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**BIOPARTNERING REPORT 2009:
STRATEGIES AND PARADIGMS
OF THE DEAL**

**EXECUTIVE
SUMMARY**

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Haptogen Acquisition Brings Shark Therapies to Wyeth
PerkinElmer to Acquire ViaCell But Will Divest Cell Therapies
Adnexus Nixes IPO Route, Opts for \$430M BMS Exit
Virxsys Acquires Intronn, Gets RNA Payloads for Gene Therapy
Evotec Plans Acquisition of Renovis in \$152M Stock Deal
Nabi's 'Turnaround' Continues, Sells Biologics Unit for \$185M
Entelos Adds Disease Models with the Acquisition of Iconix
Upstream Completes Acquisition of Firm Focused on Parasites
Cash-Poor IsoTis Acquired by Integra in \$51M Deal
Aegera Acquires LymphoSign, Completes Series C
Neuren Acquires Hamilton, Gets Phase II CNS Drug
Cell Therapeutics Gets Phase II Cancer Drug in SMi Acquisition
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Partnering Tables Turn as Big Pharma Pitches Biotech

Abbott Laboratories

Alcon Inc.

Amgen Inc.

AstraZeneca plc

Bayer Healthcare Pharmaceutical

Biogen Idec Inc.

Boehringer Ingelheim GmbH

Bristol-Myers Squibb Co.

Eisai Inc.

Eli Lilly and Co.

EMD Serono Inc.

Genentech Inc.

Genzyme Corp.

GlaxoSmithKline plc

H. Lundbeck A/S

Jazz Pharmaceuticals Inc.

Johnson & Johnson

Merck & Co. Inc.

Novartis AG

Novo Nordisk A/S

Nycomed A/S

Organon International

P&G Pharmaceutical Inc.

Pfizer Inc.

Roche

Sanofi Pasteur

Schering-Plough Corp.

Shire plc

Solvay Pharmaceutical Inc.

Takeda Pharmaceutical Co. Ltd.

TAP Pharmaceutical Products Inc.

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Top Deals from 2007-2008

Company Name	Estimated Value	Date
Actelion Ltd.—GlaxoSmithKline plc	\$3,200M	7/08
Isis Pharmaceuticals Inc.—Genzyme Corp.	\$1,900M	1/08
Ablynx NV—Boehringer Ingelheim GmbH	\$1,800M	9/07
Accelaron Pharma Inc.—Celgene Corp.	\$1,800M	2/08
Targacept Inc.—GlaxoSmithKline plc	\$1,570M	7/07
Galapagos NV—Janssen Pharmaceutica NV	\$1,430M	10/07
MacroGenics Inc.—Eli Lilly and Co.	\$1,094M	10/07
Alnylam Pharmaceuticals Inc.—Roche Holding AG	\$1,000M	7/07
Synta Pharmaceuticals Corp.—GlaxoSmithKline plc	\$1,000M	10/07
Regeneron Pharmaceuticals Inc.—Sanofi-Aventis	\$1,000M	11/07
Alnylam Pharmaceuticals Inc.—Takeda Pharmaceutical Co.	\$1,000M	5/08
Amgen Inc.—Takeda Pharmaceutical Co. Ltd.	\$900M	2/08
Antisoma plc—Novatis AG	\$890M	4/07
Seattle Genetics Inc.—Genentech Inc.	\$860M	1/07
Renovo Group plc—Shire plc	\$825M	6/07
Cytos AG—Novartis AG	\$808M	4/07
ThromboGenics NV—F. Hoffmann-La Roche Ltd.	\$780M	6/08
CoMentis Inc.—Astellas Pharma Inc.	\$760M	5/08
Tolerx Inc.—GlaxoSmithKline plc	\$750M	10/07
Ariad Pharmaceuticals Inc.—Merck and Co. Inc.	\$727M	7/07
Cytokinetics Inc.—Amgen Inc.	\$725M	1/07
Addex Pharmaceuticals—Merck & Co. Inc.	\$702M	1/08
Santaris Pharma A/S—GlaxoSmithKline plc	\$700M	12/07
Oxford BioMedica plc—Sanofi-Aventis SA	\$690M	3/07
XenoPort Inc.—GlaxoSmithKline plc	\$640M	2/07
Anacor Pharmaceuticals Inc.—Schering-Plough Corp.	\$625M	2/07
Immunomedics Inc.—Nycomed GmbH	\$620M	7/08
MorphoSys Inc.—Novartis AG	\$600M	12/07
Regulus Therapeutics LLC—GlaxoSmithKline plc	\$600M	4/08
Nastech Pharmaceutical Co. Inc.—Procter & Gamble Pharmaceuticals Inc.	\$577M	2/07
Dyax Corp.—Sanofi-Aventis	\$525M	2/08
Amgen Inc.—Kyowa Hakko Kogyo Co. Ltd.	\$520M	3/08
Argenta Discovery Ltd.—AstraZeneca plc	\$500M	2/07
Radius Health Inc.—Novartis AG	\$500M	9/07
GTx Inc.—Merck & Co. Inc.	\$500M	11/07
Astex Therapeutics Ltd.—Janssen Pharmaceutica NV	\$500M	6/08

SOURCE: *BioWorld Today* archives.

Executive Summary

Biopartnering Isn't Just Facilitating the Drug Industry; It Is Delineating It

Biopartnering is big in 2008. It is big like DNA in 1953 ... big like Genentech in 1976 ... big like human insulin in 1982 ... big like the Human Genome Project in 2001.

It is big like the driver of an \$80 billion revenue biotechnology market that is capable of facilitating ultramodern research to manage, or potentially eradicate, disease in a number of indications, while buttressing the bottom lines of not one, but two, principal mega-markets.

The biopartnering dynamic is attracting the fancy and finances of the \$700 billion pharmaceutical industry and infusing the biotechnology market with the pecuniary and material resources necessary to increase its collective market status into the \$100 billion value range.

If there is one thing that is apparent, albeit not exclusive, in biotech, it is that things change, and changing dynamics have usually resulted in unexpected, but more often than not, ultimately positive results for the overall biotech market. The ongoing biopartnering relationship with the pharmaceutical industry is the latest, and arguably, the most impactful, lifeline dynamic in biotech's history.

The fragile dollar, the stagnate European biotech market, a foreboding prevalence of global disease, the nascent Asian life sciences sector, the meandering overseas pharma industry, and the withstanding biotechnology market are acting together in creating a perfect storm of opportunity to partner or invest in American biotech.

The engine that drives this phenomenon is the innovation that the biotechnology sector has historically and continuously demonstrated through periods of traditional investment droughts, irrevocable regulatory administration, protracted research agendas, demanding stockholder impatience, and its own oft-sparse cash reserves.

When Does a Trend Become a Standard?

There has been no abatement in 2008 in the level of biopartnering activity that swept through and buttressed the biotech and pharma markets in 2007. Deals continue to overshadow drugs and venture capital investment as the defining industry trend, as biopartnering transactions continue at record-breaking occurrence rates and financial levels, while annual FDA approval rates remain flat and VC financings are losing the steam they had maintained throughout the first half of 2008.

The deal is still the thrill in drug development markets, as biotechnology innovation continues to be the temptation from which Big Pharma cannot afford to abstain.

A developing twist is being observed, as Big Pharma is getting increased competition from secondary suitors in courting biotech. Entities such as nonprofit/patient advocacy organizations, CROs, academia and government bodies are joining in to vie for the attention of biotech's innovative proj-

ects. The participation of these groups is contributing to increase the number of late-stage deals, while concurrently decreasing the number of available late-stage clinical opportunities, thereby making it more necessary to consider strategies that delve deeper into the pipeline to secure deals or bankroll projects that are in earlier stages of development.

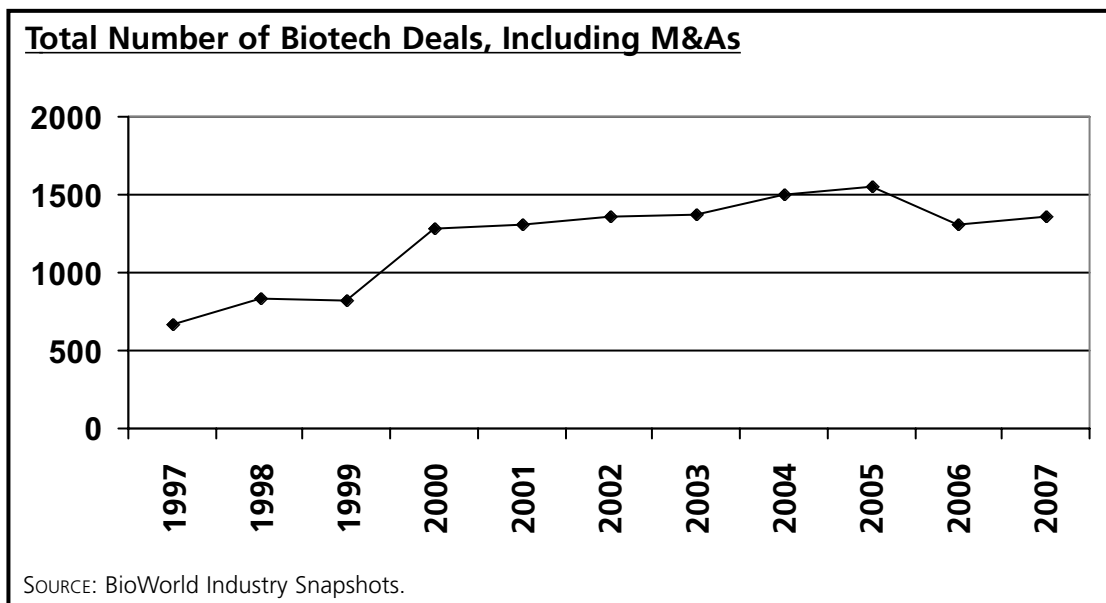
This trend is giving a financial boost to platform, preclinical and Phase I programs that have heretofore been generally shunned by picky investors preferring to minimize their risks and ROI waiting periods by backing projects that are closer to commercialization.

Much is at stake, as evidenced by the record amount of \$168 million spent on lobbying by the drug development industry in 2007, representing a 32 percent jump over 2006. The pharmaceutical industry continues to lead all markets in lobbying dollars, which translate into political results, meaning Big Pharma usually gets what it wants, and, right now, pharma wants biotech!

Who ever thought the exit strategy for the biotechnology market would culminate in a “rule the world” scenario? We are not projecting that the pharmaceutical industry is financing its own demise, as the biopartnering trend is definitely mutually beneficial; however, the lasting regard will likely reside with the innovators, rather than the financiers. “Who cured diabetes?” will generally eclipse “Who paid for the research?”

A concern in the biopartnering phenomenon is that the biotech industry will be compromised, or summarily assimilated into the pharmaceutical industry, consequently losing its aptitude for innovation under the aegis of Big Pharma. That apprehension may be assuaged when observing the prevailing trend of pharmas seeking to be more like biotech, rather than trying to meddle with the success of innovation by attempting to instill the pharma culture into its new partners or acquisitions.

Much to their credit, big pharmaceutical companies, such as Roche, GlaxoSmithKline and Bristol-Myers Squibb are going out of their way to adopt the mentality and tactics of the biotech milieu in order to



cultivate the environment of innovation that currently is the almost-exclusive territory of biotech.

These companies are changing their management, R&D agendas, investment objectives and even the way they refer to themselves, as they willingly and unabashedly reinvent themselves in the image of their junior counterpart market.

Well, the more pharma companies seek to shed their proper pharmaceutical corporate trade names and insist on a.k.a. designations such as “biopharmaceutical,” “biotherapeutics,” “drug development,” “bioscience,” “health care,” or anything other than their “pharma” surnames, the more it signals a shift in the rise of biotechnology’s regard, clout, value and deed. This does not signal the downfall of the pharmaceutical industry, rather the mutually constructive integration of the two markets into a therapeutic and financial entity that can exploit, manage and facilitate therapeutic innovation from concept through commercialization.

That process has traditionally been divided between the two industries, with biotech doing the front-end brainwork in academia and early-stage to create and develop unique therapeutics, and pharma using its resources arsenal to do the heavy lifting on the back end to deliver marketable products. This biopartnership archetype that exploits the strengths of all components is defining the new face of an integrated drug development market that will produce the therapeutics of the twenty-first century.

This progressive confluence is seeing each side engage in and, consequently, become more proficient in each other’s strong suit, as the bigger, and even some mid-sized, biotechs increasingly commercialize their own products with little or no Big Pharma help, while Big Pharma evermore gets involved in the earlier phases of the drug development cycle, as competition for late-stage therapeutic programs intensifies.

Even so, it may be unwarranted to criticize Big Pharma’s precautionous approach, considering its tactic of selectivity in waiting for a technology or clinical trial to reach its “safest bet” stage has afforded it the ability to avoid being burned by the failure of others as much as, say, its counterparts in the traditional VC community.

On the other hand, pharma’s reluctance to embrace early-stage deals leaves that opportunity open for alternatives to Big Pharma’s financing, such as nonprofits and individual investors.

In spite of spotting the pharmaceutical industry a century-long head start in drug development, it is conceivable that the biotechnology therapeutics market could surpass pharma’s record of curing disease within a period as soon as the next decade. Such a feat would be primarily attributable to the many never-before-seen, but imminently on-the-market (as projected by BioWorld analysis) technologies and products developed from the pipelines of biotech companies, and also from the pharma entities that are capitalizing on the biopartnering opportunities that are now available.

Biopartnering’s Big Challenge Could Be Big Pharma’s Impatience

The foremost challenges to the continuation of the biopartnering trend will not be posed by financial or innovation shortages, but will be most prone to result from the impatience of Big Pharma

in waiting out the tenure of traditionally slow clinical trial cycles, especially when partnering deals involve earlier-stage candidates that may be four or more years from realistically reaching the market.

Unfortunately, Big Pharma and venture capitalists still seem to lack corresponding confidence in innovation, as evidenced by their persistent reluctance to earnestly support the early-stage research that is the seed for the eventual bloom that winds up on the market.

It should be acknowledged that pharma's predilection for the deal is not necessarily an altruistically driven mission; rather, it is at least partially spurred by its own inability to sustain an in-house innovative R&D environment. That shortcoming is responsible for the creative stalls in pharmaceutical pipelines that are threatening to produce corresponding stalls in revenue generation beginning in earnest around 2011-2012, when some of the industry's top-selling pharmaceutical drugs are scheduled to be exposed to generic competition.

Still today, relative to the biopartnering trend, the pejorative attitude in pharma toward early-stage remains the biggest potential derailing factor that could wreck the abiding biotechnology archetype.

In contrast, as far back as its origin, biotechnology has acknowledged the fact that innovation takes time to develop and that discovery is just as important as the product. Innovation doesn't grow on trees, but it does mature as deliberately as a tree.

If biopartnering deals persist, they are likely to consume many, if not all, Phase III biotech projects. Especially if M&As are included in biopartnering activity, the ripe projects will be picked and harvested even more quickly under the auspices of pharma buyers looking for sooner-than-later ROIs.

Pharma's impatience will be tested when it is time to make the decision whether to curtail the biopartnering trend or seriously engage in early-stage deals that would be expected to primarily safeguard the future by nurturing projects that would be available to replace the next wave of products that will fall victim to patent expirations around the latter part of the next decade.

The pharmas seem to be paying attention now, but even though they may acknowledge the largely self-inflicted reasons behind the mess they are in currently, (but may wind up evading anyway, due to the SOS biopartnering deals being made) it is not a given that they have sufficiently conquered their early-stage phobia.

Unless Big Pharma can permanently take on that part of the biotech mind-set that respects the front-end of drug development as dutifully as the end product, funding gaps for those R&D stages will produce correlated revenue disruptions years later.

Late-Stage Projects Being 'Spoiled Rotten,' While Newborn Ones Must 'Act Out' for Attention

Pharma is saying complimentary things now about not stymieing biotech's creative spirit and managing such acquisitions and partnerships in a hands-off style; however, it will take plenty of rarely-seen-before early-stage patience on pharma's behalf for those sound bites to become manifest.

Pharma, which is a first-born in the drugmaker family itself, has, in turn, conventionally showed favoritism to the eldest pipeline offspring, investing in their near-future and bestowing them with full access to the parent's vast accumulative resources.

The biopartnering trend is seeing biotech giving pharma more heirs to propagate and extend its dynasty, and the eldest of those are getting the true-to-form preferential treatment that has been pharma's trademark. Once the most senior of these adopted technologies leave the pipeline nest for market, however, pharma's next likely, and best, option is apt to be to focus its usually short attention span on the remaining junior candidates in Phase I and earlier in order to rear those stepchild candidates into enough maturity to live on their own in the marketplace.

Many ongoing trends and best business practices will continue to be relevant into 2009, including:

- M&As
- Approaching/Getting noticed by Big Pharma
- Alternative financings and sources
- Alliance management
- Terms sheets and agreements
- Gene therapy deals
- Government, private and individual stem cell financings

Major new trends through 2009 include:

- An increase in the number of entities shopping for biotech. Biotechnology companies don't have to peddle themselves or their technologies as aggressively as they did earlier in the decade. This is attributable to the pipeline problems that are requiring pharmaceutical companies to redirect their business operations to mimic biotech (fewer employees, more focused R&D approaches that include fewer indications, more integration of biotech platforms into existing clinical trials, etc.).
- More sponsorship and funding of biotech R&D by non-pharma sources, particularly non-profits (in less prevalent disease indications), government (state-level support of stem cells, ag-bio, biofuels, etc.).
- The gradual return of traditional VC investment in biotech. Pharma is getting the bulk of late-stage candidates. Given the VCs' aversion to front-end research, it is likely that they will seek to invest in the best of the remaining projects that are within three years of potential market launches, as Big Pharma shows no sign of slowing down in its biotech mission. That will require their participation sooner, rather than later, so a return of the traditional VC could begin as early as the beginning of 2009.

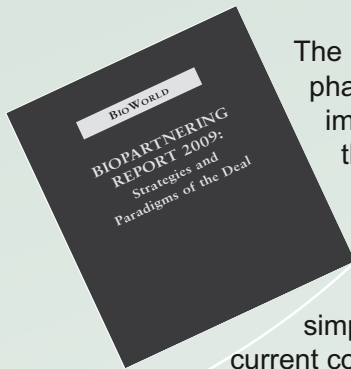
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