

Ester J. Kwon  
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## Education

**University of Washington at Seattle** **September 2005-present**  
PhD candidate, Bioengineering  
Advisor: Suzie Pun, PhD

**University of California at Berkeley** **December 2004**  
BS, Bioengineering with honors  
BA, Molecular & Cellular Biology with honors

## Research Experience

**Research Assistant** **August 2005 - present**  
***Pun Lab - University of Washington***

Developed peptide-modified nonviral gene delivery vehicles and evaluated vehicles for gene transfer *in vitro* and *in vivo*.

Investigated the intracellular trafficking of nonviral gene delivery vehicles.

Synthesized and purified peptides.

### Intern

#### **Chemistry - Seattle Genetics**

Prepared peptide fluorophore and toxin conjugates for binding and toxicity evaluation in a panel of cell lines.

Developed method for site-specific conjugation of antibodies.

**Research Assistant** **May 2003 – August 2005**  
***Marqusee & Bustamante Labs - University of California at Berkeley***

Operated optical tweezer instrument for single protein refolding/unfolding experiments

Prepared constructs for optical tweezer experiments using subcloning, mutagenesis, and protein purification

Programmed protein unfolding/refolding simulations in MATLAB.

### Intern

**June – September 2004**

#### ***Protein Separation Division - Bio-Rad Laboratories***

Validated software for Bio-Rad's DuoFlow Chromatography System and developed automated protein purification methods

## Teaching and Mentoring Experience

**Mentor** **July 2007 – present**

Mentor a bioengineering undergraduate, Sylvie Liong, on the evaluation of gene transfer efficiency of multicomponent nonviral gene delivery vehicles.

**Mentor** **July – August 2007**

#### **Research Experiences for Undergraduates (REU)**

Mentored Brendan Horton from Boston on the quantification of the intracellular distribution of nonviral gene delivery vehicles

**Teaching Assistant**

July – August 2006,

June – August 2007

***Initiative for Maximizing Student Diversity, University of Washington***

The goal of the Initiative for Maximizing Student Diversity is to increase involvement of underrepresented students in biomedical research and education

Taught basic laboratory techniques and theory.

**Undergraduate Student Instructor**

June – August 2003

***Department of Chemistry, University of California at Berkeley***

Led a discussion and laboratory section for an organic chemistry course and evaluated exams and notebooks and held office hours.

**Publications**

Kwon EJ, Bergen JM, Park IK, Pun SH. Peptide-modified vectors for nucleic acid delivery to neurons. *J Control Release*. 2008, 132(3):230-235.

Kwon EJ, Bergen JM, Pun SH. Application of an HIV gp41-derived peptide for enhanced intracellular trafficking of synthetic gene and siRNA delivery vehicles. *Bioconjug Chem*. 2008, 19(4):920-7.

Bergen JM, Kwon EJ, Shen TW, Pun SH. Application of an environmentally sensitive fluorophore for rapid analysis of the binding and internalization efficiency of gene carriers. *Bioconjug Chem*. 2008, 19(1):377-84.

Cellitti J, Llinas M, Echols N, Shank EA, Gillespie B, Kwon E, Crowder SM, Dahlquist FW, Alber T, Marqusee S. Exploring subdomain cooperativity in T4 lysozyme I: structural and energetic studies of a circular permutant and protein fragment. *Protein Sci*. 2007 May;16(5):842-51.

**Posters and Presentations**

E. Kwon, J. Lasiene, I.K. Park, P.J. Horner, S.H. Pun. 2008. Gordon Research Conference: Drug Carriers in Biology & Medicine, Big Sky, MT.

E. Kwon, J.M. Bergen, S.H. Pun. 2008. American Society of Gene Therapy, Boston, MA.

E. Kwon and S.H. Pun. 2007. Vehicles Modified with Lytic Peptide for Non-Viral Gene Delivery. Biomedical Engineering Society, Hollywood, CA.

J.M. Bergen, E. Kwon, T.W. Shen, and S.H. Pun. 2007. Environmentally-sensitive fluorophores for rapid analysis of the binding and uptake of gene carriers. Biomedical Engineering Society, Hollywood, CA.

S.H. Pun, J.M. Bergen, E. Kwon. and I.K. Park. 2007. Multicomponent nanoparticles for controlled intracellular delivery to targeted cells. American Vacuum Society, Seattle, WA.

E. Kwon and S.H. Pun. 2007. Lytic Peptides for Non-Viral Gene Delivery. Arthur M. Sackler Colloquia of the National Academy of Sciences, Washington, D.C.

**Awards****Fellowships**

NIH Ruth L. Kirschstein National Research Service Awards for Individual Predoctoral Fellows (F31) 2009

NIH Engineered Biomaterials Training Program Fellow 2008

National Science Foundation – Graduate Research Fellowship Program Honorable Mention 2005, 2006, 2007

**Conference Awards**

Travel Award – American Society for Gene Therapy 2009

Travel Award and Selected Presentation – Gordon Research Conference 2008

Travel Award – American Society for Gene Therapy 2008