Equipment

Equipment in Dr. Nomura and Dr. Lundgren's Laboratory:
All of the equipment that Dr. Nomura and Dr. Lundgren need to perform the proposed research is available at SUNY-ESF or in collaborating labs (see below). Dr. Nomura’s laboratory has a Shimadzu 2010 GC machine with AOCI20S attachment capable of high throughput analysis of polymer samples, Shimadzu LC2010AHT HPLC system with UV detector and RID10A Refractive Index Detector, an additional Shimadzu LC2010 GPC system with RID10A Refractive Index Detector for the measurement of polymer $M_w$, $M_n$, and polydispersity, an AKTA Purifier FPLC system for protein purification, BioRad IQ5 real-time quantitative PCR machine, BioRad iCycle thermocycler for standard PCR reactions, BioRad GelDoc viewing system, two refrigerated microfuges, three room temperature microfuges, two Sorvall Legend benchtop RT centrifuges with biocontainment rotors, two New Brunswick I26 stackable shakers, two New Brunswick BioFlo310 Fermentors with 2-L and 7-L vessels and Mettler equipped with Toledo probes for pH, dissolved oxygen, and CO₂, Genysis UV/Vis scanning spectrophotometer, Nanodrop spectrophotometer for small volume nucleic acid measurements, laminar flow hood, and a Sorvall Speedvac. Vortexes, stir plates, and analytical balances are also available.

Equipment available in collaborator’s laboratories:
For transcriptomic studies, we will work with our collaborator Dr. Frank Middleton (see attached letter of support) and we will be using the SUNYMAC Core Facility located at SUNY Upstate Medical University (a 5 min walk from our building) equipped with two Illumina sequencers for RNAseq applications, two Affymetrix hybridization ovens, three microfluidics stations, an Affymetrix GeneChip 7G/4C scanner with autoloader and two data analysis workstations (see attached letter of support).

Additional Equipment Available:
In addition, the research group has access to shared facilities and equipment scattered throughout SUNY-ESF’s Jahn Laboratory, including the following: Autoclaves, -80 °C freezers, -20 °C freezers, 4 °C, 30 °C, and 37 °C incubators, Sorvall RC-5B refrigerated centrifuge, Bio-Tek Synergy HT and H4 plate readers, BioRad Calibrated Densitometer, BioRad Pharos FX Molecular Imager with 488 and 635 nm laser unit, BioRad Chemidoc MP Protein and Agarose Gel Imaging System, Digital PCR, Malvern Zetasizer, BioRad Cipher Genetic Analysis System for DGGE/TTGE/SSCP Electrophoriesis, AB Sciex PA8000 Capillary Electrophoresis, and walk-in cold rooms/freezers. SUNY-ESF Analytical & Technical Services (A&TS) (www.esf.edu/ats/) will provide access to the following: light microscopy laboratory, Perkin Elmer Differential Scanning Calorimeter 4 for thermal characterization, TA Instruments 2950 Hi-res Thermogravimetric analyzer for thermo-degradation analyses, Hewlett Packard Model 5989B GC/MS, Hewlett Packard Series 1100 MSD LC/MS, Bruker AVANCE 300 MHz, 600 MHz, and 800 MHz NMR spectrometers, Bruker MALDI TOF/TOF Mass Spectrometer. For EMSA visualization, we have access to a Molecular Dynamics Phosphorimager. A&TS also has both light microscopy and electron microscopy facilities. Light microscopes are outfitted with SpotRT or K digital cameras (16000 X 1200 pixel resolution) and can be recorded into Spot, Image Pro Plus 7.0, Image J, or Photoshop. Also included in this facility are a new JEOL JSM-IT100LA Scanning Electron Microscope and JEOL JSM-2000EX Transmission Electron Microscope. This facility will provide us with microscope use and expertise for the proposed research. Space for experiments with radioactivity is available in Jahn Laboratory under the supervision of the campus radiation safety officer, Dr. Mark Driscoll.