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Things in small packages

Whether it's synthesizing a multitude of compounds in minuscule amounts or analyzing the harmful effects of pathogenic microorganisms, drug discovery operates on the very small scale. Faster, better, cheaper—and smaller—may well be the pharmaceutical industry's watchwords for R&D. Keeping this in mind, February's issue of *Modern Drug Discovery* focuses on the challenges and benefits of trying to reap economies of "small" scale.

Combinatorial chemistry, for example, has increased the speed at which researchers generate compounds for screening. But, in contrast to traditional synthetic chemistry methods, it often produces samples that are difficult to identify, purify, and quantify. In this month's cover story, Bing Yan, director of analytical sciences in Discovery Partners International's chemistry division, offers hope on how to improve the process by applying quality control standards to address compound purity and yield.

Looking again on the small side, *MDD*'s Tool Box department addresses the challenge of reliably handling and transferring liquids on the nanoliter scale. Despite success in moving toward ever-smaller volumes, researchers face the additional hurdle of making small-scale liquid-handling systems compatible with life science applications. One solution, described by Richard Ellson and Roeland Papen of LabCyte, couples focused acoustic transfer with the use of glass capillaries as sample conduits or reaction vessels.

Reducing the volumes of biological samples, such as blood, and facilitating their automated collection are the goals of an in vivo sampling approach outlined in *MDD*'s Applications Notebook. It offers the possibility of getting more data faster from fewer laboratory animals, explains Peter T. Kissinger, professor of bioanalytical chemistry at Purdue University and founder of Bioanalytical Systems, Inc.

In separate stories, *MDD*'s senior editors Randall Willis and Mark Lesney report on the highly topical subjects of microbial infection and bioterrorism. Provisions of the U.S. Bioterrorism Act of 2002 will be coming into effect throughout 2004. Lesney outlines the implications and some changes the act will bring to drug regulation and to R&D.

Although biodefense has moved decidedly to the forefront of government and scientific thinking, detecting microbial species remains challenging, as Willis highlights in another *MDD* feature story. Time and sensitivity remain the two biggest stumbling blocks to large-scale testing. Academic and industrial researchers are tackling these problems by developing new approaches based on bacteriophages, antibody-based assays, and genomic analysis. Meanwhile others—see "The innate defense" on page 43—are creating anti-infective therapeutics that use the body's own immune mechanisms.

These stories—along with *MDD*'s other regular departments and features—make up the package of information that we offer this month, and every month, to keep readers informed about events and trends in drug R&D. This month also marks my joining the magazine as editor after more than 15 years covering pharmaceuticals and biotechnology for the American Chemical Society's *Chemical & Engineering News*.

Along with *MDD*'s experienced staff, I look forward to offering the most relevant, interesting, and timely package of information available. Drug discovery and development are exciting and dynamic fields, and *MDD* will strive even harder to keep in step. Faster and better will be our watchwords as we report on advances in science, technology, research, and regulation, and on the business of drug R&D.