THE BURRILL REPORT

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Review/Preview

Market Turmoil Overshadows Biotech Successes in 2011

Despite global worries, opportunities remain for innovative companies

Year In Review

The biotech industry in 2011 scored notable victories with the achievement of major drug approvals, deals, and advancements. But while the industry finished the first half of 2011 on pace for one of its biggest years of fundraising yet, global economic worries and political fights over government debt in Europe and the United States weighed heavily on financial markets and overshadowed the industry's successes.

These pressures not only hampered companies' ability to obtain funding in the second half of the year, but also raised the specter of cuts to governments' expenditures on healthcare and biomedical research. With capital scarce and expensive, companies will need to focus their investments on clear paths to revenues. They will also have to develop products that push beyond incremental improvements on available products and instead concentrate on disruptive solutions that make healthcare costs more sustainable.

Recapping 2011

The Burrill Biotech Select finished the year up 18.5 percent. That outpaced the Dow Jones Industrial Average, which rose 5.5 percent in the year, and the Nasdaq Composite Index, which closed in negative territory as it finished the year down 1.8 percent. The Burrill Mid-Cap Index was the best performer in the Burrill family of life sciences indices, ending the year up 35.4 percent, while the Burrill Personalized Medicine Index was the worst performer, closing down 5.3 percent for the year.

Life sciences companies across the globe during 2011 raised a total of $83.1 billion in public financings, up from $65 billion in 2010. Debt financings dominated fundraising both years and accounted for the overall fundraising growth in 2011. Global life sciences public equity financings (IPOs, PIPEs, and follow-ons) totaled just $16 billion, an 8 percent increase over the $14.8 billion raised in 2010, thanks largely to follow-on financings in China.

In the United States, public equity financings in 2011 totaled $5.7 billion, down 17.4 percent from $6.9 billion a year ago. Fundraising slowed considerably in the United States in the second half of the year as markets swung wildly in the face of the European debt crisis and the fights in the United States over the raising of the debt ceiling, the Standard and Poor's downgrade of U.S. credit, and the inability to reach agreement in Congress on how to reduce the budget deficit.

A total of 16 life sciences companies managed to go public in the United States in 2011. Together, they raised $1.4 billion.

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2011 Life Sciences Capital Scorecard in USD M

	2011	2010	Change
Total Global Venture Capital	**9,975**	**9,116**	**9.4%**
U.S. VC	7,620	6,975	9.2%
Total IPOs*	**3,748**	**6,767**	**-44.6%**
U.S. IPOs**	1,394	1,431	-2.6%
Total Global PIPEs	**3,354**	**3,782**	**-11.3%**
U.S. PIPES	1,506	1,949	-22.7%
Total Global Follow-ons	**8,880**	**4,255**	**108.7%**
U.S. Follow-ons	2,832	3,556	-20.4%
Global Debt Offerings	**55,544**	**37,872**	**46.7%**
U.S. Debt	35,927	30,550	17.6%

	2011	2010	Change
Global Other Financings	**11,662**	**12,322**	**-5.4%**
U.S. Other Financings	5,791	6,846	-15.4%
Total Global Public Financings	**83,188**	**64,998**	**28.0%**
Total U.S. Public financings	47,450	44,332	7.0%
Global Partnering	**38,142**	**61,303**	**-37.8%**
U.S. Partner/Licenser	22,853	34,001	-32.8%
Global M&A	**159,731**	**148,561**	**7.5%**
M&A, U.S. Target	95,231	71,854	32.5%

** (46 in 2011 v. 39 in 2010)* *** (16 in 2011 v. 20 in 2010)*

Year in Review

Bright spots, but still a tough climate for investment

(continued from previous page)

That compares to 20 IPOs in 2010 that raised a total of slightly more than $1.4 billion. As a group, the life sciences IPOs of 2011 fell 27 percent from their initial offering prices as of the close of the year. Getting the deals done was not easy. Ten of these companies went public below their target price ranges and, as a group, these companies sold nearly 28 percent more shares than they had set out to sell while raising about 13 percent less than they had hoped.

The specialty pharma Sagent Pharmaceuticals, which went public at the high end of its target range, was the biggest gainer as of December 30, closing up 31 percent to $21. The medical device maker Kips Bay Medical was the steepest decliner, falling 83 percent to finish December 30 at $1.34. Public market volatility weighed on public financings overall. U.S. follow-ons fell 20.4 percent and PIPE offerings dropped 22.7 percent from year-ago levels in 2011.

The nearly $10 billion invested in the global sector through venture capital reflected a 9.4 percent increase over last year. But there are growing concerns about the future role traditional venture investors will play in funding biotech. Several life sciences venture capital firms in 2011 announced plans to reduce investment in the sector or exit it completely. That reflects both frustration with regulatory barriers and the weak market for initial public offerings that has made it difficult for venture investors to capture returns on their investments.

M&A

On the M&A front, 2011 saw a conclusion to the long negotiation between Sanofi and Genzyme. Divergent views on the value of the pioneering rare disease biotech were closed with the use of contingent value rights that could be worth up to $14 each. The rights closed the year at $1.17, a reflection of Wall Street's uncertainty about their value. Those rights could add as much as $3.8 billion more to the agreed on $20.1 billion deal. Other notable deals included generic drug giant Teva buying the biotech Cephalon for $6.8 billion; Japanese drug giant Takeda buying Switzerland's Nycomed for $13.7 billion to broaden its access to European and emerging markets; and Gilead's planned $11 billion purchase of hepatitis C drug developer Pharmasset. Gilead's $137 a share bid for Pharmasset, an 89 percent premium on Phar-

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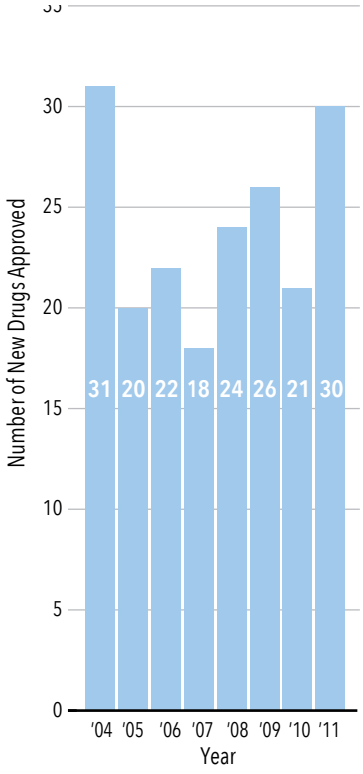
FDA Drug Approval Trend, 2004-'11

New drug approvals are at a seven-year high



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U.S. Biotech Financings in 2011, in USD M

	Q1 2011	Q2 2011	Q3 2011	Q4 2011	TOTAL
PUBLIC					
IPO	510	540	50	182	1,282
FOLLOW-ON	1,464	2,248	453	740	4,905
PIPES	403	450	211	328	1,392
DEBT	7,928	5,867	2,235	14,359	30,389
PRIVATE					
VC	1,179	1,338	1,312	1,392	5,221
PARTNERING					
	9,363	3,686	2,873	6,967	22,889
TOTAL	**20,847**	**14,129**	**7,134**	**23,968**	**66,078**

Biotech includes therapeutics, tools/technology, diagnostics, industrial biotech, digital health

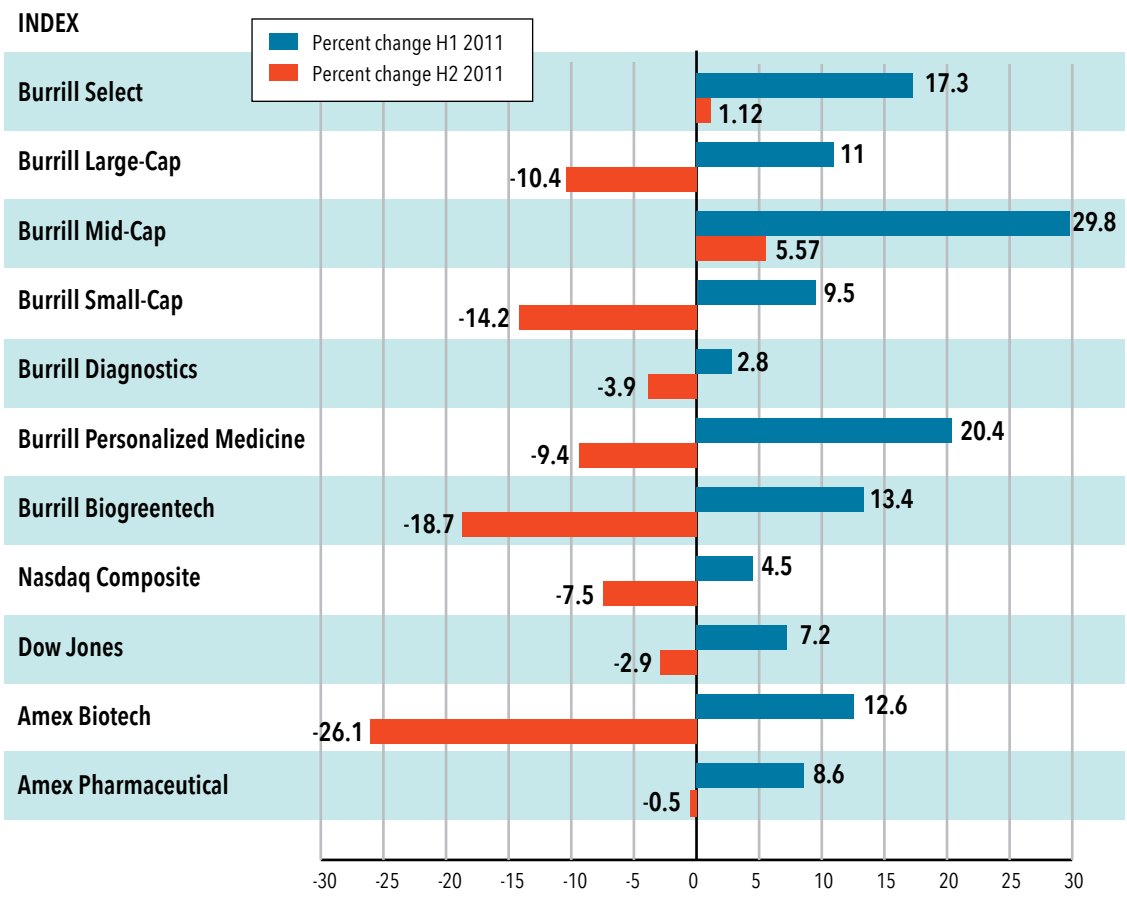
Year in Review

» (continued)

masset's shares from the close the day prior to the bid, helped propel the biotech to end the year as the sector's biggest gainer as it rose 488.6 percent to close the year at $128.20. Burrill & Company, publisher of The Burrill Report, is an investor in Pharmasset.

The U.S. Food and Drug Administration approved 30 new drugs in 2011, compared to 21 in 2010. Among the notable drugs that won approval during the year were Vertex Pharmaceutical's oral hepatitis C drug Incivek, Bristol-Myers Squibb's melanoma drug Yervoy, the first new melanoma drug in 13 years, and the first to extend the lives of patients with late-stage disease; and Human Genome Sciences' lupus drug Benlysta, the first new lupus drug in 50 years. Despite the increase in FDA approvals of new drugs in 2011, regulatory uncertainty continues to plague the industry. Increasingly we will see the FDA move away from being a gold standard for the world to being a late adopter as companies move to first win approval for innovative therapies in other countries.

Indices Performance First Half vs. Second Half 2011 – Percent Change Comparison



Source: Burrill & Company

A tailored fit

Personalized medicine also emerged as a bright spot for the sector with the FDA's approval of Roche's melanoma drug Zelboraf and Pfizer's non-small cell lung cancer drug Xalkori. Both drugs were approved with companion diagnostics to determine which patients would benefit from their use. The FDA also approved Seattle Genetics' lymphoma drug Adcetris, a drug that marries an antibody to a toxic chemotherapeutic payload to deliver a targeted therapy to a certain subgroup of lymphoma patients.

With these approvals, personalized medicine took a major step forward. It is clear that not only drugmakers but regulators are embracing the benefits. With the expiration of patent protection on Pfizer's best-selling statin Liptor, the era of the one-size-fits-all blockbuster is drawing to a close. We'll still have billion-dollar drugs, but they will be developed and prescribed with an understanding of a patient's individual genetics.

Personalized medicine emerged as a bright spot for the sector as the FDA approved two drugs developed with companion daiagnostics to determine which patients would benefit from their use.

Accelerating change

Though the U.S. Supreme Court has said it will rule on the constitutionality of the Patient Protection and Affordable Care Act, the healthcare reform legislation passed in 2010 has already set in motion significant change. Regardless of the court's ruling, meaningful reform will be driven by payers, physicians, patients and technology. The pace of that reform will only accelerate.

As we begin the new year, the volatility that has characterized the financial markets in the second half of 2011 is likely to continue. Europe's sovereign debt crisis will take years to work through and with 2012 being an election year in the United States, the divide between the parties is not likely to be bridged. While the industry continues to raise a substantial amount of capital, much of it is going to fund large, well-established companies. Smart companies will raise money when they can rather than waiting until they need to. ■

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What's Ahead in 2012: Predictions for the new year

While companies will still face challenges raising money in 2012 as the debt crisis in Europe and election year politics continue to fuel volatility in financial markets, overall, I expect the life sciences sector to outperform the major market indices in 2012 as they have in 2011, as measured by the Burrill Biotech Select Index.

By G. Steven Burrill
CEO, Burrill & Company

Despite the turmoil in the financial markets, there remains enormous opportunities for companies that deliver true innovation and value. While companies will still face challenges raising money in 2012 as the debt crisis in Europe and election year politics continue to fuel volatility in financial markets, overall, I expect the life sciences sector to outperform the major market indices in 2012 it has in 2011, as measured by the Burrill Biotech Select Index.

Here are my predictions for 2012:

FUNDRAISING: The ability of companies to raise financing on the public markets will be tempered by ongoing volatility, but the environment for raising capital will improve throughout the year.

BIOTECH IPOS: Biotech companies will continue to go public in choppy markets where they will grab opportunities as they arise. Companies in 2011 had to adjust their expectations of what the market would be willing to pay. Overall, companies ended up selling more shares for lower prices than they had set out to do in 2011. There will be a pick-up in IPO activity with several major consumer technology companies slated to go public in the first part of the year. Expect about 25 life sciences IPOs in 2012, up from 16 in 2011.

PRIVATE FINANCING: In 2011, life sciences companies raised about $7 billion in private financings in the United States. While overall private investments in life sciences will grow by about 10 percent in 2012, corporate venture capital, angel capital, and other private sources of funding will be increasingly important sources of capital compared to traditional venture capital. Traditional venture investors will continue to broaden their portfolios away from therapeutics to other areas of healthcare, with a particular focus on access and delivery. There will also be increased investment in the medical device sector, driven in part by the aging population, technological improvements, and growing demand in emerging markets. The companies that will get funded are the ones with disruptive technology rather than those offering incremental improvements.

Preview 2012

MERGERS & ACQUISITIONS: In 2011 there was a major pick-up in M&A deal values. Several mid-cap life sciences companies are likely targets for acquisition in 2012. That will heat up activity in the sector. Large pharmaceutical companies will continue to breakdown the distinctions between pharmaceutical, biotech, generic, biosimilars, and diagnostics companies by acquiring companies across the spectrum. They will need to compete with larger biotechs, which will become more aggressive buyers of innovative companies. Non-traditional life sciences companies will also move deeper into the space. Look for a major tech company establishing itself in the bioinformatics space through an acquisition.

PARTNERING: Pharmaceutical companies moved away from internal R&D in 2011 to rely more on partnerships with biotechs and academic centers as sources of innovation. In 2012, there will be a continued bifurcation of partnering deals as companies seek research and discovery deals with small upfront payments plus options to license compounds at one end and big dollar, late-stage deals at the other end. Pharmaceutical and big biotech companies will not be afraid to pay big dollars for assets that have largely had their risks abated. There will also be an increase in non-competitive alliances between large companies seeking to cut the cost and risk of drug development through shared research.

REGULATORY: The U.S. Food and Drug Administration approved 30 new drugs in 2011, a significant increase over the 21 approved in the previous year. The spike in approvals is not the result of any significant changes at the agency or within industry. In 2012, there will be fewer approvals as there will be no lessening in regulatory barriers to winning approval for new drugs. Regulatory barriers will increase in the United States and lead companies to look to emerging markets for first approvals of new products. The FDA will shift from being a gold standard to a late adopter as companies will focus on getting to markets outside of the United States first because of the complexity and challenge at the FDA.

The renewal of the Prescription Drug User Fee Act will move through Congress, but despite an accord between the industry and the agency on the language of the legislation, it will get bogged down in fights over issues related to drug pricing and safety.

DIAGNOSTICS: Diagnostics will grab an increasing portion of healthcare spending in 2012 driven by the approval of new companion diagnostics, the growth of predictive diagnostics, and the emergence of an increasing number of point-of-care diagnostics.

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Preview 2012 » (continued from previous page)

The pharmaceutical industry's love affair with emerging markets will be put to the test in 2012, as economic disruptions in developed economies spill over into some of the bright spots of growth in emerging economies.

SEQUENCING: Advances in this area will continue at a rapid pace and it will improve our understanding of the genetics of diseases and advance the development of personalized medicine. In 2011, the long-awaited $1,000 genome will arrive. China's BGI, which is sequencing everything, will raise the profile of the country as a leader in personalized medicine.

BIOINFORMATICS: The real issue is not when we will arrive at the $1,000 genome -- we are there already -- but when we will be able to make use of the data contained in the genome to reduce the cost of drug development, develop safer and more effective drugs, and not only treat, but prevent disease. In 2012, we will see major investment and initiatives supporting new ways to harness and analyze all of the information being generated in our new age of genomics.

EMERGING MARKETS: The pharmaceutical industry's love affair with emerging markets will be put to the test in 2012, as economic disruptions in developed economies spill over into some of the bright spots of growth in emerging economies. Companies will feel mounting pressures on pricing of pharmaceuticals in these markets. A growing middle class, rising incidence of chronic disease, and aging populations, though, will keep up demand, particularly for branded generics, and continue to drive Big Pharma's strategy to build new sources of revenue growth. China will transition from being a source of low-cost labor to a source of innovation for the pharmaceutical industry.

HEALTHCARE: The U.S. Supreme Court will rule on the constitutionality of the Patient Protection and Affordable Care Act. The ruling will have little impact on the actual direction of healthcare reform. Any ruling by the court on the 2010 legislation will not halt the transformation that has begun. Patients, doctors, payers, and technology are already driving changes to healthcare delivery and access. Real progress will be made in moving from an increasingly dysfunctional U.S. healthcare system to an increasingly functional wellness-based system that provides predictive and pre-emptive healthcare with new digital health tools to help people manage their own health.

DIGITAL HEALTH: The wireless revolution is driving significant changes to the way healthcare is accessed and delivered. Doctors will start to drive patient adoption in 2012. Smartphones will become the key connector between people and their healthcare providers. They will increasingly monitor and guide users on their health and wellbeing. Useful technology that better personalizes treatment, and predicts and prevents disease, will pull consumers to adoption.

HEALTHCARE REFORM IN EUROPE: Debt problems compelling cuts in entitlements will put new pressures on European governments to reign in healthcare spending. This will fuel political unrest and make drug companies the target for new pricing pressures and push systems toward value-based pricing of pharmaceuticals.

BIOSIMILARS: With the establishment of a pathway for biosimilars, the landscape will take shape in 2012 with well funded pharmaceutical companies and generic drugmakers vying to stake a claim. Biotech companies with manufacturing expertise and capabilities will become acquisition targets. Brands -- both branded generics and branded biosimilars -- will become important in the global marketplace. The emergence of bio-betters will also provide a new source of competition to well-established biologics.

AGRICULTURAL BIOTECH: We will see greater global adoption of genetically modified crops and a relaxing of restrictions as resistance to their use gives way to the need of meeting world food and energy needs. Agribusinesses struck more than a dozen research agreements with biotechs in 2011 to improve crop traits and increase yields. China is likely to approve biotech rice for planting and India will move forward on its biotech rice field trials. Even Europe will see a growth in biotech crops.

BIOFUELS AND BIOCHEMICALS: 2012 will be a critical year for the industry as companies seek access to capital to complete their scale up and establish commercial facilities. It's still early times for the sector, but revenues will grow and attract capital. In 2011, 7 bio-industrial companies raised $929 billion in initial public offerings, with three U.S. IPOs netting $500 million. Economic and political uncertainty will continue to impede access to capital but with a dozen U.S. companies in the IPO queue, expect to see at least half of them complete their initial offerings.

BIORENEWABLES: Big oil, chemical, and consumer products companies will play an increasingly important role in the growth of the sector, with major oil companies stepping in to take equity stakes and help with project finance, and a strong interest in bringing biochemicals and bioplastics into the industrial sector. Besides industrial oil and chemical companies, we will see consumer product makers increase investment in the sector as they respond to pressures to shift their production to use more environmentally sustainable goods and processes.

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New Approved Drugs and Biologics, 2011

PROPRIETARY NAME	ESTABLISHED NAME	COMPANY	INDICATION
UNITED STATES			
SMALL MOLECULES			
Intermezzo	zolpidem tartrate	Transcept Pharmaceuticals	Prescription Sleep Aid
Jakafi	ruxolitnib	Incyte	Myelofibrosis
CPI-300	bupropion hydrochloride	IntelGenX	Major depressive disorder
Exparel	depobupivacaine	Pacira Pharmaceuticals	Post-surgical pain management
Onfi	clobazam	Lundbeck	Childhood Seizures
Ferriprox	deferiprone	ApoPharma	Treatment for iron overload
Firazyr	icatibant	Shire	Acute Type I and II attacks of hereditary angioedema
Zelboraf	vemurafenib	Roche; Daiichi Sankyo	Untreated BRAF V600 mutation-positive metastatic melanoma
Brilinta	ticagrelor	AstraZeneca	Acute coronary syndromes
Arcapta	indacaterol inhalation powder	Novartis	Chronic Obstructive Pulmonary Disease
Xarelto	rivaroxaban	Janssen Pharmaceuticals (Johnson and Johnson)	Blood clot risk reduction
Potiga	ezogabine	Valeant Pharmaceutical	Partial seizures
Dificid	fidaxomicin	Optimer; Astellas	Clostridium difficile infection
Incivek	telaprevir	Vertex Pharmaceuticals; Tibotec (Johnson & Johnson); Mitsubishi Tanabe Pharma	Genotype 1 chronic hepatitis
Edurant	rilpivirine	Tibotec (Johnson & Johnson)	HIV-1 infection in adults who have never taken HIV therapy
Victrelis	boceprevir	Merck	Chronic hepatitis C
Tradjenta	linagliptin	Boehringer Ingelheim; Eli Lilly	Type 2 diabetes
Zytiga	abiraterone acetate	Centocor Ortho Biotech	Metastatic prostate cancer
Horizant	gabapentin enacarbil	GlaxoSmithKline; XenoPort	Restless leg syndrome
Vandetanib	vandetanib	iPR Pharmaceuticals; AstraZeneca	Medullary thyroid cancer
Gadavist	gadobutrol	Bayer HealthCare	Imaging agent for MRIs of the central nervous system
Daliresp	roflumilast	Forest Laboratories	Chronic Obstructive Pulmonary Disease
Edarbi	azilsartan medoxomil	Takeda	Hypertension
Viibryd	vilazodone hydrochloride	Trovis Pharmaceuticals	Major depressive disorder
ParaPRO	spinosad	Natroba	Head lice infestation
DaTscan	Ioflupane I 123	GE Healthcare	Brain imaging suspected Parkinsonian Syndromes
BIOLOGICS			
Eylea	VEGF Trap-Eye	Regeneron Pharmaceuticals; Bayer	Wet Age-related Macular Degeneration
Erwinaze	L-asparaginase	EUSA Pharma	Acute lymphoblastic leukemia
Xalkori	crizotinib	Pfizer	Non-small cell lung cancer

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New Approved Drugs and Biologics, 2011

	PROPRIETARY NAME	ESTABLISHED NAME	COMPANY	INDICATION
	Adcetris	brentuximab vedotin	Seattle Genetics	Hodgkin's lymphoma and systemic anaplastic large cell lymphoma
	Nulojix	belatacept	Bristol-Myers Squibb	Preventing organ rejection in kidney transplants
	Yervoy	ipilimumab	Bristol Myers Squibb	Metastatic melanoma
	Benlysta	belimumab	Human Genome Sciences; GSK	Systemic lupus erythematosus
	Menactra	Meningococcal Polysaccharide (Serogroups A, C, Y and W-135) Diphtheria Toxoid Conjugate Vaccine	Sanofi Pasteur	Prevention of invasive meningococcal disease in infants and toddlers
EUROPE				
SMALL MOLECULES				
	Onglyza	saxagliptin	AstraZeneca; Bristol-Myers Squibb	Type 2 Diabetes
	Vyndaqel	tafamidis	Pfizer	Amyloidosis
	Plenadren	hydrocortisone	DuoCort Pharma	Adrenal Insufficiency
	Vibativ	telavancin	Astellas Pharma	Cross Infection Pneumonia, Bacterial
	Trajenta	linagliptin	Boehringer Ingelheim International	Diabetes Mellitus, Type 2
	N/A	levodopa/carbidopa/ entracepone Orion	Orion Corporation	Parkinsons Disease
	Zoely	nomegestrol/estradiol	Teva; Merck Serono	Contraception
	Victrelis	boceprevir	Merck	Chronic hepatitis C
	Eliquis	apixaban	Bristol-Myers Squibb; Pfizer	Prevention of venous thromboembolic events in adults following a hip or knee replacement operation
	Pravafenix	pravastatin and fenofibrate	Laboratoires SMB	High risk of heart disease
	Rasilamlo	Aliskiren and amlodipine	Novartis	High blood pressure
	Trobalt	retigabine	GlaxoSmithKline; Valeant Pharmaceuticals	Partial-onset seizures
	Halaven	eribulin mesylate	Eisai	Metastatic breast cancer
	Jevtana	cabazitaxel	Sanofi-Aventis	Hormone refractory metastatic prostate cancer
	Esbriet	pirfenidone	InterMune	Idiopathic Pulmonary Fibrosis
	Pumarix	Pandemic influenza vaccine (h5n1) (split virion, inactivated, adjuvanted)	GlaxoSmithKline	Pandemic flu (H5N1)
BIOLOGICS				
	Tobi Podhaler	tobramyin	Novartis	Respiratory Tract Infections; Cystic Fibrosis
	Yervoy	ipilimumab	Bristol Myers Squibb	Metastatic melanoma
	Bydureon	exetanide	Eli Lilly	Type 2 diabetes
	Nulojix	belatacept	Bristol-Myers Squibb	Preventing organ rejection in kidney transplants
	Hizentra	immunoglobulin	CSL Behring	Primary immunodeficiency syndromes, chronic lymphocytic leukaemia

A Tough Year in the Eurozone

Despite challenges, investors say fundamentals of Europe's biotech sector remain intact

By Lucy Clarke

The economic environment in Europe remained unforgiving in 2011. As the Eurozone threatened to unravel, governments and industries grappled with their own financial crises and recessions, or the looming possibility of a double-dip recession.

The headline numbers for the European biotech industry reflect the turbulence. Share values in the sector fell by 33 percent, with only 18 percent of companies managing to post an absolute increase in share price, according to Samir Devani of Nomura Code Securities. This dismal performance was largely the result of the bigger cap companies, which had a particularly bad year. "Of the 15 companies over £300 million ($459.7 million) market cap at the beginning of the year, the median fall was 45 percent with only Algeta (up 13 percent) and BTG (up 36 percent) able to deliver positive returns", says Devani.

There were just two European IPOs in 2011, Karolinska Development in April and Moberg Derma in May. But both have suffered in the aftermarket with Karolinska Development down 40 percent from its IPO price and Moberg Derma down 16 percent. Follow-on activity was also subdued in Europe with a mere $593 million (£387 million) raised, down a whopping 46 percent on 2010.

But behind the share price performance data, the message from biotech executives is that little changed in terms of getting business done. So are the numbers just a distraction from the sector's fundamental performance in 2011?

"In the overall scheme of things, the current economic situation is a bit of a red herring. Biotech's problems are much more entrenched," says Kevin Johnson of Index Ventures. Fundamentally, biotech was and is facing the same problems it always faced – access to capital, long investment timelines, and regulatory hurdles, says Johnson. But he believes there were some promising trends during 2011, with some major deals made by big pharma and biotech as they look beyond their own business-

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es for growth opportunities.

"It is a clear trend because it is difficult to see how they can refill their pipelines any other way. This is good news from a venture capital perspective because we need to know that there is demand for the companies we are building," he says.

Notable deals in 2011 included the privately held, Austrian antibody fragment company, F-star, which signed a $708 million deal with Merck Serono and a $1.7 billion pact with Boehringer Ingelheim. Investors in the University College London spin-out BioVex got a dream exit when the company was snapped up by Amgen for $425 million, with the potential for future payments of up to $575 million. BioVex is developing cancer vaccines using its genetically modified virus, OncoVex. Other M&A included Kyowa Hakko Kirin, which bought UK specialty pharma company ProStrakan for $474 million and another specialty pharma player, Eurand of the Netherlands, which was bought by Axcan Pharma, now known as Aptalis.

The pharma and biotech industries are settling into a positive pattern with these tie-ups, which are all the more important because the public markets remain unsupportive of biotech and Johnson sees little likelihood of change as we move through 2012. He added too that the venture capital sector is finding it tougher to raise money and the number of venture capitalists managing active funds has fallen overall.

Johnson says he has not changed the way he worked. He still looks for outstanding projects with a future strategic value to a third party. "You need to look for the stand-out thing because that is what you will be able to transact on."

Senior industry executive Clive Dix agrees. Dix is currently on the boards of four private U.K. life sciences companies. "Very little has changed if you know what you are doing", he says. Three of Dix's companies had to raise money last year and succeeded, whilst the fourth, Convergence Pharmaceuticals, a GlaxoSmithKline spin-out, managed to raise $35 million at the tail end of 2010. He sees no reason for things to change this year. "People are still ready to invest, although they are more choosey than five to 10 years ago." He did note that Big Pharma is less bold than previously, possibly because it is distracted by its patent cliff worries, but there are still "more innovative, foot-in-the-door sort of deals."

Paul Cuddon, analyst at brokers Peel Hunt, concurs with his peers. "Healthcare is always a defensive sector and good in times of austerity," he reminds us. But he does acknowledge that the appetite for risk is and will likely remain poor, with the development-stage, "binary biotechs," continuing to struggle. As such he favors companies such as BTG, which has seen such success with its prostate cancer drug Zytiga, and has gone on to make some astute acquisitions that have diversified the business. Cuddon highlights the 2011 Biocompatibles acquisition that expands BTG's cancer focus without the high risks often associated with the indication.

The scarcity of quality, revenue-generating biotechs in Europe provides a further boost to companies such as BTG. Beyond these, the risk aversion to biotech prevails and although valuations are at a relative all-time low, so are the valuations for most other sectors. Thus companies that represent real value are side-stepped in favor of more predictable stocks.

Nonetheless, Cuddon thinks that sentiment towards biotech will improve in 2012. "Investor interest has grown gradually since 2009 and I expect this to continue this year," he says.

So the message is that the fundamentals of Europe's biotech sector remain intact. For now, there is what Johnson refers to as a "period of weeding," where only the quality opportunities will be left to thrive. "It can be a time of acute pain but longer term it will prove beneficial." With 2012 set to be another testing year, time will tell.

Life Sciences Venture Financings Grew 9.3 Percent in 2011

Boston area and Minnesota see greatest gains; San Diego, Seattle see slowdown in funding

California continued to lead the nation in private capital financings with 176 companies raising almost $3 billion in 2011, accounting for one third of the total number of private companies that raised money in the year and 39 percent of the total dollars raised.

By Marie Daghlian

While life sciences companies in the United States raised more than $1 billion in early-stage venture financings in 2011, an analysis of those numbers reveals most of the funding going to just a handful of firms.

In 2011, 99 companies raised a little more than $1 billion in series A financings. But a deeper analysis shows that just 17 companies, or 17 percent of the total number of companies closing first funding rounds, accounting for $532 million, or more than half of the total raised. Their average deal size was $31.3 million. The average first funding round for the remaining 82 companies was only $6 million.

Overall, U.S. life sciences companies raised a total of $7.6 billion in venture capital (including private equity and corporate participation) in 2011, a 9.3 percent increase over the $7 billion raised in 2010. The Boston area was the biggest gainer in 2011 among the major life sciences hubs, with 125 companies in the area raising $1.7 billion during the year, a 22.6 percent increase over 2010.

California continued to lead the nation in private capital financings with 176 companies raising almost $3 billion in 2011, accounting for one third of the total number of private companies that raised money in the year and 39 percent of the total dollars raised. The San Francisco-San Jose region continued to lead the nation in venture dollars at $1.9 billion, .4 percent less than the $2 billion they raised in 2010.

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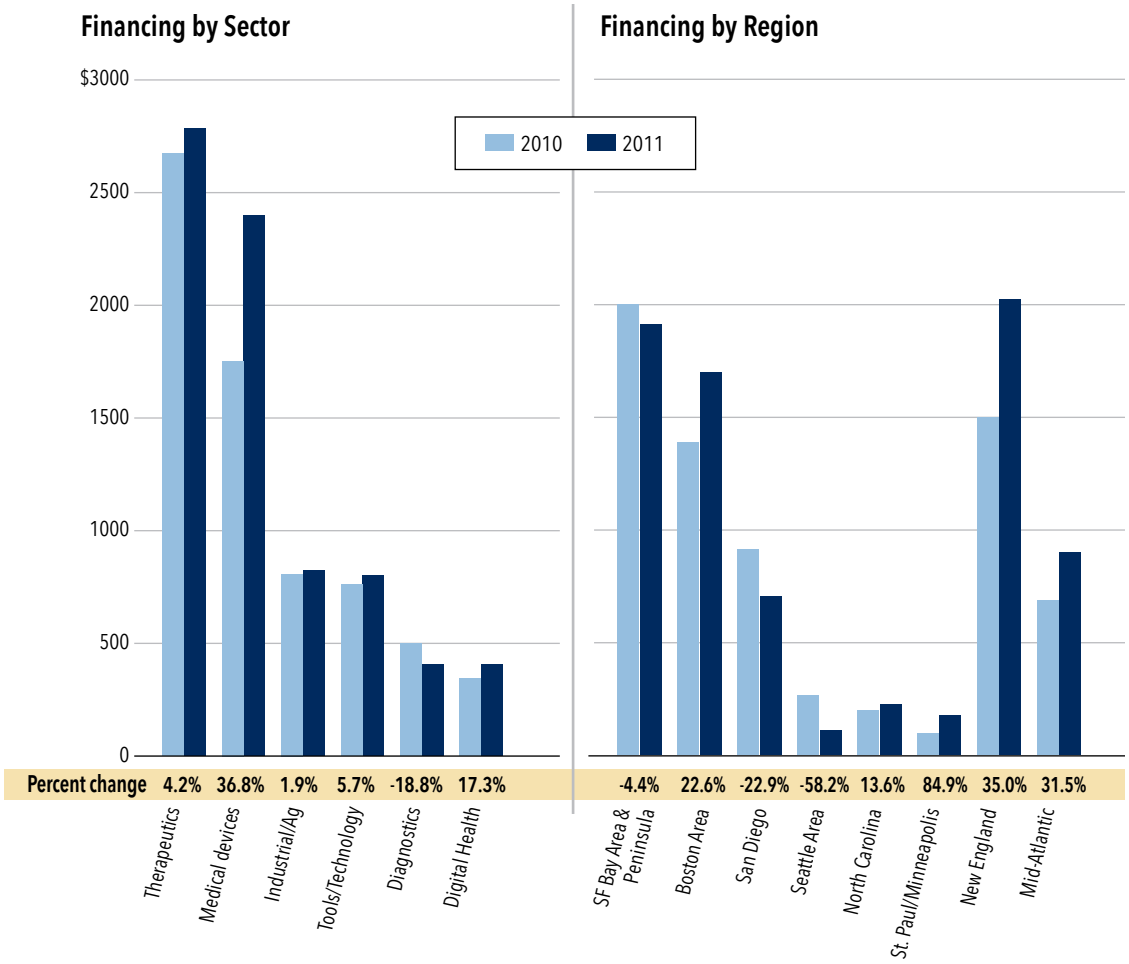
U.S. Venture Capital by Sector and Region (USD M)



Venture Capital Growth

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Companies based in the St. Paul and Minneapolis areas, most of them medical device developers, raised $176 million in venture capital in 2011 for the largest year-over-year increase in funding at 85 percent.

Both San Diego and Seattle saw declines in venture capital funding. Seattle companies raised $110 million, a 58 percent drop over 2010. San Diego companies raised $705 million, a 23 percent decrease over the previous year.

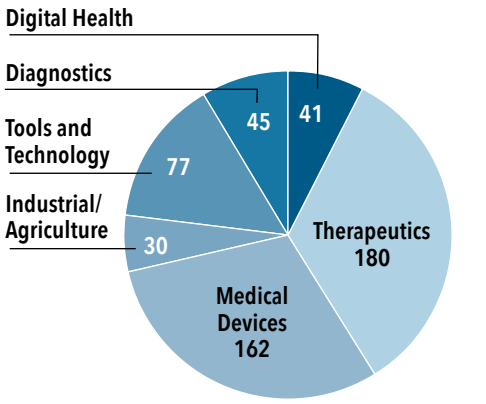
While a year-over-year change is not necessarily a trend, a comparison of regional financings between 2008 and 2011 finds that while the dollars flowing to companies based in the San Francisco-San Jose region has remained fairly constant, there have been increases in all areas except for Seattle. Companies based in the Seattle area had raised $179 million in 2008, 38 percent more than what was raised in 2011. Venture financings for Seattle area companies peaked at $316 million in 2009 and have been declining since then.

The number of deals in 2011 remained constant with 2010 at 587, which has meant a 15 percent increase in average deal size to $13.7 million, compared to $11.9 million in 2010. An analysis of average deal size by disclosed stage of investment from 2008 through 2011 shows an increase for seed and series A rounds, and a decrease in the size of all later stage financings.

Venture capitalists were hot for medical devices and digital health in 2011. Venture financing for medical device firms grew 37 percent in 2011 to $2.7 billion raised by 162 companies and accounted for 32 percent of total dollars raised. Digital health firms are a growing sweet spot for VCs as a potential source of disruptive healthcare delivery. Financings in the space grew 17 percent over the previous year with 41 companies raising $406 million.

Companies engaged in drug discovery and development continued to account for the majority of venture financings. In 2011, 180 companies raised $2.7 billion, or 36 percent of the total venture capital. Industrial biotechs raised $823 million in 2011, slightly above the $808 million raised in 2010. Most of these companies are engaged in the development of biorenewables. Average deal value for the 30 companies that got funding was $27.4 million, well above the total life sciences average. Tools and technology firms, which make products and offer services to life sciences industries, also saw a modest increase in funding with 77 companies raising $803 million in 2011, compared to $760 million raised in 2010. Diagnostics makers were the only companies that saw a decrease in venture financing, falling to $406 million in 2011 compared to $500 million in 2010, a 19 percent drop.

2011 U.S. Venture Capital-Number of Transactions by Sector



Source: Burrill & Company

U.S. Venture Capital Financings in 2011 (USD M)

TOTALS

	2008	2009	2010	2011	PERCENT CHANGE 2011 OVER 2010	PERCENT CHANGE 2011 OVER 2008
Total Raised U.S. (USD M)	6,855	6,771	6,973	7,620	9.3%	11.2%
Number of deals	373	534	588	587	-0.2%	57.4%
Number of companies	366	489	526	535	1.7%	46.2%
Average Deal Size (USD M)	18.4	12.7	11.9	13.7	15.1%	-25.5%
Seed stage	1.50	1.86	1.36	1.53	12.5%	2.0%
Series A	10.31	11.27	10.96	10.85	-1.0%	5.2%
Series B	21.08	16.12	17.14	15.8	-7.8%	-25.0%
Series C	27.38	16.45	24.13	23.52	-2.5%	-14.1%
Series D	28.14	26.55	24.97	18.05	-27.7%	-35.9%
Series E, F, G	36.90	20.31	19.36	29.16	50.6%	-21.0%

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U.S. Venture Capital Financings in 2011 (USD M)

BY REGION

REGION	2010	2011	PERCENT CHANGE 2011 OVER 2010
SF Bay Area and Peninsula	1,999	1,911	-4.4%
Boston Area	1,387	1,700	22.6%
San Diego	914	705	-22.9%
Seattle Area	263	110	-58.2%
North Carolina	199	226	13.6%
St Paul/Minneapolis	95	176	84.9%
New England	1,499	2,024	35.0%
Mid Atlantic (NY,NJ,DE,PA,MD)	685	901	31.5%

BY STATE

STATE	2010	2011	PERCENT CHANGE 2011 OVER 2010
Alabama	0.6	9.5	1483.3%
Arizona	19.8	64.7	226.8%
California	2,913.1	2,970.1	2.0%
Colorado	44.6	291.6	553.8%
Connecticut	47.5	77.2	62.5%
Florida	33.6	31.3	-6.8%
Georgia	98.0	29.5	-69.9%
Iowa	13.5	0.0	-100.0%
Illinois	255.3	78.0	-69.4%
Indiana	2.0	0.5	-75.0%
Kansas	0.0	38.0	
Kentucky	10.3	3.7	-64.1%
Louisiana	0.0	12.7	
Maine	0.0	21.0	
Maryland	85.8	160.9	87.5%
Massachusetts	1,386.8	1,889.7	36.3%
Michigan	81.8	36.7	-55.1%
Minnesota	95.2	176.4	85.3%
Missouri	10.7	20.8	94.4%
Nebraska	2.0	0.0	-100.0%
New Hampshire	36.4	20.8	-42.9%
New Jersey	219.9	311.5	41.7%
New Mexico	4.0	20.1	402.5%
New York	151.1	206.2	36.5%
North Carolina	199.1	226.1	13.6%

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U.S. Venture Capital Financings in 2011 (USD M)

STATE	2010	2011	PERCENT CHANGE 2011 OVER 2010
Ohio	55.9	110.9	98.4%
Oklahoma	0.0	25.5	
Oregon	61.8	67.0	8.4%
Pennsylvania	228.3	222.6	-2.5%
Rhode Island	28.2	10.0	-64.5%
South Carolina	1.3	8.3	538.5%
Tennessee	0.0	4.0	
Texas	310.7	86.7	-72.1%
Utah	26.5	20.7	-21.9%
Vermont	0.0	6.0	
Virginia	40.0	174.5	336.3%
Washington	262.9	109.7	-58.3%
Wisconsin	257.4	64.7	-74.9%

2011 YEARLY STATISTICS

Biggest Advancers and Decliners in 2011, By Percent Change

COMPANY	TICKER	CLOSING PRICE 12/31/2010	CLOSING PRICE 12/30/2011	PRICE CHANGE	PERCENT CHANGE
ADVANCERS					
Pharmasset, Inc.	VRUS	21.78	128.2	106.42	488.6%
Inhibitex, Inc.	INHX	2.6	10.94	8.34	320.8%
Medivation, Inc.	MDVN	15.17	46.11	30.94	204.0%
Questcor Pharmaceuticals, Inc.	QCOR	14.73	41.58	26.85	182.3%
Pharmacyclics Inc.	PCYC	6.08	14.82	8.74	143.8%
Ariad Pharmaceuticals Inc.	ARIA	5.1	12.25	7.15	140.2%
Elan Corporation, plc	ELN	5.73	13.74	8.01	139.8%
Curis Inc.	CRIS	1.98	4.68	2.70	136.4%
Oncothyreon Inc	ONTY	3.26	7.58	4.32	132.5%
Vical Inc.	VICL	2.02	4.41	2.39	118.3%
DECLINERS					
La Jolla Pharmaceutical Co.	LJPC	2.6	0.003	2.60	-99.9%
Genta Incorporated	GNTA	1.475	0.003	1.47	-99.8%
Radient Pharmaceuticals Corporation	RXPC	1.01	0.003	1.01	-99.7%
Jiangbo Pharmaceuticals, Inc.	JGBO	5.72	0.13	5.59	-97.7%
Neurologix Inc.	NRGX	1	0.037	0.96	-96.3%
Rosetta Genomics, Ltd.	ROSG	3.76	0.18	3.58	-95.2%
Marina Biotech, Inc.	MRNA	15.49	0.891	14.60	-94.2%
StemCells Inc.	STEM	10.8	0.824	9.98	-92.4%
Diamyd Medical AB	DMYD.Y	18.57	1.43	17.14	-92.3%
Emisphere Technologies, Inc.	EMIS	2.41	0.215	2.20	-91.1%

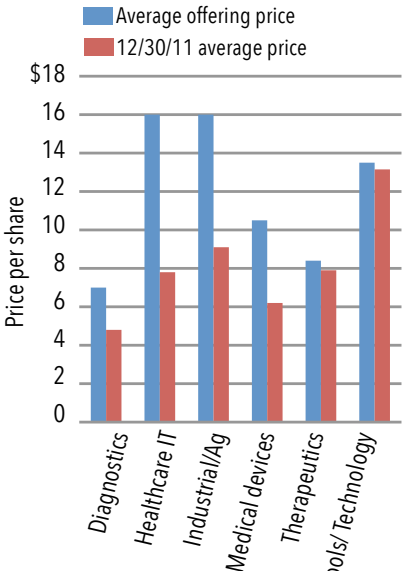
Includes life sciences stocks with closing price of $1 or more on December 31, 2010

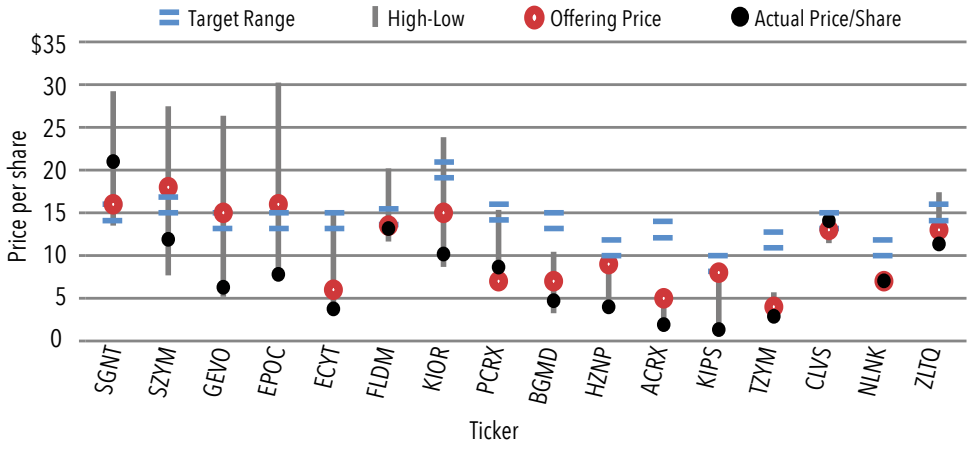
Biggest Advancers and Decliners in 2011 By Market Cap

	COMPANY	TICKER	MARKET CAP 12/31/2010 (USD B)	MARKET CAP 12/30/2011 (USD B)	CHANGE IN MARKET CAP (USD B)
ADVANCERS					
	Pfizer Inc.	PFE	140.25	166.35	26.09
	Roche Holding AG	SWX:ROG	118.14	136.21	18.07
	Bristol-Myers Squibb Company	BMY	45.32	59.72	14.39
	Sanofi	ENXTPA:SAN	62.44	76.31	13.87
	Biogen Idec Inc.	BIIB	15.98	26.73	10.75
	Johnson & Johnson	JNJ	169.86	179.1	9.23
	GlaxoSmithKline plc	GSK	64.42	72.89	8.47
	Pharmasset, Inc.	VRUS	1.48	9.7	8.22
	Eli Lilly & Co.	LLY	40.41	48.12	7.71
	Valeant Pharmaceuticals	TSX:VRX	8.48	14.68	6.2
DECLINERS					
	Teva Pharmaceutical Industries Limited	TEVA	46.86	35.72	-11.14
	Thermo Fisher Scientific, Inc.	TMO	22	17.01	-4.99
	Bayer AG	DB:BAYN	45.52	40.69	-4.84
	Hospira Inc.	HSP	9.3	5	-4.3
	Illumina Inc.	ILMN	7.92	3.7	-4.22
	China Pharmaceutical Group Ltd.	SEHK:1093	6.66	2.62	-4.05
	Dendreon Corp.	DNDN	5.04	1.13	-3.91
	Life Technologies Corporation	LIFE	10.36	6.93	-3.43
	Human Genome Sciences Inc.	HGSI	4.51	1.47	-3.04
	AstraZeneca PLC	AZN	41.17	38.45	-2.73

Includes life sciences stocks with closing price of $1 or more on December 31, 2010

2011 Global IPO Performance (USD M)





Year-End IPO Performance

COMPANY	TICKER	PRINCIPAL FOCUS	IPO DATE	CAPITAL RAISED (USD M)	OFFERING PRICE (USD)	PRICE 12/30/2011 (USD)	RETURN FROM IPO
Epocrates	EPOC	Healthcare IT	2/2/11	85.8	16	7.8	-51.3%
Pacira Pharmaceuticals	PCRX	Therapeutics	2/3/11	42	7	8.65	23.6%
Endocyte	ECYT	Therapeutics	2/4/11	86.3	6	3.76	-37.3%
BG Medicine	BGMD	Diagnostics	2/4/11	40.3	7	4.72	-32.6%
Gevo	GEVO	Industrial/Ag	2/9/11	123.3	15	6.29	-58.1%
Fluidigm	FLDM	Tools/ Technology	2/10/11	86.3	13.5	13.16	-2.5%
AcelRx Pharmaceuticals	ACRX	Therapeutics	2/11/11	40	5	1.92	-61.6%
Kips Bay Medical	KIPS	Medical devices	2/11/11	17	8	1.34	-83.3%
Tranzyme Pharma	TZYM	Therapeutics	4/1/11	48	4	2.89	-27.8%
Sagent Pharmaceuticals	SGNT	Therapeutics	4/20/11	92/105.8	16	21	31.3%
Solazyme	SZYM	Industrial/Ag	5/27/11	227.2	18	11.9	-33.9%
KiOR	KIOR	Industrial/Ag	6/24/11	150	15	10.18	-32.1%
Horizon Pharma	HZNP	Therapeutics	7/28/11	49.5	9	4	-55.6%
Zeltiq Aesthetics	ZLTQ	Medical devices	10/18/11	91	13	11.36	-12.6%
New Link Genetics	NLNK	Therapeutics	11/11/11	43	7	7.04	0.6%
Clovis Oncology	CLVS	Therapeutics	11/15/11	139.1	13	14.09	8.4%
AVG RETURN FOR CLASS OF 2011							**-26.5%**

Total U.S. Life Sciences Capital Raised in 2011, by Category

TYPE	CATEGORY	RAISED USD M
VENTURE		
	Therapeutics	2784
	Tools/Technology	803
	Diagnostics	406
	Digital Health	406
	Indusrtrial Biotech	823
	Medical Devices	2398
	TOTAL	**7620**
IPO		
	Therapeutics	563
	Tools/Technology	86
	Diagnostics	40
	Digital Health	86
	Indusrtrial Biotech	502
	Medical Devices	118
	TOTAL	**1395**
PIPE		
	Therapeutics	1273
	Tools/Technology	82
	Diagnostics	8
	Digital Health	7
	Indusrtrial Biotech	20
	Medical Devices	117
	TOTAL	**1507**
FOLLOW-ON		
	Therapeutics	3990
	Tools/Technology	992
	Diagnostics	168
	Digital Health	0
	Indusrtrial Biotech	52
	Medical Devices	148
	TOTAL	**5350**

TYPE	CATEGORY	RAISED USD M
DEBT		
	Therapeutics	18881
	Tools/Technology	9100
	Diagnostics	1258
	Digital Health	1150
	Indusrtrial Biotech	0
	Medical Devices	5538
	TOTAL	**35927**
OTHER		
	Therapeutics	1550
	Tools/Technology	1510
	Diagnostics	2228
	Digital Health	20
	Indusrtrial Biotech	102
	Medical Devices	354
	TOTAL	**5764**
GRANTS		
	Therapeutics	138
	Tools/Technology	73
	Diagnostics	27
	Digital Health	2
	Indusrtrial Biotech	308
	Medical Devices	19
	TOTAL	**567**
CONTRACTS		
	Therapeutics	2413
	Tools/Technology	260
	Diagnostics	1
	Digital Health	0
	Indusrtrial Biotech	0
	Medical Devices	28
	TOTAL	**2702**

Top Venture Financings in 2011, by Category

COMPANY	PRINCIPAL ATIVITIES	RAISED USD M	FINANCING ROUND	CITY	STATE/ COUNTRY	INVESTORS
THERAPEUTICS						
Symphogen	Antibody therapeutics	134.0		Copenhagen	Denmark	Novo A/S; Essex Woodlands; Danish Pension Fund PKA
Tesaro	Cancer	101.0	Series B	Boston	MA	Kleiner Perkins Caufield & Byers; New Enterprise Associates ($38M); InterWest Partners; T. Row Price; Pappas Ventures; Oracle Partners; Deerfield Management; Leerink Swann
Circassia Limited	Allergy vaccines	98.0		Oxford	UK	Imperial Innovations; Invesco Perpetual; existing investors
Portola Pharmaceuticals	Hematology	89.0		South San Francisco	CA	Temasek; Eastern Capital; existing investors
Agios Pharmaceuticals	Cancer metabolism	78.0	Series C	Cambridge	MA	Celgene; Arch Venture Partners; Flagship Ventures; Third Rock Ventures; undisclosed investors
Merrimack Pharmaceuticals	Cancer	77.0	Series G	Cambridge	MA	New and existing investors including Credit Suisse First Boston Next Fund; Crocker Ventures; funds advised by Fred Alger Management; funds advised by Noonday Asset Management; Jennison Associates; TPG-Axon Capital; WT Investmetn Advisors Fund
Rempex Pharmaceuticals	Infectious	76.0	Series A and B	San Diego	CA	Frazier Healthcare Ventures; Vivo Ventures; SV Life Sciences; OrbiMed Advisors; Adams Street Partners
Radius Health	Osteoporosis	71.1	Series C	Cambridge	MA	BB Biotech; Brookside Capital; Saints Capital; Nordic Bioscience; Ipsen Pharma; MPM Capital; BB Biotech Ventures; MPM Bio IV NVS Strategic Fund; The Wellcome Trust; HealthCare Ventures; Scottish Widows Investment Partnership
Puma Biotechnology	Cancer	55.0	Series A	Los Angeles	CA	Adage Capital Partners; Brookside Capital; H&Q Healthcare Investors; H&Q Life Science Investors; Jennison Associates; Orbimed Private Investments; T.Rowe Price Associates; institutional investors
Ascletis	Specialty pharma	50.0	Series A, 1st tranche of $100M	Hangzhou Research Triangle Park	China NC	Private Chinese investors led by Hangzhou Binjiang Investment Holding
Sangart	Hematology	50.0	Series G	San Diego	CA	Leucadia National; existing investors
Hua Medicine	Drug development	50.0	Series A	Shanghai	China	ARCH Venture Partners; Fidelity Biosciences; Fidelity Growth Partners Asia; Venrock; Sino-Alliance International; WuXi PharmaTech Corporate Venture
TOOLS/TECHNOLOGY						
Intrexon	Synthetic biology	100.0	Series E	Blacksburg	VA	A total of 82 investors with identities not disclosed
Advanced Accelerator Applications	Personalized medicine	56.8		Saint-Genis-Pouilly	France	A total of 116 public and private shareholders including Italian biopharma Dompe

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Top Venture Financings in 2011, by Category

COMPANY	PRINCIPAL ATIVITIES	RAISED USD M	FINANCING ROUND	CITY	STATE/ COUNTRY	INVESTORS
Oxford Nanopore Technologies	Genomics	41.0		Oxford	UK	Lansdowne Partners; IP Group; Invesco Perpetual; Redmile Group; Illumina; other investors
Pharmaron Holding	CRO	40.0	Series C	Beijing	China	DCM, Legend Capital; GL Capital Group; other investors
Blueprint Medicines	Personalized cancer therapeutics	40.0	Series A	Cambridge	MA	Third Rock Ventures; other investors
IntegenX	Biometrics	40.0	Series C	Pleasanton	CA	Essex Woodlands; Domain Associates; QuestMark Partners; Greenspring Associates; Cross Creek Capital; RONAholdings; Samsung Ventures; In-Q-Tel
Asymchem Laboratories	CMO	39.0		Tianjin	China	Infinity Group; Tianjin Venture Capital
RainDance Technologies	Biological analysis platform	37.5	Series D	Lexington	MA	Quaker BioVentures; Mohr Davidow Ventures; Alloy Ventures; Acadia Woods
Unimark Remedies	Biomanufactuirng	33.3		Mumbai	India	Hikma Pharmaceuticals
Cellular Dynamics International	iPS stem cells	30.0	Series B	Madison	WI	Tactics II Stem Cell Ventures; Sam Zell's equity Group Investments; Sixth Floor Investors; G Force Investments
Crown Bioscience	CRO	28.8	Series C	Santa Clara	CA	OrbiMed Advisors Caduceus Asia Partners Fund; Argonaut Private Equity; CID Group; OBT; CDIB Capital Investment; Qiming Venture Partners; CRCI
Cohera Medical	Surgical aids	25.0	Series C	Pittsburgh	PA	Kern Whelan Capital; existing investors, new investors
DIAGNOSTICS						
Biocartis	Personalized medicine	97.5	Series C	Lausanne	Switzerland	Debiopharm Group; Philips; Johnson & Johnson Development; Wellcome Trust; Korys; Valiance; Biovest; IHL SA; PMV; New Rhein Healthcare; Biocartis senior management; family office of founder Rudi Pauwels
CardioDx	Genomic tests	60.0	Series E	Palo Alto	CA	Longitude Capital; Kleiner Perkins Caufield & Byers; TPG Biotech; MDV; Intel Capital; Pappas Ventures; DAG Ventures; Asset Management Group; GE Capital; Acadia Woods Partners; Bright Capital; JP Morgan Venture Capital
Verinata Health	Prenatal	46.5	Series C	San Carlos	CA	Mohr Davidow Ventures; Sutter Hill Ventures; Alloy Ventures
Crescendo Bioscience	Personalized medicine	31.0	Series C	South San Francisco	CA	Aeris Capital; Mohr Davidow Ventures; Kleiner Perkins Caufield & Byers; other investors
Atlas Genetics	Point of care testing	27.3	Series B	Bristol	UK	Novartis Venture Funds; Consort Medical; LSP; BB Biotech Ventures; existing investors

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Top Venture Financings in 2011, by Category

COMPANY	PRINCIPAL ATIVITIES	RAISED USD M	FINANCING ROUND	CITY	STATE/ COUNTRY	INVESTORS
Foundation Medicine	Cancer	23.5	Series A	Cambridge	MA	Kleiner Perkins Caufield & Byers; Google Ventures (Third Rock is original series A investor)
T2 Biosystems		23.0	Series D	Lexington	MA	Aisling Capital; Flagship Ventures; Polaris Venture Partners; Flybridge Capital Partners; Physic Ventures; Partners Healthcare; Arcus Ventures; RA Capital; Camros Capital; WS Investments
Biodesix	Cancer	20.0	Series D	Broomfield	CO	Existing investors
Sera Prognostics	Women's health	19.3	Series A	Salt Lake City	UT	InterWest Partners; Domain Associates; Catalyst Health Ventures; UpStart Life Sciences Capital; Osage University Partners
Cleveland HeartLab	Cardiovascular	18.4	Series B	Cleveland	OH	Excel Venture Management; Helath; HealthCare Ventures
HTG Molecular Diagnostics	Cancer Dx	15.7	Series D	Tuscon	AZ	Novo A/S; Fletcher Spaght Ventures; Merck Capital Ventures; Solstice Capital; Valley Ventures
Curetis	Infectious	13.3	Series A	Holzgerlingen	Germany	Forbion Capital Partners; Roche
DIGITAL HEALTH						
ZocDoc	Doctor locator service	75.0	Series C	New York	NY	DST Global; Goldman Sachs
NovaSom	Cloud-based diagnostics	35.0		Glen Burnie	MD	Safeguard Scientifics; TPG Biotechnology II Fund; Quaker BioVentures
Lumos Labs	Online cognitive enhancement tools	32.5	Series C	San Francisco	CA	Menlo Ventures; FirstMark Capital; Harrison Metal Capital; Norwest
Awarepoint	Realtime tracking software	27.0	Series F	San Diego	CA	Kleiner Perkins Caufield & Byers; Top tier Capital Partners; Cardinal Partners; Venrock; Jafco Ventures
Care.com	Online portal for finding caregivers	25.0		Waltham	MA	New Enterprise Associates; Matrix Partners; Trinity Ventures
Medley Health	Doctor-patient services	20.0	Series A	Dublin	CA	Cardinal Partners; Technology Partners; Vivo Ventures
Teledoc	Phone medical consultation services	18.6	Series C	Dallas	TX	Kleiner Perkins Caufield & Byers; Cardinal Partners; HLM Venture Partners; Trident Capital; New Capital Partners
Strava	Fitness tracking	12.6	Series B	San Francisco	CA	Madrone Capital Partners; Sigma Partners
Sotera Wireless	Vital sign monitoring	12.2	Series D	San Diego	CA	EDB Investments (Singapore): Cerner Capital; Qualcomm Ventures; Sanderling Ventures; Intel Capital ; West Health Investment Fund

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Top Venture Financings in 2011, by Category

COMPANY	PRINCIPAL ATIVITIES	RAISED USD M	FINANCING ROUND	CITY	STATE/ COUNTRY	INVESTORS
Intuity Medical	Glucose monitoring	12.0	Series D	Sunnyvale	CA	Accuitive Medical; Investor Growth Capital; Thomas McNerney and Partners; Venrock; Versant Ventures; U.S. Venture Partners
Tandem Diabetes Care	Wearable insulin pump	12.0		San Diego	CA	Not disclosed
HealthTap	Online health advisory	11.5	Series A	Palo Alto	CA	Mayfield Fund; Mohr Davidow Ventures; Innovation Endeavors
INDUSTRIAL/AG						
Sundrop Biofuels	Biofuels	175.0		Louisville	CO	Chesapeake NG Ventures ($155M-taking 50 percent stake); Oak Investment Partners
Enerkem	Waste-to-biofuel	105.0	Series C	Pleasanton	CA	Rustic Canyon Partners; U.S. Renewables Group
Fulcrum BioEnergy	Waste-to-ethanol	75.0	Strategic	Quincy	MA	PTT Chemical Group (Thailand)
Myriant Technologies	Renewable chemicals	60.0		Montreal, Quebec	Canada	Valero Energy; Waste Management; Rho Ventures; Braemar Energy Ventures; Cycle Capital
Harvest Power	Waste-to-energy	51.7	Series B	Waltham	MA	Generation Investment Management; DAG Ventures; Keating Capital; Kleiner Perkins Caufield & Byers; Waste Management; Munich Venture Partners; TriplePoint Capital
Elevance Renewable Sciences	Renewable chemicals	50.0		Bolingbrook	IL	Not disclosed
Agilyx	Renewables from waste	47.0	Series B and C	Beaverton	OR	Keating Capital; Waste Management; Pleiner Perkins Caufield & Byers; Chrysalix Energy; Total; Saffron Hill Ventures; Reference Capital
Genomatica	Renewable chemicals	45.0	Series D	San Diego	CA	VantagePoint Venture Partners; Bright Capital (Russia's RU-COM Group; Waste Management; TPG Biotech; Mohr Davidow Ventures; Alloy Ventures; Draper Fisher Jurvetson
BioAmber	Renewable chemicals	45.0	Series B	Minneapolis	MN	NAXOS Capital Partners; Mitsui & Co; sofinnova Partners; Mitsui & Co Venture Partners; Cliffton Group
OPX Biotechnologies	Renewable chemicals	36.5	Series C	Boulder	CO	US Renewables Group; DBL Investors; Mohr Davidow Ventures; Braemar Energy Ventures; Altira Group; X/Seed Capital
Avantium	Biochemicals	35.9		Amsterdam	Netherlands	Sofinnova Partners; Aster Capital; De Hoge Dennen; Aescap Venture; Capricorn Cleantech Fund; ING Corporate Investments; Navitas Capital
ZeaChem	Renewable fuels and chemicals	24.0	Series C	Lakewood	CO	Birchmere Ventures; Firelanke Capital; Globespan Capital Partners; Mohr Davidow Ventures; PrairieGold Venture partners; Spring Ventures

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Top Venture Financings in 2011, by Category

COMPANY	PRINCIPAL ATIVITIES	RAISED USD M	FINANCING ROUND	CITY	STATE/ COUNTRY	INVESTORS
MEDICAL DEVICES						
Valeritas	Insulin delivery	150.0	Series C	Bridgewater	NJ	Welsh, Carson, Anderson & Stow; MPM Capital; Pitango Venture Capital; Abingworth; Advanced Technology Ventures; ONSET Ventures; HLM Venture Partners; Agate Medial Investments; CHL Medical Partners; Kaiser Permanente Ventures
Cameron Health	Cardiovascular	107.0		San Clemente	CA	Alloy Ventures; Delphi Ventures; Boston Scientific (has option to acquire), other investors
AcuFocus	Ophthalmic	65.0		Irvine	CA	Cowen Healthcare Royalty Partners; SV Life Sciences; Versant Ventures; Carlyle Group Accuitive Medical Ventures; Bausch & Lomb
Nevro Corp	Chronic pain relief	58.0		Menlo Park	CA	Johnson & Johnson Development; Aberdare Ventures; Accuitive Medical Ventures; Bay City Capital; Mayo Clinic; MPM Capital; Three Arch Partners
Sensors for Medicine and Science	Glucose monitoring system	54.1	Series D	Germantown	MD	Delphi Ventures; New Enterprise Associates; HealthCare Ventures; Anthem Capital; Greenspring Associates
Transcend Medical	Ophthalmic	51.0	Series B	Menlo Park	CA	Canaan Partners; Finistere Ventures; HLM Venture Partners; Kaiser Permanente Ventures; Latterell Venture Partners; Morgenthaler Ventures; Split Rock Partners; Technology Partners
NeuroPace	Neurostimulation	49.1		Mountain View	CA	Investors include Kleiner Perkins Caufield & Byers; New Enterprise Associates; Angel Medical Systems; Cutlass Capital; Domain Associates
Cellnovo	Diabetes	48.4	Series B	London	UK	Edmond de Rothschild Investment Partners; Forbion Capital Partners; Auriga Partners; NBGI Ventures; Credit Agricole Private Equity; Advent Venture Partners; HealthCare Ventures; NESTA
PixelOptics	Ophthalmic	45.0		Roanoke	VA	Safeguard Scientifics; Delphi Ventures; The Carlyle Group; Longitude Capital; Stark Investments; Horizon Technology Finance
CardioKinetix	Transcatheter implant	44.0	Series E	Menlo Park	CA	SV Life Sciences; New Leaf Venture Partners; U.S. Venture Partners; J.P. Morgan Partners; H&Q Healthcare Investors; H&Q Life Sciences Investors
Restoration Robotics	Hair restoration	41.0	Series C	Mountain View	CA	Clarus Ventures; Sutter Hill Ventures; Alloy Ventures; Interwest Partners
Uptake Medical	Emphysema	40.0	Series B	Tustin	CA	Not disclosed; previous investors include GBS Venture Partners; Maverick Capital; Affinity Capital; WRF Capital; other investors

2011 Top U.S. IPOs

COMPANY	TICKER	RAISED (USD M)	NUMBER OF SHARES (M)	PRINCIPAL ACTIVITY
Solazyme	SZYM	227.2	12.6	Biofuels,biochemicals
KiOR	KIOR	150.0	10.0	Biofuels,biochemicals
Clovis Oncology	CLVS	139.1	10.7	Cancer drugs
Gevo	GEVO	123.3	8.2	Biofuels, biochemicals
Sagent Pharmaceuticals	SGNT	105.8	6.6	Specialty pharma
Zeltiq Aesthetics	ZLTQ	100.7	7.7	Fat reduction system
Endocyte	ECYT	86.3	14.4	Targeted cancer drugs
Fluidigm	FLDM	86.3	6.4	Microfluidics
Epocrates	EPOC	85.8	5.4	Digital health
Tranzyme Pharma	TZYM	57.4	13.5	Gastriointestinal drugs

Top Global Public Financings in 2011

TYPE	COMPANY	COUNTRY	TICKER	RAISED USD M	PRINCIPAL ACTIVITY
IPO					
	Adecoagro	Luxembourg	NYSE:AGRO	314.0	Renewable energy in South America
	Guangdong Dahuanong Animal Health Products	China	SHE:300186	228.4	Animal health and vaccines
	Solazyme	US	SZYM	227.2	Biofuels, biochemicals
	Chongqing Fuan Pharmaceuticals	China	SHE:300194	213.5	Antibiotic APIs
	Zhendong Pharma	China	SZ:300158	211.0	TCM
	China NT Pharma	China	HK:1011	208.0	Pharmaceuticals
	Tornier	Netherlands	TRNX	166.3	Orthopedic
	KiOR	US	KIOR	150.0	Biofuels,biochemicals
	Shenzhen Edan Instruments	China	SHE:300206	146.0	Medical devices
	Clovis Oncology	US	CLVS	139.1	Cancer
	Gevo	US	GEVO	123.3	Biofuels, biochemicals
	Sagent Pharmaceuticals	US	SGNT	105.8	Specialty pharma
PIPE					
	Northeast Pharmaceutical Group	China	SHA:000597	370.0	Generics, vitamins
	Lexicon Pharmaceuticals	US	LXRX	161.0	Gastrointestinal
	Mesoblast	Australia	ASX:MSB	140.1	Stem cells
	Swedish Orphan Biovitrum	Sweden	SSE:SOBI	102.2	Hematology
	Zhejiang Hisoar Pharmaceutical	China	SHE:002099	79.0	Pharmaceuticals
	Henan Lingrui Pharmaceutical	China	SHA:600285	60.5	Traditional chinese medicine
	Pharmacyclics	US	PCYC	57.1	Cancer, immunology
	Active Biotech	Sweden	SSE:ACTI	56.7	Cancer, autoimmune

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Top Global Public Financings in 2011

TYPE	COMPANY	COUNTRY	TICKER	RAISED USD M	PRINCIPAL ACTIVITY
	Pharmaxis	Australia	ASX:PXS	51.4	Pulmonary; infectious
	Vivus	US	VVUS	45.8	Obesity; diabetes; ED
	Intercell	Austria	Vienna:ICLL	45.6	Infectious
	Carmat	France	Euronext:ALCAR	41.7	Artificial heart
FOLLOW-ON					
	Shanghai Pharma	China	HK:2607	2,000.0	Pharmaceuticals
	Danaher	US	DHR	900.0	Tools/Technology
	Kangmei Pharma	China	SHEX:60051	529.0	Traditional Chinese Medicine
	Sinopharm	China	HK:1099	440.0	Pharmaceuticals
	Ariad Pharmaceuticals	US	ARIA	258.0	Cancer
	Shandong Weigao Group Medical Polymer	China	HK:8199	226.7	Medical devices
	Nektar Therapeutics	US	NKTR	225.2	Cancer, CNS
	Exelixis	US	EXEL	189.8	Cancer
	Seattle Genetics	US	SGEN	178.3	Cancer
	Rigel Pharmaceuticals	US	RIGL	150.0	Autoimmune
	Bavarian Nordic	Denmark	CSE:BAVA	131.1	Infectious, cancer
	Pharmasset	US	VRUS	129.5	Infectious
DEBT					
	Sanofi	France	SNY	8,000.0	Biopharmaceuticals
	Amgen	US	AMGN	7,500.0	Biopharmaceuticals
	Teva Pharmaceuticals	Israel	TEVA	5,750.0	Biopharmaceuticals
	Gilead Sciences	US	GILD	4,700.0	Antivirals
	Thermo Fisher Scientific	US	TMO	4,300.0	Tools/Technology
	Warner Chilcott	Ireland	WCRX	3,000.0	Specialty pharma
	Amgen	US	AMGN	3,000.0	Biopharmaceuticals
	Kinetic Concepts	US	KCI	2,300.0	Wound care
	Danaher	US	DHR	1,800.0	Tools/Technology
	Valeant Pharmaceuticals	Canada	VRX	2,150.0	Pharmaceuticals
	Becton Dickinson	US	BD	1,500.0	Tools/Technology
	Quest Diagnostics	US	DGX	1,250.0	Diagnostics

Top Grants in 2011

COMPANY	PRINCIPAL ACTIVITY	GRANTING AGENCY	AMOUNT (USD M)
Takeda Pharmaceutical	Flu vaccine manufacture	Japanese gov't for vero cell culture vaccine	310.7
Advanced Biofuels producers	Advanced Biofuels	USDA Bioenergy Program for Avanced Biofuels	156.0
Mascoma	Cellulosic ethanol facility	US Department of Energy	80.0
New England Research Institutes	CRO--Pediatric Heart Network	National Institutes of Health	45.0
Geron	Stem cells	California Institute for Regenerative Medicine	25.0
EdeniQ	Corn-to-cellulosic ethanol	DOE Integrated Biorefinery Program	20.5
Virent	Biofuels,biochemicals	U.S. Department of Energy	13.4
Aeolus Pharmaceuticals	Radiation countermeasures	NIH CounterACT	12.7
HCL Cleantech	Biofuels,biochemicals	U.S. Department of Energy	9.0
Opsona	Organ rejection	EU 7th Framework Programme	8.5
Pieris	Anticalins	EU FP7 Grant for Eurocalin Consortium	8.3
Siga Technologies	Antivirals for arenaviruses	National Institutes of Health	7.7
Ark Therapeutics	Cardiovascular	EU Framework Program 7	7.5
Avantium	Biochemicals	Dutch Innovation Credit	7.2

Top Contracts in 2011

COMPANY	PRINCIPAL ACTIVITY	FUNDING AGENCY	AMOUNT (USD M)
Emergent BioSolutions	Anthrax vaccine	U.S. government supply agreement	1,250.0
Siga Technologies	Smallpox antiviral	HHS BARDA over 5 years	433.0
Biota	Influenza	BARDA 5-year milestone-based	231.0
VaxInnate	Flu vaccines	HHS-BARDA, option for additional $78.7 million	118.0
Advanced BioScience Laboratories	Preclinical development support	NIH NIAID 7-year contract	102.5
Emergent BioSolutions	Anthrax vaccine	CDC contract expansion	101.0
Novavax	Flu vaccines	HHS-BARDA, option for additional $82 million	97.0
ClinicalRM	Clinical research management services	U.S. Army Medical Research and Materiel Command	97.0
GlaxoSmithKline	GSK'052 Antibiotic	BARDA over 4 years	94.0
Elusys Therapeutics	Anti-toxin for anthrax	BARDA over 5 years	68.9
Cangene	Botulism antitoxin	US HHS BARDA	61.0
Biocryst Pharmaceuticals	Influenza	HHS BARDA	55.0
Bavarian Nordic	Smallpox vaccine	HHS BARDA 2009 contract increase	54.0
Albany Molecular Research	Neuromuscular	NIH Blueprint Neurotherapeutics Network	43.0
Enanta Pharmaceuticals	Anti-infectives	NIH NIAID	42.7
Harris Corp	Clinical research management services	National Cancer Institute	37.0
CureVac; In-Cell-Art; Sanofi Pasteur	RNA vaccine technology	DARPA	33.1
XOMA	Botulism antitoxin	NIH NIAID	28.0
Chimerix	Antivirals, smallpox	BARDA ($81.1 million over 3 years)	24.8
Neumedicines	Radiation countermeasures	HHS BARDA (potential for $273M over 5 years)	17.0
Cellerant Therapeutics	Cell therapy for acute radiation syndrome	HHS BARDA	16.7

Top M&A in 2011

	ACQUIRER	COUNTRY	TARGET	COUNTRY	VALUE USD M	FOCUS
THERAPEUTICS						
	Sanofi	France	Genzyme	United States	20,100.0	Biopharmaceuticals
	Takeda Pharmaceutical	Japan	Nycomed	Switzerland	13,700.0	Biopharmaceuticals
	Gilead Sciences	United States	Pharmasset	United States	11,000.0	Infectious disease drugs
	Teva Pharmaceuticals	Israel	Cephalon	United States	6,800.0	Biopharmaceuticals
	Forest Laboratories	United States	Clinical Data	United States	1,200.0	Specialty pharma
	Alexion Pharmaceuticals	United States	Enobia Pharma	Canada	1,080.0	Rare diseases
	Amgen	United States	BioVex	United States	1,000.0	Cancer vaccines
	Alkermes	United States	Elan Drug Technologies	Ireland	960.0	Biopharmaceuticals
	Daiichi Sankyo	Japan	Plexxikon	United States	935.0	Cancer therapeutics
	Shire plc	United Kingdom	Advanced BioHealing	United States	750.0	Regenerative medicine
	Valeant Pharmaceuticals	Canada	iNova Pharmaceuticals	Australia	689.5	Pharmaceuticals
	Prestige Brands Holdings	United States	GSK's 17 OTC brands	United Kingdom	660.0	Over the counter drugs
	Gilead Sciences	United States	Calistoga Pharmaceuticals	United States	600.0	Cancer therapeutics
DIAGNOSTICS						
	Thermo Fisher Scientific	United States	Phadia AB	Sweden	3,500.0	Diagnostics
	Fujifilm Holdings	Japan	SonoSite	United States	995.0	Point-of-care ultrasound
	Quest Diagnostics	United States	Athena Diagnostics (Thermo Fisher Scientific)	United States	740.0	Diagnostics
	Quest Diagnostics	United States	Celera Corporation	United States	657.0	Diagnostics
	Novartis	Switzerland	Genoptix	United States	470.0	Diagnostics
	Qiagen	Netherlands	Cellestis	Australia	380.0	Diagnostics
	Alere	United States	Axis-Shield	United Kingdom	375.0	Diagnostics
	Ventana Medical (Roche)	Switzerland	mtm laboratories	Germany	260.0	Diagnostics
TOOLS/TECHNOLOGY						
	Danaher	United States	Beckman Coulter	United States	6,800.0	Tools/Technology
SERVICES						
	Carlyle Group; Hellman & Friedman	United States	PPD	United States	2,900.0	CRO
	KKR	United States	Pfizer's Capsugel	United States	2,380.0	Drug delivery
	TPG Capital	United States	Immucor	United States	1,939.0	Tools/Technology
	Fresenius Medical Care	Germany	Liberty Dialysis Holding	United States	1,700.0	Dialysis clinics
	Lonza	Switzerland	Arch Chemicals	United States	1,400.0	Biocides
	Miraca Holdings	Japan	Caris Life Sciences unit	United States	725.0	Anatomic pathology
	PerkinElmer	United States	Caliper Life Sciences	United States	600.0	Tools/Technology
	Fujifilm	Japan	Two Merck laboratories	United States	490.0	Biomanufacturing

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Top M&A in 2011

	ACQUIRER	COUNTRY	TARGET	COUNTRY	VALUE USD M	FOCUS
	Catalent Pharma Solutions	United States	Aptuit's Clinical Trial Supplies	United States	410.0	Supply/Service
INDUSTRIAL/AG						
	DuPont	United States	Danisco	Denmark	6,300.0	Industrial/Ag
	BP	United Kingdom	CNAA	Brazil	680.0	Industrial/Ag
MEDICAL DEVICES						
	Johnson & Johnson	United States	Synthes	Switzerland	21,600.0	Medical devices
	Apax Partners; Canada Pension Plan Investment Board; Public Sector Pension Investment Board	U.S.; Canada	Kinetic Concepts	United States	6,300.0	Medical devices
	Endo Pharmaceuticals	United States	American Medical Systems	United States	2,900.0	Medical devices
	Terumo	Japan	CaridianBCT	United States	2,600.0	Medical devices
	Dentsply	United States	Astra Tech (AstraZeneca)	United Kingdom	1,800.0	Dental implants
	Getinge	Sweden	Atrium Medical	United States	680.0	Medical devices
	Elekta AB	Sweden	Nucletron BV	Netherlands	523.0	Medical devices
	Bain Capital	United States	Medtronic's Physio-Control	United States	487.0	EMR technology
	Medtronic	United States	Salient Surgical Technologies	United States	480.0	Surgical products

Top Partnering Deals in 2011

LICENSER	LICENSEE	DEAL TYPE	DEAL VALUE USD M	UP-FRONT	STAGE	PRINCIPAL FOCUS	RATIONALE/PRINCIPAL ASSET
Otsuka Pharmaceutical	H Lundbeck	Alliance	1,800.0	200	Various	Central nervous system	Alliance is a sales and cost share agreement that cover the global development and commercialization of up to five innovative and psychiatric and neuroscience products, including two late stage Otsuka compounds, one of which is a depot formulation of aripiprazole (Abilify).
Alios BioPharma	Vertex Pharmaceuticals	License	1,500.0	60	Preclinical	Hepatitis C	Exclusive global license for two hepatitis C nucleotide analogues, ALS-2200 and ALS-2158, discovered by Alios. Vertex is resposible for development costs and research funding and Alios is eligible for up to $715 million in milestones if both compounds are approved; and up to $750 million in sales milestones on sales of all approved medicines.

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Top Partnering Deals in 2011

LICENSER	LICENSEE	DEAL TYPE	DEAL VALUE USD M	UP-FRONT	STAGE	PRINCIPAL FOCUS	RATIONALE/PRINCIPAL ASSET
AVEO Pharmaceuticals	Astellas Pharma	License	1,425.0	125	Phase 3	Cancer	Global agreement to develop and commercialize AVEO's lead cancer drug tivozanib outside of Asia where Kyowa Hakko Kirin holds rights. Upfront includes $75 million license fee and $50 million in research funding. Aveo is eligible for $575 million in clinical and regulatory milestones as well as more than $780 million in commercial milestones. The partners will share equally all North American and EU development and commercialization costs, and profits.
Boehringer Ingelheim	Eli Lilly	Alliance	1,233.0	400	Phase 3/FDA review	Diabetes	Joint development and commercialization of two Boehringer oral diabetes agents--linagliptin and BI0773--in late stage development, Lily's two late stage basal insulin analogues, plus an option to co-develop and co-commercialize Lilly's anti-TGF-beta monoclonal antibody. Lilly will pay Boehringer a one-time payment of $400 million. Both are eligible for significant milestones and will equally sharae in any commercialized products costs and gross margin.
Eli Lilly	Boehringer Ingelheim	Alliance	1,175.0		Phase 2/3	Diabetes	Joint development and commercialization of two Boehringer oral diabetes agents--linagliptin and BI0773--in late stage development, Lily's two late stage basal insulin analogues, plus an option to co-develop and co-commercialize Lilly's anti-TGF-beta monoclonal antibody. Lilly will pay Boehringer a one-time payment of $400 million. Both are eligible for significant milestones and will equally sharae in any commercialized products costs and gross margin.
Micromet	Amgen	License	997.0	14.1	Discovery	Cancer	Amgen will have right to pursue development and commercialization of BiTE antibodies against up two two of three undisclosed solid tumor targets. Micromet will get $14 million upfront and is eligible for milestones. Micromet will be responsible for discovery and preclinical development, Amgen will bear all costs and lead the clinical development, manufacture, and commercialization of any product resulting from the collaboration.
Pharmacyclics	Janssen Biotech (J&J)	License	975.0	150	Phase 2	Blood cancers	Joint development and marketing of anti-cancer compound PCI-32765, in mid-stage development. The companies have a worldwide 50/50 profit-loss agreement, and will share development and commercialization activities. Pharmacyclics will get $150 million upfront and is eligible for milestones.
Evotec	Roche	License	830.0	10	Phase 2	Alzheimer's disease	Roche will pay Evotec $10 million upfront for the right to develop Evotec's EVT 302, which targets monoamine oxidase type B for Alzheimer's. Evotec is eligible for up to $820 million in development and sales milestones, as well as royalties. Roche will pay all development and commercialization costs.

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Top Partnering Deals in 2011

LICENSER	LICENSEE	DEAL TYPE	DEAL VALUE USD M	UP-FRONT	STAGE	PRINCIPAL FOCUS	RATIONALE/PRINCIPAL ASSET
Molecular Partners	Janssen Biotech (J&J)	Collaboration	800.0	N/A	Discovery	Immuno-therapeutics	The companies will collaborate on research of DARPins to selected targets in immunological diseases. Janssen has the right to exercise four options to exclusively license resulting products, after which it will be solely responsible for further development. Molecular Partners has an option to co-develop one product on a global basis. Molecular Partners will get up to $200 million in upfront, license fees, research funding, and milestones for each option, plus royalties.
Intra-Cellular Therapies	Takeda Pharmaceutical	Collaboration	750.0	N/A	Discovery	Neurology	Takeda granted exclusive global rights to selective PDE1 inhibitors for the treatment of cognitive impairment associated with schizophrenia. ITI retains option to co-promote in the United States. ITI will get an undisclosed upfronts and is eligible for development and sales milestones. Takeda will be responsible for development and commercialization.
Hanwha Chemical	Merck	License	720.0	N/A		Biosimilars	Hanwha sells Merck the marketing rights and technology for its biosimilar drugs for an undisclosed upfront payment and milestones for technology transfer and regulatory progress as well as royalties on sales.
Array BioPharma	Genentech (Roche)	License	713.0	28	Phase 1	Cancer	Oncology agreement for each company's early stage Checkpoint kinase 1 (ChK-1) program. Genentech is responsible for all clinical development and commercialization activities. Array will get $28 million upfront and is eligible to receive up to $865 million in milestones and double-digit royalties on sales of any resulting drugs.
F-Star	Merck Serono (Merck KGaA)	License	672.8		Discovery	Inflammatory	Partners will work together to use F-Star's modular antibody technology to discover monspecific Fc-based targeted biologics (Fcabs) and bispecific IgG-based targeted biologics against up to three Merck Serono targets in inflammatory diseases. Merck Serono will have exclusive global rights to any resulting products. F-Star will get a technology access fee, research funding, and will be eligible for license fees, milestones, and royalties.
Theraclone Sciences	Pfizer	Collaboration/ License	632.0		Discovery	Infectious, cancer	Multi-year R&D collaboration to use Theraclone's I-STAR technology to discover Mabs against up to four undisclosed targets in the areas of infectious disease and cancer. Pfizer will have exclusive global license to any therapeutic antibodies discovered under the collaboration and will be responsible for all preclinical and clinical development. Theraclone is eligible to receive royalties on sales of any developed products and up to $632 million in research funding and milestones.

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Top Partnering Deals in 2011

LICENSER	LICENSEE	DEAL TYPE	DEAL VALUE USD M	UP-FRONT	STAGE	PRINCIPAL FOCUS	RATIONALE/PRINCIPAL ASSET
Epizyme	GlaxoSmithKline	Alliance	630.0	20	Discovery	Epigenetic therapeutics	Global strategic alliance to discover, develop, and market drugs targeting methyltransferases (HMTs) to treat cancer and other diseases. Epizyme will receive $20 million upfront, is eligible for milestones, and will receive royalties on sales of products resulting from the alliance. For each target, Epizyme will be responsible for discovery research and GSK will be responsible for development and commercialization.
Santaris Pharma	Pfizer	Alliance	614.0	14	Discovery	mRNA and microRNA	Expansion of 2009 agreement with Wyeth. Pfizer will pay $14 million for access to Santaris' Locked Nucleic Acid technology for the development of RNA-targeted drugs. Santaris is eligible for up to $600 million in milestones, plus royalties on sales of products that may be developed for up to 10 new RNA targets selected by Pfizer.
Glenmark Pharmaceuticals	Sanofi	License	613.0	25	Phase 1/2	Autoimmune	Sanofi licenses Glenmark's novel GBR500 antibody to treat Crohn's Disease and other autoimmune disorders. Glenmark will get $50 million upfront, half of which is contingent on Sanofi's positive assessment of certain data to be provided by Glenmark. Sanofi will have exclusive marketing rights in North America, Europe, Japan, Mexico, Argentina, Chile, and Uruguay, and share them in Brazil, Russia, Australia and New Zealand. Glenmark retains rights in India and the rest of the world.
AVEO Pharmaceuticals	Centocor Ortho Biotech (J&J)	License	555.0	15	Preclinical	Cancer	Centocor granted exclusive global rights to Aveo's antibodies targeting the RON receptor, believed to be involved in regulation of tumor growth, survival and metastasis, and bone disruption. Aveo will get $15 million upfront, half of which is an equity investment by J&J Development.
Portola Pharmaceuticals	Biogen Idec	License	553.0	45	Phase 1	Autoimmune; inflammatory	Exclusive global collaboration and license deal to develop and commercialize highly selective novel oral Syk inhibitors to treat autoimmune and inflammatory diseases. Biogen will lead efforts in major indictions such as rheumatoid arthritis and lupus, while Portola will lead efforst for select smaller indications and discovery efforts for follow-on Syk inhibitors. Portola retains option to co-promote in the U.S. in major indications. Worldwide costs and profits will be split 75/25 Biogen/Portola.
Zealand Pharma	Boehringer Ingelheim	License	530.0	N/A	Preclinical	Metabolic	Boehringer granted exclusive global license to Zealand's lead glucagon/GLP-1 dual agonist drug candidate for the treatment of type-2 diabetes and obesity. Zealand will conduct early stage trials and Boehringer will fund all development costs. The partners will also focus on developing additional glucagon/GLP-1 dual agonists in new indications, formulations, and delivery systems.

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Top Partnering Deals in 2011

LICENSER	LICENSEE	DEAL TYPE	DEAL VALUE USD M	UP-FRONT	STAGE	PRINCIPAL FOCUS	RATIONALE/PRINCIPAL ASSET
Xoma	Servier	Collaboration	505.0	35	Phase 2	Inflammation	Joint development and commercialization of XOMA 052 in multiple indications. Servier will fund the first $50 million of development and 50 percent of further expenses in the Behcet's uveitis indication; and will fund all expenses in diabetes and cardiovascular disease in exchange for global rights. XOMA retains option to reaquire rights in U.S. and Japan by paying an option fee and partial reimbursement of incurred development expenses.
Xencor	Amgen	License option	500.0	N/A	Preclinical	Autoimmune	Amgen granted option to license exclusive worldwide rights to autoimmune candidate Xmab5871, in preclinical testing. Amgen can exercise its option following completion of predefined phase 2 trial. If exercised, Xencor will get an upfront payment and option exercise fee of $75 million, and is eligible for up to $425 million in milestones plus tiered royalties.
FivePrime Therapeutics	Human Genome Sciences	License	495.0	50	Phase 1	Cancer	Human Genome Sciences acquires rights to develop and commercialize FP-1039, a first-in-class biologic targeting multiple fibroblast growth factor ligands, in the United States, Canada, and the European Union. FivePrime retains minority co-promotion rights in the U.S., and full rights in the rest of the world. FivePrime will get an upfront license fee of $50 million, is eligible for milestones, plus royalties.
PTC Therapeutics	Roche	License	490.0	30	Preclinical	Rare diseases	Roche gains exclusive access to PTC's Spinal Muscular Atrophy program, which includes three compounds in preclinical development, as well as potential back-up compounds. Development will be overseen by a joint steering committee that includes Roche, PTC, and the SMA Foundation. PTC will get $30 million upfront, is eligible for milestones, and royalties.
Biotest	Abbott Laboratories	Collaboration	470.0	85	Phase 2	Autoimmune	Global agreement to develop and commercialize BT-061, a novel anti-CD-4 antibody to treat rheumatoid arthritis and psoriasis. Abbott and Biotest will co-promote in five major European markets and Abbott will have exclusive global rights to commercialize BT-061 outside those countries. Biotest will get $85 million upfront, is eligible for milestones, and royalites. Companies will share responsibility for commercial production.
Innate Pharma	Bristol-Myers Squibb	Collaboration/ License	465.0	35	Phase 1	Cancer	BMS granted exclusive worldwide rights to develop, manufacture, and commercialize IPH2102 and related compounds blocking KIR receptors for all potential indications. Innate will continue to develop it in acute myeloid leukemia through the end of phase 2. BMS will fund the development of IPH2102, pay Innate $35 million upfront, and up to $430 million in milestones, as well as royalties.

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Top Partnering Deals in 2011

LICENSER	LICENSEE	DEAL TYPE	DEAL VALUE USD M	UP-FRONT	STAGE	PRINCIPAL FOCUS	RATIONALE/PRINCIPAL ASSET
Momenta Pharmaceuticals	Baxter International	Collaboration	452.0	33.0		Biosimilars	Global biosimilars collaboration with both companies leveraging their expertise to make an dmarket up to six follow-on biologic compounds. Baxter will pay Momenta $33 million upfront, plus milestones.
MacroGenics	Servier	License option	450.0	20	Phase 1	Cancer	License option for MGA271, a first-in-class monoclonal antibody for the treatment of solid tumors. MacroGenics retains full rights in the U.S., Canada, Mexico, Japan, Korea, and India, while Servier has the option to obtain an exclusive license covering the rest of the world. MacroGenics will get $20 million upfront. Both parties will fund development prior to and after the option exercise.
Molecular Partners	Allergan	License	420.0	45	Phase 2	Ophthalmic	Allergan granted exclusive global rights for MP0112 for ophthalmic indications, including age-related macular degeneration and diabetic macular edema. Parties will work together during phase 2b after which Allergan will take full responsibility for further development. Molecular Partners will get $45 million upfront, is eligible for milestones, plus royalties.
Affectis Pharmaceuticals	Merck Serono (Merck KGaA)	License	400.7	3.4	Preclinical	Neurology	Merck Serono granted exclusive global license for the development and commercialization of oral compounds targeting P2X7 receptors, believed to be involved in neuroinflammation observed in some neurodegenerative diseases.

DECEMBER 2011 STATISTICS

December Financings: Funding Early Stage Biotechs

Creative models seek to fill the gap in access to capital for early stage firms

By Marie Daghlian

Venture capitalists, frustrated by regulatory unpredictability and the difficulties in exiting their investments because of the weak IPO demand for life sciences companies, are exploring new models to lower the risk of early-stage investing in therapeutics.

One model gaining traction involves a venture capital firm in partnership with a Big Pharma or Big Biotech, funding a startup with an exit plan built into the arrangement. For the biopharmaceutical funding partner, the approach provides access to early-stage technology at a time when the lack of R&D productivity has driven large companies away from performing their own discovery work. Venture capital firms, under this model, have a potential acquirer for their investment should milestones be met.

One model gaining traction involves a venture capital firm partnering with a Big Pharma or Big Biotech, funding a startup with an exit plan built into the arrangement.

Consider Versant Ventures, which teamed up with Celgene in November to fund Quanticel Pharmaceuticals through a strategic collaboration. Under the agreement, Celgene will commit $45 million and take an equity position in the startup. It retains an exclusive option to acquire the company. Quanticel is developing an innovative platform for cancer drug discovery.

Another similar approach involves venture firms teaming up with pharmaceutical companies to seek out a broad range of investing opportunities where the two can benefit from each other's expertise while lowering the risk of not finding an exit for the venture firm. Such an approach can be particularly useful for pharmaceutical firms that don't have a corporate venture arm.

Atlas Venture has teamed up with Shire Human Genetic Therapies to look at investment opportunities in early-stage, rare disease therapeutics. The partnership of the venture capital firm and the biologics division of the pharmaceutical Shire aims to leverage the venture firm's managerial expertise with the Dublin-based biopharma's R&D knowledge and capabilities in rare diseases to identify strategic investments for early-stage venture creation around rare genetic diseases.

While rare diseases are currently a hot target for therapeutics development, many early-stage companies are finding it increasingly difficult to fund their companies, with many venture investors turning to less risky later-stage deals that offer the potential for quicker exits. At the same time, pharmaceutical companies are seeking to expand their pipelines with external sources of innovation and are looking for new ways to access promising technology.

Researchers at Shire Human Genetic Therapies will work closely with Atlas venture partners in the multi-year collaborative effort. "The partnership with Shire is truly synergistic and leverages our individual strengths to create and fund new startups around high-potential medical science early in the R&D cycle," says Bruce Booth, Atlas Venture partner.

In a blog post, Booth says the partners will focus on diseases that extend well beyond what is currently in Shire's pipeline. Shire will do the wet diligence, test promising discovery and preclinical candidates in the lab, while Atlas will work on the diligence and structuring of new opportunities.

"The possibility for creating option-like structures for these deals is a key part of this alliance, and we anticipate setting them up as part of our initial investment where the structure makes sense," writes Booth. "In these deals, Shire will have the right to acquire and integrate the company/asset into its R&D pipeline at a pre-defined valuation upon reaching an agreed set of milestones. This secures access to these innovations for Shire, while mitigating the downstream liquidity risk for the team and investors."

Atlas isn't the only firm looking to fill the funding gap for early-stage therapeutics companies at a time when many traditional VCs are limiting their exposure in life sciences and some are moving out of the sector altogether. Access BridgeGap Ventures, has been set up to fund early-stage therapeutics startups and also create new companies around disruptive technologies including technology still in academic labs. The new venture group is backed by Access Industries, a privately held, U.S.-based international industrial group.

Daniel Behr and Ben Bronstein, both well-known serial entrepreneurs and technology developers, are leading the venture firm. Funding activities will focus on scientists, entrepreneurs, and companies that are developing novel and clinically relevant therapeutic approaches and platforms. Access BridgeGap expects to fund three to five companies per year and to deploy $75 million over the first few years.

Such early-stage funding tends to be one of the riskiest investments, but it can also lead to greater financial rewards. "Commercially promising innovations being developed in research institutions and in young startups are often deemed too early for partnering by industry or for investment by traditional venture capital," says Bronstein. "Our focus is to translate early-stage science into commercially relevant products and companies."

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December 2011 Venture Financings

COMPANY	PRINCIPAL FOCUS	RAISED (USD M)	FINANCING ROUND	INVESTORS
IntegenX	Tools/Technology	40.0	Series C	Essex Woodlands; Domain Associates; QuestMark Partners; Greenspring Associates; Cross Creek Capital; RONAholdings; Samsung Ventures; In-Q-Tel
Uptake Medical	Medical devices	40.0	Series B (in two tranches, first closing in July)	Not disclosed; previous investors include GBS Venture Partners; Maverick Capital; Affinity Capital; WRF Capital; other investors
Ember Therapeutics	Therapeutics	34.0	Series A	Third Rock Ventures
Acceleron	Therapeutics	30.0		Celgene; Advanced Technology Ventures; Bessemer Venture Partners; Flagship Ventures; other existing investors
Agilyx	Industrial/Ag	25.0	Series C	Keating Capital; Waste Management; Pleiner Perkins Caufield & Byers; Chrysalix Energy; total; Saffron Hill Ventures; Reference Capital
Cohera Medical	Tools/Technology	25.0	Series C	Kern Whelan Capital; existing investors, new investors
C8 MediSensors	Medical devices	24.0	Series C	GE Capital; GE Healthcare; existing investors
Radius Health	Therapeutics	21.4	Series C, third and final tranche	BB Biotech; Brookside Capital; Saints Capital; Nordic Bioscience; Ipsen Pharma; MPM Capital; BB Biotech Ventures; MPM Bio IV NVS Strategic Fund; The Wellcome Trust; HealthCare Ventures; Scottish Widows Investment Partnership
CSA Medical	Medical devices	20.5	Series B	Intersouth Partners; First Analysis; SV Life Sciences; Rose Park; Blue Heron Capital; existing investors
ImmusanT	Therapeutics	20.0	Series A	Vatera Healthcare Partners; other investors
Svelte Medical Systems	Medical devices	17.0	Series B, part of $37 million round	Not disclosed
Aspire Bariatrics	Medical devices	16.0	Part of $20 million round	Not disclosed
InnoPharma	Therapeutics	15.0	Series A	Thomas, McNerney & Partners
Small Bone Innovations	Medical devices	15.0	Series F	Not disclosed
Aratana Therapeutics	Therapeutics	15.0	Series B	MPM Capital; Avalon Ventures; Cultivian Ventures; Ewing Marion Kauffman Foundation; other investors
Cerulean Pharma	Therapeutics	15.0	Series D	CVF (Henry Crown and Company of Chicago); Polaris Venture Partners; Venrock; Lilly Ventures; Lux Capital; Bessemer Venture Partners
BeneChill	Medical devices	15.0	Part of $25.6 million round	Not disclosed
Supernus Pharmaceuticals	Therapeutics	15.0	Venture debt	Not disclosed
TransEnterix	Medical devices	14.9		Nine investors; previous investors include Aisling Capital; Intersouth Partners; Quaker Partners; SV Life Science Advisers; synergy Life Science Partners; parish Capital Advisors
NexSteppe	Industrial/Ag	14.0	Series B	Braemer Energy Ventures; CYM Ventures (Asia); Zygote Ventures
Sotera Wireless	Digital Health	12.2	Series D	EDB Investments (Singapore): Cerner Capital; Qualcomm Ventures; Sanderling Ventures; Intel Capital ; West Health Investment Fund
Excelimmune	Therapeutics	12.0		Private investor
Medrobotics	Medical devices	11.7	Series C	Not disclosed
HealthTap	Digital Health	11.5	Series A	Mayfield Fund; Mohr Davidow Ventures; Innovation Endeavors

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December 2011 Venture Financings

COMPANY	PRINCIPAL FOCUS	RAISED (USD M)	FINANCING ROUND	INVESTORS
Aviir	Diagnostics	10.0	Part of $30 million round	Merck Global Health Innovation Fund; Bay City Capital; Aberdare Ventures; New Leaf Venture Partners
PharmacoFore	Therapeutics	10.0		Founders Fund
Neuraltus Pharmaceuticals	Therapeutics	9.6	Part of $11.1 million round	Seven investors
Velomedix	Medical devices	9.3	Part of $10.7 million round	Not disclosed
Alung Technologines	Medical devices	9.0	Series B	Birchmere Ventures; angel investors
LifeImage	Digital Health	8.0	Series B	13 investors
Catabasis Pharmaceuticals	Therapeutics	8.0	Series A extension	SV Life Sciences; Clarus Ventures; MedImmune Ventures; Advanced Technology Ventures
Cerevast Therapeutics	Medical devices	6.6	Series C, part of $15.7 million round	Seven Investors
Keas	Digital Health	6.5	Series B	Atlas Ventures; Ignition Partners
Groove Biopharma	Therapeutics	6.0	Series B	Alexandria Venture Investments; Arch Venture Partners; OVP Venture Partners; Versant Ventures; WRF Capital
Grove Instruments	Medical devices	6.0	Series B	New investors and existing investors
PatientKeeper	Digital Health	6.0		Flybridge Capital Partners; New Enterprise Associates; Whitney & Company
OpGen	Tools/Technology	5.1	Series B-$3M plus bridge financing	Existing investors, other investors
Selventa	Tools/Technology	5.0		Not disclosed
Cardeas Pharma	Therapeutics	5.0	Series A, first tranche	Novo Ventures; Avalon Ventures; WRF Capital; Devon Park Bioventures
Daktari Diagnostics	Diagnostics	5.0	Part of $10 million round	Not disclosed; previous investors included Partners Innovaation Fund; Launchpad Venture Group; Hub Angels Investment Group; Boston Harbor Angels
CeNeRx BioPharma	Therapeutics	4.9		Perseus Soros Biopharmaceutical Fund; L Capital Partners; Pappas Ventures; Omega Funds
Enumeral Biomedical	Tools/Technology	4.3	Series A	Harris & Harris, other investors
Intimate Bridge 2 Conception	Medical devices	4.3	Series A	Private Pennsylvania investment group; PLSG Accelerator Fund
CosmosID	Tools/Technology	4.0		Battelle, other investors
Lux Biosciences	Therapeutics	4.0		Not disclosed
Correx	Medical devices	3.3	Part of $4 million round	Not disclosed
Tribogenics	Medical devices	2.5	UCLA spinoff: Seed stage	Flywheel Ventures; angel investors
Cibus Global	Industrial/Ag	2.0		Not disclosed
ImThera Medical	Medical devices	1.5		Allied Beacon Partners
Perosphere	Therapeutics	1.0	Series A, part of $1.5 million	Private investors; company management

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December 2011 Venture Financings

COMPANY	PRINCIPAL FOCUS	RAISED (USD M)	FINANCING ROUND	INVESTORS
Tosk	Therapeutics	0.8	Part of $5.1 million round	Not disclosed
Asteres	Digital Health	0.8		Not disclosed
Gain Fitness	Digital Health	0.7	Seed stage	InterWest Partners; Seraph Group; individual investors
Proacta	Therapeutics	0.5	Part of $3 million round	Not disclosed; investors include Alta Partners; Clarus Ventures; Delphi Ventures; Endeavour Capital (NZ); GBS Venture Partners (Australia); Genentech; No 8 Ventures (NZ); Roche
Afraxis	Therapeutics	0.3	Part of $2 million round	Avalon Ventures
100Plus	Digital Health	N/A	Seed stage	John Lilly; Reid Hoffman; Felicis Ventures; Band of Angels Acorn Fund; Founders Fund
Merganser Biotech	Therapeutics	N/A	Seed stage	BioAdvance; Biotechnology Greenhouse of Southeastern Pennsylvania; individual investors
Enlight Biosciences	Therapeutics	N/A		AstraZeneca and Novo Nordisk each invest and become a partner
AuraSense Therapeutics	Therapeutics	N/A	Series B	Abbott Biotech Ventures; Patrick Ryan; David Walt; Eric Schmidt; Craig Mundie
Allozyne	Therapeutics	N/A		Arch Venture Partners; MPM Capital; OVP Venture Partners
CoolPlanet Biofuels	Industrial/Ag	N/A	Series C	Shea Ventures; BP Technology Ventures; GE; Google Ventures; ConocoPhillips; NRG; North Bridge Venture Partners
TOTAL U.S. VENTURE FINANCINGS		**629.2**		
arGEN-X (Netherlands)	Therapeutics	37.0	Series B	OrbiMed Advisors; Seventure Partners; Forbion Capital Partners; Credit Agricole Private Equity; LSP; BioGeneration Ventures; Erasmus Biomedical Fund; Thuja Capital; VIB
SynBio (Russia)	Therapeutics	28.7		Rusnano
Enerkem (Canada)	Industrial/Ag	15.0		Waste Management; EB Investments
TopiVert (United Kingdom)	Therapeutics	12.5		Imperial Innovations; SV Life Sciences
TMO Renewables (United Kingdom)	Industrial/Ag	11.9		Not disclosed
MedLumics (Spain)	Diagnostics	4.7	Series A	Ysios Capital Partners; Caixa Capital Risc
Immunicum (Sweden)	Therapeutics	3.6		Not disclosed
Atox Bio (Israel)	Therapeutics	3.3		Esperante; private US-based investor
Arcarios (Netherlands)	Therapeutics	1.6	First tranche of $7 million loan	Agentschap
Inform Genomics (United Kingdom)	Therapeutics	1.1	Seed stage	Angel investors; company management
NanoVibronix (Israel)	Medical devices	0.3		Tegal Corporation
Acesion Pharma (Denmark)	Therapeutics	N/A	Spinout of NeuroSearch	Novo Seeds; DTU Symbion Innovation; NeuroSearch (option)
TOTAL NON-U.S. VENTURE FINANCINGS		**119.7**		
TOTAL DECEMBER VENTURE FINANCINGS		**748.9**		

December 2011 Public Financings

	COMPANY	TICKER	AMOUNT RAISED (USD M)	PRINCIPAL FOCUS
IPOS				
	Chiome Bioscience	Tokyo:4583	6.5	Tools/Technology
	TOTAL NON-U.S. IPOS		**6.5**	
	TOTAL DECEMBER IPOS		**6.5**	
PIPES				
	Lexicon Pharmaceuticals	LXRX	161.0	Therapeutics
	Cell Therapeutics	CTIC	20.0	Therapeutics
	Nymox Pharmaceuticals	NYMX	15.0	Therapeutics
	Celsion	CLSN	13.9	Therapeutics
	Ampio Pharmaceuticals	AMPE	9.4	Therapeutics
	Pacific Ethanol	PEIX	8.0	Industrial/Ag
	Marina Biotech	MRNAD	5.0	Therapeutics
	MiMedx	OTC:MDXG	5.0	Tools/Technology
	Inovio Pharmaceuticals	INO	4.0	Therapeutics
	Oxygen Biotherapeutics	OXBT	3.5	Therapeutics
	Oculus Innovative Sciences	OCLS	2.0	Medical devices
	Marshall Edwards	MSHL	2.0	Therapeutics
	ARCA biopharma	ABIO	1.8	Therapeutics
	AspenBio Pharma	APPY	1.6	Diagnostics
	Ohr Pharmaceutical	OTC:OHRP	1.1	Therapeutics
	FluoroPharma Medical	OTC:FPMI	1.0	Tools/Technology
	Advaxis	OTC:ADXS	1.0	Therapeutics
	IntelliCell Bioscience	OTC:SVCF	0.5	Tools/Technology
	BioNeutral Group	OTC:BONU	0.4	Tools/Technology
	TOTAL U.S. PIPES		**256.2**	
	Agennix (Germany)	Xetra:AGX	15.2	Therapeutics
	Protox Therapeutics (Canada)	TSX:PRX	8.1	Therapeutics
	Compugen (Israel)	CGEN	8.0	Tools/Technology
	Verona Pharma (United Kingdom)	LSE:VRP	5.1	Therapeutics
	Patrys Limited (Australia)	ASX:PAB	3.5	Therapeutics
	Amsterdam Molecular Therapeutics (Netherlands)	Euronext:AMT	3.2	Therapeutics
	biOasis Technologies (Canada)	TSX-V:BTI	1.1	Therapeutics
	Allon Therapeutics (Canada)	TSX:NPC	1.1	Therapeutics
	PharmaGap (Canada)	TSX-V:GAP	0.6	Therapeutics
	TOTAL NON-U.S. PIPES		**45.9**	
	TOTAL DECEMBER PIPES		**302.1**	

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December 2011 Public Financings

COMPANY	TICKER	AMOUNT RAISED (USD M)	PRINCIPAL FOCUS
FOLLOW-ONS			
Ariad Pharmaceuticals	ARIA	258.0	Therapeutics
Orexigen Therapeutics	OREX	90.0	Therapeutics
Exact Sciences	EXAS	28.8	Diagnostics
Synergy Pharmaceuticals	SGYPD	17.3	Therapeutics
MELA Sciences	MELA	16.3	Medical devices
StemCells	STEM	10.0	Therapeutics
Novelos Therapeutics	OTC:NVLT	5.9	Therapeutics
TOTAL U.S. FOLLOW-ONS		**426.3**	
Pharmaxis (Australia)	ASX:PXS	31.2	Therapeutics
TOTAL NON-U.S. FOLLOW-ONS		**31.2**	
TOTAL DECEMBER FOLLOW-ONS		**457.5**	
DEBT			
Gilead Sciences	GILD	3,700.0	Therapeutics
Amgen	AMGN	1,500.0	Therapeutics
Zalicus	ZLCS	8.5	Therapeutics
TOTAL U.S. DEBT		**5,208.5**	
Pharming (Netherlands)	PHARM	11.0	Therapeutics
Cynapsus Therapeutics (Canada)	TSX:CTH	0.1	Therapeutics
TOTAL NON-U.S. DEBT		**11.1**	
TOTAL DECEMBER DEBT		**5,219.6**	

OTHER FINANCINGS

COMPANY	TICKER	AMOUNT RAISED (USD M)	PRINCIPAL FOCUS	FINANCING TYPE
Laboratory Corp. of America	LH	560.0	Diagnostic	Draw down from credit facility
Dendreon	DNDN	125.0	Therapeutics	Sale of Victrelis royalty rights
Small Bone Innovations	Private	43.0	Medical devices	Senior secure credit facility
Hansen Medical	HNSN	30.0	Medical devices	Debt facility
Supernus Pharmacetuicals	Private	27.0	Therapeutics	Sale of TCD Royalty subsidiary
Stereotaxis	STXS	20.0	Medical devices	Royalty financing agreement
InfraReDx	Private	10.0	Medical devices	Senior secure term loan
PURE Bioscience	PURE	10.0	Tools/Technology	CEFF with Lincoln park Capital
CytoSorbents	OTC:CTSO	8.5	Medical devices	CEFF with Lincoln Park Capital Fund
Provenance Biopharmaceuticals	Private	8.0	Therapeutics	Financing by Alopexx Enterprises
Radius Health	Private	6.3	Therapeutics	Second tranche of $25 million loan facility

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December 2011 Public Financings

COMPANY	TICKER	AMOUNT RAISED (USD M)	PRINCIPAL FOCUS	FINANCING TYPE
IntegenX	Private	5.0	Tools/Technology	Credit facility
Rosetta Genomics	ROSG	0.9	Diagnostics	Sells majority stake in Rosetta Green
Intelligent Bio-Systems	Private	0.8	Tools/Technology	Mass Life Sciences Center Loan
Allurion Technologies	Private	0.8	Medical devices	Mass Life Sciences Center Loan
Paragonix Technologies	Private	0.7	Medical devices	Mass Life Sciences Center Loan
Radient Pharmaceuticals	OTC:RXPC	0.5	Diagnostics	Warrant exercise
TOTAL U.S. OTHER FINANCINGS		**856.5**		
Hutchison China MediTech (China)	LSE:HCM	27.0	Therapeutics	Secured 3-year term loan facility
Aoxing Pharmaceutical (China)	AXN	3.2	Therapeutics	One year term loan
Tekmira Pharmaceuticals (Canada)	TSX:TKM	3.0	Therapeutics	Term loan from Silicon Valley Bank
Biotie Therapies (Finland)	HSE:BTHIV	2.9	Therapeutics	Loan forgiveness by Finnish Funding Agency for Technology and Innovation
Zealand Pharma (Denmark)	CSE:ZEAL	1.5	Therapeutics	Warrant exercise
Exiqon (Denmark)	CSE:EXQ	0.1	Tools/Technology	Warrant exercise
TOTAL NON-U.S. OTHER FINANCINGS		**37.7**		
TOTAL DECEMBER OTHER FINANCINGS		**894.2**		

December 2011 Grants and Contracts

COMPANY	AMOUNT RAISED (USD M)	PRINICPAL FOCUS	FUNDING AGENCY
GRANTS			
Mascoma	80.0	Cellulosic ethanol facility	US Department of Energy
Profectus BioSciences	5.4	Antibody against Nipah or Hendra virus	NIAID Partnerships for Biodefense
PTC Therapeutics	5.0	Bacterial infections	Wellcome Trust Seeding Drug Discovery Award
Seventh Sense Biosystems	3.3	Point-of-care testing	Bill & Melinda Gates Foundation
AM Biotechnologies	1.7	Point-of-care testing	Bill & Melinda Gates Foundation
Phthisis Diagnostics	0.5	Infectious	Commonwealth of Virginia
NeuroGenetic Pharmaceuticals	0.3	Alzheimer's disease	NIH SBIR
Trevena	0.2	Parkinson's research	Michael J. Fox Foundation
Celek Pharmaceuticals	0.2	Bladder cancer drug	National Cancer Institute SBIR
CytoSorbents	0.1	Blood purification	US Army Medical Research and Material Command SBIR
Amarantus Biosciences	N/A	Traumatic brain injury	Brewer Sports International
TOTAL U.S. GRANTS	**96.7**		

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December 2011 Grants and Contracts

COMPANY	AMOUNT RAISED (USD M)	PRINICPAL FOCUS	FUNDING AGENCY
Cytoo and Cenix BioScience (France)	5.2	High throughput RNAi screening of cultured cells	EU FP7
TiGenix (Belgium)	3.8	Stem cell therapy for RA	EU FP7
ProtAffin (Austria)	2.7	Inflammatory lung disease	Austrian Forschungs-Förderungs-Gesellschaft
Plasticell (United Kingdom)	2.3	Stem cell manufacturing	UK Technology Strategy Board
GlaxoSmithKline (United Kingdom)	2.3	R&D job protection	Scottish Enterprise
arGEN-X (Netherlands)	1.7	Antibody platform	Institute for the Promotion of Innovation by Science and Technology in Flanders
Cellzome (United Kingdom)	1.6	Regenerative medicine	UK Technology Strategy Board
Summit PLC (United Kingdom)	0.8	Duchenne muscular dystrophy	Muscular Dystrophy Association
to-BBB technologies (Netherlands)	0.8	Brain drug delivery	Agentschap (Dutch government)
Orexo (Sweden)	0.3	Drug delivery technology	Swedish Research Council
TOTAL NON-U.S. GRANTS	**21.5**		
TOTAL DECEMBER GRANTS	**118.2**		
CONTRACTS			
BrainScope	7.5	Traumatic brain injury	Department of Defense
Quanterix	0.3	Botulinum toxin test	Department of Homeland Security
TOTAL DECEMBER CONTRACTS	**7.8**		

M&A: Rare Diseases and Biosimilars

Month's deals focus on both ends of the therapeutic spectrum

Biosimilar products have become an area of enormous interest within the drug industry, sparked by an amendment to the Public Health Service Act creating an abbreviated pathway for biologics demonstrated to be "biosimilar" to or interchangeable with a FDA-licensed biological product.

By Marie Daghlian

Alexion's acquisition of Enobia Pharma and a bevy of biosimilars deals highlight the strong interest in drugs to treat rare diseases on one end of the therapeutic spectrum and drugmakers' positioning to take advantage of their expertise to stake a claim in an expected growth market for biosimilars.

At the close of 2011, U.S. biopharma Alexion Pharmaceuticals said it was acquiring privately-held Canadian biotech Enobia Pharma for up to $1.1 billion in cash. Based both in Montreal and Cambridge, Massachusetts, Enobia first garnered attention when it reeled in $50 million in venture capital in August 2009 to develop its therapies to treat patients with ultra-rare and life-threatening genetic metabolic disorders.

Alexion will pay Enobia's shareholders $610 million in cash, and up to $470 million more based on the achievement of various regulatory and sales milestones.

Enobia's lead therapeutic candidate, asfotase alfa, is a human recombinant targeted alkaline phosphatase enzyme-replacement therapy for patients suffering with hypophosphatasia, an ultra-rare, genetic metabolic disease resulting in skeletal deformity, severe muscle weakness, and ultimately death. There are no approved treatment options. Enobia has reported compelling mid-stage clinical data for asfotase alfa in infants and juveniles with the disease.

With the acquisition, Alexion will acquire full global development and commercial rights to asfotase alfa, which has orphan drug designation in the United States and EU and Fast Track status in the United States.

Ramping Up for Biosimilars

Drugmakers announced three partnerships focused on biosimilars in December as these companies seek to share in the potential revenues from copies of biologic drugs losing patent protection in the coming years. Unlike generic drugs, which are copies of small molecule drugs that are chemically synthesized, the molecular complexity of biologics and the fact that they are produced by living cells, means biosimilars are not truly identical to their branded counterparts.

Although no biosimilar products have yet been approved in the United States, they have become an area of enormous interest within the drug industry, sparked by an amendment to the Public Health Service Act creating an abbreviated pathway for biologics that are demonstrated to be "biosimilar" to or interchangeable with a U.S. Food and Drug Administration licensed biological product.

Korean industrial conglomerate Samsung, heavily involved in electronics, has been aggressively expanding its industrial base into life sciences. Its Samsung Biologics division will take the lead role in a new $300 million joint venture with Biogen Idec, which will contribute its expertise in protein engineering and biologics manufacturing. Burrill & Company, publisher of the Burrill Report, served as an advisor to Samsung in the agreement. Samsung Biologics, was established in April by Samsung and Quintiles Transnational.

Samsung will contribute $255 million to own 85 percent of the joint venture while Biogen will contribute $45 million, for a 15 percent stake. The venture will be based in South Korea and will contract with both companies for technical development and manufacturing services. It will not pursue any biosimilars of Biogen's proprietary products. Biogen CEO George Scangos had publically expressed interest in the area in an interview in with Reuters in May 2011, saying that Biogen would be very interested in a partnership that allowed it to remain focused on manufacturing the drugs while the partner would handle clinical trials, commercialization, sales and marketing. He has found the right partner in Samsung Biologics.

"This relationship will allow us to leverage our world-class protein engineering and biologics manufacturing capabilities while maintaining focus on our mission of discovering, developing and delivering innovative therapies," said Scangos, in a comment on the new joint venture.

Amgen, another biotech powerhouse, announced a collaboration with Watson Pharmaceuticals, in a deal that seemed similar to the one struck just two weeks before between Biogen Idec and Samsung. Announced as a collaboration, the $400 million deal is focused on developing and commercializing several biosimilar oncology antibody drugs. Amgen and Watson are splitting the costs of development roughly in half, with Watson providing up to $400 million. Watson will also be eligible to receive royalties and milestone payments on any sales of the drugs.

Amgen will assume primary responsibility for developing, manufacturing, and initially selling the biosimilars while Watson will provide its expertise in the commercialization and marketing of generic medicines. Neither company specified which drugs they planned to develop but the collaboration will not pursue

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biosimilars of any of Amgen's branded products.

Baxter International also jumped into the biosimilars arena through collaboration with Momenta Pharmaceuticals to develop and commercialize follow-on biologics. Baxter will leverage its clinical development, biologic manufacturing, sterile injectable, and commercial expertise, while Momenta will provide its capabilities in high-resolution analytics, characterization, and product and process development.

Baxter will pay Momenta $33 million upfront for up to six follow-on biologic compounds, plus make additional payments of more than $400 million over the next several years for the development of the compounds, contingent upon the achievement of technical, development, and regulatory milestones with respect to all six products.

"As biologics have become an increasingly important part of patient care, the collaboration with Momenta allows us to tap both companies' expertise to expand access to these important therapies," says Ludwig Hantson, president of Baxter's BioScience business. "The collaboration complements Baxter's early-stage pipeline and allows the company to expand its leadership in biologics at a time when the global regulatory pathway for approval is becoming more clear."

Eventually, the companies believe that the biosimilar market could become more like the market for conventional generic drugs, with competition focused around price. Should that happen, Watson's expertise would come into greater play. "Over time, the commercial relationship modifies," says Paul Bisaro, CEO of Watson. "We both have strengths that make sense for each other no matter how the market develops."

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ACQUIRER	COUNTRY	TARGET	COUNTRY	DEAL VALUE (USD M)	PRINCIPAL FOCUS
Alexion Pharmaceuticals	United States	Enobia Pharma	Canada	1,080.0	Rare disease
Fujifilm Holdings	Japan	SonoSite	United States	995.0	POC ultrasound
Prestige Brands Holdings	United States	GSK's 17 OTC brands	United Kingdom	660.0	Over the counter drugs
Valeant Pharmaceuticals	Canada	ISTA Pharmaceuticals	United States	327.0	Ophthalmic
Baxter International	United States	Synovis Life Sciences	United States	325.0	Tissue regeneration
C.R. Bard	United States	Lutonix	United States	325.0	Medical devices
Takeda Pharmaceutical	Japan	Intellikine	United States	310.0	Cancer
Symmetry Medical	United States	Codman & Shurtleff (J&J)	United States	165.0	Surgical instruments
ViroPharma	United States	Meritage Pharma	United States	90.0	Inflammatory
Hikma Pharmaceuticals	United Kingdom	Promopharm	Morroco	63.0	Pharmaceuticals
Akorn	United States	H Lundbeck injectables	Denmark	60.0	Branded generics
Momenta Pharmaceuticals	United States	Virdante Pharmaceuticals	United States	56.0	Anti-inflammatory technology
Cubist Pharmaceuticals	United States	Adolor	United States	38.0	Gastrointestinal
Sinclair Pharma	United Kingdom	Advanced Bio-Technologies	United States	32.8	Dermatology
OPKO Health	United States	FineTech Pharmaceuticals	Israel	27.5	APIs
Guangdong Taiantang Pharma	China	Guangzhou Hongxing Group	China	21.4	Traditional Chinese medicine
Roche	Switzerland	Verum Diagnostica	Germany	17.5	Coagulation diagnostics
Beijing Double-Crane Pharmaceutical	China	Henan Shuanghe Huali Pharma	China	17.4	Transfusion products
Beijing SL Pharmaceutical	China	Forwell Biopharm	China	14.0	Pharmaceuticals
Ventrus Biosciences	United States	Sam Amer & Co		12.5	GI drug rights

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ACQUIRER	COUNTRY	TARGET	COUNTRY	DEAL VALUE (USD M)	PRINCIPAL FOCUS
LA-SER Alpha Group	United Kingdom	Accentia's Analytica subsidiary	United States	10.0	Healthcare economics
Stellar Pharmaceuticals	Canada	Tribute Pharmaceuticals	Canada	9.9	Pharmaceuticals
Gamma-Dynacare Medical Laboratories	Canada	Warnex' medical laboratories	Canada	9.7	Testing services
Apricus Biosciences	United States	Topotarget	Denmark	4.0	Musculoskeletal
Vermillion	United States	Correlogic Systems	United States	0.4	Diagnostic
Bausch + Lomb	United States	Laboratorio Pfortner Cornealent SACIF	Argentina	N/A	Eye care
Agilent Technologies	United States	Halo Genomics	Sweden	N/A	DNA sequencing
Agilent Technologies	United States	BioSystem Development	United States	N/A	Tools/Technology
Vivimed Labs	India	Uquifa	Spain/Mexico	N/A	APIs
The Medicines Company	United States	GeNO	United States	N/A	Nitrous oxide technology
Elsevier	United Kingdom	Ariadne Genomics	United States	N/A	Genomics analysis
Zhejiang Conba Pharma	China	Yunnan Xiongye Pharmaceutical	China	N/A	Pharmaceuticals
AstraZeneca	United Kingdom	Guangdong BeiKang Pharmaceutical	China	N/A	Pharmaceuticals
TaiGen Biotechnology	Taiwan	Warner Chilcott's nemonoxacin	United States	N/A	Antibiotics
Mindray Medical	China	Zhejiang Greenlander Information Technology	China	N/A	Healthcare IT
ICON	Ireland	BeijingWits Medical Consulting	China	N/A	CRO
Pall Corporation	United States	ForteBio	United States	N/A	Protein analysis
NewGen Therapeutics	United States	Kanion Pharmaceutical	China	N/A	Three oncology programs
Mindray Medical	China	Hunan Changsha Tiandiren Biotech	China	N/A	Tools/Technology
Zydus Cadila	India	Biochem	India	N/A	Antibiotics

December 2011 Partnering

COMPANY/LICENSER	COMPANY/LICENSEE	DEAL TYPE	POTENTIAL DEAL VALUE (USD M)	UPFRONT PAYMENT (USD M)	PHASE	PRINCIPAL FOCUS
Pharmacyclics	Janssen Biotech (J&J)	License	975.0	150	Phase 2	Blood cancers
Molecular Partners	Janssen Biotech (J&J)	Collaboration	800.0	N/A	Discovery	Immunotherapeutics
Momenta Pharmaceuticals	Baxter International	Collaboration	452.0	33.0		Biosimilars
MacroGenics	Servier	License option	450.0	20	Phase 1	Cancer
Reata Pharmaceuticals	Abbott Laboratories	License and collaboration	400.0	400	Preclinical	Inflammatory
Amgen	Watson Pharmaceuticals	Collaboration	400.0			Biosimilars
Metamark Genetics	Janssen Biotech (J&J)	License and collaboration	365.0	N/A	Discovery	Cancer
Biogen Idec	Samsung	Joint venture	300.0			Biosimilars
Exelixis	Merck & Co	License	251.0	12	Preclinical	Immunotherapeutics
Scil Technology	Sanofi	License	234.3	N/A	Preclinical	Cartilage regeneration
ImmunoGen	Eli Lilly	Collaboration	220.0	20		Antibody drug conjugates
Karo Bio	Pfizer	Collaboration	217.0			Autoimmune
Hutchison China MediTech	AstraZeneca	License	140.0	20	Phase 1 ready	Cancer
Central Adelaide Local Health Network	BioMarin Pharmaceuticals	License	81.0			Naglazyme galsulfase IP
Marina Biotech	Mirna Therapeutics	License	63.0			microRNA therapeutics
Immunomedics	UCB	License restructure	60.0	30		Autoimmune
China Sky One Medical	Harbin Medical Science University	Joint Venture	36.3			Gene/cell therapy
AstraZeneca	Neoprobe	License	22.5	5		Alzheimer's Diagnostic agent
Shore Therapeutics	Santarus	License	16.0	11	Marketed	Endocrine/metabolic
Pacific Biofuels	Alta Vista Securities	Joint Venture	7.0			Biofuels
Dr. Falk Pharma	Coronado Biosciences	Collaboration	6.5		Phase 2	Autoimmune
AtheroNova	Maxwell Biotech Venture Fund	License	N/A			Cardiovascular
Tibotec (J&J)	Bristol-Myers Squibb	Collaboration	N/A			Combination HCV therapy
Caprotec Bioanalytics	Bayer CropScience	Collaboration	N/A			Agrochemicals
Numerate	Boehringer Ingelheim	Collaboration	N/A			In silico drug design
Beactica	Almay Discovery	Collaboration	N/A			Drug discovery
NanoBio	Merck subsidiary	Collaboration	N/A		Preclinical	RSV vaccine
Ezose Sciences	Merck	Collaboration	N/A			Biomarkers in diabetes
ACORN Research	Clarient (GE Healthcare)	Collaboration	N/A			Cancer diagnostics
Dako Denmark	Genentech (Roche)	Collaboration	N/A			Companion diagnostic
BTG	Ohara Pharmaceutical	License	N/A		Filed, Pre-Approval	Cancer side effects

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December 2011 Partnering

COMPANY/LICENSER	COMPANY/LICENSEE	DEAL TYPE	POTENTIAL DEAL VALUE (USD M)	UPFRONT PAYMENT (USD M)	PHASE	PRINCIPAL FOCUS
GE Healthcare	Microsoft	Joint Venture	N/A			Healthcare IT
TopiVert	RespiVert (J&J)	Partnership	N/A		Discovery	Inflammation, ophthalmic
Evogene	SLC Agricola	Collaboration	N/A			Biofuels
Aventyn	Zephyr Technology	Partnership	N/A			Digital Health
Intarcia Therapeutics	Quintiles	Alliance	N/A		Phase 3	Type-2 diabetes
Compugen	BioLineRx	Collaboration	N/A		Preclinical	Drug development
Simcere	Bristol-Myers Squibb	Partnership	N/A		Preclinical	Cardiovascular
Receptos	Ono Pharmaceutical	Collaboration	N/A		Discovery	GPCR targets
GE Healthcare	M+W Group	Alliance	N/A			Drug manufacture
NeurOp	Bristol-Myers Squibb	Collaboration	N/A		Discovery	Depression, pain
Morphosys	Novozymes	Alliance	N/A			Protein engineering
Gevo	Coca-Cola Company	Agreement	N/A			Renewable plastics
Virent	Coca-Cola Company	Agreement	N/A			Renewable plastics
Avantium	Coca-Cola Company	Agreement	N/A			Renewable plastics
VaxInnate	CheilJedang Corporation	License	N/A		Phase 2	Flu vaccine technology
Agenus	NewVac (ChemRar)	License	N/A		Marketed	Cancer immunotherapeutics
Hanmi Pharmaceuticals	Kinex Pharmaceuticals	License	N/A			Oral drug absorption
ChemDiv	Janssen Pharmaceutica	Collaboration	N/A			Drug discovery
Roche	Hua Medicine	License	N/A			Diabetes
ProteoTech	GSK (China) R&D Company	Agreement	N/A			Parkinson's Disease
Rosetta Green	DuPont's Pioneer Hi-Bred	Agreement	N/A			Agbiotech
Prosidion (Astellas Pharma)	AstraZeneca	License option	N/A		Phase 2	Diabetes
Ligand Pharmaceuticals	Eli Lilly	License	N/A	1		Drug delivery technology
QRxPharma	Actavis	Partnership	N/A	6	Marketed	Generic pain drug
USCN Life Science	BioTime	License option	N/A			Cell lines

Company/Academic/Non-Profit Partnerships in December 2011

COMPANY	COUNTRY	ACADEMIA/NON-PROFIT	COUNTRY	PRINCIPAL FOCUS
GE Healthcare	United States	University of California, San Francisco	United States	Cord blood
AstraZeneca	United Kingdom	UK Medical Research Council	United Kingdom	Cancer
Liquidia Technologies	United States	PATH	Global	Pneumococcal vaccine
Onyx Pharmaceuticals	United States	Multiple Myeloma Research Foundation	United States	Personalized medicine
Lineagen	United States	National Multiple Sclerosis Society	United States	Biomarkers
Bristol-Myers Squibb	United States	Gladstone Institutes	United States	Alzheimer's disease
Biogen Idec, UCB Group	US/Belgium	ALS Therapy Development Institute	United States	Neurology

DECEMBER PIPELINE

December 2011 Clinical Trial Results

DATE	COMPANY	TICKER	DRUG	INDICATION	RESULT	NOTES
PHASE 3						
12/28/11	Bristol-Myers Squibb	BMY	brivanib	hepatocellular carcinoma	Failed	The late-stage clinical trial in patients with hepatocellular carcinoma who failed or are intolerant to sorafenib did not meet the primary endpoint of improving overall survival versus placebo.
12/22/11	Noven Pharmaceuticals	NOVN	LDMP	vasomotor symptoms associated with menopause	Positive	This late-stage study was a 24-week, double-blind, randomized, placebo-controlled trial of LDMP as a treatment of vasomotor symptoms associated with menopause. The primary objective of the study was to assess the safety and efficacy of LDMP and the primary outcome measures were mean changes in frequency and severity of moderate-to-severe hot flashes from baseline to the fourth and twelfth weeks of the study, as well as maintenance of therapeutic effect at week 24. All primary outcome measures in the study were achieved with statistical significance. The most frequent adverse events observed in the study were nasopharyngitis, upper respiratory tract infection, headache, nausea and fatigue.
12/20/11	AstraZeneca, Targacept	AZN, TRGT	TC-5214	major depressive disorder	Failed	The late-stage study looked at the efficacy and tolerability of TC-5214 as an adjunct therapy to an antidepressant in patients with major depressive disorder, who do not respond adequately to initial antidepressant treatment. Results showed that study did not meet its primary endpoint, change in the Montgomery-Asberg Depression Rating Scale total score after 8 weeks of adjunct treatment with TC-5214 as compared to placebo.
12/19/11	Trius Therapeutics	TSRX	tedizolid	acute bacterial skin and skin structure infections	Positive	Tedizolid met the primary objective of non-inferiority for the efficacy outcome of early clinical response versus the comparator linezolid in patients with acute bacterial skin and skin structure infections. Tedizolid also met all secondary efficacy outcomes in this first of two pivotal trials.
12/16/11	Valeant Pharmaceuticals	VRX	efinaconazole	onychomycosis	Positive	Results from 2 international phase 3 studies of efinaconazole for the treatment of mild to moderate onychomycosis of the toenail, demonstrated that the drug was statistically superior to placebo for all primary and secondary endpoints. It was further found to be generally safe and well tolerated.
12/15/11	BioSante Pharmaceuticals	BPAX	LibiGel	female sexual dysfunction	Failed	Results from two late-stage trials with LibiGel showed that the they did not meet the co-primary or secondary endpoints. Although there were no statistical differences in the endpoints, all results were in the appropriate directions. The trials demonstrated that LibiGel was generally well tolerated with a safety profile that appears to be comparable to placebo.
12/9/11	Gilead Sciences	GILD	elvitegravir	HIV	Positive	Top-line results from the late-stage clinical trial demonstrated that elvitegravir was non-inferior to the integrase inhibitor raltegravir after 96 weeks of therapy in treatment-experienced patients.

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December 2011 Clinical Trial Results

DATE	COMPANY	TICKER	DRUG	INDICATION	RESULT	NOTES
12/8/11	AstraZeneca, Bristol-Myers Squibb	AZN, BMS	dapagliflozin	type 2 diabetes	Positive	Results from a late-stage clinical study showed that reductions in HbA1c seen at 24 weeks with dapagliflozin added to existing glimepiride therapy, compared to placebo added to glimepiride, were maintained at 48 weeks in adults with type 2 diabetes.
12/7/11	Curemark	private	CM-AT	autism	Positive	The phase 3 double blind, randomized, placebo-controlled multicenter clinical trial of CM-AT for autism met its primary and secondary endpoints. The trial compared CM-AT to placebo in children with autism aged 3 to 8. Top-line results demonstrate a statistically significant effect of CM-AT over placebo on both core and non-core symptoms of autism.
12/7/11	Sanofi, Zealand Pharma	SASY, ZEAL	lixisenatide	type 2 diabetes	Positive	In the late-stage trial, lixisenatide in combination with insulin glargine achieved the primary study endpoint of significantly reducing HbA1c with a significant improvement in 2-hour post-prandial glucose levels compared to insulin treatment alone in patients with type 2 diabetes.
12/5/11	Gilead Sciences	GILD	cobicistat	HIV	Positive	The study met its 48-week primary objective of non-inferiority to ritonavir. The analysis indicated that after 48 weeks of treatment, 85 percent of patients taking a regimen of cobicistat-boosted atazanavir plus Truvada achieved HIV RNA of less than 50 copies/mL, compared to 87 percent of patients taking ritonavir-boosted atazanavir plus Truvada. Discontinuation rates due to adverse events were 7.3 percent and 7.2 percent in the cobicistat and ritonavir arms of the study, respectively.
PHASE 2						
12/28/11	Repros Therapeutics	RPRX	Androxal	secondary hypogonadal men with moderate to severe dysfunction	Positive	At baseline, median morning testosterone levels for the 4 randomized groups were; placebo (220 ng/dl), 12.5 mg Androxal (202 ng/dl), 25 mg Androxal (202 ng/dl) and Testim (207 ng/dl). There was no statistical difference between the groups in testosterone at baseline. At the end of the 3 month dosing period median morning testosterone levels were placebo (196 ng/dl), 12.5 mg Androxal (432 ng/dl), 25 mg Androxal (416 ng/dl) and Testim (393 ng/dl). A comparison of final median morning testosterone in all 3 of the active arms to placebo showed them to be highly statistically different. There was no statistical difference observed between the active arms.
12/22/11	Chelsea Therapeutics	CHTP	droxidopa	fibromyalgia	Positive	Topline results of the phase 2 study indicate a dose response with the highest dose of droxidopa, 600 mg, 3 times a day, demonstrating a 6.2-point average improvement from a baseline score of 23.00 on the Short Form McGill Questionnaire at the end of the 9-week treatment period, the primary endpoint. This reflects a 3.2 unit improvement over placebo on the Short Form McGill Questionnaire total pain score.
12/16/11	Sygnis Pharma	LIOK	AX200	stroke	Failed	AX200 failed to meet the primary goal of the mid-stage study, after it showed no difference versus a placebo. The study recorded no clinical improvement and did not show any statistically significant difference.

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December 2011 Clinical Trial Results

DATE	COMPANY	TICKER	DRUG	INDICATION	RESULT	NOTES
12/13/11	Anacor Pharmaceuticals	ANAC	AN2728 and AN2898	atopic dermatitis	Positive	The phase 2a trial of AN2728 and AN2898 in mild-to-moderate atopic dermatitis met the primary endpoint after 28 days of twice-daily treatment. 64 percent of AN2728-treated lesions showed improvement in Atopic Dermatitis Severity Index score versus 24 percent for vehicle and 71 percent of AN2898-treated lesions showed improvement in Atopic Dermatitis Severity Index score versus 14 percent for vehicle. There were no severe adverse events reported that were considered related to either study drug.
12/13/11	Novartis	NVS	Exjade	non-transfusion-dependent thalassemia and iron overload	Positive	The mid-stage trial investigated whether patients with non-transfusion-dependent thalassemia and iron overload can benefit from iron chelation therapy as determined by liver iron concentration. The study met its primary endpoint, showing that Exjade at a 10 mg/kg/day starting dose significantly reduced liver iron concentration from baseline by 3.8 mg of iron per gram of liver dry weight compared to an increase of 0.38 mg in patients on placebo. The study also determined that a 10 mg/kg/day dose was superior to a 5 mg/kg/day dose.
12/13/11	Aestus Therapeutics	private	ATx08-001	post-herpetic neuralgia	Positive	The mid-stage study of 2 doses of ATx08-001 over 8 days of treatment showed a statistically significant reduction in the Mean Pain Intensity Score after 1 week of treatment of post-herpetic neuralgia. The analgesic effect compared favorably with published results for the standard of care medication.
12/12/11	Celator Pharmaceuticals	private	CPX-351	acute myeloid leukaemia	Positive	The findings of the randomized phase 2b study showed a statistically significant benefit in overall survival favoring CPX-351 in acute myeloid leukemia patients who had an unfavorable risk profile as assessed by the European Prognostic Index. In addition, positive trends were seen in overall patient survival, as well as complete remission rates, in patients treated with CPX-351 compared to salvage regimens.
12/9/11	Furieux Pharmaceuticals	FURX	PPD-10558	statin-associated myalgia	Failed	Top-line results from the mid-stage trial with PPD-10558 in patients with statin-associated myalgia, did not meet the primary efficacy endpoint. The study enrolled patients with high cholesterol and a prior history of statin-associated myalgia, and evaluated recurrence rates for statin-associated myalgia over a 12-week treatment period across three different treatment regimens: placebo; PPD-10558; and atorvastatin. Patients did not report any significant differences in muscle symptoms, nor did they drop out due to statin-associated myalgia in significantly different percentages, among the 3 regimens. As expected, however, PPD-10558, did significantly lower LDL-cholesterol compared with placebo, and the compound also had a favorable safety profile.
12/8/11	Shire	SHPGY	Vyvanse	depression	Positive	The mid-stage, double-blind, placebo-controlled study consisted of a 2-week screening period, a 9-week double-blind period and a 2-week single-blind period. During the study, subjects, who had mild or less than mild depressive symptoms, continued taking established maintenance doses of antidepressant monotherapy. On the primary efficacy measure, Global Executive Composite T-score of the BRIEF-A self-report, Vyvanse was superior to placebo. On a secondary end point, mean change in Montgomery-Åsberg Depression Rating Scale total score from baseline to end point, Vyvanse was superior to placebo.

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December 2011 Clinical Trial Results

DATE	COMPANY	TICKER	DRUG	INDICATION	RESULT	NOTES
12/8/11	Synta Pharmaceuticals	SNTA	ganetespib	breast cancer	Positive	A total of 22 patients were enrolled in the mid-stage trial. Of the 13 HER2-positive patients, all of whom were refractory to treatment with trastuzumab, 2/13 (15 percent) showed a partial response, and an additional 6/13 (46 percent) showed stable disease as their best response.
12/8/11	Metabolex	private	arhalofenate in combination with febuxostat	gout	Positive	Treatment with febuxostat alone resulted in response rates of 55 and 9 percent, for the serum uric acid targets of less than or equal to 5 and 4 mg/dL, respectively. After 2 weeks of treatment with 400 mg of arhalofenate, these response rates were increased to 100 and 36 percent, respectively. After treatment with 600 mg of arhalofenate, the response rates were 100 and 82 percent, respectively. Relative to treatment with febuxostat alone, the combination with arhalofenate (600 mg) increased the response rate to the 4 mg/dL target by 73 percent. The combination of arhalofenate and febuxosat was well tolerated. There were no serious or severe adverse events and no discontinuations due to adverse events.
12/7/11	Pearl Therapeutics	private	PT001	chronic obstructive pulmonary disease	Positive	All doses of PT001 tested produced statistically significant improvements in lung function compared to placebo. Further, doses of PT001 were identified that were non-inferior to Atrovent. PT001 was well tolerated and no safety concerns were identified.
12/6/11	Peregrine Pharmaceuticals	PPHM	bavituximab	non-small cell lung cancer	Positive	Preliminary results from a randomized phase 2 trial showed a 50 percent improvement in overall tumor response rates in non-small cell lung cancer patients. Patients treated with bavituximab plus carboplatin and paclitaxel currently demonstrate overall tumor response rates of 39 percent, versus 26 percent in patients treated with carboplatin and paclitaxel alone. The preliminary analysis using RECIST guidelines included all 86 front-line, stage IV non-small cell lung cancer patients randomized in the trial.
12/6/11	ViroPharma, Halozyme Therapeutics	VPHM, HALO	Cinryze and recombinant human hyaluronidase enzyme	hereditary angioedema	Positive	Positive top line data was reported from the mid-stage, open-label, multiple dose trial of Cinryze in combination with recombinant human hyaluronidase enzyme in subjects with hereditary angioedema. In the study, the addition of recombinant human hyaluronidase enzyme led to higher maximum levels and greater systemic exposure of functional and antigenic C1 inhibitor for both Cinryze doses evaluated (1000 and 2000 units) as compared to subcutaneous administration of Cinryze alone. The most commonly reported adverse events are mild local injection site reactions such as erythema and pain.
12/5/11	XenoPort	XNPT	XP21279	Parkinson's disease	Failed	The phase 2 trial was a randomized, crossover clinical trial that compared optimized treatment with either Sinemet or XP21279 co-formulated with carbidopa (279/CD) in advanced Parkinson's disease patients with motor fluctuations. 279/CD dosed 3 times a day reduced mean daily "off time" by 46 percent compared to baseline when the patients were taking their pre-trial Sinemet dosing regimen. However, in the primary analysis of the trial, the improvement with 279/CD was not statistically better than the improvement seen with optimized Sinemet dosed 4 or 5 times a day during the double-blind phase of the trial.

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December 2011 Clinical Trial Results

DATE	COMPANY	TICKER	DRUG	INDICATION	RESULT	NOTES
PHASE 1						
12/19/11	Selexys Pharmaceuticals	private	SelG1	sickle cell disease	Positive	SelG1 appeared to be safe and well tolerated, with no serious adverse events reported in any subjects. There was no observed immune response to SelG1 during the study. Analysis of SelG1 pharmacokinetic and pharmacodynamic data demonstrated a serum halflife of approximately two weeks and complete blockade of P-selectin activity in all patients for at least 1 month following a single intravenous dose.
12/13/11	Nektar Therapeutics	NKTR	NKTR-181	chronic pain	Positive	In the multiple dose phase 1 study, NKTR-181 exhibited a sustained analgesic response. Pupillometry data from the study demonstrated that NKTR-181's centrally-mediated opioid effects are dose-dependent and that the molecule enters the brain slowly, which could reduce the euphoria and other CNS side-effects that are associated with current opioids. NKTR-181 was also well-tolerated over the entire eight-day dosing period in the study at all doses evaluated.
12/12/11	Genmab	GEN	daratumumab	multiple myeloma	Positive	In the early-stage study, 49 percent, 55 percent, and 61 percent reductions in the serum M-component were observed in the 3 patients treated at the highest dose level examined so far (4 mg/kg of daratumumab). The serum M-component is a direct marker for tumor activity and the observed level of reduction indicates that daratumumab was clinically active in the multiple myeloma patients.
12/12/11	Noxxon Pharma	private	NOX-A12	hematological oncology	Positive	In phase 1 studies with healthy volunteers single doses of NOX-A12 up to 10.8 mg/kg and daily doses up to 2 mg/kg for five days were found to be safe and well tolerated and resulted in dose-dependent mobilization of white blood cells and CD34+ cells as predicted by preclinical studies.
12/12/11	Isis Pharmaceuticals	ISIS	ISIS-FXIRx	thrombosis	Positive	The results from the early-stage study demonstrated that treatment with ISIS-FXIRx produced dose-dependent statistically significant reductions of up to 78 percent in Factor XI activity. ISIS-FXIRx was safe and well tolerated with no increase in bleeding.
12/12/11	Immunomedics	IMMU	veltuzumab	immune thrombocytopenia	Positive	In the early-stage trial, 2 doses of veltuzumab produced an overall objective response rate of 67 percent, including an 18 percent durable complete response rate, in 39 evaluable patients with immune thrombocytopenia. Responses occurred across all doses tested, including the lowest dose at 80 mg, regardless of the route of administration, history of splenectomy or prior use of rituximab.
12/7/11	InViragen	private	DENvax	Dengue fever	Positive	In the phase 1 randomized, placebo-controlled study of 96 healthy adults, DENVax was safe and well tolerated and induced significant neutralizing antibody responses to all four dengue virus subtypes. The most frequent adverse events reported were transient local injection site reactions.

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December 2011 Clinical Trial Results

DATE	COMPANY	TICKER	DRUG	INDICATION	RESULT	NOTES
12/6/11	Isis Pharmaceuticals	ISIS	APOCIIIRx	cardiovascular disease	Positive	The results demonstrated that ISIS-APOCIIIRx treatment produced rapid, dose-dependent reductions of up to 78 percent in apolipoprotein C-III protein and up to 44 percent in blood triglyceride levels. The drug also demonstrated a good safety profile and was well tolerated.
12/5/11	Achillion	ACHN	ACH-2928	hepatitis C	Positive	Proof-of-concept data from the phase 1b trial demonstrated that patients treated with ACH-2928 achieved a mean maximum 3.68 log10 reduction in HCV RNA after three-day monotherapy of 60 mg once daily. The compound also demonstrated good safety and tolerability both in healthy volunteers and in patients with chronic hepatitis C.

December 2011 Patents

COMPANY	TICKER	COMPANY DESCRIPTION	GRANTING AGENCY	PATENT NUMBER	PATENT COVERS
MEDA Pharmaceuticals	MEDAA: Stockholm	A specialty pharmaceutical company	U.S. Patent and Trademark Office	N/A	Covers Astepro nasal spray for the treatment of runny nose, sneezing, and itchy nose.
Senior Scientific	Private	Focused on the rapidly emerging field of nanomedicine with an emphasis on the early detection and localization of cancer and other human diseases	U.S. Patent and Trademark Office	U.S. Patent No. 8,060,179	Covers technology that will localize, and determine the amount, of plaque and neurofibrillary tangles in the brain, the principal characteristics of Alzheimer's disease
Aradigm Corporation	OTCBB:ARDM	Specialty pharmaceutical company focused on the development and commercialization of drugs delivered by inhalation for the treatment of severe respiratory diseases by pulmonologists	U.S. Patent and Trademark Office	U.S. Patent No. 8,071,127	Covers formulations of inhaled liposomal and free ciprofloxacin including its lead preparation, Pulmaquin
ZIOPHARM Oncology	NASDAQ: ZIOP	Biopharmaceutical company engaged in the development and commercialization of a diverse portfolio of cancer therapeutics	European Patent Office for Patent	Notice of Allowance No. 05 821 125.1	Covers the pharmaceutical compositions of a novel DNA cross-linker including palifosfamide (Zymafos or ZIO-201) and its use in treating cancer
Ampio Pharmaceuticals	NASDAQ: AMPE	Develops innovative proprietary drugs for metabolic disease, eye disease, kidney disease, inflammation, CNS disease, and male sexual dysfunction	European Patent Office for Patent	N/A	Covers broad claims directed to compositions containing DA-DKP, a cyclic dipeptide diketopiperazine which is the active ingredient of Ampion. The patent includes claims for the compositions that target clinical treatments for inflammation and inflammatory diseases and conditions, such as arthritis and allergies.

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December 2011 Patents

COMPANY	TICKER	COMPANY DESCRIPTION	GRANTING AGENCY	PATENT NUMBER	PATENT COVERS
Suven Life Sciences	Private	In the business of design, manufacture and supply of Bulk Actives, Drug Intermediates and Fine Chemicals, catering to the needs of global Life Science Industry	Canadian IP Office and Australian Patent Office	Australia Patent No. 2,007,343,062 and 2,008,246,947; Canada Patent No. 2,490,254 and 2,552,106	Covers a class of selective 5-HT compounds discovered by Suven being developed as therapeutic agents useful in the treatment of cognitive impairment associated with neurodegenerative disorders like Alzheimer's disease, attention deficient hyperactivity disorder (ADHD), Huntington's disease, Parkinson and Schizophrenia.
Cenestra Health	Private	Biopharmaceutical aiming to formulate, develop and market "best-in-class" proprietary natural products with applications in the OTC, medical food and pharmaceutical markets.	U.S. Patent and Trademark Office	U.S. patent No. 8,071,646	Protects and provides Cenestra with exclusivity for highly pure formulations of proprietary bioactive lipids
Apricus Biosciences	Nasdaq:APRI	A biopharmaceutical company that has leveraged the flexibility of its clinically-validated NexACT® drug delivery technology to enable multi-route administration of new and improved compounds across numerous therapeutic classes.	Japanese Patent Office	N/A	Covers compositions and methods related to crystalline salts contained in the Company's NexACT® permeation enhancer technology used in topical drug delivery.
Fate Therapeutics	Private	Biotechnology company developing novel stem cell modulators (SCMs), biologic or small molecule compounds that guide cell fate, to treat patients with very few therapeutic options	U.S. Patent and Trademark Office	U.S. Patent No. 8,071,369	Covers compositions that are broadly utilized throughout the field of induced pluripotent stem cell (iPSC) technology
Omni Bio Pharmaceutical	OTC OMBP.OB	A clinical-stage biopharmaceutical company that has licensed potential new indications for an existing FDA approved drug Alpha1 antitrypsin	U.S. Patent and Trademark Office	U.S. Patent No. 8,071,551	Covers a method for treating diabetes in subjects by administering an effective amount of a composition comprising Alpha-1 antitrypsin (AAT) or a derivative of AAT
Pharming Group	NYSE Euronext: PHARM	Developing innovative products for the treatment of unmet medical needs	U.S. Patent and Trademark Office	U.S. Patent 8,071,532	Covers a method of preventing, reducing or treating an ischemia and/or reperfusion injury by administering recombinant C1 inhibitor
Avaxia Biologics	Private	Development-stage company developing oral antibody therapeutics that act locally within the gastrointestinal tract	U.S. Patent and Trademark Office	U.S. Patent 8,071,101	Broad coverage for treating celiac disease using orally administered antibodies produced by the Company's proprietary platform technology
Aegis Therapeutics	Private	Drug delivery technology company commercializing its patented drug delivery and drug formulation technologies through product-specific licenses	U.S. Patent and Trademark Office	U.S. Patent No. 8,076,290	Protection for stabilized formulations of parathyroid hormone (PTH) and PTH peptide analogs such as PTH 1-34 suitable for all routes of administration, including the non-invasive metered nasal spray delivery route or injection
Kythera Biopharmaceuticals	Private	Clinical-stage biopharmaceutical company focused on the discovery, development and commercialization of novel prescription products for the aesthetic market	U.S. Patent and Trademark Office	Notice of Allowance	Covers ATX-101, a first-in-class, injectable drug under clinical investigation for the reduction of submental (under the chin) fat

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December 2011 Patents

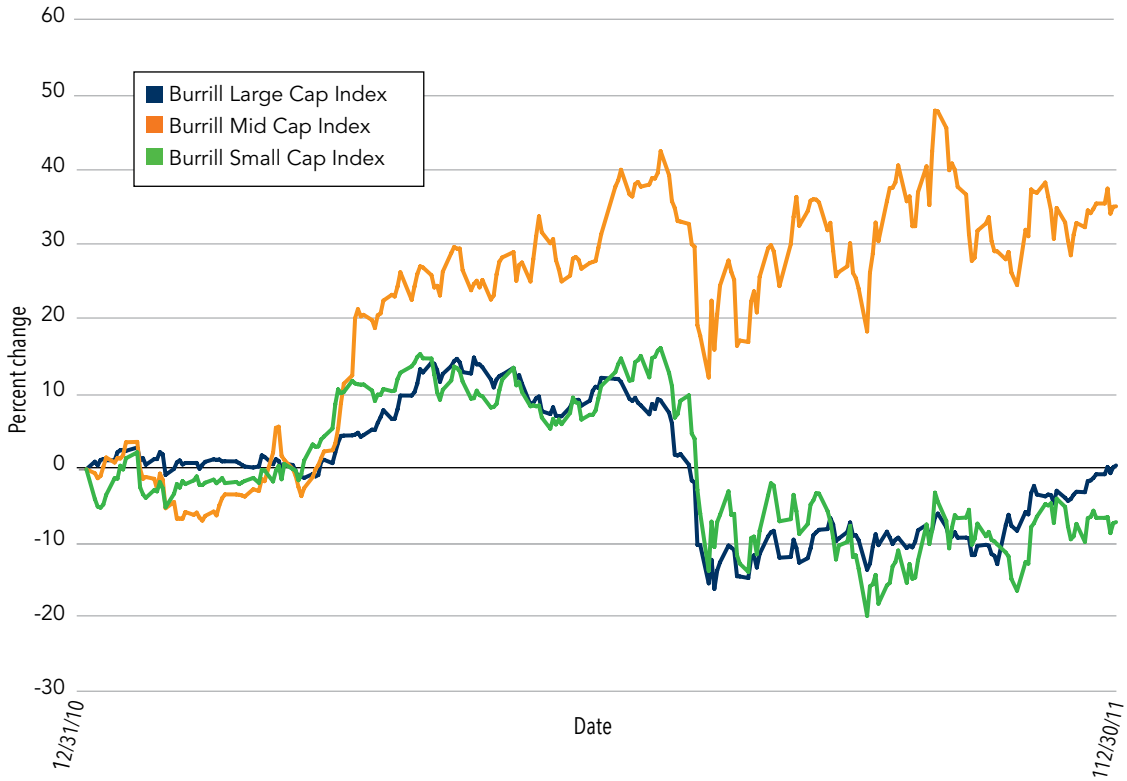
COMPANY	TICKER	COMPANY DESCRIPTION	GRANTING AGENCY	PATENT NUMBER	PATENT COVERS
Coronado Biosciences	OTCBB:CNDO	Biopharmaceutical company focused on the development of novel immunotherapy agents for the treatment of autoimmune diseases and cancer	Australian Patent Office	Australian Serial No. 2,006,224,313	Covers methods of activating NK cells as well as to activated NK cell compositions and their use in methods for treating cancer
Immunomedics	NASDAQ:IMMU	Biopharmaceutical company primarily focused on the development of monoclonal antibody-based products for the targeted treatment of cancer, autoimmune and other serious diseases	U.S. Patent and Trademark Office	U.S. Patent No. 8,076,140	Covers improved cell lines of greater longevity, allowing increased production of recombinant proteins such as antibodies, antibody fragments, multispecific and multivalent antibodies, antibody fusion proteins.
GeNO	Private	Advanced development-stage technology company that is developing innovative nitric oxide generation and delivery platforms to enable the true potential of inhaled nitric oxide to be realized	U.S. Patent and Trademark Office	U.S. Patent No. 8,066,904 and 8,057,742	Patents cover conversion of nitrogen dioxide to nitric oxide using the GeNO cartridge technology to scavenge nitrogen dioxide that may have been formed and controlled release matrix made up of a nitric oxide-releasing agent, nitric oxide precursors, and a polymer binder into a unitary structure for delivering nitric oxide to a patient
Chelsea Therapeutics	NASDAQ:CHTP	Biopharmaceutical development company that acquires and develops products for the treatment of a variety of human diseases	U.S. Patent and Trademark Office	Notice of Allowance	Covers certain oral, controlled release formulations of Northera™ (droxidopa) that include an extended release component and an immediate release component
Ablynx	Euronext: ABLX	Biopharmaceutical company engaged in the discovery and development of Nanobodies, a novel class of therapeutic proteins based on single-domain antibody fragments, for a range of serious and life-threatening human diseases.	European Patent Office for Patent	European Patent No. 1,888,641	Covers the half-life extending Nanobody, targeting human serum albumin, that is used in a number of the Nanobody products that Ablynx currently has in clinical and pre-clinical development
Pharmacyclics	NASDAQ: PCYC	Biopharmaceutical company focused on developing and commercializing innovative small molecule drugs for the treatment of cancer and immune mediated diseases	U.S. Patent and Trademark Office	U.S. patent 8,088,781	Covers an inhibited tyrosine kinase comprising an irreversible BTK inhibitor having a covalent bond to a cysteine residue of a Bruton's tyrosine kinase
Marshall Edwards	NASDAQ: MSHL	Oncology company focused on the clinical development of novel therapeutics targeting cancer metabolism	U.S. Patent and Trademark Office	U.S. Patent No. 8,080,675	Covers a number of the Company's isoflavone-based compounds, including lead oncology drug candidates ME-143 and ME-344, and their pharmaceutical compositions
Ampio Pharmaceuticals	NASDAQ: AMPE	Develops innovative proprietary drugs for metabolic disease, eye disease, kidney disease, inflammation, CNS disease, and male sexual dysfunction	Canadian IP Office	N/A	Protects compositions contain either DA-DKP, a cyclic dipeptide diketopiperazine, which is the active ingredient of Ampion, but also extend to many other diketopiperizines

Upcoming PDUFA Dates

COMPANY	TICKER	PROPRIETARY NAME	ESTABLISHED NAME	INDICATION	PDUFA DATE
Takeda	Tokyo Stock Exchange: 4502.T	Alogliptin and Alogliptin/ Pioglitazone	DPP-41 and thiazolidinedione	Type 2 diabetes	1/25/2012
Amylin; Eli Lilly; Alkermes	Nasdaq:AMLN NYSE:LLY Nasdaq:ALKS	Bydureon	exenatide extended-release	Type 2 diabetes	1/28/2012
AstraZeneca; Bristol-Meyers Squibb	NYSE: AZN NYSE: BMY	N/A	dapagliflozin	Type 2 diabetes	1/28/2012
Alexza	Nasdaq: ALXA	Adasuve	Stacatto Loxapine	Schizophrenia/ Bipolar disorder	2/4/2012
Teva Pharmaceuticals; BioSante Pharmaceuticals	Nasdaq: TEVA Nasdaq: BPAX	Bio-T-Gel	testosterone	Male low testosterone levels	2/14/2012
Corcept Therapeutics	Nasdaq: CORT	Corlux	mifepristone	Cushings Syndrome	2/17/2012
Discovery Laboratories	Nasdaq: DSCO	Surfaxin	lucinactant	Respiratory Distress Syndrome	3/6/2012
Roche; Curis	Nasdaq: RHHBY Nasdaq: CRIS	Vismodegib	GDC-0449, RG3616	Advanced basal cell carcinoma	3/8/2012
MAP Pharmaceuticals; Allergan	Nasdaq: MAPP NYSE: AGN	Levadex	dihydroergotamine	Migraine	3/26/2012
Affymax	Nasdaq:AFFY	Hematide	peginesatide	Anemia associated with chronic kidney disease	3/27/2012
Bristol-Meyers Squibb; Pfizer	NYSE: BMY NYSE: PFE	Eliquis	apixiban	Stroke and systemic embolism in patients with atrial fibrillation	3/28/2012
Vivus	Nasdaq:VVUS	Qnexa	(phentermine/ topiramate)	Obesity	4/17/2012
Vertex	Nasdaq: VRTX	Kalydeco	ivacaftor	Cystic Fibrosis	4/19/2012
Amgen	Nasdaq: AMGN	Xgeva	denosumab	Prostate Cancer/Bone Metastases	4/26/2012
Protalix BioTherapeutics; Pfizer	AMEX: PLX NYSE: PFE	Uplyso	taliglucerase alfa	Gaucher disease	5/1/2012
Merck; Ariad	NYSE: MRK Nasdaq: ARIA	Ridaforolimus	mTOR inhibitor	Sarcoma	6/5/2012
QRxPharma	ASX: QRX and OTCQX: QRXPY	MoxDuo IR	morphine and oxycodone	Acute pain	6/25/2012
Amarin	Nasdaq: AMRN	AMR101	AMR101	Hypertriglyceridemia	7/26/2012
Onyx Pharmaceuticals	Nasdaq: ONYXX	N/A	carfilzomib	Multiple Myeloma	7/27/2012

INDICES

Burrill Small-, Medium-, and Large-Cap Indices, December 2011



PERFORMANCE OF INDEX COMPONENTS

LARGE CAP
Percent change December 2011

Index	3.1%
ELN	27.3%
VRTX	13.0%
AMGN	10.7%
ILMN	9.1%
REGN	-7.9%
BIIB	-5.5%
VRUS	-0.7%
LIFE	-0.7%

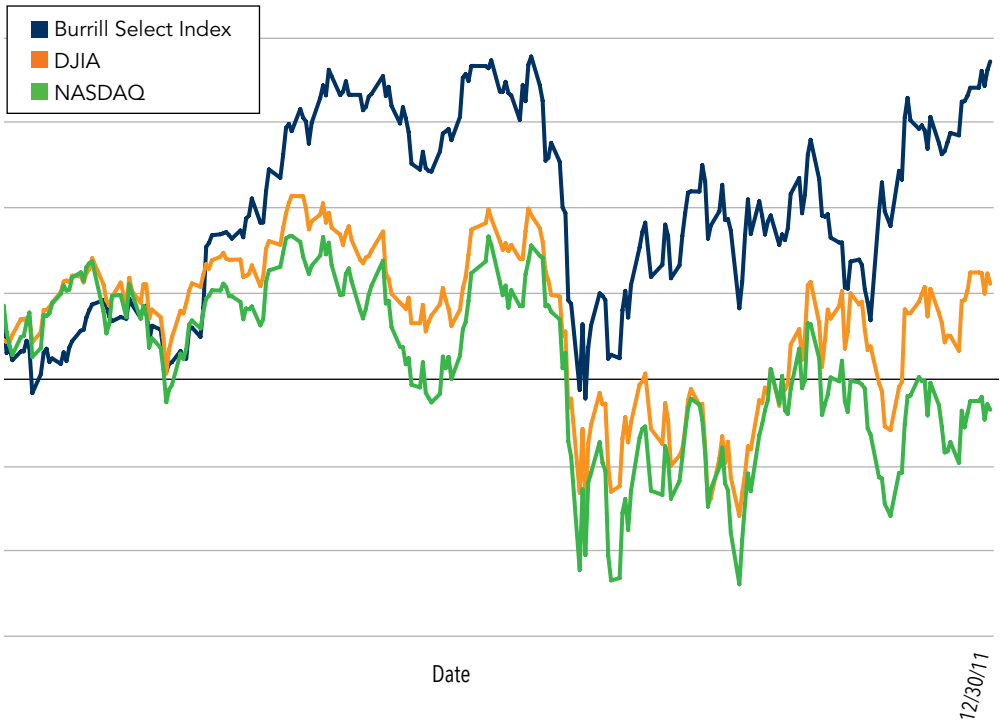
MID-CAP
Percent change December 2011

Index	-1.7%
NKTR	13.7%
SQNM	7.5%
MNTA	7.0%
RIGL	4.9%
TRGT	-24.3%
DNDN	-13.2%
IMGN	-6.1%
QCOR	-4.7%

SMALL-CAP
Percent change December 2011

Index	0.7%
ISTA	88.0%
AFFY	28.8%
CRIS	27.2%
RPTP	15.9%
HZNP	-20.8%
CYTX	-18.8%
GERN	-15.9%
AIS	-15.1%

Burrill Biotech Select Index, December 2011

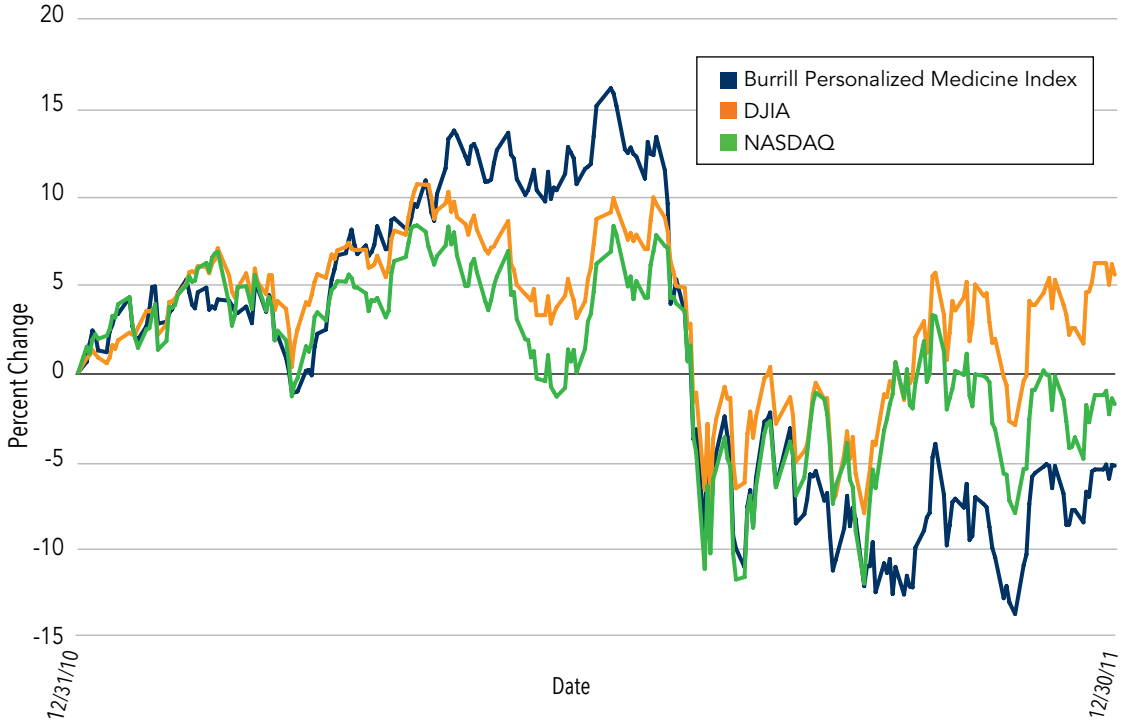


BURRILL BIOTECH SELECT INDEX

Percent change December 2011

Index	1.8%
VRTX	13.0%
AMGN	10.7%
ILMN	9.1%
SWX:ROG	8.1%
GERN	-15.9%
DNDN	-13.2%
REGN	-7.9%
QGEN	-7.3%

Burrill Personalized Medicine Index, December 2011

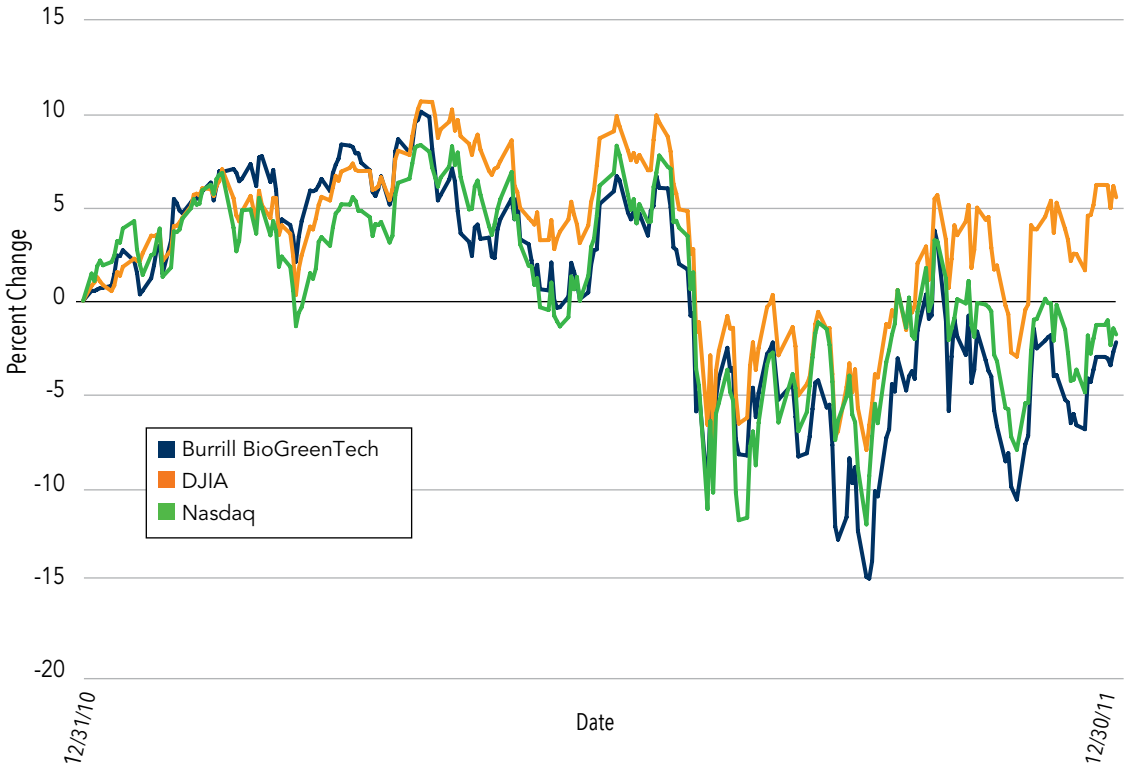


BURRILL PERSONALIZED MEDICINE INDEX

Percent change December 2011

Index	1.2%
ILMN	9.1%
SWX:ROG	8.1%
DGX	0.5%
ECYT	-64.0%
GNOM	-19.5%
QGEN	-7.3%
GHDX	-7.1%

Burrill BioGreenTech Index, December 2011

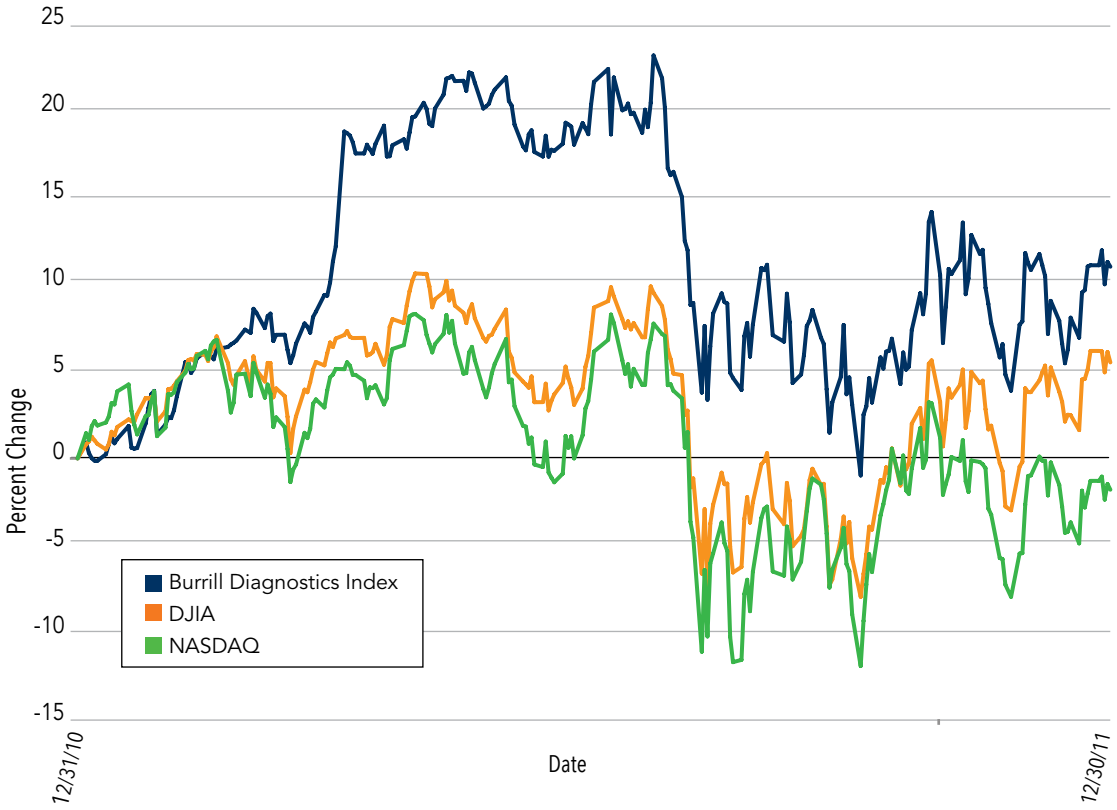


BURRILL BIOGREENTECH INDEX

Percent change December 2011

Index	-1.3%
AEB	42.9%
NZMB	7.9%
AMRS	5.4%
SWX:SYNN	3.3%
KIOR	-39.4%
GU	-32.8%
VRNM	-16.5%
CERP	-11.9%

Burrill Diagnostics Index, December 2011



BURRILL DIAGNOSTICS INDEX

Percent change December 2011

Index	-0.7%
BGMD	13.7%
SQNM	7.5%
BIO	3.0%
IDXX	2.9%
QDEL	-13.8%
GNMK	-8.4%
QGEN	-7.3%
GHDX	-7.1%