**[Robotics Core Facility](http://bauercore.fas.harvard.edu/technologies)**

**URL:** <http://bauercore.fas.harvard.edu/technologies>

**Faculty Director:** Michael Desai

**Laboratory Manager:** Claire Hartmann (formerly Reardon)

Please contact Claire (claire@cgr.harvard.edu) if you plan to submit a grant proposal referencing resources in this core, and she will help you to select the instruments and plan your experiments.

**Description:**

*Square Footage:* 2,077

*Facility Location:* Northwest Labs, B239

The Robotics Core Facility offers access to instruments for liquid handling, thermal cycling, and many other instruments.

**Major Equipment:**
The Robotics Core has a wide variety of liquid-handing instruments:

* Tecan Evo: This robot has eight independent pipetting tips for automated liquid handling in a variety of vessels, including microtiter plates, tubes, and slides. Applications include: PCR setup, reagent dispensing, sample dilution and reconfiguration.
* Beckman BioMek FXp: This two pipetting instruments are used for high-throughput liquid-handling applications in microtiter plates. Both have a 96-channel pipetting head and one also has an 8-tip head with adjustable span. Applications include: plasmid purifications, PCR setup and purification, sequencing library preparation, and plate-to-plate transfers or replications.
* Formulatrix Mantis: This low volume liquid dispenser is easy to program and use. It can dispense down to 100nl with high precision enabling reaction miniaturization. 6ul dead volume minimizes waste of precious reaction components.
* The core also has several simple dispensers that can handle 96- and 384- regular and deep-well plates.

The Robotics Core has a number of thermal cyclers for performing standard PCR, Quantitative Real-Time PCR, and Droplet Digital PCR:

* BioRad CFX96 Touch and CFX384 Touch: These systems are used for real-time quantitative PCR in 96-well and 384-well plates, respectively. Features include rapid cycling, a gradient capability for protocol optimization, and a linear dynamic range of ten orders of magnitude. The 96 system is capable of five-color detection and the 384 system is capable of four-color detection.
* Applied Biosystems 7900HT: This system is used for real-time quantitative PCR in 96-well plates, 384-well plates and TaqMan Low Density Array cards. Features include a fast cycling mode and a linear dynamic range of nine orders of magnitude.
* The Fludigm Biomark system uses microfluidics to enable low volume QPCR of up to 96 samples across 96 assays (genes).
* The BioRad QX200 encapsulates QPCR reactions into up to 20,000 droplets to enable digital readout of the PCR reaction. This allows for increased sensitivity of detection making this system particularly good for absolute quantification of rare genes/transcripts or detection of small fold-changes in expression.

In addition to the instruments listed above, the core has several other instruments that fall into these broad categories:

* Biomolecular Interaction Analysis (SPR)
* Imaging Systems
* Nucleic Acid Isolation
* Plate Readers
* Sample QC