Core Laboratories Center

Abby & Howard P. Milstein Chemistry Core Facility

Overview

The WCM CCL Chemistry Core Facility provides state-of-the art chemical synthesis and analysis resources and services, and expertise in their applications, to the WCM community and to outside investigators. Services include (1) chemical synthesis for compounds that are not readily available, for assay development and reagents and for compounds for in vitro and in vivo assays, for large-scale chemical synthesis of compounds; and (2) rapid analysis for structure-activity relationship studies on pharmacophores, for structure determination of unknown molecular entities, for chemical analysis of reaction mixtures, cell extracts and bioassays, and for molecular modeling and in silico screening. The core facility provides consultation on project design and data analysis, and offers seminars, training and educational workshops.

Chemical Synthesis

- Chemical synthesis of compounds that are not readily available or are prohibitively expensive from commercial vendors.
- Synthesis of assay development tools and reagents including: synthetic and analog pharma compounds, library-labeled compounds, compounds for evaluation of library diversity (QSAR, SAR), and compounds for medicinal chemistry.
- Synthesis of compounds to query libraries or for in vitro and in vivo assays, and for chemical assays.
- Large-scale chemical synthesis of compounds with demonstrated biological activity in primary assays, to provide medicinal chemistry investigations.
- Continuum synthesis of compounds identified by high-throughput screening.
- Structure-activity relationship (SAR) studies on validated pharmacophores, with special attention to potency, specificity, and bioavailability, while maintaining toxicity.
- Detailed determination of structures and unknown molecular entities.
- Elemental analysis of biological extracts, and bioassays.
- Structural biology and purification of complex mixture reactions.

Gas Chromatography Mass Spectrometry (GC-MS)

- Maintenance compound identification and quantitation with a wide dynamic range. 10 pg-100 mg.
- Routine, high-performance analysis with both internal and external standards.
- High levels of sensitivity and selectivity as the base analysis with hybrid CI, both positive and negative.
- User-friendly, versatile data collection, internal standardization (IS), external standardization (ES) or hybrid chemical ionization (CI). (MS.

Ultra-Performance Liquid Chromatography / Mass Spectrometry (UPLC/MS)

- Confident identity and purity of molecular products, accessibly and quickly, using the ACQUITY UPLC system.
- Detection include UV/VIS, fluorescence, and electrospray mass spectrometry (triplex). 6000Q.
- Low-dispersion design allows complex samples to be analyzed uncompromisingly, chromatographically.
- Low carryover with the choice of sample manager design (direct Load as Flow Through-Loader, compacting MS interface, and expanding linear dynamic range of MS and other UPLC detection.
- Mounted peak capacity to reduce the limitations of detection by fully resolving analytes from background interferences.

Contact Information

Abby & Howard P. Milstein Chemistry Core Facility
J. David Warren, Ph.D., Director
jdw2@med.cornell.edu
http://corefacilities.wellcometrust.org/cfn_cornell

For more information on the Milstein core facilities, please see the website of the WCM Core Laboratories (http://corefacilities.wellcometrust.org/cfn_cornell).