



NSF ExFAB BioFoundry - UC Santa Barbara Site

| Category | Environmental Chamber and Integrated Equipment | |
|----------|---|--|
| G | 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) |
| G | Thermo Spinnaker Robotic Plate Mover | Plate transfer, lidding/delidding |
| CC | 2 Thermo Cytomat 2 C450-Lin shaking incubators | Each: 42 standard or 14 deepwell microplate capacity, 4-50°C, shaking); atmospheric control (up to 10% CO2) |
| LH, CP | Tecan Fluent 780 workstation with Pickolo colony picker & vacuum manifold | Liquid handler (1 µL to 5 mL per dispense; 8 channel head w/ independent channels, 96 channel head. Heating, cooling, shaking, and magnetic blocks. |
| LH | Beckman Echo525 Acoustic liquid handler | Small volume liquid handler (25 nL to ~1.5 µL per dispense) |
| LH | Thermo Multidrop Combi liquid handler | Bulk dispensing, 6-1536w plates, 0.5 to 2500 µL dispense range |
| G | HiG4 centrifuge | Microplate format, holds 2 plates, deepwell compatible, 5000 xg max RCF |
| NA | 2 Thermo ATC Thermocyclers | 96w and 384w format |
| G | Agilent PlateLoc microplate sealer | Plate sealer - gas impermeable opaque seal |
| G | Finneran-Povair Ultraseal Pro microplate sealer | Plate sealer - gas permeable, transparent seal |
| G | Azenta Xpeel microplate peeler | Plate peeler |
| I, A | Agilent BioTek Cytation C10 confocal imaging & multimode plate reader | Automated spinning disk confocal and widefield microscopy with 6 objectives including 60x water immersion, and sets of standard fluorescence filters (from DAPI to Cy5) for Widefield fluorescence & confocal; UV/Vis absorbance, fluorescence, luminescence; 4°C above RT to 45°C |
| A | Agilent BioTek Synergy H1 multimode plate reader | UV/Vis absorbance, fluorescence, luminescence; reagent injector module |
| CS | Beckman CytoFlex S 4-B2-Y4-R3 flow cytometer | Non-sorting; 4 lasers including violet for small particle detection, 13 fluorescence channels, tube or 96w format |

CC Cell culture
 CS Cell sorting
 CT Cell transformation
 CL Cell lysis
 CP Colony picking/ pinning
 LH Liquid handling
 G General
 NA Nucleic acids
 I Imaging
 A Analysis

| Category | Benchtop Equipment with Current or Planned Anaerobic Capability | |
|----------|---|---|
| CC | Distek B1One 1250 Bioreactor | Precision cell culture (agitation, temperature, DO, pH control); 2 L vessel (max working vol 1.5 L) |
| CS | Cytek Aurora CS 4L FACS system | Cell sorting; 4 lasers including violet for small particle detection, full-spectrum detection |
| CT | HBio BTX Gemini X2 electroporation system with HT200 | 96w format |
| CL | QSonica Q500 multiprobe sonicator | Cell lysis with 24 probe head |
| CL | Omni Bead Ruptor Elite bead beater | Cell lysis; holds 24 x 2 ml, 12 x 15 ml, or 6 x 50mL sample tubes |
| G, I | Thermo Vitrobot Mark IV system | Semi-automated cryo-EM sample prep |

| Category | Additional Equipment | |
|----------|--|--|
| CC | 2x New Brunswick Scientific I26 incubator shakers | 2 large orbital shakers for cell culture, 25-400 RPM, 5-60°C, 1" orbit |
| LH | Thermo Multidrop Combi liquid handler | Bulk dispensing, 6-1536w plates, 0.5 to 2500 µL dispense range |
| G | Eppendorf 5904R refrigerated benchtop centrifuge | Centrifugation of plates or microtubes. Fixed angle rotor: 30 x 2 ml tubes, 20,800 xg max RCF; swinging bucket rotor: 2 x microplates, deepwell compatible, 2250 xg max RCF; -11-40°C |
| G | Beckman Optima XE-90 Ultracentrifuge (BNL partner facility) | Max RCF 694,000 xg; swinging bucket rotor (6 x 13.2 mL), fixed-angle rotor (8 x 39 mL); 0-40°C |
| NA | Agilent 5300 Fragment Analyzer | Automated, 48 channel capillary electrophoresis; high-resolution size separation of nucleic acids; sample purity and quality analysis |
| CS | Union Biometrica BioSorter large particle sorter | Sorts particles between 10-1500 µm; 3 filters: 498.5-521.5 nm, 532.5-557.5 nm, 603-627 nm |
| I | Molecular Devices ImageXpress HCS.ai confocal high-content imager | Automated spinning disk confocal and widefield microscopy paired with In Carta AI-powered analysis software; 4 objectives including 40x water immersion; 5 color LED illumination; RT + 5°C - 40°C |
| A | Orbitrap Ascend Tribid with Thermo Vanquish Neo UHPLC (LC-MS) | Liquid chromatography-mass spectrometry; best for proteomics, metabolomics and structural characterization |
| A | TSQ Altis Plus Triple Quad with Thermo Vanquish Flex UHPLC (LC-MS) | Liquid chromatography-mass spectrometry; best for targeted analysis of proteins and metabolites |
| A | ISQ7610 GC-MS with TriPlus RSH Autosampler | Gas chromatography-mass spectrometry; best for analysis of volatiles, lipids and low MW metabolites |
| A | 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

| Category | | Tecan Fluent 780 and integrated equipment | |
|----------|---------------------------------|---|--|
| LH | 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 | |
| A | Tecan Spark UV/Vis Plate Reader | Absorbance detection for molecular, biochemical, cellular assays (96w, 384w) | |
| G | Rotanta 460 Robotic Centrifuge | Molecular, biochemical, cellular workflows, microplate format, deepwell compatible, 5000 xg max spin | |
| CC | Liconic StoreX STX44 Incubator | Cell culture, temperature control, 44 microplate and 20 deep well capacity, 4-50°C, shaking | |

CC Cell culture
 CS Cell sorting
 CT Cell transformation
 CL Cell lysis
 CP Colony picking/pinning
 LH Liquid handling
 G General

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

NA Nucleic acids
 I Imaging
 A Analysis

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

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

| Category | | Miscellaneous equipment | |
|----------|--|--|--|
| CT | HBio BTX Gemini X2 Electroporation System with | 96w format | |
| NA | 4x Applied Biosystems MiniAmp Thermal Cyclers | 96w format or individual 0.2 ml tubes (4-99°C) | |
| CC | Infors HT Minitrans Incubator Shaker | 96w format or individual tubes, 4-65°C, 50-400 RPM | |
| CC | Excella E-25R Incubator Shaker | 96w format or individual tubes, 4-65°C, 50-400 RPM | |
| CC | Heratherm Static Incubator (x2) | 96w format or individual tubes, ambient+5-75°C | |