



NSF ExFAB BioFoundry - UC Santa Barbara Site

Environmental Chamber and Integrated Equipment	
MBraun Custom 9' x 20' Environmental Chamber	Houses 15 pieces of equipment. Atmospheric control (Pure nitrogen, can supplement with <4% hydrogen and/or <10% carbon dioxide)
Thermo Spinnaker Robotic Plate Mover	Plate transfer, lidding/delidding
2 Thermo Cytomat 2 C450-Lin shaking incubators	Each: 42 standard or 14 deepwell microplate capacity, 4-50°C, shaking)
Tecan Fluent 780 workstation with Pickolo colony picker & vacuum manifold	Liquid handler (0.5 µL to 1 mL per dispense; 8 channel head w/ independent channels, 96 channel head. Heating, cooling, shaking, and magnetic blocks
Beckman Echo525 Acoustic liquid handler	Small volume liquid handler (25 nL to ~1.5 µL per dispense)
Thermo Multidrop Combi liquid handler	Bulk dispensing, 6-1536w plates, 0.5 to 2500 µL dispense range
HiG4 centrifuge	Microplate format, deepwell compatible, 5000 xg max spin
2 Thermo ATC Thermocyclers	96w and 384w format
Agilent PlateLoc	Plate sealer - gas impermeable opaque seal
Finneran-Povair Ultraseal Pro	Plate sealer - gas permeable, transparent seal
Azenta Xpeel	Plate peeler
Agilent BioTek Cytation C10 confocal imaging & multimode plate reader	Automated spinning disk confocal and widefield microscopy with 6 objectives including 60x water immersion; UV/Vis absorbance, fluorescence, luminescence; environmental control
Agilent BioTek Synergy H1 multimode plate reader	UV/Vis absorbance, fluorescence, luminescence
Beckman CytoFlex S 4-B2-Y4-R3 flow cytometer	Non-sorting; 4 lasers, 13 fluorescence detection channels, tube or 96w format

Benchtop Equipment with Anaerobic Capability	
Distek B1One 1250 Bioreactor	Precision cell culture; 2 L vessel (max working vol 1.5 L)
Cytek Aurora CS 4L FACS system	Cell sorting; 4 lasers, full-spectrum detection
HBio BTX Gemini X2 electroporation system with HT200	96w format
QSonica Q500 multiprobe sonicator	Cell lysis with 24 probe head
Omni Bead Ruptor Elite bead beater	Cell lysis, holds 24 sample tubes
Thermo Vitrobot Mark IV system	Semi-automated cryo-EM sample prep

Additional Equipment	
Molecular Devices ImageXpress HCS.ai high content imager	Automated spinning disk confocal and widefield microscopy with 4 objectives including 40x water immersion
3x Innova 44/44R stackable incubator shakers (BNL partner facility)	3 large orbital shakers for cell culture, 25-300 RPM, 4-80°C
Beckman Optima XE-90 Ultracentrifuge (BNL partner facility)	Max g force 694,000 xg; swinging bucket rotor (6 x 13.2 mL), fixed-angle rotor (8 x 39 mL); 0-40°C
Union Biometrica BioSorter large particle sorter	Sorts particles between 10-1500 µm
Thermo Multidrop Combi liquid handler	Bulk dispensing, 6-1536w plates, 0.5 to 2500 µL dispense range
Agilent 5300 Fragment Analyzer	Automated, 48 channel capillary electrophoresis; high-resolution size separation of nucleic acids; sample purity and quality analysis
Orbitrap Ascend Tribrid with Thermo Vanquish Neo UHPLC (LC-MS)	Liquid chromatography-mass spectrometry; best for proteomics, metabolomics and structural characterization
TSQ Altis Plus Triple Quad with Thermo Vanquish Flex UHPLC (LC-MS)	Liquid chromatography-mass spectrometry; best for targeted analysis of proteins and metabolites
ISQ7610 GC-MS with TriPlus RSH Autosampler	Gas chromatography-mass spectrometry; best for analysis of volatiles, lipids and low MW metabolites
Bruker Neoflex Imaging MALDI TOF/TOF	Standard sample and imaging MALDI mass spectrometer; best for rapid metabolite screening, biomolecule and polymer analysis, spatial analysis



NSF ExFAB BioFoundry - UC Riverside Site

Tecan Fluent 780 and integrated equipment	
Tecan Fluent 780 work station	Liquid handling for molecular, biochemical, or cellular workflows. 0.5 µL to 1 mL per dispense; 8 channel pipetting head w/ independent channels; 96 channel head; heating, cooling, shaking, and magnetic blocks
Tecan Spark UV/Vis Plate Reader	Absorbance detection for molecular, biochemical, cellular assays (96w, 384w)
Rotanta 460 Robotic Centrifuge	Molecular, biochemical, cellular workflows, microplate format, deepwell compatible, 5000 xg max spin
Liconic StoreX STX44 Incubator	Cell culture, temperature control, 44 microplate and 20 deep well capacity, 4-50°C, shaking

S&P Robotics Biomatrix BM3-BC Bench-top and associated equipment	
S&P Robotics Biomatrix BM3-BC Bench-top Configuration	Automated, high-throughput cell transfer, cell pinning
Pin replicator head 96 pins	Static pin replication head for cell transfer (liquid to liquid, solid to solid, liquid to solid, solid to liquid)
Pin replicator head 384 pins	Static pin replication head for cell transfer (liquid to liquid, solid to solid, liquid to solid, solid to liquid)
Colony picking head 96 pins	Dynamic pin replication head for colony picking and re-arraying (liquid to liquid, solid to solid, liquid to solid, solid to liquid)

S&P Robotics SPImager-A3 and associated equipment/capabilities	
S&P Robotics SPImager-A3	Colony imaging over time (incubates up to 160 SBS plates)
Geneva Scientific Incubator Model I-41NL	S&P Robotics SPImager-A3 sits inside this incubator (4-44°C)
PhenoTypic custom image analysis software	Automated quantification of colony growth rate, morphology, color

Opentrons Flex and integrated equipment	
Opentrons Flex liquid handling robot Opentrons NGS Workstation w/ HEPA UV	Liquid handling, molecular, biochemical, or cellular workflows, assay setup
Temperature block	96w format or individual microtubes (4-95°C)
Heater/Shaker block	96w format or individual microtubes (Ambient - 95°C, 300-3000 RPM)
Absorbance block	Measures the optical density of samples, 96w format
Thermocycler block	96w format or individual microtubes (4-99°C)

Miscellaneous equipment	
Isolation Bio Prospector Discovery Platform	Automated generation of microbial libraries
HBio BTX Gemini X2 electroporation system with HT200	96w format
Infors HT Minitrons Incubator Shaker	96w format or individual tubes, 4-65°C, 50-400 RPM
Excelsa E-25R Incubator Shaker	96w format or individual tubes, 4-65°C, 50-400 RPM
Heratherm Static Incubator (x2)	96w format or individual tubes, ambient+5-75°C

NSF ExFAB BioFoundry - Cal Poly Pomona Site

Equipment	Capabilities
Oxford Nanopore MinION Mk1D	Long or short reads of DNA or RNA fragments, ideal for small genomes and targeted application sequencing, such as: bacterial metagenomics, bacterial isolates, bacterial whole genomes, viral genomes, full length 16S/18S rRNA, whole transcriptomes and smaller transcriptomes
2 New Brunswick Innova 42 high temperature incubator shakers	Growth of thermophilic microbes; 19 mm orbit, 25-400 RPM; ambient + 10-95°C; 50 ml - 2 L volumes, up to 8 L culture total; continuous, timed, or multi-step programming