

Finance/Funding



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▼ The money men

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Who are the super financiers of biotechnology?

A good idea and a couple of bucks will get you a white chocolate mocha at your neighborhood Starbucks. A good idea and several million dollars in venture funding will get you a company, and a shot at turning that idea into a drug or diagnostic product. Money is the fuel that drives entrepreneurs, but few industries require such a large amount of money—and repeated refueling—as does biotechnology. Until recently, there has been plenty of money available to satisfy the industry's voracious appetite.

Today, however, the industry is in crisis as the money supply has slowed from a torrent to a trickle, particularly for nascent companies or those seeking a second round of funding. The initial public offering (IPO) window is shut tight, which means that venture capitalists (VCs) are unable to cash out their investments and recycle the funds into new enterprises. The VCs are also having to supply more funds for late-stage companies that would normally turn to the public markets for continued funding, which is further strangling startups.

Is this the death-knell for biotechnology, as some predict? Or is it merely a lull before a great flood of capital that will seek to capture the economic potential of the post-genomics era of biomedical science? For insights, we've turned to some of the most experienced minds in the world of biotech finance. In the following article, we focus on the rare individuals who haven't just funneled billions of dollars into the biotechnology industry, but have applied their considerable intellect in ways that go beyond merely funding companies. Each in their own way, these five financiers have shaped the industry through their creativity, their passion for the life sciences and their ability to see beyond dollars and cents in a way that makes them valued as much for their brains as their wallets. Their stories hold lessons of tough times past, and of how creativity is often as important in the financial world as in the scientific world for turning a bright idea into a blockbuster drug.

Stelios Papadopoulos

Biotech's first analyst, Papadopoulos has become not only one of the most powerful investment bankers on Wall Street, but a venture capitalist, too.

Investment banker by day, venture capitalist at night, Stelios Papadopoulos thinks of himself first as a scientist. "I'm very methodical in the way I look at a problem, and like many scientists, that often leads to creative solutions," he explains. That creativity has shown itself many times over the 18 years that Papadopoulos has been involved with the biotechnology industry. For example, in 1987, a mere two years after becoming the first biotech analyst on Wall Street, he came up with the idea that led to Genzyme (Cambridge, MA) creating its first research and development limited partnership to fund the development of Cerezyme (Cambridge, MA). He also introduced special-purpose accelerated research corporations (SPARCS) to the world of biotechnology financing. [profile](#) and [advice](#)

As vice-chairman of SG Cowen (New York, NY), Papadopoulos is arguably the most influential biotech financier in the investment banking industry, and that combination of influence and creativity will be put to the test in the current tough financing environment. "Raising money right now is not an option for most companies, but that doesn't mean that there aren't ways to help the industry as a whole through this particular cycle. There's still plenty of action," he says with a laugh.

Papadopoulos's interest in financing biotechnology companies was born in October 1980 out of a confluence of two events: his completion of a PhD in biophysics and Genentech's IPO, the industry's first. At the time, he was trying to make some decisions about his future, thinking that he wanted to

Box 1: Stelios Papadopoulos Profile



Education: BA, physics, Bethany College, 1970; PhD, biophysics, New York University 1980; MBA, New York University, 1983

Age: 54

Years in biotech: 18

Current post: Vice-chairman, SG Cowen (New York)

Box 2: In his own words...

Self-image: "I still think of myself as a scientist, and so I like the creative side of Wall Street, the ability to invent new ways of helping entrepreneurs get the money they need to make the discoveries that are changing our lives."

Moment of greatest clarity: "The day I decided to get into biotech. It was like Moses getting the tablets. There was also the day I was skiing in Colorado and I hit on the idea of tracking stocks while I was coming down the mountain."

Advice to entrepreneurs: "Take the time to understand what drives this industry. Unless you can understand how to get your company to grow from two people to 200 people, you're going to fail."

Advice to government: "I think the FDA does a pretty good job, but it could improve in terms of transparency, giving the industry a better idea of what it's thinking about."

Most common cause of life science failure: "When an entrepreneur becomes wedded to an idea and drives with it without considering the environment. Is there competition? Has newer research made an idea obsolete? Too many entrepreneurs don't ask those questions."

Worst business habit (self or others): "Lacking the interest to really understand what's going on in this industry. The superficiality of Wall Street types is astonishing."

do something more interesting than working in the laboratory on one scientific problem. Impressed by the intensity of the excitement about this nonscientific event, he decided that he wanted to work on Wall Street, which he realized meant getting his MBA. He spent the next two and a half years going to business school at night while serving as a research faculty member at New York University Medical School (New York, NY), writing a book on biotech investing for his MBA thesis.

He landed his first Wall Street job as an analyst at Donaldson, Lufkin & Jenrette in 1985, and his timing could not have been better. Within six months, biotech was booming and he jumped to Drexel Burnham Lambert, which quintupled his salary. In 1987, Papadopoulos and the rest of the life sciences group moved en masse to Paine Webber, where he switched to the banking side of the business and brought his methodical nature and creativity to the task of raising money for an industry whose appetite for funds was growing rapidly. In addition to special financing vehicles such as SPARCs, Papadopoulos popularized so-called Regulation D filings, in which IPOs were marketed directly to individual investors as opposed to institutional clients (mutual and pension funds). He also adapted the idea of using tracking stocks, in which a well-defined component of a company is traded as a separate stock issue even though it remains wholly owned by the issuing company, as a way for companies such as Genzyme to realize some value for otherwise overlooked parts of the company. Complex acquisitions, such as Monsanto's (St. Louis, MO) deal with Celgene (Warren, NJ) and Warner-Lambert's (Morris Plains, NJ) purchase of Agouron Pharmaceuticals (La Jolla, CA), became a Papadopoulos trademark. In 2000, he moved to SG Cowen.

Not content to merely broker deals, he puts some of the wealth he's amassed from his day job to work as a venture capitalist, investing his own money in startups such as Exelixis (S. San Francisco, CA), of which he is board chairman, Cellzome (Heidelberg, Germany) and Anadys Pharmaceuticals (San Diego, CA). He also sits on the board of Diacrin (Charlestown, MA) and Structural GenomiX (San Diego, CA). "It's fun being involved in the genesis of a new company," says Papadopoulos, who says being a VC helps keep his creative juices flowing.

As to what drives this self-professed science junkie these days, it's a continuing fascination with the people and ideas that make up the industry. "There may be a shortage of money today, but there's no shortage of bright, interesting people who have brilliant ideas. My job is to bring the necessary parties together so that good people and good ideas win out."

William Kridel Jr.

Kridel gets the hard deals done by involving himself in even the most minute details, playing the role of confidante, mediator and negotiator.

As a child growing up in New York City in the early 1950s, Bill Kridel was surrounded by talk of the latest advances in biomedical and pharmaceutical science. His father, William Sr., sat on the Board of the Mount Sinai Medical Center (New York, NY), and medicine was always a part of family discussions. Nearly three decades later, after a successful career in Europe as an investment banker with a pharmaceutical focus and some emphasis on the oil and gas industry, Kridel was looking for new opportunities, and those memories of the childhood discussions prompted him to look at the life sciences. [profile](#) and [advice](#)

It was clear then—this was in the late 1980s—that there were few financial firms specializing in health care, either in terms of equity research or transactional support," says Kridel, referring to the paucity of independent stock analysis and of firms able to provide all of the legal and financial advice involved in making deals. Kridel also realized that the life sciences industry had many similarities to the oil and gas business, particularly in the level of competition and cooperation among firms and the large number of large and small players in the industry. "I concluded that there's plenty of science and clinical expertise but that the industry needed a healthy dose of finance and strategy capability."

Seeing an opportunity to combine personal interest with professional skills, he joined forces with fellow banker Jan Pilkington-Miksa and founded Ferghana Partners (New York and London) in 1992 to provide comprehensive strategic and financial advisory services to life sciences companies.

Over the past 12 years, Ferghana Partners has arranged acquisitions, divestitures, corporate partnerships and even private placements for dozens of life sciences companies, including pharmaceutical companies such as Merck KgaA (Darmstadt, Germany) and Wyeth (Madison, NJ) and smaller biotechs such as Targeted Genetics (Seattle, WA), Osiris Therapeutics (Baltimore, MD) and Atrix Laboratories (Fort Collins, CO). This past New Year's Eve, for example, Ferghana completed a \$27 million deal between EntreMed (Rockville, MD) and Celgene (Warren, NJ) that resulted in Celgene investing in EntreMed and also licensing EntreMed's thalidomide analog program as well as ending years of bitter litigation. Kridel calls it one of the most memorable deals of his career. "It was incredibly interesting and challenging in that it was part finance, part licensing, part M&A (mergers and acquisitions) and part litigation settlement in a deal context that could have disintegrated many times during the negotiating process," he explains. "Fortunately, the team and I were able to keep everyone's focus on the fact that both sides were going to be winners."

Box 3: William Kridel Jr. Profile



Education: BA, multiple majors, Yale, 1964; JD, Columbia, 1968

Age: 60

Years in biotech: 20

Current post: Managing Director, Ferghana Partners (New York and London)

Box 4: In his own words...

Self-image: "I'll go 150% of the way in terms of effort and creativity to help a company achieve its goals."

Moment of greatest clarity: "Knowing that the underlying science had to be translated functionally into clinical trials with achievable endpoints and not have the two elements unnaturally separated."

Advice to entrepreneurs: "Focus, focus, focus. Don't diversify your efforts too greatly. You need to put your resources on the narrowest area to win the war."

Advice to government: "Streamline the drug approval process in such a way that entrepreneurs and established companies have a clearer image of what they need to accomplish."

Most common cause of life science failure: "Inadequately designed clinical trials aiming at inappropriate endpoints or at markets that are already over-served."

Worst business habit (self or others): "I work about 100 hours a week and others don't. This is a field [where] extra effort pays off. When I go home on the weekend, I take the technical literature home to read."

Though Kridel and his partners will help a company raise money through the private equity markets, his personal approach is more of a holistic one. "I'm a strategy guy who looks at a company from the point of view of how can we change its circumstances, how can we reset the way it's doing business, its alliances, its development strategy, the way it is planning the clinical trials, the whole thing, in order to end up with a transactable event," he says. "In most cases, just raising money is not going to solve a company's real problems." He says that one of his biggest strengths is that he involves Ferghana and himself with every detail of a strategic transaction, whether it be planning a clinical trial or making sure every 'i' is dotted and 't' is crossed in a legal document.

What he dislikes are executives who don't have the moxie to make the changes needed to move their companies forward. "It doesn't happen often, because I think we pick our clients well, but I find it a shame when executives get lost in the moment instead of looking at the big picture. It bothers me to no end when a deal doesn't get done because the client loses nerve at the last moment or won't put that extra \$1 million on the table."

In these days of dwindling corporate bank accounts, Kridel believes that the long-anticipated industry consolidation must happen, for several reasons. First, he sees the IPO window remaining shut for "half-baked" companies, those that aren't already in good financial shape and are lacking real product-generating programs. Second, he believes that venture funds are getting so large that they can no longer invest enough in tiny startups to make a decent return on their investment. Instead, he sees venture capitalists investing multiple times in the same company, staying with the company for a longer time and nurturing them to a condition where they can be acquired or are mature enough to go public at a large valuation. "I think the magic number for a company doing an IPO, when the window reopens, is going to be north of \$300 million," he posits. Putting together smaller biotechs, with good strategic fit, may be the best way of assembling a company worth that much in the public markets.

G. Steven Burrill

Burrill built Ernst & Young's world renowned high-tech and biotech consulting business before 'retiring' to start his own venture capital firm.

Steve Burrill knew he wanted to avoid two things when he graduated from college: the East Coast and working with big, established companies. So with his newly minted finance and accounting degree from the University of Wisconsin (Madison, WI) in hand, he went out to San Francisco in the summer of 1966, got a job as an auditor with Arthur Young & Co. (San Francisco, CA) and proceeded to build from scratch the high-technology and biotechnology businesses that would become the signature practices for accounting giant Ernst & Young (E&Y, New York). By the time Burrill retired from E&Y in 1993, the high-tech and biotech practices combined for a third of the firm's \$6.5 billion in revenues and employed some 20,000 people. [profile](#) and [advice](#)

From the start, Burrill acted as mentor more than accountant to budding entrepreneurs, providing advice and introducing them to the venture capitalists, lawyers and other nonscientific experts needed to help turn ideas into companies. "I'd meet these really brilliant guys and they had all the science and engineering friends they needed, but what they were lacking was someone who knew the business world as well as they knew the science world," says Burrill, who today runs Burrill & Co. (San Francisco, CA), a life sciences merchant bank. "I became the guy that people would come to for business and financial advice."

Counting Apple Computer's Steve Jobs and Gordon Moore of Intel as some of his early clients at E&Y, Burrill rapidly became a sought-after advisor who could grease the wheels of finance for the high-tech business of Silicon Valley. It was no surprise, then, that when biotechnology shops started sprouting in the Bay Area, Burrill quickly became the center of that universe, too. "I helped write the first prospectuses mentioning biotechnology," he says, getting his entrée into the field in 1968 helping Alejandro Zaffaroni start ALZA (Mountain View, CA).

Three years later, he helped Cetus (now part of Chiron, Emeryville, CA) get off the ground, followed soon after by Genentech (S. San Francisco, CA), Amgen (Thousand Oaks, CA) and Gilead Sciences (Foster City, CA). Other companies that benefited at their inception from Burrill's advice and matchmaking skills include InSite Vision (Alameda, CA), SciClone (San Mateo, CA), Sequus (Menlo Park, CA, now part of ALZA) and Telik (S. San Francisco, CA). "It was great to have been part of helping Silicon Valley grow, but I'm really proud of the role I've played in helping get biotech off the ground," says Burrill.

In particular, he believes the work he did over the years with ALZA benefited not only the company but the industry as a whole. "We taught the biotech world how to partner," he says. And though financial vehicles such as off-balance sheet financing have gotten a bad name thanks to their aggressive use by Enron and Elan (Dublin, Ireland) to hide significant debt, in the hands of ALZA, Chiron and others they were used with complete transparency to help those companies spread risk among a larger pool of investors.

Today, Burrill sticks to providing venture capital and enabling strategic partnerships. He currently runs two venture funds with over \$425 million under management, and is close to raising another \$150 million. Burrill 2.0 and 3.0, as the funds are called, own major pieces of 38 companies, and the man behind the funds chairs two company boards and sits on another five, including those of public companies Paradigm (Research Triangle Park, NC), Third Wave Technologies (Madison, WI) and DepoMed (Menlo Park, CA).

Box 5: G. Steven Burrill Profile



Education: BBA, accounting and finance, University of Wisconsin, 1966

Age: 58

Years in biotech: 35

Current post: CEO, Burrill & Co. (San Francisco, CA)

Box 6: In his own words...

Self-image: "I'm passionate about biotechnology."

Moment of greatest clarity: "When I started Burrill & Co. I wanted to make a real difference."

Advice to entrepreneurs: "The capital markets dictate financial strategy. My sense is that most people come into this thinking strategy, believing that financing is just a tactic. In our biotech world, it's really what the financial markets expect that dictates strategy. Biotech companies may be a decade or more before we see a customer, so we're much more dependent on the capital markets."

Advice to government: "Get out of the way. While regulation is appropriate, most of what biotech needs is clarity and consistency, not a constantly changing governmental role."

Most common cause of life science failure: "Setting unreal expectations. The capital markets are patient enough, but when unrealistic expectations are made, [they] pretty much dismiss you."

Worst business habit (self or others): "Not being able to let go, whether we're investors who want to keep funding things when we should let it die, or scientists who won't realize that a project needs to die."

As the author of the seminal annual report on the biotechnology industry, Burrill is used to being asked what he thinks of the current state of the industry. "Tremendously undervalued," he replies to that question. "And if you look to the future, innovation in the life sciences is really in the hands of the small companies, of the biotech industry." Looking to the future, he sees two important trends. First, he believes that the major pharmaceutical companies are not going to acquire significant numbers of biotechs, as many other industry-watchers believe. "They'd rather partner than acquire," he explains.

Second, he argues passionately that diagnostics are going to be the value drivers in the years ahead. "In an era of personalized medicine, diagnostics will be the big money makers and drugs may become the commodity part of the value equation. That's why we're investing heavily in diagnostics today."

Dennis Purcell

After beating cancer, Purcell turned his talents to raising billions in capital for biotechs, and gained a reputation for making winners out of all parties in a transaction.

You can forgive Dennis Purcell if he takes the future of the biotechnology industry personally. Nearly 15 years ago, his doctor discovered a tumor in his arm. "I found out first-hand what this industry was about, and I decided to get into this field. I could see that this was an industry that was going to come up with some exciting products, but that it would need to raise a great deal of money to make that happen," he says. [profile](#) and [advice](#)

Raising money is Purcell's specialty, and over the past decade he has supervised over \$10 billion of financing for life sciences companies, first at PaineWebber (New York, NY), then at Chase H&Q (formerly Hambrecht & Quist, New York, NY) and for the past three years as the senior managing partner at the Perseus Soros BioPharmaceutical Fund (New York, NY). At Perseus, Purcell is responsible for the overall management of the fund, which makes private equity investments in the life sciences industry. He also serves on the boards of Auxilium Pharmaceuticals (Norristown, PA), Structural Bioinformatics (San Diego, CA), Aton Pharma (Tarrytown, NY) and Valentis (Burlingame, VA).

Purcell's goal in raising funds is to make sure that all the vested interests win—the companies, the investors and the patients who will be served by a company's success. His approach to stacking the odds in everyone's favor is to focus on management. "A good management team has to be the number one priority, and you see that in terms of the strong business model that a management team puts together," he explains. "You can't afford to just think six months out. You have to have solid long-term plan in place." The funds investments include Advion BioSciences (Ithaca, NY), CollaGenex (Newtown, PA), Myogen (Westminster, CO) and Valentis.

Since moving from the selling side to the buying side in 2000, Purcell says he feels more of a challenge because he personally is investing money for some of the country's biggest pension funds. "They're looking for superior returns, and I think we have the opportunity, and obligation, to see those kinds of returns in biotechnology." This is particularly true today, he adds, because of a confluence of events. "From an investor's standpoint, there are great values to be had. Value hasn't kept pace with the enormous gains in science that we've seen in the past few years."

In addition, Purcell believes that over the next few years, biotechnology is going to play an ever-larger role in the life of large pharmaceutical companies. "In the post-genomics world, the real expertise is in the smaller firms, and those companies that can attract funds now and develop their technologies are going to be rewarded."

Assuming, of course, that the industry can make it through what Purcell says is the toughest financial climate he's seen. "The number of companies that need to be financed has grown huge without the public financing window opening. As a result, there's a much greater demand for private capital, and it's not materializing." The cure, he says, may lie with creative vehicles such as off-balance sheet financing and other ways of sharing in the risk and reward of drug development.

Alan Walton

Walton, a former academic, makes a specialty of funding companies that fill technological niches, usually ones he's the first to spot.

Fresh from giving up a tenured faculty position at Case Western Reserve University in 1981, Alan Walton learned first-hand just how tenuous the economic life of a venture-funded biotech company can be. His first day on the job at University Genetics (UGEN, Westport, CT), Walton found out that the company's \$26 million in venture funding had evaporated the day before. Three months and some 200 dog-and-pony shows later, Walton and his partners had managed to raise enough startup capital to keep his nascent firm alive. "One of my happiest days was when we got UGEN public, and I could stop feeding my family on dog food," he says. [profile](#) and [advice](#)

By the time he left University Genetics in 1987, Walton decided he'd much rather be doling out money than begging for it. To do that, he joined the venture capital firm Oxford Partners (Westport, CT) to build its life sciences business, which became its own fund, Oxford Bioscience Partners (OBP, Westport, CT), in 1992. Over the past 16 years, Oxford Partners and OBP have provided startup funds for over 100 firms, including Human Genome

Sciences (Rockville, MD), Gene Logic (Gaithersburg, MD), Vivus (MountainView, CA), ExonHit Therapeutics (Paris, France) and Orchid Biosciences (Princeton, NJ).

For some of these, Walton provided not only funding, but the original idea behind the company as well. "For many of our deals," he notes, "we'll identify a technology hole and look to fill it by finding the right people in academia." Gene Logic is a case in point—Walton conceived of the idea in his office in 1994, set himself up as board chairman, and recruited scientists and management to run the company, which was among the first to provide extensive gene-expression databases and data-mining tools. He has since funded two Gene Logic spin offs, Avalon Therapeutics (Germantown, MD) and Psychiatric Genomics (Gaithersburg, MD), that are developing drugs for oncology and psychiatric disorders, respectively, using bioinformatics technology developed by Gene Logic.

It is from the experience of both creating and funding companies that Walton says without any hesitation that this is the worst financing environment he's seen in 16 years. "It's a terrible time to start a company right now, and that's tragic for society because there are so many important and promising ideas waiting to be developed into better medicine," says Walton. "Good ideas are being strangled."

It is a particularly tough time for the fresh-out-of-the-gate companies that Walton likes to fund. His preference is to spread investments of under \$10 million across a large number of promising startups, particularly those based on new technologies that promise to generate multiple drug candidates for more than one target. "Startups are not in vogue now, and I don't see a turnaround," states Walton. The problem, as he sees it, is one of supply and demand. "With the IPO window shut, companies are having to rely more on later-round private financings, and so there are too many companies chasing too few investment dollars." The resulting situation is great for those venture capitalists who specialize in second- and third-round financing, which are demanding and getting more equity for less money these days—"they're really squishing value down right now"—but lousy for small companies in need of cash infusions.

Although his investing mantra has always been "first with new technologies," the current environment has forced him to do late-stage deals. "It's not something we're eager to do," he says, but having raised \$450 million over the last two years, and with over \$800 million total under management in four funds, he has to put that money to work in a way that's best for his fund's investors. "Having been squished down a number of times [as an initial-round investor], we've had to become the squisher instead of the squishee."

Box 7: Dennis Purcell Profile



Education: BS, economics and accounting, University of Delaware, 1977; MBA, Harvard Graduate School of Business Administration, 1982

Age: 47

Years in biotech: 14

Current post: Senior managing partner, Perseus Soros BioPharmaceutical Fund (New York, NY)

Box 8: In his own words...

Self-image: "Completely committed to this industry."

Moment of greatest clarity: "That you could actually finance science and see results and have it impact patients."

Advice to entrepreneurs: "This is a business of seizing opportunities, of being proactive, putting yourself in a position to be ready to move."

Advice to government: "When we think about the need to increase productivity, biotech is the place where we're going to see great progress over the next quarter of a century, and we need to make sure that public policies encourage this to happen."

Most common cause of life science failure: "Having a lack of realism about the assets a company owns, and the lack of transparency that results. Companies need to realize that financiers are their partners, and that they need to [be] open about their assets and prospects. Companies often can't get financed because early on they don't see the financiers as partners."

Worst business habit (self or others): "Dismissing new ideas out of hand."

Box 9: Alan Walton Profile



Education: BS, chemistry, University of Nottingham, 1957; PhD, chemistry, Nottingham University, 1960; DSc, biological chemistry, Nottingham University, 1970

Age: 67

Years in biotech: 22

Current post: Senior managing partner, Oxford Bioscience Partners (Westport, CT)

Box 10: In his own words...

Self-image: "Tired, because I've seen it all and now I'm disappointed that the new things that excite me, the new technologies, are not going to be financed in the next couple of years."

Moment of greatest clarity: "Seeing that genomics was going to make quantitative medicine a reality."

Advice to entrepreneurs: "Don't start a company. Keep your day job."

Advice to government: "The NIH and NSF should set aside some proportionate share of their funding for truly innovative projects, along the lines of the Advanced Technology Program at NIST (the National Institute of Standards and Technology)."

Most common cause of life science failure: "Two—one is that the technology theory doesn't work out, and the second is that people are still doing clinical trials based on the simplistic idea that there's one receptor involved in one disease."

Worst business habit (self or others): "Obscuring the true facts of a company's health and prospects from the board."

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