

BIOGRAPHICAL SKETCH

NAME Jingyue Ju	POSITION TITLE Professor of Chemical Engineering and Pharmacology, Director, Center for Genome Technology and Biomolecular Engineering, Columbia University
---------------------------	---

EDUCATION/TRAINING

INSTITUTION AND LOCATION	DEGREE	YEAR(s)	FIELD OF STUDY
University of California at Berkeley	Postdoctoral	1994-95	Genomics Research
University of Southern California	Ph.D.	1994	Bioorganic Chemistry
Dalian Institute of Chemical Physics, Chinese Academy of Sciences	M.S.	1988	Organic Chemistry
Inner Mongolia University, China	B.S	1985	Chemistry

PROFESSIONAL POSITIONS

2011- Present	Samuel Ruben-Peter G. Viele Professor of Engineering, Columbia University
2010- Present	Professor of Chemical Engineering and Pharmacology, Columbia University
2003-Present	Director, Center for Genome Technology and Biomolecular Engineering, Columbia University
2005-Present	Professor of Chemical Engineering and Head of DNA Sequencing and Chemical Biology, Columbia Genome Center, Columbia University
1999-2005	Associate Professor of Chemical Engineering and Head of DNA Sequencing and Chemical Biology, Columbia Genome Center, Columbia University
1995-1999	Senior Scientist & Director, Chemistry & Assay Development, Incyte Genomics, Inc.

AWARDS

Elected Fellow of National Academy of Inventors, 2018.
Distinguished Fundamental Research Award for Next Generation DNA Sequencing Research & Development. Next Generation Sequencing (NGS) Research and Development Association, China, 2017.
Samuel Ruben-Peter G. Viele Professor of Engineering, 2011.
Outstanding Chinese Scholar Achievement Award, Columbia University Chinese Students and Scholars Association, 2004.
Packard Fellowship in Science and Engineering, 2001-2006.
DOE Human Genome Distinguished Postdoctoral Fellowship, 1994-1995.
U.S. Biochemical Postdoctoral Fellowship, 1993.

PROFESSIONAL ACTIVITIES

Session Chair, *Next Generation Sequencing Conference*, July 7-8, 2011, San Francisco.
Organizer and Chair, 2008 International Conference on Genomics, Hong Kong, China, 11/2-11/5, 2008.
Organizer and Chair, 2007 International Conference on Genomics, Hong Kong, China, 10/30-11/2, 2007.
NIH Review Panel (*Genomics Computational Biology and Technology Study Section*) 2005, 2006
Session Chair, "*Symposium on New DNA Sequencing Technologies*", International Conference on Genomics, Hangzhou, China, October 23-24, 2006.
Organizer and Chair, "*New Technologies & Genome Sequencing*" BioArrays-2004-New York Conference, July 26-27, 2004.
Organizer and Chair, "*New Technology and Toxicogenomics*" BioArrays-2003-New York Conference, October 1-2, 2003.
Organizer and Chair, Symposium on Genomics and Chemical Biology, Post 15th International Conference on Phosphorus Chemistry, Beijing, China, August 6-8, 2001.
Chair, DNA Sequencing Technology Session, Human Genome Meeting, Human Genome Organization (HUGO), 1997.

NIH Review Panel (*Genetic and Genomic Approaches to Nervous System Function and Dysfunction*) 2004

NIH Review Panel (*Biophysical and Chemical Sciences*) SBIR/STTR 1997-2001

NSF Review Panel (*Biochemical Engineering and Biotechnology*) 2001

DOE Human Genome Program Review Panel (*Advanced DNA Sequencing Technology*) 1998

Reviewer for the Journal *Proceedings of the National Academy of Sciences*, *Nature Materials*, *Nucleic Acids Research*, *Analytical Chemistry*, *JACS*, *Organic Letters*, *Bioconjugate Chemistry* and *Biotechniques*.

ISSUED US PATENTS

1. United States Patent 10,246,479 (2019) J. Ju, S. Kumar, C. Tao, M. Chien, J.J. Russo, J. Kasianowicz and J.W.F. Robertson. "Method of Preparation of Nanopore and Uses Thereof".
2. United States Patent 10,240,195 (2019) C. Fuller, S. Kumar, J. Ju, R. Davis and R. Chen "Chemical Methods for Producing Tagged Nucleotides".
3. United States Patent 10,144,961 (2018) J. Ju, H. Cao, Z. Li, Q. Meng, J. Guo, S. Zhang and L. Yu. "Synthesis of Cleavable Fluorescent Nucleotides as Reversible Terminators for DNA Sequencing by Synthesis".
4. United States Patent 10,000,801 (2018) J. Ju, D.H. Kim, L. Bi, Q. Meng and X. Li. "Four-color DNA Sequencing by Synthesis Using Cleavable Fluorescent Nucleotide Reversible Terminators".
5. United States Patent 9,868,985 (2018) J. Ju, Z. Li, J.R. Edwards and Y. Itagaki "Massive Parallel Method for Decoding DNA and RNA".
6. United States Patent 9,909,177 (2018) J. Ju, J. Wu and D.H. Kim "Pyrosequencing Methods and Related Compositions".
7. United States Patent 9,890,426 (2018) J. Ju, Z. Li, S. Kalachikov and C. Fuller "Pore-Forming Protein Conjugate Compositions and Methods".
8. United States Patent 9,738,922 (2017) T.H. Bestor, J.R. Edwards, J. Ju and X. Li "Universal Methylation Profiling Methods".
9. United States Patent 9,725,480 (2017) J. Ju, Z. Li, J.R. Edwards and Y. Itagaki "Massive Parallel Method for Decoding DNA and RNA".
10. United States Patent 9,719,139 (2017) J. Ju, Z. Li, J.R. Edwards and Y. Itagaki "Massive Parallel Method for Decoding DNA and RNA".
11. United States Patent 9,718,852 (2017) J. Ju, Z. Li, J.R. Edwards and Y. Itagaki "Massive Parallel Method for Decoding DNA and RNA".
12. United States Patent 9,708,358 (2017) J. Ju, Z. Li, J.R. Edwards and Y. Itagaki "Massive Parallel Method for Decoding DNA and RNA".
13. United States Patent 9,670,539 (2017) J. Ju, H. Cao, Z. Li, Q. Meng, J. Guo, S. Zhang, L. Yu. "Synthesis of Cleavable Fluorescent Nucleotides as Reversible Terminators for DNA Sequencing by Synthesis".
14. United States Patent 9,624,539 (2017) J. Ju, J. Wu, Z. Li. "DNA Sequencing by Synthesis Using Raman and Infrared Spectroscopy Detection".
15. United States Patent 9,528,151 (2016) J. Ju, D.H. Kim, L. Bi, Q. Meng, X. Li. "Four-color DNA Sequencing by Synthesis Using Cleavable Fluorescent Nucleotide Reversible Terminators".
16. United States Patent 9,297,042 (2016) J. Ju, L. Bi, D.H. Kim, Q. Meng. "Chemically Cleavable 3'-O-Allyl-dNTP-Allyl-Fluorophore Fluorescent Nucleotide Analogues and Related Methods".
17. United States Patent 9,255,292 (2016) J. Ju, Q. Meng, D.H. Kim, L. Bi, X. Bai, N. Turro. "Synthesis of Four-color 3'-O-allyl Modified Photocleavable Fluorescent Nucleotides and Related Methods".
18. United States Patent 9,250,169 (2016) J. Ju, D.W. Landry, Q. Lin, T. Nguyen, R. Pei, C. Oiu, M.N. Stojanovic "Selective Capture and Release of Analytes".
19. United States Patent 9,175,342 (2015) J. Ju, H. Cao, Z. Li, Q. Meng, J. Guo, S. Zhang "Synthesis of Cleavable Fluorescent Nucleotides as Reversible Terminators for DNA Sequencing by Synthesis".
20. United States Patent 9,169,510 (2015) J. Ju, J. Wu, D.H. Kim "Pyrosequencing Methods and Related Compositions".

21. United States Patent 9,133,511 (2015) J. Ju, Z. Li, J.R. Edwards and Y. Itagaki “*Massive Parallel Method for Decoding DNA and RNA*”.
22. United States Patent 9,115,163 (2015) J. Ju, D.H. Kim, J. Guo, Q. Meng, Z. Li, H. Cao “*DNA Sequencing with Non-fluorescent Nucleotide Reversible Terminators and Cleavable Label Modified Nucleotide Terminators*”.
23. United States Patent 8,889,348 (2014) J. Ju “*DNA Sequencing by Nanopore Using Modified Nucleotides*”.
24. United States Patent 8,796,432 (2014) J. Ju, L. Bi, D.H. Kim, Q. Meng “*Chemically Cleavable 3'-O-Allyl-dNTP-Allyl-Fluorophore Fluorescent Nucleotide Analogues and Related Methods*”.
25. United States Patent 8,298,792 (2012) J. Ju, D.H. Kim, L. Bi, Q. Meng and X. Li “*Four-Color DNA Sequencing By Synthesis Using Cleavable Fluorescent Nucleotide Reversible Terminators*”.
26. United States Patent 8,088,575 (2012) J. Ju, Z. Li, J.R. Edwards and Y. Itagaki “*Massive Parallel Method for Decoding DNA and RNA*”.
27. United States Patent 7,982,029 (2011) J. Ju, Q. Meng, D.H. Kim, L. Bi, X. Bai and N.J. Turro “*Synthesis of Four Color 3'O-allyl, Modified Photocleavable Fluorescent Nucleotides and Related Methods*”.
28. United States Patent 7,883,869 (2011) J. Ju, D.H. Kim, L. Bi, Q. Meng and X. Li “*Four-Color DNA Sequencing By Synthesis Using Cleavable Fluorescent Nucleotide Reversible Terminators*”.
29. United States Patent 7,790,869 (2010) J. Ju, Z. Li, J.R. Edwards and Y. Itagaki “*Massive Parallel Method for Decoding DNA and RNA*”.
30. United States Patent 7,713,698 (2010) J. Ju, Z. Li, J.R. Edwards and Y. Itagaki “*Massive Parallel Method for Decoding DNA and RNA*”.
31. United States Patent 7,635,578 (2009) J. Ju, Z. Li, J.R. Edwards and Y. Itagaki “*Massive Parallel Method for Decoding DNA and RNA*”.
32. United States Patent 7,622,279 (2009) J. Ju, “*Photocleavable Fluorescent Nucleotides for DNA Sequencing on Chip Constructed by Site-Specific Coupling Chemistry*”.
33. United States Patent 7,345,159 (2008) J. Ju, Z. Li, J.R. Edwards and Y. Itagaki “*Massive Parallel Method for Decoding DNA and RNA*”.
34. United States Patent 7,074,597 (2006) J. Ju “*Multiplex Genotyping Using Solid Phase Capturable Dideoxynucleotides and Mass Spectrometry*”.
35. United States Patent 7,015,000 (2006) R.A. Mathies, A.N. Glazer and J. Ju “*Probes Labeled with Energy Transfer Coupled Dyes*”.
36. United States Patent 6,664,079 (2003) J. Ju, Z. Li, J.R. Edwards and Y. Itagaki “*Massive Parallel Method for Decoding DNA and RNA*”.
37. United States Patent 6,627,748 (2003) J. Ju, Z. Li, A. Tong and J. Russo “*Combinatorial Fluorescence Energy Transfer Tags and their Applications for Multiplex Genetic Analyses*”.
38. United States Patent 6,544,744 (2003) R.A. Mathies, A.N. Glazer and J. Ju “*Probes Labeled with Energy Transfer Coupled Dyes*”.
39. United States Patent 6,177,247 (2001) R.A. Mathies, A.N. Glazer and J. Ju “*Detection Methods Using Probes Labeled with Energy Transfer Coupled Dyes for DNA Fragment Analysis*”.
40. United States Patent 6,046,005 (2000) J. Ju, K. Konrad. “*Nucleic Acid Sequencing with Solid Phase Capturable Terminators Comprising a Cleavable Linking Group*”.
41. United States Patent 6,150,107 (2000) A.N. Glazer, R.A. Mathies, S-C. Hung, and J. Ju “*Methods of Sequencing and Detection Using Energy Transfer Labels with Cyanine Dyes as Donor Chromophores*”.
42. United States Patent 6,028,190 (2000) R.A. Mathies, A.N. Glazer and J. Ju “*Probes Labeled with Energy Transfer Coupled Dyes*”.
43. United States Patent 5,876,936 (1999) J. Ju “*Nucleic Acid Sequencing with Solid Phase Capturable Terminators*”.
44. United States Patent 5,952,180 (1999) J. Ju “*Sets of Energy Transfer Fluorescent Tags and Their Use in Multi-Component Analysis*”.
45. United States Patent 5,869,255 (1999) R.A. Mathies, A.N. Glazer and J. Ju “*Probes Labeled With Energy Transfer Coupled Dyes Exemplified with DNA Fragment Analysis*”.

46. United States Patent 5,804,386 (1998) J. Ju “*Sets of Energy Transfer Fluorescent Tags and Their Use in Multi-Component Analysis*”.
47. United States Patent 5,707,804 (1998) R.A. Mathies, A.N. Glazer and J. Ju “*Primers Labeled with Energy Transfer Coupled Dyes for DNA Sequencing*”.
48. United States Patent 5,728,528 (1998) R.A. Mathies, A.N. Glazer and J. Ju “*Universal Spacer/Energy Transfer Dyes*”.
49. United States Patent 5,853,992 (1998) A.N. Glazer, S-C. Hung, R.A. Mathies, and J. Ju “*Cyanine Dyes with High-Absorbance Cross Section as Donor Chromophores in Energy Transfer Labels*”.
50. United States Patent 5,814,454 (1998) J. Ju “*Sets of Energy Transfer Fluorescent Tags and Their Use in Multi-Component Analysis*”.
51. United States Patent 5,654,419 (1997) R.A. Mathies, A.N. Glazer and J. Ju “*Fluorescent Labels and Their Use in Separations*”.
52. United States Patent 5,688,648 (1997) R.A. Mathies, A.N. Glazer and J. Ju “*Probes Labeled with Energy Transfer Coupled Dyes*”.

SELECTED PUBLICATIONS

1. “*Photochemical Conversion of a Cytidine Derivative to a Thymidine Analog via [2+2]-Cycloaddition*”. X. Li, E. Erturk, X. Chen, S. Kumar, C. Guo, S. Jockusch, J. J. Russo, T. H. Bestor, J. Ju. *Photochemical & Photobiological Sciences*. 2018, **17**, 1049-1055.
2. “*Saturation Mutagenesis Reveals Manifold Determinants of Exon Definition*”. S. Ke, V. Anquetil, J. Rojas-Zamalloa, A. Maity, A. Yang, M. A. Arias, S. M. Kalachikov, J. Russo, J. Ju, L. A. Chasin. *Genome Research*. 2018, **28**, 11-24.
3. “*Real-Time Single-Molecule Electronic DNA Sequencing by Synthesis Using Polymer-Tagged Nucleotides on a Nanopore Array*”. C. W. Fuller, S. Kumar, M. Porel, M. Chien, A. Bibillo, P. B. Stranges, M. Dorwart, C. Tao, Z. Li, W. Guo, S. Shi, D. Korenblum, A. Trans, A. Aguirre, E. Liu, E. Harada, J. Pollard, A. Bhat, C. Cech, A. Yang, C. Arnold, M. Palla, J. S. Hovis, R. Chen, I. Morozova, S. Kalachikov, J.J. Russo, J. Kasianowicz, R. Davis, S. Roever, G.M. Church, J. Ju. *Proceedings of the National Academy of Sciences USA*. 2016, **113**, 5233-5238.
4. “*Design and Characterization of a Nanopore-Coupled Polymerase for Single-Molecule DNA Sequencing by Synthesis on An Electrode Array*”. P. B. Stranges, M. Palla, S. Kalachikov, J. Nivala, M. Dorwart, A. Trans, S. Kumar, M. Porel, M. Chien, C. Tao, I. Morozova, Z. Li, S. Shi, A. Aberra, C. Arnold, A. Yang, A. Aguirre, E.T. Harada, D. Korenblum, J. Pollard, A. Bhat, D. Gremyachinskiy, A. Bibillo, R. Chen, R. Davis, J.J. Russo, C.W. Fuller, S. Roever, J. Ju, G.M. Church. *Proceedings of the National Academy of Sciences USA*. 2016, **113**, E6749–E6756.
5. “*DNA Sequencing by Synthesis Using 3'-O-azidomethyl Nucleotide Reversible Terminators and Surface-Enhanced Raman Spectroscopic Detection*”. M. Palla, W. Guo, S. Shi, Z. Li, J. Wu, S. Jockusch, C. Guo, J.J. Russo, N.J. Turro, J. Ju. *Royal Society of Chemistry Advances*, 2014, **4**, 49342-49346.
6. “*A Strategy to Capture and Characterize the Synaptic Transcriptome*”. S.V. Puthanveetil, I. Antonov, S. Kalachikov, P. Rajasethupathy, Y.B. Choi, A.B. Kohn, M. Citarella, F. Yu, K.A. Karl, M. Kinet, I. Morozova, J.J. Russo, J. Ju, L.L. Moroz, E.R. Kandel. *Proceedings of the National Academy of Sciences USA*. 2013, **110**, 7464-7469.
7. “*PEG-labeled Nucleotides and Nanopore Detection for Single Molecule DNA Sequencing by Synthesis*”. S. Kumar, C. Tao, M. Chien, B. Hellner, A. Balijepalli, J. W. F. Robertson, Z. Li, J. J. Russo, J. E. Reiner, J. J. Kasianowicz, J. Ju. *Scientific Reports*. 2012, **2**, 684, 1-8.
8. “*Mitochondrial SNP Genotyping by MALDI-TOF Mass Spectrometry Using Cleavable Biotinylated Dideoxynucleotides*”. C. Qiu, S. Kumar, J. Guo, J. Lu, S. Shi, S.M. Kalachikov, J.J. Russo, A.B. Naini, E.A. Schon, J. Ju. *Analytical Biochemistry*, 2012, **427**, 202-210.
9. “*Design and Synthesis of Cleavable Biotinylated Dideoxynucleotides for DNA Sequencing by MALDI-TOF Mass Spectrometry*”. C. Qiu, S. Kumar, J. Guo, L. Yu, W. Guo, S. Shi, J. J. Russo, J. Ju. *Analytical Biochemistry*, 2012, **427**, 193-201.
10. “*Fluorescent Hybridization Probes for Nucleic Acid Detection*”. J. Guo, J. Ju, N.J. Turro. *Anal. Bioanal. Chem.* 2012, **402**, 3115-3125.

11. “CdSe/ZnS Core Shell Quantum Dot-based FRET Binary Oligonucleotide Probes for Detection of Nucleic Acids”. Y. Peng, C. Qiu, S. Jockusch, A.M. Scott, Z. Li, N.J. Turro, J. Ju. *Photochem. Photobiol. Sci.* 2012, **11**, 881-884.
12. “Quantitative Evaluation of All Hexamers as Exonic Splicing Elements”. S. Ke, S. Shang, S. M. Kalachikov, I. Morozova, L. Yu, J. J. Russo, J. Ju, L.A. Chasin. *Genome Research.* 2011, **21**, 1360-1374.
13. “Translational Control Analysis by Translationally Active RNA Capture/Microarray Analysis”. K. Kudo, Y. Xi, Y. Wang, B. Song, E. Chu, J. Ju, J.J. Russo, J. Ju. *Nucleic Acids Research.* 2010, **38**, e104.
14. “An Integrated System for DNA Sequencing by Synthesis Using Novel Nucleotide Analogues”. J. Guo, L. Yu, N.J. Turro, J. Ju. *Acc. Chem. Research.* 2010, **43**, 551-563.
15. “Four-color DNA Sequencing with 3'-O-modified Nucleotide Reversible Terminators and Chemically Cleavable Fluorescent Dideoxynucleotides”. J. Guo, N. Xu, Z. Li, S. Zhang, J. Wu, D. Kim, M. S. Marma, Q. Meng, H. Cao, X. Li, S. Shi, L. Yu, S. Kalachikov, J.J. Russo, N.J. Turro, J. Ju. *Proceedings of the National Academy of Sciences USA.* 2008, **105**, 9145-9150.
16. “Genetic Architecture of the Human Tryptophan Hydroxylase 2 Gene: Existence of Neural Isoforms and Relevance for Major Depression”. F. Haghghi, H. Bach-Mizrachi, YY. Huang, V. Arango, S. Shi, AJ. Dwork, G. Rosoklija, HT. Sheng, I. Morozova, J. Ju, JJ. Russo, JJ. Mann. *Mol Psychiatry.* 2008, **13**, 813-820.
17. “3'-O-Modified Nucleotides as Reversible Terminators for Pyrosequencing”. J. Wu, S. Zhang, Q. Meng, H. Cao, Z. Li, X. Li, S. Shi, D. Kim, N.J. Turro, J. Ju. *Proceedings of the National Academy of Sciences USA.* 2007, **104**, 16462-16467.
18. “Design and Characterization of Two-dye and Three-dye Binary Fluorescent Probes for mRNA Detection”. A. A. Martí, X. Li, S. Jockusch, N. Stevens, Z. Li, B. Raveendra, S. Kalachikov, I. Morozova, J. J. Russo, D.L. Akins, J. Ju, N.J. Turro. *Tetrahedron*, 2007, **63**, 3591-3600.
19. “Inorganic-Organic Hybrid Luminescent Binary Probe for DNA Detection Based on Spin-Forbidden Resonance Energy Transfer”. A.A. Martí, C. Puckett, J. Dyer, N. Stevens, S. Jockusch, J. Ju, J.K. Barton, N.J. Turro. *J. Am. Chem. Soc.* 2007, **129**, 8680-8681.
20. “A Mammalian microRNA Expression Atlas Based on Small RNA Library Sequencing”. P. Landgraf, M. Rusu, R. Sheridan, A. Sewer, N. Iovino, A. Aravin, S. Pfeffer, A. Rice, A.O. Kamphorst, M. Landthaler, C. Lin, N.D. Socci, L. Hermida, V. Fulci, S. Chiaretti, R. Foà, J. Schliwka, U. Fuchs, A. Novosel, R.R. Müller, B. Schermer, U. Bissels, J. Inman, Q. Phan, M. Chien, D.B. Weir, R. Choksi, G. De Vita, D. Frezzetti, H.I. Trompeter, V. Hornung, G. Teng, G. Hartmann, M. Palkovits, R. Di Lauro, P. Wernet, G. Macino, C.E. Rogler, J.W. Nagle, J. Ju, F.N. Papavasiliou, T. Benzing, P. Lichter, W. Tam, M.J. Brownstein, A. Bosio, A. Borkhardt, J.J. Russo, C. Sander, M. Zavolan, T. Tuschl. *Cell.* 2007, **129**, 1401-1414.
21. “Cellular Cofactors Affecting Hepatitis C Virus Infection and Replication”. G. Randall, M. Panis, J.D. Cooper, T.L. Tellinghuisen, K.E. Sukhodolets, S. Pfeffer, M. Landthaler, P. Landgraf, S. Kan, B.D. Lindenbach, M. Chien, D.B. Weir, J.J. Russo, J. Ju, M.J. Brownstein, R. Sheridan, C. Sander, M. Zavolan, T. Tuschl, C.M. Rice. *Proceedings of the National Academy of Sciences USA.* 2007, **104**, 12884-12889.
22. “Fluorescent Hybridization Probes for Sensitive and Selective DNA and RNA Detection”. A.A. Martí, S. Jockusch, N. Stevens, J. Ju, N.J. Turro. *Acc. Chem. Res.* 2007, **40**, 402-409.
23. “Quantitative Technologies Establish a Novel microRNA Profile of Chronic Lymphocytic Leukemia”. V. Fulci, S. Chiaretti, M. Goldoni, G. Azzalin, N. Carucci, S. Tavolaro, L. Castellano, A. Magrelli, F. Citarella, M. Messina, R. Maggio, N. Peragine, S. Santangelo, F.R. Mauro, P. Landgraf, T. Tuschl, D.B. Weir, M. Chien, J.J. Russo, J. Ju, R. Sheridan, C. Sander, M. Zavolan, A. Guarini, R. Foa, G. Macino. *Blood.* 2007, **109**, 4944-4951.
24. “Four-Color DNA Sequencing by Synthesis Using Cleavable Fluorescent Nucleotide Reversible Terminators”. J. Ju, D. Kim, L. Bi, Q. Meng, X. Bai, Z. Li, X. Li, M.S. Marma, S. Shi, J. Wu, J.R. Edwards, A. Romu, N.J. Turro. *Proceedings of the National Academy of Sciences USA.* 2006, **103**, 19635-19640.
25. “Neuronal Transcriptome of *Aplysia*: Neuronal Compartments and Circuitry”. L.L. Moroz, J.R. Edwards, S.V. Puthanveetil, A. Kohn, T. Ha, A. Heyland, B. Kudsén, A. Sahni, F. Yu, L. Liu, S.

- Jezzini, R. Sadreyev, P. Lovell, W. Iannuccilli, M. Chen, T. Nguyen, H. Sheng, R. Shaw, S. Kalachikov, Y. Panchin, W. Farmerie, J.J. Russo, J. Ju, E.R. Kandel. *Cell*. 2006, **127**, 1453-1467.
26. "Design and Synthesis of a Chemically Cleavable Fluorescent Nucleotide 3'-O-Allyl-dGTP-allyl-Bodipy-FL-510 as a Reversible Terminator for DNA Sequencing by Synthesis". L. Bi, D. H. Kim, J. Ju. *J. Am. Chem. Soc.* 2006, **128**, 2542-2543.
 27. "Combinatorial Fluorescence Energy Transfer Molecular Beacons for Probing Nucleic Acid Sequences". X. Li, Z. Li, A. Marti, S. Jockusch, N. Stevens, D.L. Akins, N.J. Turro, J. Ju. *Photochemical & Photobiological Sciences*. 2006, **5**, 896-902.
 28. "Design and Synthesis of a Photocleavable Fluorescent Nucleotide 3'-O-Allyl-dGTP-PC-Bodipy-FL-510 as a Reversible Terminator for DNA Sequencing by Synthesis". Q. Meng, D.H. Kim, X. Bai, L. Bi, N.J. Turro, J. Ju. *J. Org. Chem.* 2006, **71**, 3248-3252.
 29. "Pyrene Binary Probes for Unambiguous Detection of mRNA Using Time-Resolved Fluorescence Spectroscopy". A. Marti, X. Li, S. Jockusch, Z. Li, B. Raveendra, S. Kalachikov, J. Russo, I. Morozova, S. Puthanveetil, J. Ju, N.J. Turro. *Nucleic Acids Research*. 2006, **34**, 3161-3168.
 30. "Molecular Beacons with Intrinsically Fluorescent Nucleotides". A. Marti, S. Jockusch, Z. Li, J. Ju, N.J. Turro. *Nucleic Acids Research*. 2006, **34**, e50.
 31. "The Large-Scale Structure of Genomic Methylation Patterns". R.A. Rollins, F.G. Haghghi, J.R. Edwards, J. Ju, T.H. Bestor. *Genome Research*. 2006, **16**, 157-163.
 32. "Computational Prediction of DNA Methylation Landscape in the Human Genome". R. Das, N. Dimitrova, Z.Y. Xuan, R.A. Rollins, F.G. Haghghi, J.R. Edwards, J. Ju, T.H. Bestor, M.Q. Zhang. *Proceedings of the National Academy of Sciences USA*. 2006, **103**, 10713-10716.
 33. "A Novel Class of Small RNAs Bind to MILI Protein in Mouse Testes". Aravin, D. Gaidatzis, S. Pfeffer, M. Quintana, P. Morris, S. Kuramochi-Miyagawa, T. Nakano, M. Chien, J.J. Russo, J. Ju, R. Sheridan, C. Sander, M. Zavolan, T. Tuschl. *Nature*. 2006, **442**, 203-207.
 34. "Spectroscopic Investigation of a FRET Molecular Beacon Containing Two Fluorophores for Probing DNA/RNA Sequences". S. Jockusch, A.A. Marti, N.J. Turro, Z. Li, X. Li, J. Ju, N. Stevens, D. L. Akins. *Photochemical & Photobiological Sciences*. 2006, **5**, 493-498.
 35. "MassTag Polymerase Chain Reaction Detection of Respiratory Pathogens, Including A New Rhinovirus Genotype, that Caused Influenza-Like Illness in New York State During 2004-2005". D. Lamson, N. Renwick, V. Kapoor, Z. Liu, G. Palacios, J. Ju, A. Dean, K. St George, T. Briese, W. I. Lipkin. *Journal of Infectious Diseases*. 2006, **194**, 1398-1402
 36. "MassTag Polymerase Chain Reaction for Differential Diagnosis of Viral Hemorrhagic Fevers". G. Palacios, T. Briese, V. Kapoor, O. Jabado, Z. Liu, M. Venter, J. Zhai, N. Renwick, A. Grolla, T. W. Geisbert, C. Drosten, J. Towner, J. Ju, J. Paweska, S. Nichol, R. Swanepoel, H. Feldmann, P. Jahrling, W.I. Lipkin. *Emerging Infectious Diseases*. 2006, **12**, 692-695.
 37. "Multiplex Single Nucleotide Polymorphism Detection by Combinatorial Fluorescence Energy Transfer Tags and Molecular Affinity" A. K. Tong, J. Ju. *Methods in Molecular Biology*. 2006, **335**, 201-214.
 38. "Prognostic Values of microRNAs in Colorectal Cancer". X. Yaguang, A. Formentini, M. Chien, D.B. Weir, J.J. Russo, J. Ju, M. Kornmann, J. Ju. *Biomarker Insights*. 2006, **2**, 113-121.
 39. "Four-Color DNA Sequencing by Synthesis on Chip Using Photocleavable Fluorescent Nucleotide Analogues". T. S. Seo, X. Bai, D. H. Kim, Q. Meng, S. Shi, H. Ruparel, Z. Li, N. Turro, J. Ju. *Proceedings of the National Academy of Sciences USA*. 2005, **102**, 5926-5931.
 40. "Design and Synthesis of a 3'-O-Allyl Photocleavable Fluorescent Nucleotide as a Reversible Terminator for DNA Sequencing By Synthesis". H. Ruparel, L. Bi, Z. Li, X. Bai, D. H. Kim, N.J. Turro, J. Ju. *Proceedings of the National Academy of Sciences USA*. 2005, **102**, 5932-5937.
 41. "Mass Spectrometry DNA Sequencing". J. R. Edwards, H. Ruparel, J. Ju. *Mutation Research*. 2005, **573**, 3-12.
 42. "Molecular Engineering Approaches for DNA Sequencing and Analysis". X. Bai, J.R. Edwards, J. Ju. *Expert Review of Molecular Diagnostics*. 2005, **5**, 797-808.
 43. "Two-Photon Excitation Induced Fluorescence of a Tri-fluorophore Labeled DNA". S. Jockusch, Z. Li, J. Ju, N.J. Turro. *Photochemistry and Photobiology*. 2005, **81**, 238-241.

44. "The Developmental miRNA Profiles of Zebrafish as Determined by Small RNA Cloning". P.Y. Chen, H. Manninga, K. Slanchev, M. Chien, J.J. Russo, J. Ju, R. Sheridan, C. Sander, M. Zavolan, T. Tuschl. *Genes and Development*. 2005, **11**, 1288-1293.
45. "Identification of microRNAs of the Herpesvirus Family". S. Pfeffer, A. Sewer, M. Lagos-Quintana, R. Sheridan, C. Sander, F.A. Grasser, L. F. van Dyk, C. K. Ho, S. Shuman, M. Chien, J.J. Russo, J. Ju, G. Randall, B. D. Lindenbach, C. M. Rice, V. Simon, D. D. Ho, M. Zavolan, T. Tuschl. *Nature Methods*. 2005, **2**, 269-276.
46. "Diagnostic System for Rapid and Sensitive Differential Detection of Pathogens". T. Briese, G. Palacios, M. Kokoris, O. Jabado, Z. Liu, N. Renwick, V. Kapoor, I. Casas, F. Pozo, R. Limberger, P. Perez-Brena, J. Ju, W. I. Lipkin. *Emerging Infectious Diseases*. 2005, **11**, 310-313.
47. "Identification of Virus-Encoded microRNAs". S. Pfeffer, M. Zavolan, F.A. Grasser, M. Chien, J.J. Russo, J. Ju, B. John, A.J. Enright, D. Marks, C. Sander, T. Tuschl. *Science*. 2004, **304**, 734-736.
48. "Photocleavable Fluorescent Nucleotides for DNA Sequencing on a Chip Constructed by Site-Specific Coupling Chemistry". T. S. Seo, X. Bai, Z. Li, H. Ruparel, N.J. Turro, J. Ju. *Proceedings of the National Academy of Sciences USA*. 2004, **101**, 5488-5493.
49. "Thirty Fold Multiplex Genotyping of p53 Gene Using Solid Phase Capturable Dideoxynucleotides and Mass Spectrometry". S. Kim, M. Ulz, T. Nguyen, C. Li, B. Tycko, J. Ju. *Genomics*. 2004, **83**, 924-931.
50. "Digital Detection of Genetic Mutations Using SPC-Sequencing". H. Ruparel, M. E. Ulz, S. Kim, J. Ju. *Genome Research*. 2004, **14**, 296-300.
51. "Design and Synthesis of a Photocleavable Biotinylated Nucleotide for DNA Analysis by Mass Spectrometry". X. Bai, S. Kim, Z. Li, N.J. Turro, J. Ju. *Nucleic Acids Research*. 2004, **32**, 535-541.
52. "1,3-Dipolar Cycloaddition of Azides with Electron-deficient Alkynes Under Mild Condition in Water". Z. Li, T. S. Seo, J. Ju. *Tetrahedron Letters*. 2004, **45**, 3143-3146.
53. "The Genomic Sequence of the Accidental Pathogen *Legionella Pneumophila*". M. Chien, I. Morozova, S. Shi, H. Sheng, J. Chen, S.M. Gomez, G. Asamani, K. Hill, J. Nuara, M. Feder, J. Rineer, J.J. Greenberg, V. Steshenko, S.H. Park, B. Zhao, E. Teplitskaya, J.R. Edwards, S. Pampou, A. Georghiou, I.C. Chou, W. Iannuccilli, M.E. Ulz, D.H. Kim, A. Geringer-Sameth, C. Goldsberry, P. Morozov, S.G. Fischer, G. Segal, X. Qu, A. Rzhetsky, P. Zhang, E. Cayanis, P.J. De Jong, J. Ju, S. Kalachikov, H.A. Shuman, J.J. Russo. *Science*. 2004, **305**, 1966-1968.
54. "A Photocleavable Fluorescent Nucleotide for DNA Sequencing and Analysis". Z. Li, X. Bai, H. Ruparel, S. Kim, N.J. Turro, J. Ju. *Proceedings of the National Academy of Sciences USA*. 2003, **100**, 414-419.
55. "Digital Genotyping Using Molecular Affinity and Mass Spectrometry". S. Kim, H. D. Ruparel, T. C. Gilliam, J. Ju. *Nature Reviews Genetics*. 2003, **4**, 1001-1008.
56. "Photocleavage of a 2-Nitrobenzyl Linker Bridging a Fluorophore to the 5' End of DNA". X. Bai, Z. Li, S. Jockusch, N.J. Turro, J. Ju. *Proceedings of the National Academy of Sciences USA*. 2003, **100**, 409-413.
57. "Multiplex Genotyping of the Human β 2-Adrenergic Receptor Gene Using Solid Phase Capturable Dideoxynucleotides and Mass Spectrometry". S. Kim, S. Shi, T. Bonome, J.R. Edwards, J.J. Russo, J. Ju. *Analytical Biochemistry*. 2003, **316**, 251-258.
58. "Site-Specific Fluorescent Labeling of DNA Using Staudinger Ligation". T. S. Seo, C. Wang, Z. Li, H. Ruparel, J. Ju. *Bioconjugate Chemistry*. 2003, **14**, 697-701.
59. "Identification of Critical Residues in a Class C β -Lactamase Using Combinatorial Scanning Mutagenesis". S. D. Goldberg, W. Iannuccilli, T. Nguyen, J. Ju, V.W. Cornish. *Protein Science*. 2003, **12**, 1633-1645.
60. "Solid Phase Capturable Dideoxynucleotides for Multiplex Genotyping Using Mass Spectrometry". S. Kim, J. R. Edwards, L. Deng, W. Chung, J. Ju. *Nucleic Acids Research*. 2002, **30**, e78 (p1-6).
61. "Click Chemistry to Construct Fluorescent Oligonucleotides for DNA Sequencing". T. S. Seo, Z. Li, H. Ruparel, J. Ju. *Journal of Organic Chemistry*. 2002, **68**, 609-612.

62. "Single-nucleotide Polymorphism Detection by Combinatorial Fluorescence Energy Transfer Tags and Biotinylated Dideoxynucleotides". A. K. Tong, J. Ju. *Nucleic Acids Research*. 2002, **30**, e19 (p1-7).
63. "Synthesis of Oligodeoxyribonucleoside Phosphorothioates Using Lawesson's Reagent for the Sulfur Transfer Step". J. Ju, C. McKenna, *Bioorganic & Medicinal Chemistry Letters*. 2002, **12**, 1643-1645.
64. "DNA Sequencing with Solid Phase Capturable Dideoxynucleotides and Energy Transfer Primers". J. Ju. *Analytical Biochemistry*. 2002, **309**, 35-39.
65. "Combinatorial Fluorescence Energy Transfer Tags for Multiplex Biological Assays". A. K. Tong, Z. Li, G. S. Jones, J.J. Russo, J. Ju. *Nature Biotechnology*. 2001, **19**, 756-759.
66. "DNA Sequencing Using Biotinylated Dideoxynucleotides and Mass Spectrometry". J.R. Edwards, Y. Itagaki, J. Ju. *Nucleic Acids Research*. 2001, **29**, e104 (p1-6).
67. "Triple Fluorescence Energy Transfer in Covalently Tri-Chromophore-Labeled DNA". A. Tong, S. Jockusch, Z. Li, H-R. Zhu, D. Akins, N.J. Turro, J. Ju. *J. Am. Chem. Soc.* 2001, **123**, 12923-12924.
68. "Energy Transfer Fluorescent Primers: State-of-the-art in High-throughput DNA Sequencing". J. Ju, A.N. Glazer, R.A. Mathies. *Genome Digest*, 1997, 8-9.
69. "Cassette Labeling for Facile Construction of Energy Transfer Fluorescent Primers". J. Ju, A.N. Glazer, R.A. Mathies. *Nucleic Acids Research*, 1996, **24**, 1144-1148.
70. "Energy Transfer Primers: A New Fluorescence Labeling Paradigm for DNA Sequencing and Analysis". J. Ju, A.N. Glazer, R.A. Mathies. *Nature Medicine*, 1996, **2**, 246-249.
71. "DNA Sequencing Using a Four-Color Confocal Fluorescence Capillary Array Scanner". I. Kheterpal, J. Scherer, S. M. Clark, A. Radhakrishnan, J. Ju, C. L. Ginther, G.F. Sensabaugh, R. A. Mathies. *Electrophoresis*, 1996, **17**, 1852-1859.
72. "High-Resolution Capillary Array Electrophoretic Sizing of Multiplexed Short Tandem Repeat Loci Using Energy-Transfer Fluorescent Primers". Y. Wang, J.M. Wallin, J. Ju, G.F. Sensabaugh, R.A. Mathies. *Electrophoresis*, 1996, **17**, 1485-1490.
73. "Cyanine Dyes with High Absorption Cross Section as Donor Chromophores in Energy Transfer Primers". S-C, Hung, J. Ju, A.N. Glazer, R.A. Mathies. *Analytical Biochemistry*, 1996, **243**, 15-27.
74. "Energy Transfer Primers with 5- or 6-Carboxyrhodamine-6G as Acceptor Chromophores". S-C, Hung, J. Ju, A.N. Glazer, R.A. Mathies. *Analytical Biochemistry*, 1996, **238**, 165-70.
75. "Energy Transfer Fluorescent Dye-Labeled Primers for DNA Sequencing and Analysis". J. Ju, C. Ruan, C.W. Fuller, A.N. Glazer, R.A. Mathies. *Proceedings of the National Academy of Sciences USA*. 1995, **92**, 4347-4351.
76. "Design and Synthesis of Energy Transfer Fluorescent Dye-Labeled Oligonucleotide Primers and Their Application for DNA Sequencing and Analysis". J. Ju, I. Kheterpal, J. Scherer, C. Ruan, C. Fuller, A.N. Glazer, R.A. Mathies. *Analytical Biochemistry*, 1995, **231**, 131-140.
77. "Rapid Sizing of Short Tandem Repeat Alleles Using Energy Transfer Fluorescent Primers and Capillary Array Electrophoresis". Y. Wang, J. Ju, B. A. Carpenter, J.M. Atherton, R.A. Mathies, G.F. Sensabaugh. *Anal. Chem.* 1995, **67**, 1197.
78. "Troika Acids: Synthesis, Structure and Fragmentation Pathways of Novel α -(Hydroxyimino)-Phosphonoacetic Acids". B. A. Kashemirov, J. Ju, R. Bau, C.E. McKenna. *J. Am. Chem. Soc.* 1995, **117**, 7285-7286.
79. "Some Phosphonic Acid Analogs as Inhibitors of Pyrophosphate-dependent Phosphofructokinase, A Novel Target in *Toxoplasma Gondii*". Z. Peng, J. M. Mansour, F. Araujo, J. Ju, C.E. McKenna, T.E. Mansour, *Biochemical Pharmacology* 1995, **49**, 105-113.
80. "E/Z Stereoisomer Assignment by ^{13}C NMR in Trifunctional Phosphonate α -Oximes and α -Arylhydrazones". C.E. McKenna, B.A. Kashemirov, J. Ju. *J. Chem. Soc. Chem. Commun.*, 1994, 1211-1212.
81. "Stereoselective Aldol Coupling of Cobalt-Complexed Alkynyl Aldehydes". J. Ju, B.R. Reddy, M. Khan, K.M. Nicholas. *Journal of Organic Chemistry*, 1989, **54**, 5426-5428.