

Applicant: Jim Florey

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From 1971-2002, the overwhelming majority (47%) of reported drinking water disease outbreaks in the U.S. were of undetermined etiologic cause, while 8% were found to be of viral origin. Of those without known agents, it is now believed that most, if not all, were caused by viral pathogens. It is known that the soil is a powerful agent for the disinfection of many known water contaminants, both biotic and abiotic. Most dominating, among soil particles, is the clay fraction. Clay minerals commonly determine classification of and qualities of the soil profile. More recently, the isolation of clay minerals for applications across many disciplines has been explored. The focus of my research will be the development of novel organoclay nanocomposites for the removal/inactivation of viral contaminants from aqueous matrices. This research is directly applicable to the issue of water resource management/treatment here in the state of Texas. It is my aim to develop composite adsorbents/inactivants that can be tailored to disinfect or remove specific viral contaminants. It is possible that this research will lead to the synthesis of other adsorbents/inactivants capable of removing not only viral pathogens but organic and/or pharmaceutical compounds as well. In addition, my work within the project: *Pathogen Risk to Human Health in Potable Water Related to Nonpoint Sources of Contamination: Colorado River Alluvium Case Study River Segment 1428*, which is a joint effort between the Texas Commission on Environmental Quality (TCEQ), Texas A&M University and Texas AgriLife Research, the University of Texas at Austin's Bureau of Economic Geology, and, of course, TWRI, will be a direct study of a valuable Texas waterway, the Colorado River, and its impact on groundwater sources.

UNDERGRADUATE COURSEWORK

Major: Agronomy, GPR –

Minor: Horticulture, GPR –

Coursework including but not limited to:

Soil Microbiology
Soil Fertility
Turfgrass Culture
Ecology
Entomology
Plant Breeding

Soil Science
Soil Morphology and Interpretation
Chemical Weed Control
Plant Pathology
Plant Physiology
Organic Chemistry

Various Horticultural Courses

GRADUATE COURSEWORK

GRE Score –

Overall GPR –

Completed Coursework:

Environmental Microbiology

Molecular Methods of Microbial Characterization

Biomedical Virology

Statistics in Research

Remaining Coursework:

Hydrogeology (Fall 2010)

Soil Mineralogy (Fall 2010)

Field Methods in Hydrogeology (Spring 2011)

Fundamental Scanning Electron Microscopy (Spring 2011)

If chosen, I will use these funds to attend national science and professional conferences to present my research. I believe attendance at such events is integral to both the students presenting, particularly as it pertains to the ability to adequately present scientific literature, and to the scientific community as a whole. Without such organizations and opportunities, our ability to have significant contributions realized and further pursued would be greatly hindered. By interacting with others within our own narrow scientific community we are able to make valuable contacts, relay new ideas and research, and stimulate the growth of future research.

I anticipate pursuing a career in the arena of environmental science. Quite possibly my path could lead to such government entities as the USDA, EPA, TCEQ, or various consulting firms in the private sector. In any case, my objective is to find a career of service. My time here will, hopefully, provide me with the necessary tools to competently, and with scientifically sound methods, serve to protect our environment and make it a better, safer, and more ecologically efficient world for generations to come.