hence it is not realistic to expect good predictions in every case. Such forecasts are mostly better within a chemical series, and predictions tend to fail when comparing across several chemical templates. Although *in vitro* technology has had a much longer life-span, this still cannot provide all the answers and often fails to predict *in vivo* observations. It is important that *in vitro* and *in vivo* data are constantly fed back into the *in silico* models , which can be helpful for their improvement. Thus, it is still early days for *in silico* technology, but there is no doubt that it will continue to play a key role in drug discovery and development. We look forward to a day when drugs can be designed on a computer in the way aircraft are today!

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Aggressive outsourcing yields therapeutic breadth

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The business stream of IBC's *Drug Discovery Technology Europe* conference (16–18 April 2002, Stuttgart, Germany) covered a wide range of issues, from the strategic management of drug discovery through to partnering and outsourcing, and was supplemented by a session on licensing.

Of lasting concern here was the observation made by many speakers that despite the cost and effort involved in introducing new technologies over the past few years, there has been no apparent impact on the number of new chemical entities (NCEs) entering the market. Some speakers ascribed this problem to a lag phase between the implementation of technology and the effects of its use. Others argued that the whole process does not seem to have been shortened as many more targets need work-up and validation, and that there is an inherently increased risk of failure in development with less validated targets. Efforts are being made to improve the backlog of targets by partnering and outsourcing, and it is hoped that organizational improvements will aid this process.

Failing R&D

There is also an interesting split developing in the management philosophies being employed to tackle the apparently failing output from R&D (diminishing returns). In a keynote address John McKearn (Pharmacia Discovery Research, Peapack, NJ, USA) argued for the need to consolidate research into a few therapeutic areas and to pay attention to the organization. During mergers the focus is always on the development pipeline, but over 50% of mergers fail to achieve their promise in this respect and the future lies in discovery research. Pharmacia was formerly faced with a relatively complex situation with some anomalies of focus. For example, at the time of their merger Pharmacia and Upjohn had dropped inflammatory research and invested in anti-infective research, whereas Searle did the opposite. In the new merged company both areas have prominence, thus concentrating expertise in research alongside marketing and leading to their interests in metabolic disorders being directed into a new company, Biovitrum, in order to maximize value.

McKearn admitted to a personal disappointment at losing a good research group and thus to a lower headcount in research, but also felt satisfaction in the production of a company with a good pipeline and prospects. This was underlined later in the conference when, in a talk on outsourcing, Johan Kördel (Biovitrum, Stockholm, Sweden) disclosed

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how external collaborations had helped to produce the company's 11β-hydroxysteroid dehydrogenase compound BVT3498, which has recently been successful in Phase I clinical trials. The Pharmacia philosophy is that by concentrating the portfolio and managing it aggressively with decisions based on data, success will be achieved. Key to this is the promotion of a uniform leadership style that is not risk-averse. The best leaders are identified and developed, maximizing internal abilities (personal skills and qualities) with mentoring, to create a learning environment. At this early stage hard decisions seem to be paying off for Pharmacia, with improvements in most performance indicators, which is an unusual situation post-merger.

Speakers from Pfizer and Novartis in both the science and business streams subscribed to what is essentially the opposite approach. In these companies the approach in introducing new technologies has been to increase their flexibility of response by maintaining expertise in a large portfolio of therapeutic areas and by aggressively outsourcing to supplement in-house efforts, with up to 30% of R&D spend being placed externally. The theory is that by having more therapeutic areas to select from, the potential returns from investment in research are maximized across whole receptor families. In this approach a trawl through a particular family is expected to produce leads for several promising receptors. As the final role for any agent acting at a new receptor is essentially unknown, a wider choice of business opportunities should maximize the company's ability to get a drug on the market in at least one therapeutic area.

One example of this approach was presented by Siegward Strub (Novartis Pharma, Basel, Switzerland) and Iain Buchanan (Vertex, Cambridge, MA, USA) as they discussed their collaboration in the kinase field. If this collaboration meets its targets it will generate eight new drugs for Novartis' therapeutic areas of interest over the next six years. The structure of the deal was described in some detail and is notable for its aggressive emphasis of the possible rewards – notably for Vertex – to provide an incentive for success, with up to US$800 million at stake if the project runs to plan. The collaboration seems to be on a sound structural and organizational footing and offers an example of how creative outsourcing can significantly add to a pharmaceutical company's prospects.

New deals

The other main theme running through the business stream was concerned with the way that deals are constructed and also the changing nature of those deals. In describing the factors likely to help in raising funds, Michael Lytton (Oxford Bioscience Partners. Boston, MA, USA) said the prospects for platform companies are now limited. One fallout from the heavy investment in new technologies between 1995 and 1999 is that major pharmaceutical companies are much more wary of buying into platform technologies. Rather, the swing is moving towards rental or leasing-type deals with a fee for service and fee for access basis. The knock-on effect is that this significantly reduces the value of such platform companies and hence the interest of the venture capital funds. Lytton proposed that some level of cooperation with others would be necessary before such companies would be sufficiently attractive to gain start-up funding in the future.

Conclusions

The business stream provokes several final thoughts. Consolidation of the industry into fewer, large companies has itself led to an increase in the number of biotech companies and service collaborators by shedding personnel, technologies and resources. Therefore, is the trend for these small companies to become more involved in collaborations and alliances or to be acquired by larger biotechs? Is the industry consolidating or diversifying its research, and if consolidation seems to have failed to deliver new drugs what will diversification offer?

Conference reports

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