Won I. Lee

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Education

Harvard College, Class of 2014 (*Advanced Standing*)   Cambridge, MA
> A.B. *with Highest Honors* in Physics, Mathematics, & Economics

Columbia University, Visiting Student   New York, NY
> General Graduate Biochemistry (Biochem. G4021) [Grade: A]

Awards & Honors

Phi Beta Kappa	2014
John Harvard Scholarship	2012 & 2013
Derek Bok Certificate of Distinction in Teaching	2012, 2013, & 2014

> (*awarded to highest-scoring teaching fellows*)

Harvard University Center for the Environment Independent Research Award	2013
Herchel Smith Research Fellowship	2013
Harvard Program for Research in Science & Engineering Fellowship	2012
Origins of Life Undergraduate Research Fellowship	2012
Detur Book Prize	2012

> (*awarded to sophomores with highest academic standing*)

Academic Experience

Research Fellow, Harvard University   2014 - 2015
> Research projects with faculty from Harvard University/HBS, and graduate-level coursework in statistics.

Teaching Fellow, Harvard University   2012 - 2015
> **Stat 110**, F2014 [Probability Theory]: instructed largest sections consisting of > 100 students; developed new problems, solutions, and notes; and evaluated exams & assignments. [Personal Q Score: 4.6 / 5.0]
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> **Physics 15a**, S2013 [Mechanics and Special Relativity]: wrote extensive set of notes used by students in all sections; taught sections of 30 students. [Personal Q Score: 4.8 / 5.0]
>
> **CS 20**, S2013 [Discrete Mathematics for Computer Science]: led in-class problem-solving sessions; helped develop lecture and other course material; evaluated all exams. [Personal Q Score: 4.7 / 5.0]
>
> **CS 50**, F2012, F2013 [Introduction to Computer Science]: taught sections of 20 students; developed materials for on-campus and online; evaluated exams & assignments. [Personal Q score: 4.4 / 5.0]

Teaching Assistant, Harvard Extension School   2011 - 2012
> **CSCI E-120**, S2012 [Discrete Mathematics for Computer Science]: led problem-solving sections; evaluated all problem sets and exams; and helped develop course direction and topics with instructor.

Publications & Presentations

R. I. McDonald, J. P. Guilinger, S. Mukherji, E. A. Curtis, W. I. Lee, and D. R. Liu (2014). "Electrophilic Activity-Based RNA Probes Reveal a Naturally Occurring Self-Alkylating Ribozyme That Can Be Used for Selective RNA Labeling." *Nature Chemical Biology* **10**: 1049-1054.

R. Golnabi, W. I. Lee, D. Kim, and G.R. Kowach (2012). "Effects of Crystallographic Planes

on Focused Ion Beam Milled Patterns of Single Crystal Diamonds." *Mater Res Soc Symp Proc* **1395**.

W. I. Lee, R. Golnabi, A. Calabro, C. Queenan, D. Becker, and D. Kim (2011). "Effects of Ion Current on the Morphology of Focused Ion Beam Milled Patterns on a Single Crystalline Diamond." *Microsc Microanal* **17** (Suppl. 2): 698-699.

R. Golnabi, W. I. Lee, D. Kim, and G.R. Kowach (2011). "Focused Ion Beam Milling of Crystalline Diamonds." *Mater Res Soc Symp Proc* **1282**: 111-116.

W. I. Lee (2011). "Reprogramming Efficiencies of PEI Transfection in Murine Induced Pluripotent Stem Cell Generation." *GRC on Stem Cells & Cancer* **2011**.

Other Research Experience

"Extensions of a Stochastic Cancer Megafund Model."　　　　*with Prof. Richard Freeman*
　　Extended Lo *et al.* (2012) stochastic cancer megafund model, adding synergistic effects within
　　　　investments, time series autocorrelations, expicit covariance between investments, among others.
　　Independent project on development of novel artificial agent model of population density and welfare.

"Low-Beta Anomaly and Implications for Capital Structure."　　　*with Prof. Malcolm Baker*
　　SAS data analysis to determine relationship between leverage ratios and CAPM betas across industries.
　　Initial exploration of the relationship between a firm's "capital risk", as measured by its financial obligations,
　　　　and "financial risk", as measured by traditional regression analysis of securities markets data.

"Applications of Machine Learning and Computer Vision Algorithms in Connectomics."
　　　　　　　　　　　　　　　　　　　　　　　　　　with Prof. Aravi Samuel
　　Development and application of machine learning and computer vision algorithms for connectomics of
　　　　C. elegans neural circuits using high-throughput electron microscopy imaging and 3-D modeling.
　　Experiment and analysis regarding optimization of staging and throughput for rapid connectome tracing.

"Computational Method of Moments Analysis for Mesoscale Phenomena on Metasurfaces."
　　　　　　　　　　　　　　　　　　　　　　　　　　with Prof. Federico Capasso
　　Developed generalization of optical laws involving angle-dependent phase shifts at arbitrary metasurfaces,
　　　　yielding closed-form solutions for spherical and cylindrical surface topologies.
　　Simulations of EM wave propagation from frequency-selective surfaces using spectral method of moments.

"Discontinuity Analysis of Herbal Patent Prior Art Adoption at the EPO and USPTO."
　　　　　　　　　　　　　　　　　　　　　　　　　　with Prof. Raj Choudhury
　　Analysis of patenting behavior trends resulting from improved *ex ante* information provision for examiners.
　　Regression discontinuity resulting from asynchronous adoption of updated prior art database yielded quasi-
　　　　natural experiment with statistically significant impacts on patent approval at EPO contra USPTO.