Core Facilities and Instrumentation Development at Yale

Yale Day of Instrumentation

January 24, 2020

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Yale *Research Core Facilities*

Research Core Facilities at Yale

Yale Central Campus

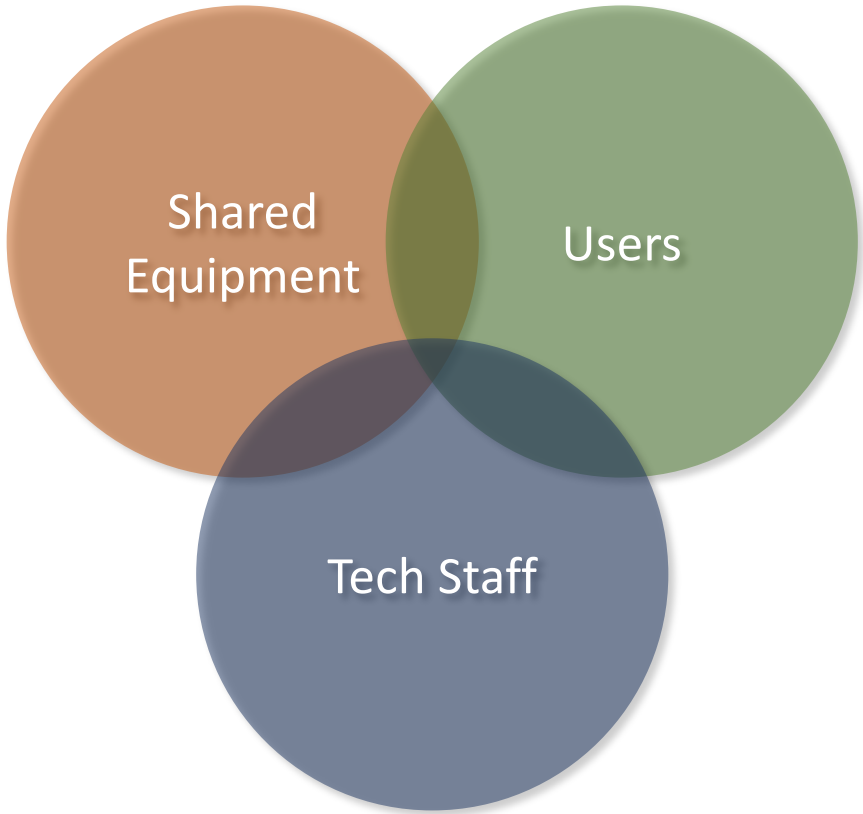
Yale West Campus

Yale School of Medicine

Imaging	Analytical	Fabrication	Animal Technology	Computational	Biomedical
Light microscopy Electron microscopy MRI	Mass Spectrometry NMR Optical Spectroscopy	Machine Shops Glass Blowing Cleanroom Microfab	Laboratory Animals Gene Editing Phenotyping	Bioinformatics Research Computing	Drug Discovery Flow Cytometry Histology

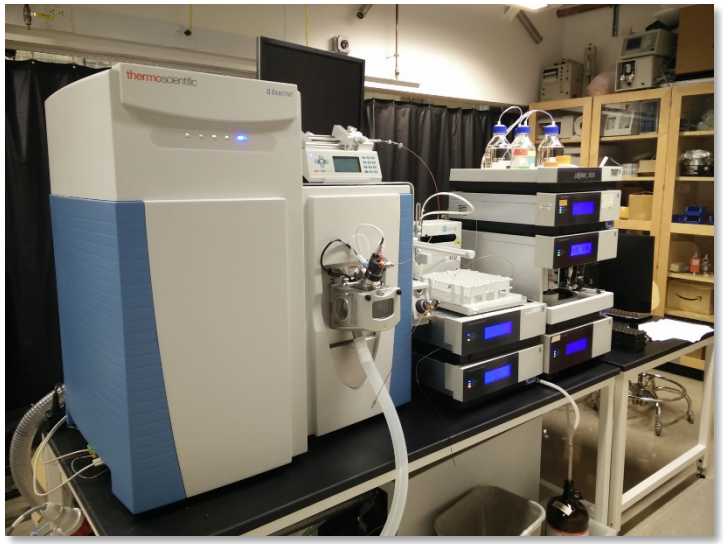
Intersection of Cores and Instrumentation

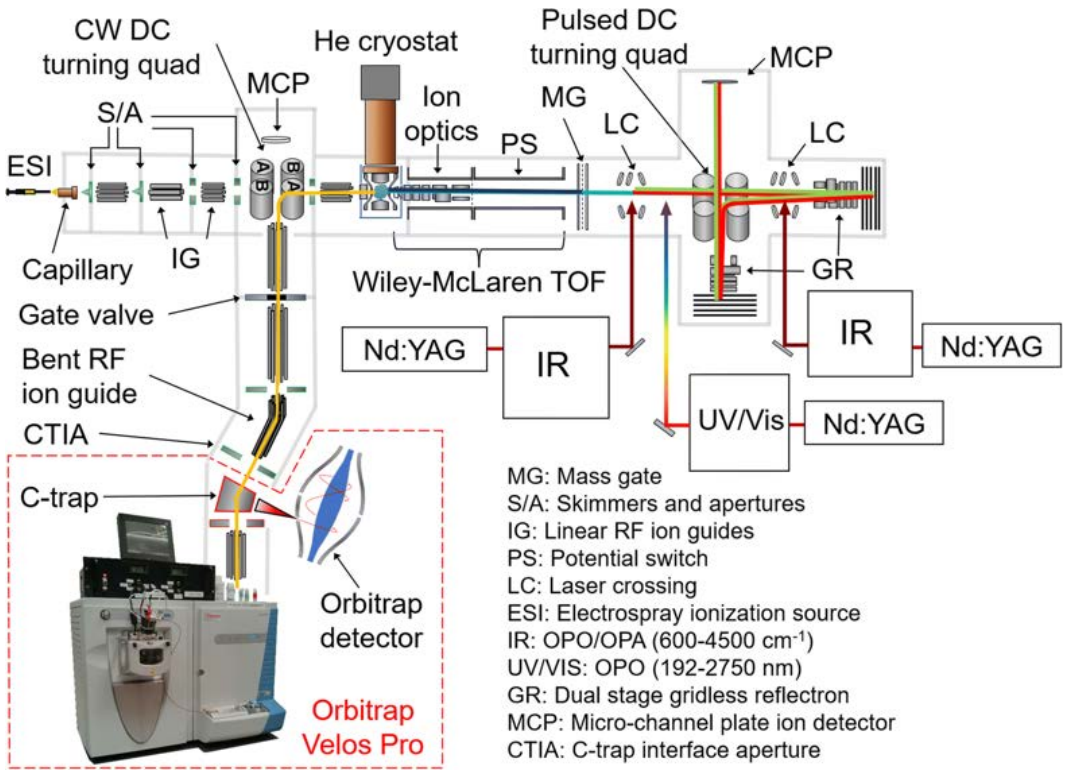
- Cores bring people together
- Interdisciplinary research
- Non-traditional users
- Expanded role of core staff
- Next generation instrumentation
  - Extensive access to core equipment
  - Validation and dissemination
  - New capabilities in existing cores
  - New cores to serve specific unmet needs
- Shared challenges
  - Data management
  - Equipment funding
  - Space allocation



MRI Development – Hybrid Mass Spectrometry

- Combines mass spectrometry with vibrational spectroscopy
- Leverages core staff expertise
  - CBIC Staff (Fabian Menges)
  - Gibbs Machine Shop



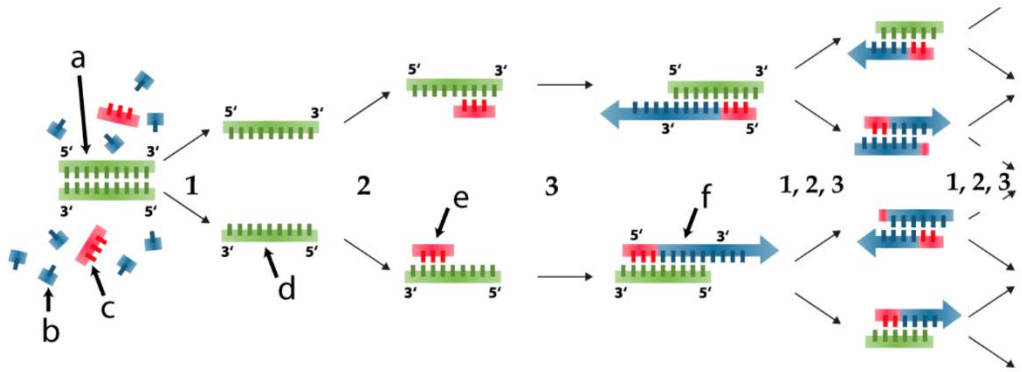


NSF MRI Award #1828190

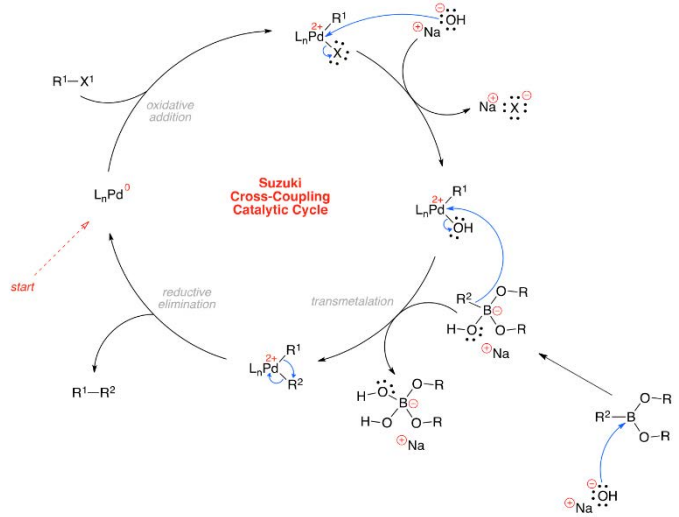
Instrumentation

Broadly, instrumentation can include tools for Yale research.

Transformative discoveries in molecular biology, chemistry and medicine are molecular tools.



https://sciencemusicvideos.com/ap-biology/genetic-engineering-and-biotechnology/polymerase-chain-reaction-pcr-tutorial/



http://www.name-reaction.com/suzuki-cross-coupling

Dedicated Core Scientists

Xiaojun Xing, Co-Director of Yale Genome Editing Center

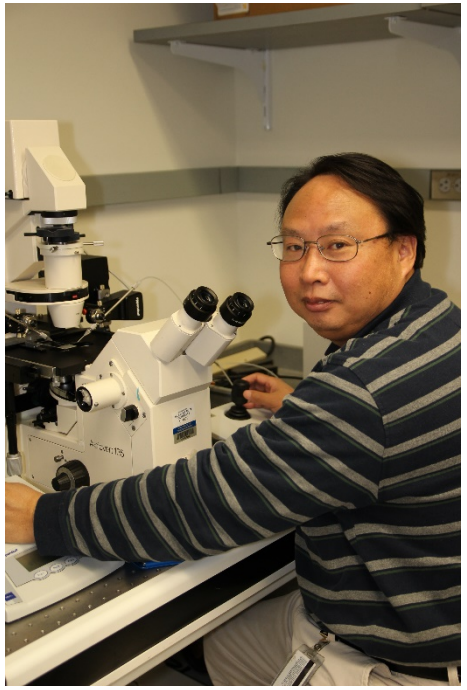
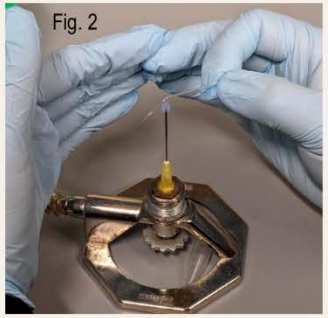
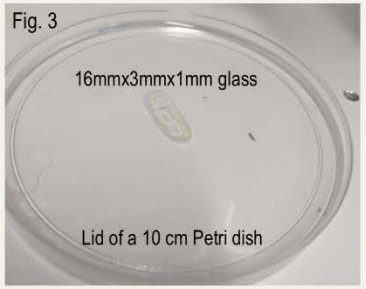


Fig. 1: Embryo handling device based on Hamilton pipette controller
Fig. 2: Modified Bunsen burner to ensure sharp, focused flame
Fig. 3: Custom injection chamber featuring an elevated glass platform in the center





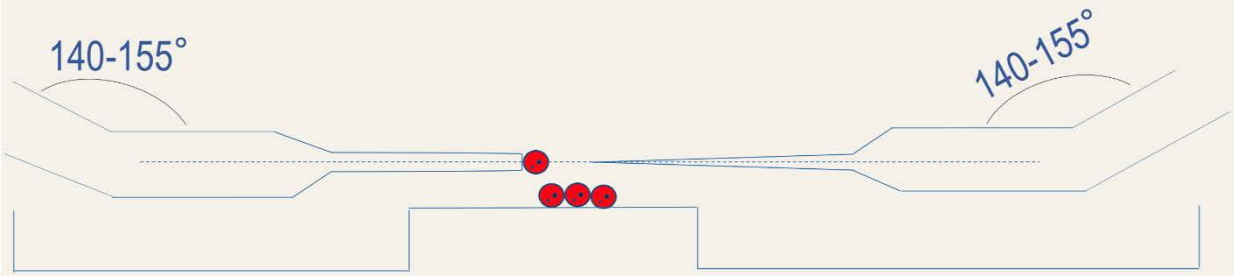


Fig.B Zero angle microinjection (ZAM) method

Zero Angle Microinjection Poster presented at International Society for Transgenic Technologies, April 2019, Xiaojun Xing, Timothy Nottoli, Suxia Bai

Technology-Specific Controls at Cores

Quality controls for key reagents, consumables, samples

Calibration and detection controls

Accuracy and precision controls

Spike in process controls

http://vp-sci.com/Beckman

Engaged Core User Groups

User Group meetings

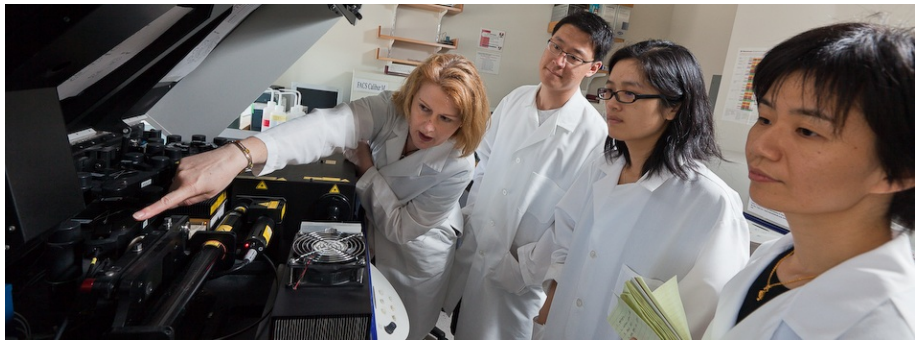
Training

Workshops

CyTOF Core

University Cleanroom and YINQE

Advanced Light Microscopy Core



Yale Flow Cytometry Core

Integrate Cores in Technology Development

Share your needs and ideas with core scientists and us.
b.myers@yale.edu and janie.merkel@yale.edu

Participate in meetings like this one that bring together researchers with differing perspectives.