Xi Chen

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ACADEMIC POSITIONS

Jane Coffin Childs Postdoctoral Fellow (Starting from 2012/09)
Wyss Institute for Biologically Inspired Engineering, Harvard University.
Supervisor: Dr. Peng Yin

Wyss Visiting Fellow (2011/01 to 2012/08)
Wyss Institute for Biologically Inspired Engineering, Harvard University.
Supervisor: Dr. Peng Yin

Postdoctoral Fellow (2011/01 to 2012/08)
Center for Systems and Synthetic Biology, University of Texas at Austin.
Supervisor: Dr. Andrew D. Ellington

Education

PhD in Biochemistry University of Texas at Austin, Dec. 2010
Thesis: Model-driven engineering of nucleic acid catalysts
Supervisor: Dr. Andrew D. Ellington

B.S. in Biological Sciences Shanghai Jiao Tong University, Jun. 2005

Honors and Awards

2012 Jane Coffin Childs Postdoctoral Fellowship
2011 CPRIT Postdoctoral Fellowship
2010 CPRIT Cancer Research Fellowship
2009 Graduate School Continuing Fellowship
2008 Ravel Award
2007 Welch Summer Fellowship
2005 Hamilton/Schoch Fellowship
2004 Dong's East Scholarship (Only recipient department-wide)
2003 Exemplar of Merit Students (One of only 9 recipients university-wide)
2003 National Scholarship (Only recipient department-wide)
2002 First Prize in Physics Competition (One of only 3 recipients university-wide)

Expertise and skills

Theoretical/computational:

- Chemical and enzymatic kinetics and thermodynamics
- Dynamic systems
- Nucleic acid biophysics
- Nucleic acid sequence analysis and design
- Evolution and directed evolution

Experimental:

- Biochemistry of nucleic acids: synthesis, purification, conjugation, structure probing, etc.
- Biochemistry of protein: purification, conjugation, enzymatic assays, etc.
- Molecular biology of nucleic acids: Northern blotting, qRT-PCR, RNase protection assays, etc.
- Molecular biology of bacteria: cloning, genome editing, etc.
- Cell biology: tissue culture, microscopy, flow cytometry, etc.
- NextGen sequencing

Publications

(Note: * denotes corresponding or co-corresponding authorship)

1. Braun B, Ellington AD, Chen X*. CircDesigNA: a web-based, general-purpose sequence design tool for DNA circuitry and DNA nanotechnology. (in preparation)
2. Briggs N, McLain JR, Ellington AD, Chen X*. Sub-million-fold signal amplification by a non-enzymatic cascade. (in preparation)
3. Chirieleison S, Allen P, Ellington AD, Chen X*. Pattern transformation using a DNA-based amorphous computer. (submitted)
4. Li B, Chen X, Ellington AD. (2012) Adapting Enzyme-Free DNA Circuits to the Detection of Loop-Mediated Isothermal Amplification Reactions. ***Anal Chem***, (in press)

5. Li B, Chen X*, Ellington AD. (2012) Probing Spatial Organization of DNA Strands using Enzyme-free Hairpin Assembly Circuits. ***J Am Chem Soc*** (in press)
6. Zhang M, Wang XJ, Chen X, Bowman ME, Luo Y, Noel JP, Ellington AD, Etzkorn FA, Zhang Y. Structural and kinetic analysis of the prolyl isomerization/phosphorylation cross-talk in the CTD code. ***ACS Chemical Biology*** (in press)
7. Allen PB, Arshad SA, Li B, Chen X, Ellington AD. (2012) DNA circuits as amplifiers for the detection of nucleic acids on a paperfluidic platform. ***Lab Chip.*** 12:2951-2958
8. Chen X*. (2012) Expanding the rule set of DNA circuitry with associative toehold activation. ***J Am Chem Soc***. 34(1):263-71.
9. Li B, Ellington AD, Chen X*. (2011) Rational, modular adaptation of enzyme-free DNA circuits to multiple detection methods. ***Nucleic Acids Res.*** 39(16):e110
10. Eckhoff G, Codrea V, Ellington AD, Chen X*. (2010) Beyond allostery: Catalytic regulation of a deoxyribozyme through an entropy-driven DNA amplifier. ***J Syst Chem***. 1:13
11. Chen X, Ellington AD. (2010) Shaping up nucleic acid computation (Review).***Curr Opin Biotechnol***. 21(4):392-400
12. Chen X, Ellington AD. (2009) Design Principles for Ligand-Sensing, Conformation-Switching Ribozymes.***PLoS Comput Biol.*** 5(12):e1000620
13. Chen X, Denison L, Levy M, Ellington AD. (2009)Direct selection for ribozyme cleavage activity in cells ***RNA***.15(11):2035-45
14. Simpson AB, Tsai TL, Nguyen N, Chen X, Ellington AD. (2009) Modeling amorphous computations with transcription networks ***J R Soc Interface.*** 6(Suppl 4):S523-33
15. Li N, Ebright JN, Stovall G, Chen X, Nguyen H, Singh A, Syrett A, Ellington AD. (2009)Technical and Biological Issues Relevant to Cell Typing by Aptamers ***J Proteome Res.*** 8(5):2438-48.
16. Ellington AD, Chen X, Robertson M, Syrett A.(2009) Evolutionary origins and directed evolution of RNA. (Review) ***Int J Biochem Cell Biol***. 41(2):254-65.
17. Yu P, Chen X, Pan DZ, Ellington AD, Synthetic Biology Design and Analysis: a Case Study of Frequency Entrained Biological Clock.(2008) ***Proc. IEEE International Conference on Bioinformatics and Biomedicine (BIBM)***, November.
18. Chen X, Li N, Ellington AD.(2007) Ribozyme catalysis of metabolism in the RNA world. (Review) ***Chem Biodivers.*** 4(4):633-55.
19. Chen X, Wang Y, Liu Q, Zhang Z, Fan C, He L.(2006) Construction of molecular logic gates with a DNA-cleaving deoxyribozyme. ***Angew Chem Int Ed Engl***. 45(11):1759-62.