(Slough, UK), for instance, signed a deal on November 10 with Penwest Pharmaceuticals to come up with a way of releasing chiral isomers at differential rates, after discovering that the isomers within its D6428 analgesic are *both* active and have different and complementary profiles. "Just because you have a single isomer doesn't mean you're going to have a drug that is going to be safer and or more effective than the parent compound," says Drake.

The trouble is there's no real way to tell this ahead of time—you have to do the work in the clinic to understand the mechanism and relate it to therapeutic and side effects. "The number of opportunities for new racemic switches are limited," says David Hipkiss, head of marketing at Ascot Fine Chemicals (Cambridge, UK). "And even if you go all of the way right to market…you have no guarantee that either yourself or your marketing partner will make that product a success."

Fundamentally, says Hipkiss, chirality is a key part of any biological process and consideration should be designed in from the start. "You would expect that in the main a product that is specifically designed to do a job would do better than a product that may be not designed so specifically." Indeed, final formulation sales for single-enantiomer pharmaceuticals increased 16% to $115 billion in 1999, accounting for a third of the $360 billion market, according to Technology Catalysts.

Nevertheless, analysts maintain that R-fluoxetine's case cannot be generalized. "The bottom line is that…it really says nothing about single isomers," says Richard Silver of Lehman Brothers. "The fact of the matter is drug development is risky no matter what…You have to look at every drug case by case."

Lilly's decision to pull out was certainly influenced by a US federal appeals court ruling in August that effectively means that Prozac loses patent protection in 2001, not 2003 as had been expected. Lilly had planned to switch its Prozac customers over to R-fluoxetine before 2003. With the R-fluoxetine side effects necessitating a re-trial at a lower dose—something that would take a couple of years—there was little point continuing because generics would hit the market before that trial was complete.

Meanwhile, Drake says with 14 other products in the clinic, Sepracor can easily compensate for its recent loss; "It's likely 6 to 9 new products will be approved in the next 4 years."

Emma Dorey

Dutch bill unlikely to revive industry

The Dutch parliament is currently considering a bill outlining the coalition government's position on biotechnology. Intended to boost investor confidence in the country's flagging biotechnology industry, the bill clarifies the country's position by bringing together in one document various efforts and policies already in operation. However, there is unlikely to be any real change in the industry until parliament is no longer dominated by factions that favor stringent biotech regulations. Nevertheless, all parties insist such a document is the best way forward.

The Dutch government has been a coalition of a social democratic party, the Partij van de Arbeid (PvdA), and two liberal factions—the right-wing Volkspartij voor Vrijheid en Democratie (VVD) and the Democraten '66 (D66) since 1998. Complaints from companies about conflicting strategies and inconsistent regulations from different government departments prompted Parliament to ask for this bill. "Five ministries and the EU are involved in biotechnology," says D66 member of parliament Pieter ter Veer, "Sometimes there is no coherence at all." The resulting document, *Integrale nota biotechnologie: kansen verantwoord en zorgvuldig benutten* is a joint effort by the minister of Economic Affairs (VVD), the minister of Agriculture, Nature and Fisheries (D66), the minister of Education, Culture and Science (VVD), the minister of Health (D66) and the only social democrat, the minister of Environmental Affairs (PvdA).

Reflecting Social Democrat views, the bill specifies no commercial release of crops containing antibiotic resistant genes, supports the labelling of GM food, and calls for a public debate in 2001 on biotechnology and food, and a broadening of the scientific advisory committee for GMO-releases to include social scientists, ecologists, and an ethics expert.

But from the economically minded Liberal side, the bill also outlines the effort already underway to create 75 new companies by 2005. 60 million guilders is being used to stimulate research on bio-informatics and genomics, and 100 million guilders (US$50 million) over four years on encouraging entrepreneurship by setting up incubators and educating young biotechnologists in commerce.

This move was prompted by concerns that the Netherlands lacks a 'booming' biotech region comparable to those around Wenen, Berlin, Gent, and Munich. Spending on biotechnology in Holland has dropped significantly from 380 million guilders (US$190 million) in the 1980s to only 11 million guilders between 1990 and 1994—the least amount spent by any European country with a significant biotech industry. Gerard van Beynum, chair of Economic Affairs advisory committee, attributes this in part to a loss of key government officials who understood the importance of a strong biotechnology industry.

Industry representatives hope that presenting a unified vision will also boost investor confidence. "More important than the money [for startups], is an improvement in the investment climate," says Ter Veer, "And that's the benefit of this Integral Document: with this the Dutch government has spoken out that biotechnology is important for the Netherlands."

However, the new bill will not change the fact that the Netherlands has one of the most stringent and confusing biotechnology policies in the EU. For instance, although protein therapeutics derived from genetically modified animals are socially acceptable, animal welfare concerns mean that cloning and genetic modification of animals (including mice) are allowed only if they are shown to be in the public's best interest and there isn't an alternative—something the Commission for Animal Biotechnology decides after a public hearing of each case. As a result, Pharming (Leiden), for example, chose the US over the Netherlands in 1997 to set up a subsidiary to develop transgenic cows. Yet the medical proteins from transgenic rabbits developed by Pharming (Belgium) are being tested against Pompe's disease in a Dutch hospital.

In addition, although the liberals and social democrats each comprise 30% of parliament, the social democrats are always supported by the Christian democratics (CDA) (20%), the Green and socialistic parties (10%), and the Christian parties (5%). Therefore, attempts to loosen restrictions governing biotech research are usually thwarted. This summer, for example, parliament voted against implementing the EU directive on patenting of GM animals and plants—an issue that is now being debated by the Council of State.

Nevertheless, PvdA member Willie Swildens is optimistic about the government's joint efforts. She still thinks it is possible to come up with a common vision of the part biotechnology has to play in the development of agriculture and health. "Sure, such an integral document is difficult to realize," she says, "But we hope this first document will play a role in the public debates"

Marianne Heselmans

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