

University of Notre Dame
Strategic Academic Planning Committee
September 2009

PROPOSAL COVER SHEET

Proposal Type: Full Grant _____ Seed Grant X

Proposal Title: Developing Group I Intron Antiviral Strategies for treating HIV
and HCV Infections.

Principal Investigator: Malcolm J. Fraser, Jr., Ph.D.

Date Submitted: September 30, 2009

Participants:

Last Name	First Name	Department
Fraser Malcolm		Biological Sciences
Huber	Paul	Chemistry and Biochemistry
Schorey Jeffrey		Biological Sciences
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A.) Abstract: This proposal developed from research funded by a prestigious Bill and Melinda Gates Foundation Grand Challenges in Global Health award to develop Group I introns as antiviral agents for suppression of Dengue fever in transgenic mosquitoes. The Gates funding has allowed us to pioneer transgenic trans-splicing Group I introns as an exciting new effector gene for suppression of Dengue virus in susceptible mosquito cells and tissues. The outstanding success of this approach has stimulated our interest in developing similar effector molecules for treating certain incurable, chronic virus diseases of humans, specifically AIDS and Hepatitis C, both of which cannot be cured using existing drug therapies or gene transfer technologies. This proposal will develop unique strategies for eliminating these viruses from infected individuals, thus curing the disease.

An attendant goal is to establish a significant research base in human disease viruses that will justify expansion of this important and eminently fundable research. Research directed towards viral pathogens of human disease is in harmony with the Eck Institute for Global Health. The Fraser Laboratory remains the sole laboratory at UND with a research emphasis in Virology, and there is no effort to expand in this research direction at present. Upon successful completion of this seed grant and the inevitable securing of further extramural funding we will propose a larger SAPC program development grant directed towards viral vaccines, viral transgene vectors, anti-viral drug agents, and human viral diseases. Each of these research areas will necessarily involve multidisciplinary research with investigators in Chemistry and Biochemistry, the Center for Transgene Research, the Center for Nano Science and Technology, and the IU School of Medicine, South Bend. Building upon this core expertise will facilitate integration with existing Virology programs at IUPUI and Purdue University. An expanded research program in Molecular Virology will also immediately lead to innovative intellectual property and foster the development of associated businesses in Innovation Park.