Ole Miss and Waters Corp. Establish Cutting-Edge Natural Products Training Center

On April 13, 2016, the west wing of the Thad Cochran Research Center (TCRC) was dedicated at the University of Mississippi (UM/Ole Miss) in Oxford, Mississippi. About 3,000 square feet of the new wing will be used for the activities of the new Natural Products Training Center (NPTC) program. This program falls within the operations of the National Center for Natural Products Research (NCNPR), which is housed within the TCRC.¹

The new NPTC program is a collaboration between the NCNPR and Waters Corporation, a company established in 1958 that offers a range of chemical analysis system solutions, software, and services for scientists.²

The NCNPR is "a university-based academic research unit devoted to the discovery and development of new pharmaceutical and agrochemical technologies based on the amazing chemical diversity of living organisms — plants, animals, and microbes," according to its website.³

The NCNPR is also a primary partner with the American Botanical Council (ABC) and the American Herbal Pharmacopoeia (AHP) in the ABC-AHP-NCNPR Botanical Adulterants Program.

The west wing of the TCRC is still under construction, and it is estimated that the total cost of the expansion will be $40 million when it is completed in 2017. The space allocated for the NPTC program includes a botanical methodology laboratory, a microscopy laboratory, an analytical laboratory, and an informatics laboratory, as well as botanical exhibits.

The state-of-the-art research space "will provide hands-on training in plant taxonomy, laboratory analytical techniques, and quality standards for botanical-based products," said Don Stanford, assistant director of the university’s Research Institute of Pharmaceutical Sciences (which includes the NCNPR), in an article released by the university.¹

"In addition, the NPTC will expand the capabilities of the School of Pharmacy to discover new drugs, and to expand the scientific knowledge base of medicinal plants and other natural products."

The NPTC space will be used to educate government officials, academic and industry professionals, scientists, and others about good manufacturing practices (GMPs) for natural products and botanical dietary supplements.¹ According to Ikhlas Khan, PhD, associate director of the NCNPR and member of ABC’s advisory board, the space is intended for any interested parties, including Ole Miss pharmacy students (email, April 25, 2016).

"This training lab was created while keeping the future of the dietary supplement industry in mind," Khan is quoted as saying in the news article.¹

Waters contributed software and several cutting-edge analytical systems for the new space, including three high-performance liquid chromatography-mass spectrometry (HPLC-MS) systems, which allow for the separation, detection, and potential identification of chemicals that are contained in complex mixtures, based on their specific molecular weights and fragmentation pattern. Waters also contributed an accelerated supercritical fluid extraction system, which allows for the extraction of compounds without using an organic solvent (e.g., ethanol or acetone).

"The ACQUITY UPLC/Q-TOP [ultra-performance liquid chromatography tandem quadrupole mass spectrometer]
provides ultimate sensitivity to identify and quantitate trace-level constituents of natural products," Stanford is quoted as saying about one of the analytical tools provided by Waters.

"Two other [HPLC] and [UPLC systems], coupled to mass spectrometers, photodiode array and evaporative light-scattering detectors, will offer training experience in a multitude of applications. The Waters Empower enterprise network system will allow multiple users in the NPTC informatics training lab to control the instruments remotely," Stanford said.

According to Kelly Johnson, the senior manager of worldwide strategic relations at Waters, the partnership between Waters and Ole Miss focuses on their mutual interests in improving the scientific knowledge base in the areas of natural products and botanical dietary supplements (email, April 27, 2016).

"Through expert-driven curricula and best practices that extend far beyond the laboratory, both institutions hold a sincere belief that this shared initiative will achieve beneficial results to raise the analytical bar on a global scale," Johnson wrote. "Waters is proud to be at the forefront of innovation and collaboration with our UM colleagues, aligning our customers' needs with the [NCNPR] mission to substantially progress research and training."

The NCNPR was established in 1995, and it has had a partnership with the US Food and Drug Administration (FDA) since 2000. The TCRC opened in 1995 and has housed a number of programs and departments of the Ole Miss School of Pharmacy.

--- Connor Yearsley

References