Biology – Food Laboratories

FAST Fellowship Program Content and Duration

The Program is a 24 month, 40-hour per week, rotational training assignment in multiple aspects of the division’s laboratory work. The recommended minimum times in the various phases are outlined below. A specific program, detailing the trainers, laboratory sections and work assignments, as well as selection of a Project will be decided together with the Trainee within the first 30 days of the program. The Trainee must be given meaningful work assignments that will provide hands-on experience from a scientific perspective. The Trainee will become competent in assigned methodologies and work side-by-side with laboratory staff on routine samples for major portions of their program. This will provide the Trainee with real world experience in day-to-day laboratory work.

The Trainee and the Mentor will agree on a project from among several needed by the laboratory. All projects will be the work of the Trainee and one or more members of the laboratory staff with the Trainee being given the lead. Assignments will include written reports and formal presentations that help develop the Trainee’s communication skills. The Project assignment and completion of the Program are ultimately at the discretion of the Director.

The training schedule for an individual Trainee is dependent upon the needs and workload in the various phase areas. Normally, the training schedule will be developed using the recommended time frames below, but special needs may require the modification of the training schedules. The Trainee must, however, be scheduled and attend all phases of training in the following outline.

For example, a laboratory may have a specific need for a biologist in a certain method and/or help with specific project. In such cases, a special schedule may be developed to emphasize those areas that impact that method by requiring more than the recommended time be spent in another such phases. If a project involves development of a new step on the method, the Trainee might spend more time in that phase. The specific program plan will be agreed upon with the Trainee. The Program Coordinator will determine the schedule to include both laboratory and administrative exposure in the following areas:

(A) Phase One - Department and Lab Overview Training (1 week)

- Orientation by Department and Division
- Safety Training
- Ethics Training
(B) Phase Two - Laboratory Training - (20 Months)

Development of Program Specifics and Choice of Project

- Choose from available projects
- Appoint a mentor
- Assign a project supervisor and project team members
- Outline the project objectives and timeline
- Identify instrumentation, equipment and supplies needed
- Identify skills and training needed
- Define the deliverables for this project
- Detail the individualized Program schedule and goals

General Laboratory – 1-2 weeks

- Sample Login, Preparation and Custody
- Aseptic Technique, Pipette, Micropipette use
- Inventory
- Media Preparation
- Autoclave Use
- Control Cultures
- Temperature Monitoring
- QC Assignments

Initial Method Authorization Training – 3-4 weeks

- Achieve initial competency for routine microbiology methods used in laboratory

Cross Training – 11 months

- Gain initial competency on microbiological pathogen methods used in laboratory
• QA/QC assignments as needed

Maintenance of on-going competency for the 2nd year will be under discretion of the trainer and mentor.

**Cross Training in Molecular Biology techniques – 3-12 months**

**Real-Time PCR (1-3 months)**

- Order Primers/Probes
- Reconstitute/Dilute Primers/Probes
- Make mastermix
- DNA Extraction (manual/automated)
- Run real-time PCR instrument

**Fish Speciation (1-3 months)**

- Sample prep
- DNA Extraction (manual/automated)
- Make mastermix/running traditional PCR
- Set up and run the DNA sequencer
- Analyze DNA sequences

**Pulsed Field Gel Electrophoresis – To be determined**

- Prepare Reagents
- Plug making
- Run gel
- Gel analysis through BioNumerics
- Earn CDC Certification (if applicable)

**Diversilab – To be determined**

- Sample Prep
- DNA Extraction (automated)
- Mastermix/PCR
- Run chips
- Chip analysis
(C) Phase Three – All Trainees – Project (This phase will run concurrent with the others)

The Project Phase begins in the first months of the Program and will overlap with the second phase. In the first months of the Program the majority of the Trainee’s time will be spent in learning, perfecting and getting competent on laboratory techniques. As determined by the Mentor and Trainer, the Trainee will focus the majority of their remaining time on the project along with real hands-on lab experience. The purpose of this phase is to provide the Trainee with hands-on project experience and time to complete project objectives, reports and presentations. This phase of the Program is intended to be independent work under the direction of a project supervisor. It is expected that the Trainee will complete the agreed upon project work and prepare a detailed development and/or validation report.

(D) Masters and PhD Trainees – Oral or Poster Presentation

Program Master Trainees are required to complete work on their Project as defined in (C) and present an oral or poster presentation to the FDACS laboratory community. Opportunities to present work at a conference or workshop may be available.

(E) PhD Trainees Only – Journal Article Publication

Program PhD Trainees are required to complete work on their Project as defined in (C) and (D) and publish the results in a minimum of one journal article based on the Project complexity. It may not be possible to publish this work within the 24 month program. All data are property of the laboratory and the Trainee cannot publish the data without permission of the laboratory. If the results are not enough for full publication, the laboratory reserves the right to submit the publication (preferable in peer-reviewed journal) without the permission of the Trainee. The Trainee will be included as author or under "Acknowledgement" depending upon the Trainee contribution to the project. Previously published or unrelated articles will not fulfill the Program requirement.