

Ancient Biomaterials Institute

Biological Sciences Technician Training Program

Level 0 – Identify and use laboratory safety items. Understand chemical labeling systems and label information. Understand different glassware types and uses for each. Minimum time 1 month; maximum allowed 2 months. Assessment requires oral exam. Passing grade 90%.

Level 1 Competency. Identify and know when to use sterile vs. non-sterile materials. Accurately prepare basic solutions and media. Calculate and differentiate between molar, molal, normality, percentages etc. Set up and perform dilutions without calculators. Conduct literature searches and report on at least two relevant primary research articles. Know how to use relevant reference materials. Maintain records. Attend ABI seminar program. Equipment used – balances, pH meters, Autoclave. Minimum time to achieve this level: UG's 2 Months (Max 3 month total); Grad students may test out. Assessment for Level 1 status requires passing a written examination. Minimum passing grade 90%

Level 2 Competency. Demonstrate proficiency in aseptic techniques (includes pure culture maintenance; streak plates; Gram stains [without book]) making and interpreting wet mounts and slides; storing cultures in Liquid N₂; produce a growth curve. Pour at least 40 petrie plates without contamination; prepare broth and slant cultures. Correctly interpret all laboratory sampling and culture codes. Maintain both computer and lab notebook records. Report on at least two relevant primary research articles found solely by the student. Attend ABI Seminars. Equipment used: Light microscope; LN₂ refrigerator; straw sealer and labeler system. Minimum time to achieve (UG 2 Months past level 1; Max 1 semester). Graduate students may test out without the minimum time requirement. Assessment for Level 2 status requires passing a written examination. Minimum passing grade 85%

Level 3 Competency: Perform PCR including all needed controls and standards be able to state reasons each control is needed, fluorometrically and spectrophotometrically quantify DNA. Run agarose gel electrophoresis and produce a pattern from either DGGE or Chef Gel systems. Demonstrate ability to clean molecular facilities, BSL-3 and Incubators. Perform periodic monitoring of ancient cultures. Maintain research records. Attend seminars. Begin individual research project. Equipment used: Thermocycler; fluorometer; spectrophotometer; incubator/shakers; DGGE or Chef system. Minimum time to complete: 4 months for UG, 2 months for graduate students. No maximum. Co-Author on presented scientific poster. Assessment for Level 3 status requires demonstration of laboratory competence, presentation of complete research records (including gel photographs) and oral demonstration of an understanding of experimental design. *Certificate awarded after completing Level 3 requirements.*

Level 4 Competency: Competent on DNA sequencer plus two of following: CHEF OR DGGE system not included in Level 3, biochemical profiling of isolates, protein purification and electrophoresis, lipid extraction and TLC. Work as team leader (handling Ancient materials) in BSL 3, co-author of peer reviewed manuscript in scientific journal. Maintain research records. Attend seminars. Assessment for Level 4 status requires demonstration of laboratory competence, presentation of complete research records (including gel photographs and graphical presentation of original data). Also an oral demonstration of an understanding of experimental design and the student project before a committee of at least two ABI related faculty. *Certificate awarded after completing Level 4 requirements. (This certificate may be awarded after graduation due to peer-review time requirements.)*

Level 5 Competency: Write peer reviewed and published journal article as SENIOR Author. Present an ABI seminar. Submission of this manuscript and presentation of the seminar constitute successfully attaining of this level. This certificate may be awarded after graduation due to peer review requirements assuming all other requirements have been met. *Certificate awarded after completing Level 5 requirements. (This certificate may be awarded after graduation due to peer-review time requirements.)*