

**Thank you for considering an undergraduate career in Microbiology & Immunology. The following section provides information about the program and this department**

### **What is Microbiology?**

Microbiology “is a branch of biology dealing especially with microscopic forms of life”. It is a field whose concerns and interest range from the clinical effects of the AIDS virus on the human host to the biochemistry and molecular biology of producing human insulin in simple bacteria or yeast cells. Efforts are being made to reprogram the human immune system to reject malignant cancer cells. Microorganisms are being utilized as gene transfer vehicles. Microbiology and Immunology is concerned with those living organisms which exist in the microscopic or submicroscopic realms. They include bacteria, viruses, yeast, molds, and protozoa that can cause diseases.

### **What Should You Expect?**

You will begin your studies by learning to cultivate, isolate, and identify microorganisms within the laboratory (MIC 301 lab).

Next, they are considered as individual living systems and their biochemical makeup, physiology, genetics, and replication schemes are examined.

Finally, studies focus on how various microorganisms spread within the environment, infect hosts, and produce disease.

### **Cox Science Center**

The Cox Science building is where the Microbiology undergraduate department is located, and where some of your classes will take place. This building is the hub of your undergraduate career here at the University.

The Microbiology & Immunology laboratory, is equipped with clinical microscopes as well as other instruments which will provide you with a foundation for your studies.

The faculty in the department, are medical school professors and researchers. One of the advantages of having professors from the medical campus is that they are aware of new developments in their field, and are enthusiastic to share that information, with you, the students.

### **Interests [Personal Qualities]**

An inquisitive mind.

A special curiosity about those forms of life usually not seen by others.

An interest in accepting the challenge of studying the smallest of all creatures.

The desire for the hands-on experience of laboratory investigation.

An imaginative mind that wants to pose questions that have not been asked before.

The maturity to accept negative or ambiguous results with the tenacity and resolve to persevere until you finally get it right.

A person can elect to be generalists or a specialist; work alone or as a member of a team; work

with the confines of a laboratory or go to where the microbe is found in nature; work with a special orientation, e.g. biochemistry, ecology, genetics, or public health.

### **Career Opportunities**

Graduates in Microbiology and Immunology are prepared to contribute in the following major areas of microbiology:

- Clinical/environmental
- Food/beverage
- Industrial
- Research
- Technical sales

Within these major areas, the principle effort may be concerned with diagnostic procedures such as:

- Quality control
- Process operation
- Product development

In these settings, the individual will be functioning as either a:

- Bacteriologist
- Immunologist
- Mycologist
- Virologist

The laboratories for these activities are to be found in corporations, governmental agencies, hospitals, research foundations, and universities. The majority of medical technologists are employed in hospital laboratories; however, other opportunities are available in:

- Physicians' offices
- Clinics
- Commercial firms
- Research facilities
- Armed Forces
- Peace Corps
- Public health agencies
- Veterinary clinics

While some medical technologists spend all their time performing clinical analyses, others expand these roles to become:

- Laboratory administrators
- Education coordinators
- Researchers
- Commercial supply representatives

NOTE: Some of the listed career options may require additional education and/or training beyond bachelor's degree.

### **Graduate and Professional School Opportunities**

Graduates choose to go to professional schools in:

Medicine  
Dentistry  
Veterinary medicine  
Law  
Business

Microbiology and Immunology is especially an ideal major and an excellent preparation for Medical School. Students may also choose to continue their education in:

Microbiology  
Molecular biology  
Biochemistry  
Immunology  
Virology  
Clinical microbiology

### **Experiential Opportunities**

Increasing opportunities are becoming available for microbiology majors to participate in summer internship programs in research programs in university, governmental and industrial research laboratories. Many students also become involved in summer or part time and volunteer work as research and clinical laboratory technicians. Many also work in laboratories, doctors offices and nursing homes to further their clinical interests.

### **Microbiology and Immunology Club**

Quite possibly the jewel of the undergraduate department, the club has grown over the years from about a handful of members to over one hundred. The club is not only for microbiology members; it allows people of all disciplines to take part in this organization's activities. Miami Rescue Missions, AIDS walks, and an educational series that members take to local high schools are all part of the club's activities. The club connects its members to the community in this way, and increases the public's awareness of certain diseases they may encounter. for more information about the club and it's activities visit us at <http://www.miami.edu/studorgs/microbiology/>