Contemporary Clinical Research: Achievements, Opportunities, and Realities

Many major breakthroughs in biomedical research and therapy development have been possible only because of close cooperation of academic researchers with the pharmaceutical industry. Outstanding historic examples include the discovery of penicillin and its further development, the invention of corticosteroids for therapeutic use, and the identification of streptomycin as a novel antibiotic. Thus, pharmaceutical companies have played crucial roles in the success stories of medicine. Today it is even more important to recognize that the continued development of modern medicine is dependent on technical innovations as well as large strategic investments, and that interactions between academia and industrial partners are increasingly important. Recent examples of remarkable successes include breakthroughs in the therapy of metastatic melanomas; the development of chimeric antigen receptor T-cell therapy for multiple malignancies; and the discoveries of novel efficacious treatments for patients with psoriasis, atopic dermatitis, and urticaria. These advances have completely changed therapeutic approaches to these patients.

The remarkable success of these new therapies demonstrates how effectively academia-industry interactions can result in patient benefit. However, these interactions also raise a number of questions and concerns that academia and society in general should be aware of, and which should be discussed openly.

Although relevant basic science discoveries are often made in academic institutions, pharmaceutical companies sponsor most clinical trials. Academic centers often provide relevant and essential expertise in support of these trials, but public funding is usually not sufficient to cover the full costs. Therefore, the design and purpose of clinical trials is influenced by the interests of sponsoring pharmaceutical companies. This has a number of consequences. First, companies are not necessarily interested in limiting the use of a well-tolerated and active therapeutic agent. For example, presently there are few good studies that clarify whether continuous administration of biologics in psoriasis is required, or whether biologics could be discontinued some time after clearance of skin symptoms. Another consequence is that interests of the pharmaceutical industry have led the dermatological community to focus on successful therapeutic trials for common diseases like psoriasis and atopic dermatitis. This is obviously driven by the fact that therapeutics for these diseases have a much higher potential financial return than do therapeutics for rare diseases with correspondingly limited markets.

Finally, there is intense corporate marketing activity leading to numerous sponsored symposia that summarize the successes of new therapies in association with most academic conferences. By default, other pressing topics in biomedicine are deemphasized and do not gain sufficient attention. Emphasis on a restricted range of topics has direct and indirect implications for clinician-scientists who are looking for funding to support research endeavors. Over time, imbalanced involvement of industrial partners in establishment of research agendas could lead to a shift in the emphasis of biomedical research in dermatology and other disciplines.

There is no question that patients have benefited from the involvement of pharmaceutical companies in clinical research. However, the biomedical academic community has broad overarching responsibilities. These include the duty to guarantee continued research regarding, and the development of new therapies for, all patients, including patients with uncommon diseases. The academic community also has an obligation to provide broad unbiased education for students and young researchers. Perhaps most importantly, the academic community must guard its scientific independence and its credibility and maintain the trust of both patients and society at large. In addition, governmental funding agencies must invest enough in academic centers and academicians to enable them to be attractive and influential partners for industry. Government also has the responsibility to make sure that sufficient resources are available for basic and clinical research.

research that provides foundations for future novel developments. Finally, society at large must support the education and training of young scientists and clinicians who can address the breadth of topics represented in biomedicine and not only focus on the disease or therapy of the day.

Broad and unbiased publication of research in skin biology and dermatology is a major aim of the *Journal of Investigative Dermatology* (JID). With that in mind, the editors have invited statements from representatives of the academic community and pharmaceutical industry related to their experiences with—and visions for—past, present, and future clinical research efforts. Although these considerations and reflections apply to biomedicine in general, new developments of targeted therapies in psoriasis represent outstanding examples. Therefore, in this issue of the JID, you will find the viewpoint of an experienced clinician, who has for many years chaired a Dermatology Department in the Netherlands and who has been involved in many clinical trials for psoriasis. A perspective of pharma is provided by scientists working in academic institutions as well as industry who are also involved in the development of the new approaches for psoriasis. Both perspective articles comment on academic—industry relationships from different angles, but both highlight similar challenges and opportunities.

It is clear that interactions involving representatives of industry and academics as complementary, bidirectionally influential partners can markedly enhance development of new therapeutics. However, the complexities and sometimes competing interests of these relationships must be managed carefully. The scientific community has to find ways to accept support from pharmaceutical companies with their distinct infrastructure and missions and at the same time independently conduct clinical research that is outside of the mainstream. Government must make sufficient funds available to allow such independent scientific work, to facilitate effective dissemination of results, and to support development of novel therapeutics for patients with uncommon illnesses.

Recent progress in biomedical research relevant to patients with dermatologic and other diseases has been remarkable. Ensuring that patients with uncommon as well as common diseases ultimately benefit will be a challenge. Continued dialog, priority setting, and resource commitment is required. A successful process should include patients, patient representatives, academic clinical researchers, representatives of the pharmaceutical industry, and government officials. Cooperation and compromise will be key.

**CONFLICT OF INTEREST**
The authors state no conflict of interest.

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