2000

Biotechnology: Business Organization Issues

Franklin A. Gevurtz
Pacific McGeorge School of Law

Biotechnology: Business Organization Issues

Franklin A. Gevurtz*

TABLE OF CONTENTS

I. INTRODUCTION

Biotechnology ventures face much the same business organization issues as firms in other industries. At the start-up, the founders of the venture must choose and establish the form (corporation, partnership, etc.) in which to operate the business. Factors of liability, tax, governance and exit rules influence this choice and its execution for biotechnology ventures, as these factors do for firms in other fields. Biotechnology ventures need capital both at their inception and as they grow. This need for money raises issues of corporate finance and securities law familiar to the attorney advising businesses in other industries. Biotechnology firms may decide to reshuffle their capital structure, or to change their form of business organization. Some owners of the venture might agree to buy out the interests of other owners. A biotechnology firm might spin-off one line of endeavor into a new firm. Biotechnology firms might acquire other companies in the field, or be acquired

* Professor of Law, University of the Pacific, McGeorge School of Law. My research assistant, Anne Sherlock, provided invaluable assistance for this paper.

themselves. Such reorganizations of biotech firms confront issues of corporate, tax, securities and other laws similar to such transactions involving companies in other fields.[1]

If all of these issues were no different for the biotechnology venture than for a generic widget company, we might as well stop this paper now. To make it worthwhile to focus on the business organization issues facing biotechnology firms, we must ask what, if anything, is unusual about the biotechnology industry which might impact the business organization issues faced by firms in the field. A review of literature concerning the biotechnology industry suggests two significant differences between business organization issues that biotechnology firms face, and the business organization issues confronted by companies in other fields.

The first difference is the staggering financial needs of early stage companies in the biotechnology field. This is not simply a matter of the large dollar amounts involved with biotechnology research and development—for example, it might require $350 million to develop, test and obtain approval to market a bioengineered drug.[2] Other industries also have large capital needs. Biotechnology, however, combines this need for large sums with the possibility of no return on this investment for years. It can easily take seven or eight years, or longer, to develop a bioengineered drug, run clinical trials, and obtain the necessary FDA approval to market the drug. All the while, the company is burning through funds with no revenues from the project, and no guarantee of anything to show for its effort.[3] In this regard, it is interesting to compare biotechnology firms with companies in another technology intensive field, the computer industry. A number of observers have commented on the ability of firms in the computer industry (most recently, firms involved with the Internet) to make initial public offerings of their stock at amazing market capitalizations despite the fact that the company has yet to generate a profit.[4] Nevertheless, these computer companies are actually marketing products and obtaining revenue, and, when successful, will achieve profitability within a couple of years. This compares quite favorably with the biotechnology company's lead time while it patiently waits (and prays) for FDA approval (without which it may have nothing to sell).

The second difference is the potential for unpredictable and catastrophic liability from biotechnology development. No sooner will any fan of science fiction[5] hear the subject of bioengineering crops or drugs, or cloning, than the mind races to the

---

1. For an exploration of the issues entailed with forming, financing and reorganizing a business, using an extended hypothetical problem involving a biotech company, see FRANKLIN A. GEVURTZ, BUSINESS PLANNING (2d ed. 1995).

2. *E.g.*, Cynthia Robbins-Roth, *Magic Bullets: The Breakthroughs, The Business & The People of Biotechnology,* FORBES, May 31, 1999, at 42.

3. *Id.*

4. *E.g.*, Greg Ip & E.S. Browning, *Getting Real: What Are Tech Stocks Worth, Now That We Know It Isn't Infinity?*, WALL ST. J., Apr. 17, 2000, at A1.

5. The author confesses to be one.

innumerable variations of the "do not fool with mother nature" theme—in other words, the basic plot in which the scientist, because of hubris, corporate greed, or desperation at the cut-off of research funds, will rush the genetic alteration experiment with results ranging from the personal destruction of the scientist, to the end of civilization as we know it.

Of course, one's first instinct is to dismiss such concerns as the subject for a symposium on literature, not for a serious piece on the legal problems of biotechnology. Coincidentally, however, during the preparation of this paper, a number of articles appeared in the press dealing with the possible impact that genetically altered corn may have on the monarch butterfly.[6] The corn is known as Bt corn, and it currently accounts for approximately one quarter of United States' corn plants. Scientists bioengineered the Bt corn plants to produce a toxin ordinarily made by a bacteria called *Bacillus thuringiensis* (hence the label "Bt") which is found in soil. This toxin is harmless to people and many beneficial insects, such as honeybees and ladybugs. However, it is poisonous to other insects, including the corn borer—an insect which causes a billion dollars of damage annually to corn crops. Hence, the genetically engineered corn produces its own natural pesticide. Still a potential problem is that the pollen produced by the Bt corn contains the toxin just like the rest of the plant. As this pollen blows in the wind, it settles on other plants, including milkweed plants that grow in climates suitable for corn farming. The monarch butterfly feeds exclusively on milkweeds. This led an entomologist from Cornell University to see what would happen to monarch caterpillars if they fed on milkweeds dusted with pollen from Bt corn. The results were not good for the monarchs.

The purpose of recounting this incident is not to criticize biotechnology or call for more regulation. In fact, other recent newspaper articles have questioned the significance of the monarch experiment, since it occurred in a laboratory rather than in the field.[7] What is important for purposes of considering the business organization issues raised by biotechnology is simply to recognize that the law of unintended consequences could apply to bioengineered products,[8] with the result that a biotechnology company might one day find itself facing liability for very large unforeseen damages.[9]

---

6. All the facts in this discussion are found in Richard A. Lovett, *Warning from the Butterflies*, SACRAMENTO BEE, June 20, 1999, at I1.

7. *E.g.*, Michael Fumento, *The World is Still Safe for Butterflies*, WALL ST. J., June 25, 1999, at A18.

8. *See* Raymond R. Coletta, *Biotechnology and the Creation of Ethics*, 32 MCGEORGE L. REV. 89 (2000) (discussing unintended consequences of biotechnology).

9. *See* Julie A. Davies & Lawrence C. Levine, *Biotechnology's Challenge to the Law of Torts*, 32 MCGEORGE L. REV. 221 (2000). Another example of their potential for unintended consequences occurred while this paper was in press. It seems that genetically altered corn—approved only for use as animal feed—has found its way into food products sold for human consumption. *E.g.*, Marc Kaufman, *Officials: Biotech Corn Has Spread in Food Supply*, SACRAMENTO BEE , Oct. 19, 2000, at A6.

As stated in the introduction to this special project, the purpose of these papers is not to attempt a comprehensive analysis of the issues raised by the development of the biotechnology industry. Rather, these papers seek to introduce issues and questions for further exploration. What then are the business organization issues created by the two differences concerning the biotechnology industry outlined above? Part I of this paper derives its analysis from the first difference—the staggering financial needs of the industry. Rather than survey every issue created by the capital needs of biotechnology development, Part II focuses on one particular issue: does the choice of business form utilized by those organizing biotechnology ventures take efficient advantage of tax laws in order to obtain, in effect, a tax subsidy of these huge expenditures? One reason for this focus is because biotechnology might provide an interesting comparison case with the underutilization of tax advantaged forms noted a few years ago in a study of high technology Silicon Valley start-ups.[10]

Part III of this paper focuses on the second difference—the potential for unpredictable and catastrophic liability. One of the central concerns of corporate or other business organizations law is the existence of, and exceptions to, limited liability for the owners of the venture. Part III looks at the challenges posed under current doctrines concerning limited liability if a biotechnology venture, due to some unforseen genetic mishap, faces responsibility for damages beyond the company's ability to pay.

II. FINANCING BIOTECHNOLOGY FIRMS AND THE UTILIZATION OF TAX ADVANTAGED BUSINESS FORMS

A. *Tax and Other Aspects of Choice of Business Form*

Persons undertaking a business venture, in biotechnology or other fields, can utilize a number of different forms for conducting the business. Traditionally, these choices consisted of the sole proprietorship, the partnership, the limited partnership, and the corporation.[11] Recently, state statutes have created new forms—the limited liability company[12] and the limited liability partnership[13]—as options for conducting

10. *See* Joseph Bankman, *The Structure of Silicon Valley Start-Ups*, 41 UCLA L. REV. 1737 (1994) (referring to biotechnology, electronics, and computing industries centered south of San Francisco and around Route 128 near Boston collectively as "Silicon Valley").

11. GEVURTZ, *supra* note 1 at 53.

12. *See, e.g.*, Franklin A. Gevurtz, *California's New Limited Liability Company Act: A Look at the Good, the Bad and the Ambiguous*, 27 PAC. L.J. 261 (1996) (explaining California's statutes creating the limited liability company).

13. Julia A. Butcher, Note, *Business Associations and Professions; Limited Liability Partnerships-Attorneys and Accountants*, 27 PAC. L.J. 440, 440-47 (1996).

businesses.[14] In choosing between these forms, there are a number of factors to consider.

The first factor to consider is the business owners' liability for the debts of the venture. In the sole proprietorship or partnership, the owners face unlimited personal liability for all of the business' debts.[15] Given the possibility for unintended consequences from biotechnology, as discussed in the introduction to this paper, avoiding, if possible, such unlimited personal liability would be a priority for the owners of a biotechnology venture. The limited partnership form allows some owners (the limited partners) to limit their liability for the business' debts, but leaves other owners (the general partners) with unlimited liability.[16] Corporations, limited liability companies and limited liability partnerships enable all of the owners to avoid personal liability for the debts of the firm.[17]

Management of the business, and the manner of dealing with the departure of owners, are factors often mentioned in choosing between business forms.[18] Normally, the centralized management structure[19] and free transferability of interests[20] in the corporation work very well for a business with numerous owners (a widely held or publicly held firm). By contrast, the partnership default approach—with its direct management by all of the owners[21] and its handling of owner departure through buy-outs by the other owners rather than transfer to a stranger[22]— is often the preferred choice as far as management and departure rules for the business with few owners (a closely held or privately held firm).[23] However, management and departure rules should not substantially impact the choice of business form for a closely held firm. This is because, under modern corporate

---

14. Both the limited liability company and limited liability partnership are designed to achieve limited liability for the owners of the business, but, at the same time, obtain treatment as a partnership under the federal income tax laws. The difference between the two forms is that a limited liability partnership is a partnership for all purposes except that, by registering as a limited liability partnership, the partners obtain limited liability (either for all debts of the firm, or, under some statutes, just for tort claims), whereas a limited liability company is a new type of entity, the governing rules for which the legislatures took from corporate, limited partnership and partnership statutes. The primary use of limited liability partnerships has been for professional firms. *See, e.g.*, Walter D. Schwidetzky, *Is It Time to Give the S Corporation a Proper Burial?*, 15 VA. TAX REV. 591, 621-24 (1996).

15. *E.g.*, UNIF. PARTNERSHIP ACT § 15, 6A U.L.A. 456 (1914).

16. UNIF. LTD. PARTNERSHIP ACT §§ 303, 403(b), 6A U.L.A. 144-45, 177 (1976). One way to avoid having any individual be personally liable for a limited partnership's debts is to have a corporation act as general partner.

17. FRANKLIN A. GEVURTZ, CORPORATION LAW § 1.1.2*a* (2000).

18. *E.g.*, Thomas L. Hazen, *The Decision to Incorporate*, 58 NEB. L. REV. 627 (1979).

19. The owners (the shareholders) elect a small group of individuals (the directors) to be responsible for governing the business.

20. A shareholder who wants out of the business can sell his or her interest to whomever the shareholder can find to buy. The buyer picks up all the rights of the seller. The departure does not directly affect the corporation or the other shareholders.

21. *See, e.g.*, Unif. Partnership Act § 18(e), 6 U.L.A. 526 (1914) (stating that "[a]ll partners have equal rights in the management and conduct of the partnership business").

22. *Id.* at §§ 27, 31, 38.

23. GEVURTZ, *supra* note 17, § 1.1.2 (b), (c).

statutes, it is usually possible for participants to run their corporation, and restrict transfer of interests in their corporation, like a partnership.[24]

So far, one might expect most businesses, including most biotechnology businesses, to operate as a corporation. A corporation can provide limited liability for the business' owners, as well as management and departure rules which either are desirable (in the widely held firm) or the owners can contract around (in the closely held firm). What then accounts for the use, and indeed growth (through the introduction of the limited liability company and limited liability partnership) of non-corporate forms? The answer largely lies in the tax laws. The Internal Revenue Code treats a corporation as a taxpaying entity separate from its shareholders.[25] In contrast, a partnership (or sole proprietorship) is not a taxpaying entity; only the owner(s) are taxpayers.[26] This difference, in turn, often means that large tax savings hinge upon making the appropriate choice of business form. For example, the tax code subjects corporate earnings to a double tax; once by the corporation as it makes money, and again by the shareholders as they receive dividends from the corporation.[27] By comparison, the tax code subjects partnership earnings to a tax only once; as the partnership makes money, each partner recognizes his or her share of the firm's earnings as taxable income, but partners generally do not recognize a distribution of money from the partnership as taxable income.[28]

The difference in the treatment of income, however, is not the most important tax consideration in deciding the optimum business form for a biotechnology venture.[29] Rather, as discussed above, the significant fact about biotechnology is the huge outlays and long lead time required before the business can expect to make money. Thus, we need to compare how the tax law treats these research and development outlays when incurred by a corporation and when incurred by a partnership.

For the corporation, as for any other taxpayer, outlays on biotechnology research and development generate deductions.[30] Being a separate taxpaying entity, the corporation can subtract these deductions from the corporation's earnings in computing the company's taxable income. Unfortunately, if the corporation has no earnings, as is typically the case for a biotechnology start-up, all the company can do with the net loss resulting from these deductions is wait and hope that in some

---

24. *See, e.g.*, DEL. CODE ANN. tit. 8, §§ 202, 350, 354 (2000). The limited liability company statutes allow owners flexibility as far as management and departure rules; Gevurtz, *supra* note 12, at 262-67.

25. *See* I.R.C. § 11 (2000) (imposing an income tax on corporations).

26. *Id.* at §§ 701, 702.

27. *Id.* at § 61(a)(7).

28. *Id.* at § 731.

29. One caveat about this statement is that the ownership of intellectual property (the biotechnology product) by a corporation means that a sale of the property and distribution of the proceeds to the shareholders can produce a significant double tax on the appreciation in value (from nil to potentially billions of dollars) which has occurred to the property by virtue of its creation. Ownership of the intellectual property by a non-corporate entity avoids this double tax.

30. *See, e.g.*, I.R.C. §§ 162(a), 174.

future year it will generate earnings against which the company can subtract the carried over loss.[31] Yet, there is a very good chance with biotechnology that the product will never pan out and there never will be earnings against which to offset the carried over losses. In this event, the potential for tax savings will be gone. Even if things eventually do work out, the long lead time in biotechnology development renders the carried over losses less valuable than if used immediately (because of the time value of money). Moreover, the inevitable need for biotechnology ventures to seek additional financing can limit the use of the carried over losses by virtue of Section 382 of the Internal Revenue Code.[32]

By contrast, since the partnership (or proprietorship) is not a separate taxpaying entity, any deductions generated by the business flow through to the owner(s). As a result, the partner (or proprietor) might be able to subtract deductions generated by biotechnology research and development from income the partner made in other activities when computing the partner's net taxable income for the year. In other words, the partner can use the deductions to shelter other income from taxation. Congress has added a number of provisions to the Internal Revenue Code to limit such tax sheltering. Most significantly, Section 469 curbs a taxpayer's use of losses from so-called passive activities to offset income from non-passive activities.[33] Section 469, however, does not remove all utility from flowing losses through to a business' owners. For example, Section 469 does not limit the use of losses by widely held corporations.[34] For reasons we shall discuss later, this exception for widely held corporations is potentially of great significance to biotechnology.

At this point, there appears to be a trade-off between the form of business most desired to limit liability for the venture's owners (the corporation), and the form of business with the most desirable tax treatment (the partnership or sole proprietorship). The limited liability partnership, limited liability company and limited partnership, however, allow owners to obtain limited liability and also partnership-style tax treatment.[35] It is also possible to operate a business through a corporation and yet obtain tax treatment largely similar to the treatment of partnerships.[36] Corporations which elect this partnership style taxation are known as "S corporations." Finally, we should note that these tax considerations cease to have relevance to a business once it is publicly held. This is because the tax code treats publicly traded partnerships the same as corporations.[37] Accordingly, the

---

31. *Id.* at § 172.

32. *Id.* at § 382. This provision is designed to prevent the trafficking in loss carry-overs. In the event of a fifty percent or greater change in the ownership of a corporation, the Section imposes a rather complex limit on how much of any net operating loss carry-overs the corporation thereafter can use.

33. *Id.* at § 469.

34. *Id.* at § 469(a) (2000). Widely held corporations might incur deductible losses not only in their own internal activities, but also in the role of partner in a partnership.

35. *See* Treas. Reg. § 301.7701-3 (2000) (allowing non-corporate entities to elect taxation as a corporation or as a partnership).

36. I.R.C. §§ 1361-1379 (1988 & Supp. 2000).

37. *Id.* § 7704.

publicly held business may as well operate as a corporation, with the management and transfer rules best adapted for publicly traded firms.

B. *The Experience With High Technology Start-Ups Generally*

The discussion above suggests we should expect to find that publicly held firms operate as corporations, but we should expect to find that start-up ventures in high technology fields operate in non-corporate forms. After all, ventures normally do not start life as publicly held and, therefore, precluded from partnership-style tax treatment. Moreover, the high technology start-up normally expects to incur tax deductible losses for at least a few years. A study in the early 1990s of Silicon Valley start-ups by Professor Joseph Bankman found, however, that reality did not correspond with this expectation.[38] Rather, Silicon Valley start-ups overwhelmingly were corporations (which evidently did not elect Subchapter S treatment). The result was the loss of millions of dollars of tax savings.

Professor Bankman conducted interviews with participants in Silicon Valley companies to inquire why they utilized the corporate form rather than a more tax advantaged organization. The answers to his inquires provided a number of rationalizations:

(1) Saving transaction costs which a non-corporate start-up would incur to incorporate later when the firm decided to make an initial public offering (albeit, the cost of reorganizing a non-corporate business into a corporation in order to go public was often far less than the tax savings forfeited by not having started life in the non-corporate form);[39]

(2) The desire to use stock options to compensate employees in Silicon Valley companies (albeit, non-corporate businesses could create similar, although less familiar and therefore less readily accepted, ownership options);[40]

(3) The fact that investors in Silicon Valley start-ups often are tax exempt institutions (such as universities) who could not use tax deductible losses to offset other taxable income (albeit, this raises the "chicken and egg" question as to whether Silicon Valley start-ups ignore tax savings because their investors are often tax exempt institutions, or whether tax exempt institutions are often the persons investing in Silicon Valley start-ups because Silicon Valley start-ups ignore tax savings);[41] and

---

38. *See* Bankman, *supra* note 10, at 1747-66.
39. *Id.* at 1749-51.
40. *Id.* at 1750-53.
41. *Id.* at 1753-64.

(4) the mentality of the owners of Silicon Valley businesses to so focus on the big payout from success to the extent that they feel they can ignore concerns about tax savings.[42]

C. *Should We Expect Biotechnology to be Different?*

Professor Bankman defined his sample of high technology firms geographically—high technology firms operating in the area south of San Francisco and along Route 128 near Boston. This lumped together biotechnology, computer and electronics firms. It is interesting to ask whether a study which focuses only on biotechnology firms, without regard to geography (except that the firms be organized in the United States[43]), would obtain the same result.[44]

There is no a priori reason to assume that the overall biotechnology industry would display the same attitude toward tax savings as found among Silicon Valley start-ups consisting presumably for the most part of computer and electronics firms. The disregard of tax savings documented in Professor Bankman's study is not characteristic of businesses in general. Many industries, notoriously including real estate, have been highly sensitive to tax advantages. Indeed, the rapid-fire spread of legislation establishing the limited liability company is testimony to the interest in the business world in obtaining partnership tax treatment.

The primary reason to expect that principals organizing biotechnology ventures might be sensitive to tax advantages lies in the staggering capital needs of the industry. It is one thing for the principals in an Internet company like Yahoo, Inc., which went public nine months after its founding, to figure that obtaining flow-through tax treatment of less than one million dollars worth of operating losses[45] was not worth worrying about. It is quite a different matter to be so cavalier about tax write-offs of $350 million invested to develop a bioengineered drug, when it could be eight years before there will be a marketable product, and often there is a good chance there will be no a marketable product at all.

Offsetting this economic factor, we must ask to what extent the various rationalizations reported by Professor Bankman for Silicon Valley firms to ignore the tax advantages of non-corporate forms apply with equal force to biotechnology businesses. The economic realities of the biotechnology industry just discussed, as compared with the computer industry, would seem to make it much more difficult for the principals in biotechnology firms to so focus on the venture's inevitable success that they feel justified in ignoring the more immediate utility of tax savings.

---

42. *Id.* at 1764-66.

43. Firms organized outside of the United States may have somewhat different choices of business forms available to them, and somewhat different tax incentives.

44. It is also interesting to ask if the result for high technology firms will have changed in the last five years, given the growing availability of new non-corporate business forms (like the limited liability company).

45. GEVURTZ, *supra* note 1, at 80 (Supp. 1998).

By contrast, at the time of Professor Bankman's study, the view that high technology firms should start life as a corporation because the business soon will go public, might have had as much basis for the biotechnology industry as it did for the computer industry. Biotechnology stocks in the 1990s, however, for the most part seem to have not faired as well as computer industry stocks. As a result, the stock market has become much less inviting for initial public offerings by biotechnology companies.[46] Hence, one might expect more recently formed biotechnology start-ups to give less thought to choosing a form of business organization based upon the expectation of an initial public offering in the near future.

It is unknown if there is much difference between biotechnology and other high technology start-ups in the desire to use stock options to compensate employees, and whether employees in biotechnology companies would be as suspicious as employees in other high technology start-ups of an offer of ownership options in a non-corporate business.

The nature of the investors in biotechnology cuts both ways when it comes to interest in flow-through treatment of business losses. The presence of tax exempt investors (who would not be interested in flow-through tax losses) may well be a more inevitable phenomenon for biotechnology than for the computer industry. After all, initial funding of drug research often comes from the National Institute of Health. Moreover, much biotechnical research takes place at universities.[47] This can lead universities not only to license the right to use results of the universities' research to biotechnology firms in exchange for cash royalties, but also to seek equity positions in the biotechnology firms.[48] On the other hand, established pharmaceutical firms have provided an increasingly important source of financing for early stage biotechnology companies.[49] As mentioned earlier, the limitations imposed by the tax code on the ability to offset losses from passive activities against other income made by a taxpayer do not apply to public corporations, such as these established pharmaceutical firms. Hence, these established pharmaceutical companies provide the perfect investors to take advantage of the tax write-offs entailed in biotechnology development.

---

46. *See, e.g.*, Larry Fisher, *Money Walks: VCs Are Bailing on Biotech*, FORBES, May 31, 1999, at 77. The market for biotech stocks staged a dramatic upturn while this article was in press; Suzanne McGee & Robert McGough, *Signs of Life: Tick, Tick, Tick: How Once-Sluggish Biotech Finally Went Boom!*, WALL ST. J., Mar. 17, 2000, at A1. Still, it is impossible to predict (or else I could become rich) whether biotech stocks will tank again.

47. Dan L. Burk, *Introduction: A Biotechnology Primer*, 55 U. PITT. L. REV. 611, 629 (1994).

48. *See, e.g.*, Gregory B. Abbott, *Pharmaceutical and Biotech Licensing and Joint Ventures*, 514 PLI/Pat 37, 47-48 (1998).

49. *Id.* at 48-52. Since 1990, established pharmaceutical companies have made over two billion dollars worth of minority position equity purchases in biotechnology companies. Established pharmaceutical companies have provided additional financing to biotechnology companies through loans repayable in cash or in stock or by reduced royalties under a licensing agreement, and through licensing agreements covering the product under development, which call for development-phase payments by the pharmaceutical company. *Id.*

D. Survey Results

In order to investigate the choice of business form made by biotechnology companies, my research assistant undertook surveys. First she conducted an Internet search for a web site which contained a list of biotechnology companies. The site she located is "www.biospace.com." From information supplied at this site, or by contacting the company directly, she was able to determine the form of business for 130 biotechnology companies listed at the site. Since, for reasons discussed above, publicly held firms are usually corporations, I asked her to identify, if possible, which firms in her sample were public and which firms were private. In addition, since limited liability companies only recently have become a realistic option for businesses, I asked her to establish, if possible, what year the biotechnology companies were formed.

The results of this survey are attached to this paper as Appendix A. Of the 130 companies at this site, seventy-three are public corporations, fifteen of the remainder are subsidiaries of other corporations,[50] thirty-six are privately held corporations, four are limited liability companies, and two are sole proprietorships. In other words, only six out of forty-two non-public and non-subsidiary biotechnology firms chose a form of business which would optimize the tax utility of biotechnology research expenditures. As expected, the use of limited liability companies is a recent phenomenon: one of the four biotechnology limited liability companies in the sample was formed in 1993, one in 1996, and two in 1997. Yet, even in 1997, the sample included the formation of eight privately held biotechnology corporations, as compared with only two limited liability companies.

In addition to the web site survey, my research assistant used information published by the Sacramento Business Journal to investigate the choice of business entity made by Sacramento area biotechnology firms. The results also are attached to this paper as Appendix B. Overall, the results are consistent with the web site survey. Of the eleven Sacramento area biotechnology firms which are neither publicly held nor a subsidiary of another company, eight are organized as privately held corporations, one is a sole proprietorship, and two are limited liability companies.[51] Interestingly, however, the only Sacramento area biotechnology firm formed since 1996 is a limited liability company.[52] This timing is potentially significant because California's limited liability company statute took effect in 1995.[53] The sample is far too small, however, to show that even in the Sacramento

50. If these subsidiaries are at least eighty percent owned by their parent corporations, the parent corporations can gain the advantage of offsetting the subsidiaries' biotechnology development expenses against the parents' other income by filing consolidated tax returns. I.R.C. §§ 1501-1504 (1998 & Supp. 2000); Treas. Reg. § 1.1502-21T (as amended in 1998).

51. *See* Table 2 *infra* (summarizing 1998 and 1999 SACRAMENTO BUSINESS JOURNAL articles).

52. *Id.*

53. *See* Butcher, *supra* note 13, at 440-47.

area, privately held biotechnology firms will shift to make greater use of tax advantaged forms.

E. Caveats and Suggestions for Further Investigation

The results of these surveys suggest that biotechnology companies generally have made little use of tax favored business forms—albeit this may have recently begun to change in Sacramento. The goal of this study, however, was simply to gain a preliminary understanding of the data, rather than to undertake any sort of statistically rigorous investigation. Hence, the sample was selected based upon convenience of data collection, rather than working through a comprehensive list of all biotechnology companies. Such a comprehensive list would include approximately 1200 biotechnology companies, of which three-quarters are privately held.[54] Still, there is no reason to believe that the samples were unrepresentative with respect to selection of business form.

In addition, it is possible that owners of privately held biotechnology corporations have found a way to deduct development expenses against their other income despite the use of the corporate form. Perhaps some of these private biotechnology corporations have elected taxation under Subchapter S. This seems unlikely, however, because of the one class of stock requirement for electing taxation as an S corporation.[55] The one class of stock requirement precludes the corporation from issuing the preferred stock which venture capital firms and similar investors desire. Alternately, perhaps established pharmaceutical corporations who provide funds to early stage biotechnology companies are obtaining the advantage of tax write-offs through licensing deals. Specifically, licensing agreements between established pharmaceutical companies and early stage biotechnology companies usually provide for some payments by the pharmaceutical companies to the biotechnology companies while the product to be licensed to the pharmaceutical company is still under development.[56] Perhaps the pharmaceutical companies are writing off these development-phase payments as ordinary business expenses. While such payments constitute income to the biotechnology company, the development expense deductions "wash out" this income. The end result would be a self-help partnership-style tax treatment despite use of the corporate form. On the other hand, use of this technique by pharmaceutical companies to claim tax deductions (if, in fact, this is what the companies are doing) might be subject to challenge by the Internal Revenue Service. The problem is that such development-phase payments might constitute non-deductible capital expenditures made to acquire the value entailed in the later license rights, rather than an immediately deductible ordinary

54. Abbott, *supra* note 48, at 46.
55. I.R.C. § 1361(b)(1)(D) (2000).
56. Abbott, *supra* note 48, at 57-58.

and necessary business expense.[57] The topic of when a taxpayer must capitalize, rather than deduct immediately, payments made to achieve long term benefit has become even murkier as a result of the U.S. Supreme Court's decision in *INDOPCO, Inc. v. Commissioner*,[58] and is well beyond the scope of this paper. At any event, further investigation of this area would call for contacting privately held biotechnology corporations to determine whether they are managing in some manner to pass loss deductions through to their owners or suppliers of capital despite the choice to operate in the corporate form.

III. LIMITED LIABILITY FOR OWNERS OF BIOTECHNOLOGY VENTURES

A. *Piercing the Corporate Veil*

As discussed in Part II of this paper, the desire of participants in a business to avoid personal liability for the venture's debts is one, if not the primary, factor in choosing to conduct business through a corporation.[59] Nevertheless, when a corporation is unable to pay its debts, creditors of the corporation often sue one or more of the shareholders, and urge the court to disregard the normal rule that shareholders are not personally liable for the corporation's debts.[60] The popular name for imposing such personal liability upon the shareholders is "piercing the corporate veil."[61] Accordingly, if a biotechnology calamity produces damages beyond the company's ability to pay, we should expect to see creditors sue some or all of the owners of the biotechnology company in an action urging the court to pierce the corporate veil and impose personal liability upon the owners.

In piercing the corporate veil cases, courts almost invariably begin at the same point of departure: piercing is an equitable remedy the court can impose in order to avoid injustice.[62] Unfortunately, once courts go beyond this broad generality, piercing the corporate veil doctrine turns into something of a muddle.[63] The primary factors recited by courts and writers suggesting that the owners should not be shielded from liability include: (1) the defendant shareholder's control over the

---

57. Because the pre-development payments are to acquire license rights, presumably the pharmaceutical company could not use Section 174 of the Internal Revenue Code to avoid capitalization treatment—even though the money ultimately funds research and development.

58. 503 U.S. 79 (1992).

59. Participants can also limit liability by conducting business through another entity, such as a limited liability company.

60. In fact, such claims make up the single most litigated area in corporate law. Robert B. Thompson, *Piercing the Corporate Veil: An Empirical Study*, 76 CORNELL L. REV. 1036, 1036 (1991).

61. Although we cannot speak literally of piercing the "corporate" veil when dealing with a limited liability company, the same general doctrine presumably applies in the limited liability company context. *E.g.*, Ditty v. CheckRite, Ltd., 973 F. Supp. 1320 (D. Utah 1997); CAL. CORP. CODE § 17101(b) (West Supp. 2000).

62. *See, e.g.*, DeWitt Truck Brokers v. W. Ray Flemming Fruit Co., 540 F.2d 681, 683 (4th Cir. 1976).

63. For a comprehensive exploration of this area, see Franklin A. Gevurtz, *Piercing Piercing: An Attempt to Lift the Veil of Confusion Surrounding the Doctrine of Piercing the Corporate Veil*, 76 OR. L. REV. 853 (1997).

corporation;[64] (2) failure to observe corporate formalities;[65] (3) fraud or other wrongful conduct by the defendant shareholder in dealing with the plaintiff creditor;[66] (4) siphoning, commingling or other misuse of the corporation's assets by the defendant shareholder;[67] and (5) inadequate capitalization.[68]

In the context of a biotechnology mishap, the corporation would most likely face tort, rather than contract, liability. Put differently, courts would probably be dealing with the claims of persons who had not voluntarily extended credit to the corporation. The traditional wisdom has been that courts are more likely to pierce the corporate veil in favor of such involuntary or tort claimants (as opposed to voluntary or contract creditors).[69] In fact, however, an empirical study of piercing decisions in the Westlaw database found that courts actually pierced in a higher percentage of contracts as opposed to torts cases[70]—albeit, this simply might represent the fact that perhaps the most common ground for piercing (fraudulently inducing extensions of credit to the corporation) can be relevant to the claims of contract creditors, but is irrelevant to the claims of tort victims.[71]

When confronting a piercing claim arising out of a biotechnology calamity, the most salient ground for piercing probably would be inadequate capitalization. Court opinions differ on the degree to which inadequate capitalization constitutes grounds for piercing the corporate veil.[72] Most courts avoid the issue by stating that inadequate capitalization is a factor to consider, without specifying the impact of this factor.[73] At any event, the real challenge if a biotechnology mishap produces cataclysmic damages will be to figure out what constitutes inadequate capitalization. The biotechnology company might have considerable capital in the sense of dollars paid as equity investment in the companies—after all, biotechnology development demands large amounts of capital—but the damages from a truly cataclysmic biotechnology disaster could dwarf this equity investment. From a policy standpoint, the purpose of piercing the corporate veil in favor of tort victims based upon inadequate capitalization is to force those in charge of corporations to internalize the costs of accidents into the costs of goods or services.[74] Such internalization takes place through paying insurance premiums. Hence, the criterion for adequate

---

64. Thompson, *supra* note 60, at 1063 (defendant's control over the corporation mentioned as a factor for piercing in 551 of the approximately 1600 piercing decisions surveyed in this study).

65. *E.g.*, Sea-Land Services, Inc. v. Pepper Source, 941 F.2d 519 (7th Cir. 1991). *But see* Gevurtz, *supra* note 63, at 866-70.

66. *E.g.*, *DeWitt Truck Brokers*, 540 F.2d 681.

67. *E.g.*, *Sea-Land Services*, 941 F.2d 519.

68. *E.g.*, Minton v. Cavaney, 364 P.2d 473 (Cal. 1961).

69. *E.g.*, Frank H. Easterbrook & Daniel R. Fischel, *Limited Liability and the Corporation*, 52 U. CHI. L. REV. 89, 112 (1985).

70. Thompson, *supra* note 60, at 1058.

71. Gevurtz, *supra* note 63, at 859.

72. *Compare Minton*, 364 P.2d 473, *with Walkovszky*, 223 N.E.2d 6.

73. *E.g.*, *DeWitt Truck Brokers*, 540 F.2d at 685-87.

74. Gevurtz, *supra* note 63, at 887.

capitalization in the tort claim context should be whether the corporation had adequate insurance for foreseeable risks of its business.[75] Unfortunately, biotechnology presents challenges which differ in substantial degree from those in other industries. It is one thing to measure the foreseeable risks of a taxicab business to decide whether $10,000 of liability insurance constitutes adequate capitalization.[76] It is quite a different matter to determine what level of insurance is adequate to deal with the possibility that, like the Bt corn, some biotechnology product or experiment falls victim to the law of unintended consequences.

Now let us shift our discussion from the nature of the probable plaintiffs and their likely theory for piercing, to who will be the likely defendants when a piercing claim arises out of a biotechnology mishap. One probable defendant would be the biotechnology company's parent corporation. The web site survey reported in Part II, supra, illustrated that a fair number of biotechnology firms are subsidiaries of other corporations. These parent companies are typically the sort of major corporations whose deep pockets make a piercing claim attractive. While there is some authority arguing that courts should be more willing to pierce against a parent corporation than against an individual who is a controlling shareholder,[77] neither judicial doctrine[78] nor the statistical results of piercing decisions[79] reflect such a view. At any event, a piercing claim against a parent corporation in the event of a biotechnology calamity will force courts to confront the same sort of issues which have already arisen in situations in which a subsidiary's actions have produced mass tort claims (such as with asbestos, silicon breast implants, and similar cases).[80] For example, courts must decide to what extent a parent's control over the subsidiary should become grounds to pierce. In fact, in some previous mass tort cases, the parent's control over the very technology which led to the mass tort has been so extensive that courts have been able to hold the parent liable for the negligence of the parent corporation's own personnel, and thereby probably avoid the whole issue of whether to pierce the subsidiary.[81] If, however, the parent merely exercises general control over the business of the biotechnology subsidiary, and is not itself a party to creating the mishap, their general control probably is a necessary, but not a sufficient, ground for piercing.[82] In addition to the impact of control, a calamity involving a biotechnology subsidiary might force a court to confront the policy issue

---

75. *See, e.g.*, Radaszewski v. Telecom Corp., 981 F.2d 305, 308-09 (8th Cir. 1992).

76. *See Walkovszky*, 223 N.E.2d at 7.

77. Easterbrook & Fischel, *supra* note 69, at 110-11.

78. In fact, courts tend to cite and apply piercing precedent without regard for whether the shareholders involved were individuals or parent corporations. Gevurtz, *supra* note 63, at 896-97.

79. Thompson, *supra* note 60, at 1056 (finding that courts pierced in a slightly higher percentage of cases when the shareholder defendant was an individual, as opposed to a parent corporation).

80. *See, e.g.*, In re Silicone Gel Breast Implants Prod. Liab. Lithog., 887 F. Supp. 1447, 1452-53 (N.D. Ala. 1995).

81. *Id.* at 1453-54.

82. Gevurtz, *supra* note 63, at 862-66.

of whether large companies should be able to place more hazardous ventures in separate corporations in order to insulate the wider enterprise from liability.

One interesting prospect with biotechnology, which might distinguish it from other mass tort situations in recent years, is that the mishap might occur in the early stage of product development.[83] In this event, the biotechnology corporation might be a fairly new company which is neither a subsidiary nor a publicly traded firm.[84] In such a scenario, the targets of a piercing suit could include venture capital firms, universities, or the like, who were investors in the biotechnology company—since the individuals actively running the company might possess insufficient wealth, outside of their interest in the company, to make a piercing suit against such individuals worthwhile. Courts generally will not pierce against passive shareholders in a failed corporate debtor.[85] Venture capital firms, however, often insist on taking a fairly active role in their portfolio companies.[86] Whether the sort of guidance which a venture capital firm supplies would be sufficient to justify holding the venture capital firm liable in a piercing case—assuming there is grounds for piercing, such as inadequate capitalization—is an interesting question upon which there is little, if any, authority.[87]

B. Licensing and Cooperative Activities

As mentioned in Part II supra, licensing agreements and other cooperative arrangements between developmental stage biotechnology development companies and established pharmaceutical firms have become an important source of financing in the biotechnology industry. If a pharmaceutical company, pursuant to its license rights, sells a biotechnology product that turns out to be dangerous, then the pharmaceutical company can face direct liability for its own possible tort. Suppose, however, the research activities of a development stage biotechnology company create a biotechnology calamity prior to the full development of a biotechnology product that is subject to a licensing agreement. In this event, is there any theory under which the pharmaceutical company licensee could end up liable?

One theory is that the biotechnology company and the pharmaceutical company are not simply licensor and licensee, but are partners in a partnership. As a partner, the pharmaceutical company would face unlimited personal liability for any debts

---

83. In other words, a situation in which the mishap involves the escape of a genetically altered product, rather than the sale of the product to consumers who are then injured.

84. Courts have never pierced against the shareholders of a publicly held firm. Thompson, *supra* note 60, at 1047.

85. *Id.* at 1056.

86. *E.g.*, GEVURTZ, *supra* note 1, at 582.

87. In a noted opinion, the California Supreme Court held that an individual who had an active, but by no means dominant, role in a corporation—the individual being an attorney who did the legal work to form the company and acted as one of the company's directors—could be liable when the court pierced the corporation on the ground of inadequate capitalization. Minton v. Cavaney, 364 P.2d 473, 474-76 (Cal. 1961).

of the partnership, including liabilities resulting from torts committed by the biotechnology company in the course of the partnership's development of the biotechnology product.[88] In order for the pharmaceutical company and the biotechnology company to be partners, the two companies must be carrying on, as co-owners, a business for profit.[89] It is often not easy to tell when two or more persons are acting as co-owners of a business for profit, as opposed to being simply lender and borrower,[90] employer and employee,[91] or, in this situation, licensor and licensee. The two primary indicators of co-ownership are a sharing of profits and a sharing of control.[92]

Under the Uniform Partnership Act, receiving a share of the profits of a business is prima facie evidence that the recipient is a partner.[93] Biotechnology license agreements generally call for royalty payments based upon a percentage of net sales.[94] The agreement often limits the number of items that may be subtracted from gross revenues in computing net sales in order to prevent net sales from equaling net profits, thereby triggering prima facie partner status.[95] Still, the sharing of the income stream from the biotechnology product inherent in the license-royalty arrangement is hardly inconsistent with the possibility that the two firms really are partners.

Control also depends upon the license agreement. Many such agreements establish management committees, composed of representatives of the pharmaceutical company and representatives of the biotechnology company, "to review project progress, establish timelines and responsibilities and set budgets."[96] There may also be a separate research committee, composed of scientists from both firms, to conduct scientific reviews of the project and engage in planning.[97] This collaborative management of a research project seems to go beyond the consultation and veto rights which court opinions have held not to create partner status.[98]

---

88. *E.g.*, UNIF. PARTNERSHIP ACT §§ 13, 15, 6 U.L.A. 444, 456 (1914).

89. *Id.* at § 6(1).

90. *See, e.g.*, Martin v. Payton, 158 N.E. 77 (N.Y. 1927).

91. *See, e.g.*, Vohland v. Sweet, 433 N.E.2d 860 (Ind. Ct. App. 1982).

92. *See, e.g., Martin*, 158 N.E. at 220-23.

93. UNIF. PARTNERSHIP ACT § 7(4), 6 U.L.A. 280 - 281 (1914). This provision excludes from the prima facia evidence characterization receipt of a share of the profits under a variety of circumstances, including rent to a landlord, but does not expressly exclude receipt of a share of profits as royalties from such characterization.

94. Abbott, *supra* note 48, at 58.

95. *Id.*

96. *Id.* at 52-53.

97. *Id.* at 53.

98. *See, e.g., Martin*, 158 N.E. at 79-80. This discussion suggests that the current structure of biotechnology licensing agreements might achieve the worst of both worlds. For reasons discussed in Part II of this paper, these agreements might not allow the pharmaceutical company to take an immediate tax deduction for development-phase payments made to the biotechnology company, as the pharmaceutical company could have if it formed a partnership for tax purposes with the biotechnology company. At the same time, state courts might treat the license arrangement as a partnership for purposes of imposing liability upon the pharmaceutical company. A better structure might be to form a research limited liability company between the biotechnology company and the pharmaceutical company.

C. Business Acquisitions and Dispositions

Liability issues under business organizations law also can arise if a catastrophic mishap occurs following a variety of reorganization transactions, including mergers or other acquisitions of biotechnology companies, dissolutions of biotechnology companies, and spin-offs of biotechnology companies. The underlying concern in all of these transactions comes from the prospect that a biotechnology company has planted the seeds (pun not intended) for a biotechnology mishap prior to the transaction, which then produces a calamity after the transaction. One possible scenario is common to defective product cases.[99] A biotechnology product already sold by the biotechnology firm might cause harm after an acquisition, dissolution or spin-off involving the firm. An alternate scenario might involve a development stage mishap, which only becomes known and produces harm after the acquisition, dissolution or spin-off. This is a parallel to, and indeed, in some cases might come within, the situations in which purchasers of businesses or property face liability under federal environmental statutes as a result of the earlier owner's disposal of hazardous waste.[100]

In a merger involving a biotechnology company, the surviving firm will pick up all of the liabilities of the biotechnology corporation—including liabilities for any pre-merger biotechnology mishaps which later come home to roost—by operation of law.[101] If, on the other hand, the parties to the acquisition of a biotechnology company structure the transaction as a sale of assets by the biotechnology company to the other firm, then, under traditional corporate law, the purchasing company will not become liable for the biotechnology company's debts unless the purchasing company agrees to assume the debts.[102] An exception to this avoidance of liability exists if the court treats the purchase as a "de facto merger." Whether a court will treat an asset purchase as a de facto merger can depend upon whether the purchasing company picks up the selling firm's organization, management and personnel (which makes the transaction look more like a merger), how long and how actively the selling company continues to exist after the sale (the longer and more actively the selling company continues after the sale, the less the transaction looks like a merger), and, most critically, whether the sale is for cash or for stock in the purchasing corporation (cash consideration rules out defacto merger

---

99. *See, e.g.*, Ramirez v. Amsted Indus, Inc., 431 A.2d 811 (N.J. 1981).

100. *See, e.g.*, New York v. Shore Realty Corp., 759 F.2d 1032 (2d Cir. 1985) (purchaser of contaminated property held liable under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), 42 U.S.C. §§ 9601-9675 (1982)).

101. *E.g.*, DEL. CODE ANN. tit. 8, § 259(a) (1991).

102. *E.g.*, McKee v. Harris-Seybold Co., 264 A.2d 98 (N.J. Super. Ct. Law Div. 1970), *aff'd*, 288 A.2d 585 (N.J. Super. Ct. App. Div. 1972). An acquisition structured as the purchase of stock in the biotechnology company by the acquiring firm creates a parent subsidiary situation. Hence, liability for the acquiring firm in a stock acquisition depends upon whether a court will pierce the corporate veil.

characterization).[103] Some courts, however, have gone beyond this narrow exception and have held that a corporation which acquires and continues a product line will be liable when a product of that line turns out to be defective, even though the defective product was sold before the defendant corporation purchased and took over the product line.[104]

Dissolution of a biotechnology company raises similar concerns about liability based upon events prior to the dissolution which lead to unexpected damages after dissolution. With a dissolution, however, the concern is not liability of the acquiring company, but rather the liability of the shareholders of the dissolved firm. Normally, upon dissolution, the corporation must pay off its creditors before distributing whatever assets are left to its shareholders.[105] Failure to do so can lead to liability for the recipient shareholders under both common law and statutory theories.[106] The problem, however, is that it is difficult for the corporation to pay a claim which is unknown to the company before the distribution of assets. State corporation statutes often contain provisions allowing corporations to cut off claims after a certain length of time if the corporation gives notice of its dissolution.[107] On the other hand, if a biotechnology company's management were aware of the mishap and then decided to dissolve the company and distribute its assets with the plan of avoiding payment of claims, there could be liability.[108]

In a spin-off, the stock of a new corporation is distributed to the shareholders of an existing corporation out of whose assets the new corporation was formed. The end result is to create two independent corporations. This is the opposite of a merger or acquisition. Spin-offs create the issue of whether a corporation can avoid liability for a biotechnology calamity by spinning off a biotechnology company, when the roots of the mishap may have existed before the spin-off, but the damage only occurred after. Resolving this issue could confront the court with the difficult task of deciding when the claim accrued—before the spin-off (in which case, the preexisting corporation cannot escape responsibility for its own tort by forcing the plaintiffs to sue the new corporation[109]), or after the spin-off (in which case, liability would appear to fall only on the spun off company).

IV. CONCLUSION

The brave new world of biotechnology confronts a host of legal issues, including issues concerning business organization. This paper has introduced two of the business organization issues: (1) whether biotechnology firms are choosing

103. *E.g.*, Shannon v. Samuel Langston Co., 379 F. Supp. 797, 801 (W.D. Mich. 1974).
104. *E.g.*, Ray v. Alad Corp., 560 P.2d 3 (1977).
105. *E.g.*, DEL. CODE ANN. tit. 8 § 281(a) (1990).
106. *Id.* § 282.
107. *Id.* §§ 280, 282(b).
108. *See, e.g.*, Pacific Scene, Inc. v. Penasquitos, Inc., 758 P.2d 1182 (Cal. 1988).
109. *See, e.g.*, Darcy v. Brooklyn & N.Y. Ferry Co., 127 A.D. 167 (N.Y. App. Div. 1908).

their form of business to make efficient use of tax laws in financing biotechnology development, and (2) whether the parties involved in biotechnology will be able to avoid personal liability if the law of unintended consequences results in a biotechnology product wiping out more than perhaps some monarch butterflies. These are subjects worthy of further exploration.

APPENDIX

TABLE 1: www.biospace.com						
Year Incorporated or Founded	Public Corporation	Private Corporation	Sole Proprietorship	LLC	Subsidiary	**TOTAL**
Pre-1980		1			6	**7**
1980					1	**1**
1981	1	1			1	**3**
1982						**0**
1983						**0**
1984	1				1	**2**
1985						**0**
1986					1	**1**
1987						**0**
1988						**0**
1989	1	1				**2**
1990	3	1				**4**
1991	8	1				**9**
1992	6	3			1	**10**
1993	5	3		1		**9**
1994	6	4				**10**
1995	8	3			1	**12**
1996	22	8		1	2	**33**
1997	8	8		2	1	**19**
1998	3	1	1			**5**
1999	1	1				**2**
TOTAL	**73**	**36**	**1**	**4**	**15**	**129**

SUMMARY OF TABLE 1: Statistics Obtained from www.biospace.com on June 7, 1999		
Public Corporations	73	56.2%
Private Corporations	36	27%
Subsidiaries	15	11.5%
LLC	4	3.1%
Sole Proprietorships	2 (for one the date the company began was unavailable and was not included in Table 1)	1.5%
Partnerships	0	0%
TOTAL BIOTECH COMPANIES	**130**	**100%**

TABLE 2: Sacramento Business Journal-Top 25 List of Biotech Companies 1999[110]

Year Established in Sacramento Area	Public Corporation	Private Corporation	Sole Proprietorship	LLC	Subsidiary	TOTAL
Pre-1980		2			2	**4**
1980				1		**1**
1981	1	1				**2**
1982						**0**
1983						**0**
1984						**0**
1985		1				**1**
1986		1	1			**2**
1987						**0**
1988						**0**
1989					1	**1**
1990						**0**
1991		1			1	**2**
1992					1	**1**
1993		1				**1**
1994						**0**
1995		1				**1**
1996						**0**
1997						**0**
1998				1		**1**
TOTAL	**1**	**8**	**1**	**2**	**5**	**17**

110. *Top 25 List of Biotech Companies*, SACRAMENTO BUS. J., Apr. 9, 1999, at 133; *Top 25 List of Biotech Companies*, SACRAMENTO BUS. J., Apr. 3, 1998, at 51.

SUMMARY OF TABLE 2: Statistics Obtained from Sacramento Business Journal-Top 25 List of Biotech Companies		
Public Corporations	1	5.9%
Private Corporations	8	47%
Subsidiaries	5	29.4%
LLC	2	11.8%
Sole Proprietorships	1	5.9%
Partnerships	0	0%
TOTAL BIOTECH COMPANIES	**17**	**100%**