

9th ANNUAL DEPARTMENT OF PATHOLOGY YOUNG INVESTIGATORS' DAY
POSTER SESSION

Thursday, April 5th, 2007
TURNER CONCOURSE
REGISTRATION FORM

E-mail COMPLETED Registration form and abstract to:
Stacey Morgan (smorgan9@jhmi.edu) on or before
Friday, March 16th, 2007

If you have questions or problems regarding your submission, please contact Stacey Morgan via e-mail (smorgan9@jhmi.edu)

Applicant's Name: **Bruce Huang** _____ Degree: _____

Applicant's Division: GYN Pathology _____

Faculty Preceptor: T.-C. Wu, MD, PhD _____
(Must hold a primary appointment in Pathology)

Appointment Category: _____ House Staff _____ Clin Fellow _____ Research Fellow
_____ Medical Student X Graduate Student (Program: Pathobiology)

Register for: _____ Clinical Research X Translational Research _____ Basic Research

Full Poster Title * RNA interference-mediated *in vivo* gene silencing as a strategy for the enhancement of nucleic acid-based vaccine potency

Where has the work been presented?

Not Previously Presented

Where is this work being published? **In Preparation**

Author(s) (First & Last) **Bruce Huang, Chih-Ping Mao, Shiwen Peng, Chien-Fu Hung, T.-C. Wu**

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***INCLUDE A ONE-PAGE ABSTRACT (including title and all authors) OF THE WORK YOU WILL BE PRESENTING**

***Title:* RNA interference-mediated *in vivo* gene silencing as a strategy for the enhancement of nucleic acid-based vaccine potency**

***Authors:* Bruce Huang, Chih-Ping Mao, Shiwen Peng, Chien-Fu Hung, T.-C. Wu**

Abstract

Intradermal administration of DNA vaccines encoding luciferase represents a convenient method to assess gene expression *in vivo*. Gene silencing by intradermal gene gun administration of DNA encoding short hairpin RNA (shRNA) may represent an effective technique for the specific knockdown of gene expression *in vivo*. In the current study, we characterized luciferase gene expression over time *in vivo* using non-invasive bioluminescence imaging systems. Furthermore, we characterized *in vivo* luciferase gene silencing using DNA encoding shRNA targeting luciferase. We also characterized the human papillomavirus type 16 (HPV-16) E7-specific CD8⁺ T cell immune responses in mice immunized with E7 DNA and DNA encoding shRNA targeting Fas ligand (FasL), a key pro-apoptotic signaling protein. Our results indicated that luciferase expression *in vivo* peaked at 24 hours following DNA administration. Furthermore, we observed that co-administration of DNA encoding shRNA targeting luciferase significantly reduced luciferase expression in mice intradermally administered with luciferase DNA. In addition, we observed that mice vaccinated with E7 DNA co-administered with DNA encoding shRNA targeting FasL generated significantly enhanced E7-specific CD8⁺ cytotoxic T cell responses. Thus, intradermal administration of DNA encoding shRNA represents a plausible approach to silence genes *in vivo* and a potentially useful tool to enhance DNA vaccine potency.