J. Shim**, W. Taylor, F. Kosari, G. Vasmatzis, D. Ahlquist, and R. Bashir, "Magnetophoretic-Based Microfluidic Device for DNA Concentration", *Biomedical Microdevices*, 2016, 18:28
21. **J. Shim**, Y. Kim, G. Humphreys, D. Ahlquist, W. Taylor, F. Kosari, G. Vasmatzis, S. Myong, A. Nardulli, and R. Bashir, "Nanopore-based Assay for Detection of Methylation in Double-Strand DNA Fragments", *ACS Nano*, 2015, 9; 290-300
    - Featured in *BRIC*
20. S. Banerjee, J. Wilson, **J. Shim**, M. Shankla, E. Corbin, A. Aksimentiev, and R. Bashir, "Slowing DNA Transport Using Graphene-DNA Interactions", *Advanced Functional Materials*, 2015, 25; 936-946
19. **J. Shim**‡, J.A. Rivera‡ and R. Bashir, "Electron Beam Induced Local Crystallization of HfO_2 Nanopores for Biosensing Applications", *Nanoscale*, 2013, 5; 10887-10893 **(Cover Article)**
18. V. Kurz, E.M. Nelson, **J. Shim** and G. Timp, "Direct Visualization of Single Molecule Translocations through a Synthetic Nanopores Comparable in Size to a Molecule", *ACS Nano*, 2013, 7; 4057-4069
17. **J. Shim**, G.I. Humphreys, B.M. Venkatesan, J.M. Munz, X. Zou, C. Sathe, K. Schulten, F. Kosari, A.M. Nardulli, G. Vasmatzis and R. Bashir, "Detection and Quantification of Methylation in DNA using Solid-State Nanopores", *Scientific Reports (Nature Publishing Group)*, 2013, 3;1389
    - Featured in *Nanotech News at National Cancer Institute*, *Science daily*, *Newswise*, *Science Blog*, *Mayo Clinic*, *Nanowerk*, *Medical News Today*, *e-newsletter of Engineering at Illinois*
16. B. Dorvel, G. Damhorst, V. Chan, **J. Shim**, S. Banerjee, C. Cvetkovic, R. Raman and R. Bashir, "Research Highlights: Highlights from the last year in nanomedicine", *Nanomedicine*, 2013, 8;13-15
15. S. Banerjee‡, **J. Shim**‡, J.A. Rivera, X. Jin, D. Estrada, V. Solovyeva, X. You, J. Pak, E. Pop, N. Aluru and R. Bashir, "Electrochemistry at the Edge of a Single Graphene Layer in a Nanopore", *ACS Nano*, 2013, 1; 834-843
14. E.M. Nelson, V. Kurz, **J. Shim**, W. Timp and G. Timp, "Using a Nanopore for Single Molecule Detection and Single Cell Transfection", *Analyst***,** 2012, 137; 3020-3027
13. K. Park, **J. Shim**, V. Solovyeva, E. Corbin, S. Banerjee and R. Bashir, "Hydrodynamic Loading and Viscous Damping of Patterned Perforations on Microfabricated Resonant Structures", *Applied Physics Letters*, 2012, 100; 154107
12. V. Solovyeva, B.M. Venkatesan, **J. Shim**, S. Banerjee, J.A. Rivera and R. Bashir, "Nanopore Sensors for DNA Analysis", *Proc. SPIE,* 2012, 8373; 83730O
11. **J. Shim**, V. Solovyeva, D. Estrada, S. Banerjee, J.A. Rivera, E. Pop, and R. Bashir, "Graphene

Nanopores for Nucleic Acid Analysis", *Nanotechnology (IEEE NANO)*, 2012, (ISBN: 978-1-4673-2198-3)
- Featured in *TECHONOMY*

10. **J. Shim*** and L.Q. Gu, "Single-Molecule Investigation of G-Quadruplex using a Nanopore Sensor", *Methods***,** 2012, 57; 40-46
9. Q. Tan, **J. Shim,** and L.Q. Gu, "Separation of Heteromeric Potassium Channel Kcv towards Probing Subunit Composition-Regulated Ion Permeation and Gating", *FEBS Letters*, 2010, 584; 1602-1608
8. L.Q. Gu and **J. Shim**, "Single Molecule Sensing by Nanopores and Nanopore Devices", *Analyst*, 2010, 135; 441-451
- *Featured in Journal of Materials Chemistry*

7. **J. Shim**, Q. Tan, and L.Q. Gu, "Single-Molecule Detection of Folding and Unfolding of the G-quadruplex Aptamer in a Nanopore Nanocavity", *Nucleic Acids Research*, 2009, 37; 972-982
- Featured in *Mizzou Engineer Magazine*

6. **J. Shim** and L.Q. Gu, "Encapsulating a Single G-Quadruplex Aptamer in a Protein Nanocavity", *Journal of Physical Chemistry B*, 2008, 112; 8354-8360
5. **J. Shim** and L.Q. Gu, "Stochastic Sensing on a Modular Chip Containing a Single-Ion Channel", *Analytical Chemistry*, 2007, 79; 2207-2213
4. **J. Shim**, M. Yang, and L.Q. Gu, "In Vitro Synthesis, Tetramerization and Single Channel Characterization of Virus-Encoded Potassium Channel Kcv", *FEBS Letters*, 2007, 581; 1027-1034
3. **J. Shim**, W. Liu, and H. Tang, "System Development for Multichannel Electrotactile Stimulation on the Lips", *Medical Engineering and Physics*, 2006, 28; 734-739

BOOK CHAPTERS:

2. **J. Shim*** and L.Q. Gu, "Biotechnology-Utilized Nanopore for Single-Molecule Investigation", In Noemi Rozlosnik editor, *Nanomedicine in Diagnostics*, Science Publishers, 2012 (ISBN: 978-1-57808-738-9)
1. G. Timp, U. Mirsaidov, W. Timp, **J. Shim**, D. Wang, V. Dimitrov, J. Scrimgeour, C. Lin, J. Comer, H.Y. Ho, X. Zou, A. Aksimentiev and K. Schulten, "Third Generation DNA Sequencing with a Nanopore", In Samir M. Iqbal and Rashid Bashir editors, *Nanopores: Sensing and Fundamental Biological Interactions*, Springer Science+Business Media, LLC 2011 (ISBN : 978-1-4419-8251-3)

PATENTS:

4. R. Bashir, B. Venkatesan, G. Vasmatzis and **J. Shim**, Detection and Quantification of Methylation in DNA, (US 20170022546 A1, filed by the University of Illinois)
3. R. Bashir, B. Venkatesan, G. Vasmatzis and **J. Shim**, Detection and Quantification of Methylation in DNA, (WO2015138405A3, filed by the University of Illinois)
2. R. Bashir, B. Venkatesan, G. Vasmatzis and **J. Shim**, Detection and Quantification of Methylation in DNA, (WO2015138405A2, filed by the University of Illinois)
1. L.Q. Gu and **J. Shim**, Stochastic sensor and method to fabricate stochastic sensor, (06UMC015prov-3, filed by the University of Missouri)

HONORS AND AWARDS:

Frances R. Lax Fund award	2018
Who's who, Marquis	2016-2017
Travel Award, Mayo-Illinois Strategic Alliance for Technology-Based Healthcare	2013-2014

INTERNATIONAL CONFERENCE ABSTRACTS AND PRESENTATIONS:

38. J. Bello, M. Mowla, N. Troise, and **J. Shim**, "Slowed Down Double-Stranded DNA Transport through Solid-State Nanopores by Using A LiCl Concentration Gradient", *62nd Biophysical Society Meeting*, San Francisco CA, February 17-21, 2018

37. T. Vu, S-L. Davidson, and **J. Shim**, "Investigation of Compacted DNA Structures Induced by Na+ and K+ Monovalent Cations Using Biological Nanopore", *62nd Biophysical Society Meeting*, San Francisco CA, February 17-21, 2018
36. (Talk) J. Bello, Y. Kim, S. Banerjee, K. Smithe, D. Estrada, S. Myong, A. Nardulli, E. Pop, R. Bashir, and **J. Shim**, "Detection of Methylation on dsDNA at Single-Molecule Level Using Solid-State Nanopores", *62nd Biophysical Society Meeting*, San Francisco CA, February 17-21, 2018
35. **J. Shim**, S. Banerjee, K. Smithe, H. Qiu, D. Estrada, J. Bello, E. Pop, and R. Bashir, "Detection of Biomolecules using Nanopores in MoS_2 membrane", *2017 BMES (Biomedical Engineering Society) Annual Meeting*, Phoenix AZ, October 11-14, 2017
34. H. Ryu, J. Park, M-C. Lim, **J. Shim**, S. M. Kim, Y-R. Kim, T-J. Jeon, "Hairpin based stochastic sensor for bacterial spore detection", 2017 The Korean Society for Biotechnology and Bioengineering - Fall Meeting and International Symposium, Busan Korea(South), October 11-13, 2017
33. (Invited Talk) K. Yocham, E. Krueger, **J. Shim**, C. Scott, R. Brown, K. Fujimoto, E. Tanasse, M. Hondros, R. Bashir, T. Lujan, J. Oxford, D. Estrada, "Applications of Atomically Thin Materials from Biomolecules to Engineered Tissue", *2017 EAMC (European Advanced Materials Congress)*, Stockholm, Sweden, August 22-24, 2017
32. H. Ryu, M-C. Lim, J. Park, **J. Shim**, S. M. Kim, Y-R. Kim, T-J. Jeon, "Nanopore- and Aptamer-based Bacillus thuringiensis HD-73 Spores Sensor", 2017 The Korean Society for Biotechnology and Bioengineering - Spring Meeting and International Symposium, Gyeongju Korea(South), April 5-7, 2017
31. (Talk) **J. Shim**, Y. Kim, G.I. Humphreys, A.M. Nardulli, F. Kosari, G. Vasmatzis, W.R. Taylor, D.A. Ahlquist, S. Myong, and R. Bashir, "Nanopore-Based Detection of Biomarker toward Cancer Diagnostics", *2015 BMES (Biomedical Engineering Society) Annual Meeting*, Tampa FL, October 7-10, 2015
30. (Talk) **J. Shim**, A.M. Nardulli, F. Kosari, G. Vasmatzis, D.A. Ahlquist, and R. Bashir, "Nanopore-Based Methylation Analysis", *Drug Discovery & Therapy World Congress 2015 and Global Biotechnology Congress 2015*, Boston MA, July 22-25, 2015
29. **J. Shim**, Y. Kim, G.I. Humphreys, A.M. Nardulli, F. Kosari, G. Vasmatzis, W.R. Taylor, D.A. Ahlquist, S. Myong, and R. Bashir, "Nanopore-Based Detection of Biomarker for Cancer Diagnostics", *NHGRI Advanced DNA Sequencing Technology Development Meeting*, San Diego CA, May 14-15, 2015
28. (Talk) E. Krueger, **J. Shim**, A.N. Chang, B. Subei, A. Fathizadeh, K. Livingston, P. Davis, E. Graugnard, F. Khalili-Araghi, R. Bashir, D. Estrada, and D. Fologea, "Nanopore Sensors for Analysis of Circular DNA Topology", *59th Biophysical Society Meeting*, Baltimore MD, February 7-11, 2015
27. **J. Shim**, G.I. Humphreys, B.M. Venkatesan, J.M. Munz, X. Zou, C. Sathe, K. Schulten, F. Kosari, A.M. Nardulli, G. Vasmatzis, and R. Bashir, "Detection and Quantification of Methylation in DNA using Solid-State Nanopores", *Individualizing Medicine Conference*, Rochester MN, September 30 – Oct 2, 2013
26. **J. Shim**, G.I. Humphreys, J.M. Munz, F. Kosari, A.M. Nardulli, G. Vasmatzis, and R. Bashir, "Detecting Method for Methylation in DNA using Solid-State Nanopore", *NCI Alliance for Nanotechnology in Cancer (Annual Principal Investigators' Meeting)*, Bethesda MD, September 17 – 19, 2013
25. (Selected as Contributed Talk) J.D. Wood, G.P. Doidge, **J. Shim**, C. Koepke, E.A. Carrion, I. Datye, G.L. Damhorst, E. Salm, Y. Chen, R. Bashir, E. Pop, and J.W. Lyding, "Layered Graphene Membranes for Biomolecule Preservation and Programmable Hydration", *Graphene Week*, Chemnitz, Germany, June 2-7, 2013
24. (Talk) S. Banerjee, **J. Shim**, J.A. Rivera, X. Jin, D. Estrada, V. Solovyeva, X. You, J. Pak, E. Pop, N. Aluru, and R. Bashir, "Electrochemistry at the Edge of a Single Graphene Layer in a Nanopore", *NHGRI Advanced Sequencing Technology Development Meeting*, San Diego CA, May 1-2, 2013
23. (Talk) **J. Shim**, G.I. Humphreys, B.M. Venkatesan, J.M. Munz, X. Zou, C. Sathe, K. Schulten, F.

Kosari, A.M. Nardulli, G. Vasmatzis, and R. Bashir, "Detection and Quantification of Methylation in DNA using Solid-State Nanopores", *NHGRI Advanced Sequencing Technology Development Meeting*, San Diego CA, May 1-2, 2013

22. S. Banerjee, **J. Shim**, J.A. Rivera, X. Jin, D. Estrada, V. Solovyeva, X. You, J. Pak, E. Pop, N. Aluru, and R. Bashir, "Electrochemistry of Graphene Edge Embedded Nanopores", *American Physical Society March Meeting 2013*, Baltimore MD, March 18-22, 2013
21. **J. Shim**, G.I. Humphreys, J.M. Munz, F. Kosari, G. Vasmatzis, A.M. Nardulli, and R. Bashir, "Nanopore-based direct analysis of methylated-DNA/MBD complex", *IEEE EMBS Micro and Nanotechnology in Medicine (MNM'13) Conference*, Mau HI, December 3-7, 2012
20. S. Banerjee, **J. Shim**, J.A. Rivera, X. Jin, D. Estrada, N. Aluru, E. Pop, and R. Bashir, "Stacked Graphene-Al2O3 Nanopore Architecture for DNA detection", *IEEE EMBS Micro and Nanotechnology in Medicine (MNM'13) Conference*, Mau HI, December 3-7, 2012
19. **J. Shim**, G.I. Humphreys, B.M. Venkatesan, J.M. Munz, X. Zou, C. Sathe, K. Schulten, F. Kosari, A.M. Nardulli, G. Vasmatzis, and R. Bashir, "Detection and Quantification of Methylation in DNA using Solid-State Nanopores", *NCI Alliance for Nanotechnology in Cancer (Annual Principal Investigators' Meeting)*, Houston TX, November 13-17, 2012
18. (Invited Talk) **J. Shim**, V. Solovyeva, D. Estrada, S. Banerjee, J.A. Rivera, E. Pop, and R. Bashir, "Graphene Nanopores for Nucleic Acid Analysis", *IEEE NANO 2012 12th International Conference on Nanotechnology*, Birmingham UK, August 20-23, 2012
17. (Talk) **J. Shim**, V. Solovyeva, B.M. Venkatesan, S. Banerjee, D. Estrada, J.A. Rivera, X. Jin, J.M. Munz, F. Kosari, G. Vasmatzis, N. Aluru, A.M. Nardulli, E. Pop, and R. Bashir, "Stacked Graphene Architecture for Detection of DNA and DNA-Protein Complexes", *NHGRI Advanced Sequencing Technology Development Meeting*, San Diego CA, April 11-12, 2012
16. V. Kurz, **J. Shim**, W. Timp, and G. Timp, "Single Cell Electroporation Using A Nanopore", *56th Biophysical Society Meeting*, San Diego CA, February 25-29, 2012
15. (Invited Talk) **J. Shim**, W. Timp, D. Wang, J. Comer, X. Zou, K. Schulten, A. Aksimentiev, and G. Timp, "The Prospects for 3rd Generation DNA Sequencing with a Nanopore", *FNANO (Foundation of NanoScience)*, Snowbird UT, April 11-15, 2011
14. D. Wang, **J. Shim**, W. Timp, A. Ho, A. Aksimentiev, and G. Timp, "Using Measurements of the Ion Current Through a Synthetic Nanopore to Discriminate Nucleotides in a Single DNA Molecule", *55th Biophysical Society Meeting*, Baltimore MD, March 5-9, 2011
13. (Invited Talk) L.Q. Gu, Y. Wang, C. Gao, **J. Shim**, Q. Tan, and S. Ding, "Nanopore Single-Molecule Sensors for Biomedical Detection", *BIT's first Annual World Congress of Nanomedicine 2010*, Beijing China, October 23-25, 2010
12. D. Wang, W. Timp, **J. Shim**, U. Mirsaidov, J. Comer, A. Aksimentiev, and G. Timp, "Discriminating Bases by Stretching Double-Stranded DNA In a Nanopore Study", *54th Biophysical Society Meeting*, San Francisco CA, February 20-24, 2010
11. **J. Shim**, Q. Tan, and L.Q. Gu, "Revealing Programmable Ion-Exchange in A G-Quadruplex Using the Nanopore detector", *54th Biophysical Society Meeting*, San Francisco CA, February 20-24, 2010
10. **J. Shim**, Q. Tan, and L.Q. Gu, "Ion-Regulated Assembling Of the G-Quadruplex Aptamer – A Nanopore Single-Molecule Study", *53rd Biophysical Society Meeting*, Boston MA, February 28-March 4, 2009
9. Q. Tan, **J. Shim,** and L.Q. Gu, "Toward Controlling the Ion Selectivity by Manipulating Individual Subunits Among Four In A Tetrameric K+ Channel", *53rd Biophysical Society Meeting*, Boston MA, February 28-March 4, 2009
8. (Talk) **J. Shim** and L.Q. Gu, "Stochastic Sensing on a Modular Chip Containing a Single Ion Channel", *2008 BMES (Biomedical Engineering Society) Annual Fall Meeting*, St. Louis MO, October 1-4, 2008
7. **J. Shim** and L.Q. Gu, "Single-Molecule Detection of Folding and Unfolding of the G-Quadruplex Aptamer, Using A Protein Nanopore Nanocavity", *2008 BMES (Biomedical Engineering Society)*

Annual Fall Meeting, St. Louis MO, October 1-4, 2008

6. **J. Shim** and L.Q. Gu, "A Guest-Nanocavity Supramolecular System for Non-covalent Single-Molecule Manipulation", *Institute of Biological Engineering Annual Conference*, Chapel Hill NC, March 6-9, 2008
5. (Talk) **J. Shim** and L.Q. Gu, "Biosensing on a modular and portable chip containing a single ion channel", *Institute of Biological Engineering Annual Conference*, Chapel Hill NC, March 6-9, 2008
4. (Talk) **J. Shim** and L.Q. Gu, "A Guest-Nanocavity Supramolecular System for Non-covalent Single-Molecule Manipulation", *52nd Biophysical Society Meeting and 16th IUPAB International Biophysics Congress*, Long Beach CA, February 2-6, 2008
3. **J. Shim** and L.Q. Gu, "Single-Molecule Detection of Folding and Unfolding Of The G-Quadruplex Using A Protein Nanocavity", *52nd Biophysical Society Meeting and 16th IUPAB International Biophysics Congress*, Long Beach CA, February 2-6, 2008
2. **J. Shim** and L.Q. Gu, "Biosensing On A Modular and Portable Chip Containing A Single Ion Channel", *52nd Biophysical Society Meeting and 16th IUPAB International Biophysics Congress*, Long Beach CA, February 2-6, 2008
1. **J. Shim** and L.Q. Gu, **"**In vitro synthesis, tetramerization and single channel characterization of virus-encoded potassium channel Kcv", *51st Biophysical Society Meeting*, Baltimore MD, March 3-7, 2007

REGIONAL CONFERENCE ABSTRACTS AND PRESENTATIONS:

32. (Talk) T. Vu, J. Borgesi, J. Soyring, M. D'Alia, and **J. Shim**, "Detecting cytosine methylation with LiCl salt gradient using the alpha-hemolysin biological nanopore", 44th Annual Northeast Bioengineering Conference, Drexel University, Philadelphia PA, March 28-30, 2018
31. T. Vu, J. Borgesi, and **J. Shim**, "Capturing single-stranded DNA compaction with biological nanopore", 44th Annual Northeast Bioengineering Conference, Drexel University, Philadelphia PA, March 28-30, 2018
30. J. Bello and **J. Shim**, "Fabrication of Solid-State Nanopore in LiCl using Controlled Dielectric Breakdown", 44th Annual Northeast Bioengineering Conference, Drexel University, Philadelphia PA, March 28-30, 2018
29. (Talk) J. Bello, M. Mowla, N. Troise, and **J. Shim**, "Slowed down double-stranded DNA transport through Solid-State Nanopores by Using a LiCl Concentration Gradient", 44th Annual Northeast Bioengineering Conference, Drexel University, Philadelphia PA, March 28-30, 2018
28. **J. Shim**, "Nanopore-based detection of cancer biomarker at molecular level" Faculty Research Day, Rowan University, Glassboro NJ, March 28, 2018
27. **J. Shim**, Y. Kim, G. Humphreys, S. Shim, J. Bello, A. Nardulli, F. Kosari, G. Vasmatzis, W. Taylor, D. Ahlquist, S. Myong, and R. Bashir, "Detection of Methylation in DNA using Nanopores", Life Sciences Future, Philadelphia PA, September 18-19, 2017
26. T. Vu, S. Davidson, J. Borgesi, J. Bello, M. Mowla, and **J. Shim**, "Toward Early Cancer Diagnosis with Biological Nanopore: Detection of 5-Methylcytosine and Cytosine on Single-Stranded DNA using Alpha-Hemolysin", RowanSOM Annual Research Day Conference, Rowan University, Glassboro NJ, May 4, 2017
25. J. Bello, M. Mowla, T. Vu, J. Borgesi, S. Davidson, and **J. Shim**, "Solid-State Nanopore Formation by Controlled Dielectric Breakdown Towards Cancer Related DNA Detection", Engineering Showcase, Rowan University, Glassboro NJ, April 25, 2017
24. T. Vu, S. Davidson, J. Borgesi, J. Bello, M. Mowla, and **J. Shim**, "Toward Early Cancer Diagnosis with Biological Nanopore: Detection of 5-Methylcytosine and Cytosine on Single-Stranded DNA using Alpha-Hemolysin", Engineering Showcase, Rowan University, Glassboro NJ, April 25, 2017
23. J. Bello, M. Mowla, T. Vu, J. Borgesi, S. Davidson, and **J. Shim**, "Solid-State Nanopore Formation by Controlled Dielectric Breakdown Towards Cancer Related DNA Detection", STEM Symposium, Rowan University, Glassboro NJ, April 21, 2017

22. T. Vu, S. Davidson, J. Borgesi, J. Bello, M. Mowla, and **J. Shim**, "Toward Early Cancer Diagnosis with Biological Nanopore: Detection of 5-Methylcytosine and Cytosine on Single-Stranded DNA using Alpha-Hemolysin", STEM Symposium, Rowan University, Glassboro NJ, April 21, 2017
21. T. Vu, J. Bello, and **J. Shim**, "Detection of 5-methylcytosine and cytosine on single-stranded DNA using nanopores", *The 43rd Annual Northeast Bioengineering Conference*, New Jersey Institute of Technology, Newark NJ, March 31 – April 2, 2017
20. **J. Shim**, Y. Kim, G. Humphreys, S. Shim, A. Nardulli, F. Kosari, G. Vasmatzis, W. Taylor, D. Ahlquist, S. Myong, and R. Bashir, "Nanopore-based Assay for Detection of Methylation in Double-Strand DNA Fragments", *Cancer Community at Illinois Fall Reception and Bioengineering External Review*, University of Illinois, Urbana IL, November 10, 2014
19. (Invited talk) **J. Shim**, "Investigation of Single-Molecule Structural Change and Detection of Molecular Biomarker for Cancer", *Nanohour seminar*, Beckman Institute, University of Illinois, Urbana IL, September 24, 2014
18. **J. Shim**, X. Zou, C. Sathe, K. Schulten, and R. Bashir, "Interaction between MBP bound on methylated DNA and SiN Nanopore Surface", *The 10th Annual Biophysics and Computational Biology Symposium*, University of Illinois, Urbana IL, April 23, 2014
17. **J. Shim**, G.I. Humphreys, J.M. Munz, F. Kosari, A.M. Nardulli, G. Vasmatzis, and R. Bashir, "Nanopore-based Detection of MBP bound Methylated DNA", *Illinois – Tsinghua Nanotechnology Symposium jointly held with the CNST 12th Annual Nanotechnology Workshop*, University of Illinois, Urbana IL, April 15-17, 2014
16. **J. Shim**, G.I. Humphreys, B.M. Venkatesan, J.M. Munz, X. Zou, C. Sathe, K. Schulten, F. Kosari, A.M. Nardulli, G. Vasmatzis, and R. Bashir, "Methylated-DNA detection with MBD using solid-state nanopore", *Society of Postdoctoral Scholars 3rd Annual Postdoctoral Research Symposium*, University of Illinois, Urbana IL, January 25, 2013
15. (Invited talk) **J. Shim**, "Nanopore-Based Analysis on Methylated-DNA with MBD", *Nanohour seminar*, Beckman Institute, University of Illinois, Urbana IL, October 3, 2012
14. **J. Shim** and L.Q. Gu, "Single-Molecule Detection of Folding and Unfolding of the G-quadruplex Aptamer in a Nanopore Nanocavity", *Life Sciences Week 2009*, University of Missouri, Columbia MO, April 13-18, 2009
13. **J. Shim**, Q. Tan, and L.Q. Gu, "Encapsulation a Single G-Quadruplex Aptamer in a Protein Nanocavity", *Life Sciences Week 2009*, University of Missouri, Columbia MO, April 13-18, 2009
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