CORPORATE STRATEGY

ALLIANCES VALIDATE LIPOSOME CO. WORK

NEW YORK—Sometimes, an agreement reached with a large pharmaceutical company is just the shot in the arm a biotechnology company needs. Based on recent moves in its stock price, The Liposome Company (TLC, Princeton, NJ) appears to have received a massive injection.

While it is too early to say "At long last, liposomes..." the mood of the company certainly has changed recently. For the first time in many years, management is smiling in public. The stock, thanks in no small measure to a recent report from C.J. Lawrence, Morgan Grenfell (New York) analyst D. Larry Smith, shot up 50 percent in early January. This follows a move in 1990 that made TLC the second-leading gainer among biotech issues—up 136 percent, behind Amgen's (Thousand Oaks, CA) 154 percent advance. (The third-best gainer was Enzon [So. Plainfield, NJ], which also benefitted in 1990 from pacts with major biotech corporate partners. See *Bio/Technology* 8:279, Apr. '90.)

Liposome technology is not new, but formulating compounds efficaciously has been a nagging problem. Liposomes accumulate preferentially at sites of inflammation, infection, and also in some solid tumors—"For reasons that are not clearly understood," notes Smith in the C.J. Lawrence report. Drug candidates can be encapsulated inside liposomes in two ways: the interior compartments will trap water-soluble molecules, and the membrane itself can hold fat-soluble compounds. The resulting formulations are then injected into the blood. The hope is that the targeting ability of the liposomes will reduce the incidence of side-effects as compared with administration of pure drug—especially highly potent chemotherapeutic agents and anti-fungals.

The key TLC announcement came last December, when the company announced it had struck a deal with Pfizer (New York) to co-develop liposomal doxorubicin (*Bio/Technology* 9:8, Jan. '91). No financial terms were announced, but Pfizer will fully fund development, trials, manufacturing, sales, and marketing. Beyond the euphoria expected when a major pharmceutical company steps in and, in effect, validates the prospects for a company's technology, TLC is excited by the prospect of joining up with Pfizer in its first foray in the cancer arena. As well, says company vice president of medical affairs, Steven Saletan, "the key to the deal was letting The Liposome Company control clinical trials," which will give it control over the product it has nursed for so long. TLC also anticipates a full commitment from Pfizer as its sales force penetrates the market in a new area. TLC's credibility was also boosted by agreements with Schering (Berlin, Germany, to encapsulate an imaging agent) and Diagnostica Stago (Paris, for an *in vitro* diagnostic) signed late last year.

All this is good news, but there remains much downside risk. The company still needs to strengthen its balance sheet through financing. Competition remains a worry, too: the other liposome firms—in particular Liposome Technology Inc. (LTI, Menlo Park, CA) and Vestar (San Dimas, CA)—are working on similar products. Each is developing a version of doxorubicin, and they are also involved with amphotericin B. (LTI has a liposomal formulation of amphotericin B in Phase II trials, and Vestar has begun selling its version of the product in Ireland.) TLC and Bristol-Myers Squibb (New York) are proceeding with Phase II trials of an amphotericin-B lipid complex to treat cryptococcal meningitis (as with the Pfizer deal, fully funded by TLC's partner). And in another trial centering on immunocompromised patients, it is testing a proprietary drug for treating *Mycobacterium avium-intracellulare*.

As well, the technology is "not generous," warns Linda Miller of PaineWebber (New York). "Liposomes have not proven to be a broadly applicable delivery technology." And if the company remains undercapitalized, the corporate dollars that look good now may not be so impressive down the road. As for formulation concerns, they will linger until these clinical trials prove encouraging. "There's still a lot of variability—art, not science—in formulating products," says Miller, "but clinical trials progress shows confirmation that this can be overcome."

—Mark Ratner