

## NIH/Oxford University Graduate Student at the Forefront of SARS Research

**ERIC C. FREUNDT**

Oxford Scholar 2003

Undergraduate: Middle Tennessee State University: B.S., Biology, 2003

Research Area: Virology



Having entered the **NIH/Oxford/Cambridge Scholars Program** in July 2003, Scholar Eric Freundt found the world health community had mobilized to face the outbreak of Sudden Acute Respiratory Syndrome (SARS), a new, mystifying, and frightening disease. At the time, efforts were focused on controlling the spread of SARS—it had reached 30 countries and had taken the lives of many of the afflicted, including healthcare workers on the frontlines of treatment. Even as infection control methods were being invoked, little was known about the cause of SARS and its implications for the future.

Had Eric graduated from college and headed for a traditional biomedical research doctoral program, he would have begun his training by engaging in 1-2 years of coursework and rotations. Instead, as an NIH/Oxford/Cambridge Scholar, Eric went straight to the lab to be part of the world-wide effort to understand SARS. In particular, he began a collaboration with two remarkable scientists who agreed to serve as his research mentors: Dr. Michael Lenardo at the NIH and Xiaoning Xu at the University of Oxford. Together, these three traveled to China to meet with scientists at the forefront of the SARS investigation and were given access to samples from SARS patients not available outside the country. Since those early days in the Scholars Program, Eric's graduate work has focused on understanding the mechanism by which the SARS coronavirus causes cell death, leading to fatal lung damage in its victims. His collaboration resulted in the discovery of a protein unique to the SARS coronavirus which contributes importantly to the virus' ability to kill cells during infection.

Contacts made as a direct result of Eric's collaborations with his mentors and with physician-scientist teams in China resulted in a spin-off collaboration with implications far beyond the original investigation of SARS. At first, the opportunity arose to transfer technology developed by others in Eric's NIH lab. Within two years' time, this led to the creation of a new **Immunological Diseases Research and Diagnosis Center at the Children's Hospital, Fudan University, Shanghai, China**. Eric's experiences exemplify the unique opportunities the Scholars Program offers its students to share research and clinical experiences across the globe. With the Scholar as the initial catalyst, the program design encourages students and mentors to "follow the science" wherever it may lead them in the quest

to identify the most productive avenues of investigation possible. These new encounters lead to unforeseen opportunities for research synergism based on personal knowledge and relationships which disseminate information and resources in a very powerful way.

## **Eric Freundt**

Eric graduated Summa Cum Laude from the Honors College Middle Tennessee State University with a B.S. in Biology and Chemistry. He has received numerous awards and honors for his outstanding academic achievements including the Presidential Scholarship, Quill E. Cope Scholarship, Maria de los Reyes Scholarship, the Elliot Dawson/Bioventures Biotechnology Scholarship, and has been inducted into many honors societies including Phi Eta Sigma from which he received the Most Distinguished Senior Award, and Golden Key International. He also received the Peter I. Karl Outstanding Senior Award from the biology department as well as the President's Award and a Phi Kappa Phi Graduate Fellowship.

While an undergraduate, Eric worked extensively in independent research on several noteworthy projects such as characterizing the effectiveness of light-dependent DNA repair mechanisms and detection of new Legionella-like Amoebal pathogens through sequencing of the 16S ribosomal gene. His honors thesis involved the discovery of a novel tick-borne enterovirus in patient cerebral spinal fluid. Eric also enjoyed being active in student ministry at Middle Tennessee State and served leadership roles in the Tri- Beta Biological Honor Society, and in the Scientia Online Journal.

## **Publications in PubMed**

**Freundt EC**, Czapiga M, Lenardo MJ. Photoconversion of Lysotracker Red. 2007. Submitted.

Yu L, Wan F, Dutta S, Welsh S, Liu Z, **Freundt E**, Baehrecke EH, Lenardo M. Autophagic programmed cell death by selective catalase degradation. Proc Natl Acad Sci U S A. 2006 Mar 28; 103(13): 4952-7.

**Freundt EC**, Lenardo MJ. Interfering with interferons: Hepatitis C virus counters innate immunity. Proc Natl Acad Sci U S A. 2005 Dec 6; 102(49): 17539-140.

**Freundt EC**, Beatty DC, Stegall-Faulk T, Wright SM. Possible tick-borne human enterovirus resulting in aseptic meningitis. J Clin Microbiol. 2005 Jul; 43(7): 3471-3.

Yu L, Alva A, Su H, Dutt P, **Freundt E**, Welsh S, Baehrecke EH, Lenardo MJ. Regulation of an ATG7-beclin 1 program of autophagic cell death by caspase-8. Science. 2004 Jun 4; 304 (5676):1500-2.

### **1<sup>st</sup> Author:**

- [Interfering with interferons: Hepatitis C virus counters innate immunity. Proc Natl Acad Sci U S A. 2005 Dec 6;102\(49\):17539-40. Epub 2005 Nov 28. No abstract available.](#)
- [Possible tick-borne human enterovirus resulting in aseptic meningitis. J Clin Microbiol. 2005 Jul;43\(7\):3471-3.](#)

5<sup>th</sup> Author:

- [Regulation of an ATG7-beclin 1 program of autophagic cell death by caspase-8. Science. 2004 Jun 4;304\(5676\):1500-2. Epub 2004 May 6.](#)

6<sup>th</sup> Author:

- [Autophagic programmed cell death by selective catalase degradation. Proc Natl Acad Sci U S A. 2006 Mar 28;103\(13\):4952-7. Epub 2006 Mar 17.](#)