

Galapagos Scores \$1.35B Deal With Abbott for Arthritis Drug

By Nuala Moran
Staff Writer

LONDON – Galapagos NV landed a deal with Abbott worth \$1.35 billion, plus royalties, for its JAK1 inhibitor for rheumatoid arthritis, in an agreement the company said is the largest for a Phase II compound in the history of the industry.

Under the terms, Galapagos will take a company-transforming fee of \$150 million up front, with a further \$200 million to follow by the end of 2014 if the compound, GLPG0634, shows positive results in a Phase IIb study to be carried out by the Mechelen, Belgium-based biotech.

"This is a different magnitude to previous deals; the near-term numbers are much higher," said Onno van de Stolpe, CEO.

"From 2006 to date we've taken €180 million (US\$242.4 million) up front across a number of deals. Now we are

See Galapagos, Page 3

Boston Bio Morphs Deal Into \$2.6B Dainippon Buyout

By Trista Morrison
Staff Writer

Less than a year after picking up several regional options to Boston Biomedical Inc.'s lead cancer stem cell drug BBI608, Dainippon Sumitomo Pharma Co. Ltd. skipped exercising those options in favor of an all-out acquisition.

Boston Biomedical shareholders will get a hefty \$200 million up front, with an additional \$540 million in development milestones and up to \$1.89 billion in sales milestones. But how likely those milestones are to be realized is up for debate: Published research continues to challenge the cancer stem cell theory, raising questions about how likely the approach is to gain approval, much less the \$4 billion in annual sales required to trigger the full potential of the Dainippon deal.

Milestone payments or not, the deal is a win for

See Boston Biomedical, Page 4

Nektar Cashes in Cimzia, Mircera Royalties for \$124M

By Mari Serebrov
Washington Editor

Rather than banking on its future royalties of Cimzia and Mircera, Nektar Therapeutics Inc. cashed them in for \$124 million to pay down its \$215 million convertible debt that comes due in September.

Nektar, of San Francisco, sold the worldwide royalties, which generated \$8.3 million in 2011, to Royalty Pharma. But there is a caveat: If the royalties don't meet undisclosed thresholds this year and next, Nektar would have to pay Royalty Pharma \$3 million in 2013 and \$7 million in 2014.

All in all, it was a good move by Nektar, J.P. Morgan analyst Cory Kasimov said, as it removes a major overhang on the company's shares (NASDAQ:NKTR), which were up 42 cents in heavy trading Wednesday, closing at \$7.17.

The royalty sale should leave Nektar with about \$490 million in cash at the end of the first quarter, which should

See Nektar, Page 5

Concert, Avanir Make Sweet Music in Potential \$200M Deal

By Marie Powers
Staff Writer

Privately held Concert Pharmaceuticals Inc. increased its bandwidth by signing an exclusive licensing agreement with Avanir Pharmaceuticals Inc. for the global rights to develop and commercialize multiple deuterium-modified dextromethorphan (d-DM) compounds developed by Concert for neurological and psychiatric disorders, as well as certain rights to additional unspecified d-DM compounds.

The deal includes individual milestone payments of up to \$6 million, \$15 million and \$60 million, respectively, for clinical, regulatory and commercial targets – in aggregate, potentially totaling more than \$200 million. Even more harmoniously for Concert, of Lexington, Mass., tiered royalty payments begin in the single-digits and increase to the low double-digits for worldwide net sales of d-DM

See Avanir, Page 6

| | |
|----------------|---|
| INSIDE: | VIVUS' POST-PANEL STOCK SURGE PROMPTS HEFTY PUBLIC OFFERING.....2 |
| | U.S. PATENT DISCLOSURES: ARCA, AVAXIA, CUMBERLAND, FATE.....8 |



*Financings Roundup***Vivus' Post-Panel Stock Surge Prompts Hefty Public Offering****By Jennifer Boggs
Managing Editor**

Given the 125 percent stock surge after last week's positive FDA panel review for obesity candidate Qnexa (phentermine/topiramate), Vivus Inc.'s plan for a public offering comes as little surprise.

The Mountain View, Calif.-based firm has not yet priced the 8.5 million shares it plans to sell, but at Monday's closing price of \$23.78, the offering would bring in \$191.6 million – or \$220.4 million if underwriter J.P. Morgan Securities exercises the full overallotment option. That would more than double Vivus' cash balance, which totaled \$146.8 million as of Dec. 31, and analysts view the financing as a smart move, regardless of the FDA's decision on Qnexa, expected in April.

"We see this raise as a decent insurance policy," Cowen and Co. analyst Simos Simeonidis wrote in a research report, adding that the firm could "tap into the capital markets again" upon approval to further pad its balance sheet ahead of the commercial launch.

Whether the agency will grant Qnexa approval by the April 17 PDUFA date remains a tough call, despite the overwhelmingly favorable 20-2 vote by the Endocrinologic and Metabolic Drugs Advisory Committee (EMDAC). The EMDAC vote bodes well for the firm, as does the fact that the increasing media attention on the obesity epidemic has put pressure on the FDA to approve an obesity drug and discussion during the EMDAC panel last week identified Vivus' Qnexa as the best of the lot. (See *BioWorld Today*, Feb. 23, 2012.)

But a two-day advisory committee meeting slated for mid-March, a month before the Qnexa decision, could derail approval. That meeting is expected to discuss cardiovascular safety issues related to obesity drug development.

And there's also the fact that one of Vivus' competitors, San Diego-based Orexigen Therapeutics Inc., already has

Stock Movers**2/29/12**

| Company | Stock Change | |
|------------------------------|---------------------|---------|
| Nasdaq Biotechnology | -\$6.81 | -0.55% |
| Amarin Corp. plc | -\$0.98 | -11.23% |
| ImmunoCellular Therapeutics | +\$0.33 | +16.18% |
| NovaBay Pharmaceuticals Inc. | -\$0.18 | -11.32% |

(Biotechs showing significant stock changes Wednesday)

been asked to conduct a large, cardiovascular outcomes study before it can resubmit its new drug application for Contrave (naltrexone HCl/bupropion HCl). Analysts have predicted that Contrave could hit the market in 2014. (See *BioWorld Today*, Sept. 22, 2011.)

Depending on the outcome of the two-day March meeting, Vivus could find itself having to do a similar cardiovascular study pre-approval, rather than post-approval. As analyst Jonathan Aschoff, of Brean Murray, Carret & Co., noted, "Unlike the panel, the FDA is on the hook for any downstream problems."

Two months after Qnexa's PDUFA date, the FDA is expected to make a decision on another competitor, Arena Pharmaceuticals Inc.'s Lorquess (lorcaserin).

Proceeds from Vivus' offering are expected to support commercial infrastructure, including a sales force, for Qnexa, as well as regulatory costs for erectile dysfunction drug avanafil and clinical trials for Qnexa and other product candidates. After the offering, the firm will have about 97.5

See Financings Roundup, Page 7

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Galapagos

Continued from page 1

getting \$150 million in one go,” he told *BioWorld Today*.

Shares in the company (Brussels:GLPG) gained 21 percent, or €2.25 to close Wednesday at €13.09.

The deal marked a turning point for Galapagos, not only because of the financial impact, but also as a validation of the company’s discovery platform. “We identified the target and brought the program through to a massive deal after proof of concept in the clinic,” van de Stolpe said.

For Abbott, GLPG0634 presents a possible successor to Humira (adalimumab), its blockbuster anti-TNF alpha monoclonal antibody, if the results from the Phase IIa study play out in subsequent trials.

To date, JAK inhibitors have been touted as potential treatments for patients who have failed on, or become resistant to, anti-TNF antibodies. However, JAK inhibitors are orally available and have shown modest side-effect profiles in clinical studies, suggesting that given time and appropriate efficacy, they could replace injected antibodies altogether.

GLPG0634 offers the potential for “an improved patient experience,” said John Leonard, senior vice president of global R&D at Abbott.

If Abbott Park, Illinois-based Abbott decides to take up the license when Galapagos presents the complete Phase II rheumatoid arthritis data file in 2014, the U.S. pharma also will develop GLPG0634 in psoriasis, irritable bowel syndrome and lupus. That will mirror the way in which the label on Humira has been expanded beyond the initial indication of rheumatoid arthritis.

Galapagos has retained co-promotion rights to GLPG0634 in Belgium, the Netherlands and Luxembourg. Van de Stolpe said that in addition to the significant cash infusion from the deal, that will pave the way for the company to start to build the sales and marketing infrastructure that will enable it to take its cystic fibrosis program through to commercialization on its own.

“We will bring this all the way under the Galapagos label – we couldn’t do that in rheumatoid arthritis because it’s so big you need a partner,” he said.

Van de Stolpe claimed Galapagos’ Abbott agreement is the largest Phase II deal in the history of the industry.

Analyst Jan de Kerpel, at KBC Securities in Belgium, agreed that the terms set a precedent for a compound at that development stage – and with a data package based on only four weeks dosing in a chronic disease.

“Not only is the up front double our base-case scenario, it is much more than any other oral compound in rheumatoid arthritis,” de Kerpel said in a note.

The deal also is an important milestone in translating the biology of Janus kinases – an enzyme family that plays a key role in signaling pathways used by cytokines and growth factors involved in autoimmune diseases and cancer – into therapies. The only JAK inhibitor to have made

it to market, Incyte Inc.’s Jakafi (ruxolitinib), was approved by the FDA in November 2011. (See *BioWorld Today*, Nov. 17, 2011.)

As well as being the first JAK inhibitor to be commercialized, Jakafi is the first registered treatment for the bone marrow cancer myelofibrosis.

Other companies, including Sanofi SA, S*Bio Ltd. and YM Biosciences Inc., have JAK inhibitors in development for hematological cancers.

In rheumatoid arthritis, the lead JAK inhibitor, Pfizer Inc.’s tofacitinib, has been filed for FDA approval, while Vertex Inc.’s VX509 is in Phase II.

Each member of the Janus kinase family associates with different cytokine and growth factor receptors. While Pfizer’s tofacitinib inhibits JAK3, it also binds JAK1 and JAK2. GLPG0634, on the other hand, inhibits only JAK1.

Van de Stolpe has been keen to emphasize that, in the Phase IIa trial in 36 patients, GLPG0634 demonstrated a better safety profile than other JAK inhibitors. In particular, there was no anemia and no increases in LDL/cholesterol levels. Van de Stolpe ascribed GLPG0634’s better side-effect profile to the fact it is a selective inhibitor.

In terms of its clinical impact, the Phase IIa trial of GLPG0634 delivered positive results on ACR20, the standard measure of disease activity, and also on the standard test for inflammation, serum levels of C-reactive protein.

Having signed the deal with Abbott, Galapagos next needs to do a Phase IIa dose-ranging study before progressing to the Phase IIb. If Abbott picks up the program after Phase II is complete, it will be responsible for all onward development. ■

Other News To Note

• **ArGen-X BV**, of Rotterdam, the Netherlands, said it entered an alliance with **Shire plc**, of Dublin, Ireland, to create therapeutic antibody products against multiple targets submitted by Shire. ArGen-X will use its SIMPLE Antibody discovery technology to isolate and characterize human antibodies against targets that are known to contribute to the pathophysiology of severe, rare genetic diseases. Under the terms, ArGen-X will receive an up-front technology access fee, research funding and preclinical success payments. If Shire opts to develop and commercialize any products resulting from the collaboration, the small biotech could get additional fees, milestones and royalty payments. Specific terms were not disclosed.

• **Avaxia Biologics Inc.**, of Lexington, Mass., inked a deal for **Courtagen Life Sciences Inc.**, of Woburn, Mass., to develop an assay that will streamline the development of Avaxia’s oral antibody therapy to mitigate the gastrointestinal damage that follows radiation exposure that might occur after a nuclear incident. Financial terms were not disclosed.

Boston Biomedical

Continued from page 1

Boston Biomedical. The Norwood, Mass.-based firm was founded in late 2006 as a spin-out of ArQule Inc. At the time, ArQule wanted to focus on c-Met-targeted cancer drug tivantinib (ARQ 197), which later went on to secure a lucrative partnership with Daiichi Sankyo Co. Ltd. and last year started Phase III trials in non-small-cell lung cancer. (See *BioWorld Today*, Nov. 11, 2008, and Jan. 21, 2011.)

With ArQule's focus on its more advanced programs, Chiang Li, chairman of ArQule's scientific advisory board, decided to spin out the cancer stem cell program. He was joined by about 26 ArQule employees, many of whom had worked together at Cyclis Pharmaceuticals Inc. before that firm was acquired by ArQule in 2003. (See *BioWorld Today*, July 18, 2003.)

ArQule helped Boston Biomedical get off the ground by signing the firm on for a \$5 million contract research deal, but it did not retain any equity interest in the start-up.

The majority shareholder in Boston Biomedical is Globe Health LLC, which was founded by Li. There are five other shareholders, but the firm has never issued a press release regarding a financing. It filed a Form D in 2008 for a \$3 million potential offering and in 2010 for a \$2 million potential offering. Dainippon said Boston Biomedical had \$5.8 million in capital.

Li did not return calls seeking comment, but it appears he will be the primary beneficiary of the Dainippon buyout, which has been approved by the boards of both firms. Boston Biomedical will become a wholly owned subsidiary of Dainippon, with the biotech's Boston offices serving as the Osaka, Japan-based pharma's new R&D base in the U.S.

The acquisition builds on a 2011 deal in which Dainippon paid \$15 million up front and up to \$155 million in milestones for rights to BBI608 in Japan and an exclusive option on the drug in the U.S. and Canada. (See *BioWorld Today*, April 8, 2011.)

BBI608 is a small molecule that hits an undisclosed internal cellular target. The drug is designed to target highly malignant cancer stem cells as well as heterogeneous cancer cells. In Phase I trials, it triggered stable disease for at least two months with signs of tumor regression in six of nine evaluable patients, and it showed a favorable safety profile. A Phase I/II trial combining the drug with paclitaxel in solid tumors is under way, and Dainippon said it is preparing for a Phase III trial in colorectal cancer.

In addition to BBI608, the acquisition brings Dainippon the Phase I cancer stem cell drug BBI503, as well as a cancer discovery platform.

The cancer stem cell theory postulates that a small minority of cancer cells in a tumor are responsible for continued malignant growth, cancer recurrence, metastasis and treatment failure, and that the majority of cancer cells are actually progeny of those cancer stem cells. But the existence and significance of cancer stem cells remain

controversial, and there is a lack of a clear definition of what a cancer stem cell actually is, or how to identify it.

Last month, a publication in *Cancer Cell* found that progenitor cells, not cancer stem cells, were responsible for formation of the most aggressive glioma tumors. The researchers argued that drugs targeting the stem-like population would not be sufficient to eliminate disease, and that a truly successful therapy would need to target multiple types of tumor cells. (See *BioWorld Today*, Jan. 18, 2012.)

Boston Biomedical's approach seeks to do just that. It targets cancer cells that show more malignancy than the rest of the population and are often resistant to other drugs, regardless of whether those cells are true cancer stem cells or other heterogeneous cancer cells.

Many biotechs and pharmas have thrown a hat into the cancer stem cell ring, including Astellas Pharma Inc., Sanofi SA, GlaxoSmithKline plc, Boehringer Ingelheim GmbH, Pfizer Inc., OncoMed Pharmaceuticals Inc., Stemline Therapeutics Inc., Verastem Inc. and others. OncoMed has landed two \$1.4 billion cancer stem cell deals with big pharma, and Verastem's cancer stem cell work fueled its initial public offering. (See *BioWorld Today*, Dec. 11, 2007, June 18, 2010, and Jan. 30, 2012.)

Dainippon will have to hope that whether or not the cancer stem cell theory plays out, Boston Biomedical's approach to targeting highly malignant cells delivers. The big pharma has little presence in oncology, other than an approved liver cancer chemotherapy drug and a midstage blood cancer agent. Yet oncology is one of its new areas of focus, along with central nervous system drugs, as evidenced by the 2009 acquisition of Sepracor Inc. (See *BioWorld Today*, Sept. 4, 2009.)

Jefferies analyst Naomi Kumagai wrote in a research note that Dainippon, along with many other big pharmas, is struggling with core products facing patent expirations and "no major programs in the late stage of development." ■

Other News To Note

• **Biocrea GmbH**, of Radebeul, Germany, said it completed an asset purchase and licensing deal with Ingelheim, Germany-based **Boehringer Ingelheim GmbH**. Under the terms, Biocrea will receive an undisclosed payment and will transfer the exclusive global rights for certain research programs originating from its phosphodiesterase platform to Boehringer, including rights to its PDE2 inhibitors and most advanced compound BCA909.

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Nektar

Continued from page 1

be sufficient to address the convertible debt by September, Kasimov said in a note.

Although Nektar receives royalties from several partnered products, this is the first time the company has sold a royalty stream, Jennifer Ruddock, Nektar's vice president of investor relations and corporate affairs, told *BioWorld Today*.

The company saw it as a way to "unlock unrecognized value in Nektar's legacy collaborations and access significant capital in a nondilutive transaction," Nektar President and CEO Howard Robin said in a press release.

The Cimzia (certolizumab pegol) and Mircera (methoxy polyethylene glycol-epoetin beta) royalties stem from separate licensing agreements. Cimzia dates back to a 2000 license, manufacturing and supply agreement with Celltech Chiroscience Ltd., which was acquired by UCB Pharma SA a few years later. Cimzia is approved to treat Crohn's disease in the U.S. and for the treatment of rheumatoid arthritis in the European Union, as well as the U.S.

Also in 2000, Nektar licensed its pegylation materials to Roche AG for use in the development and manufacture of Mircera, a continuous erythropoietin (EPO) receptor activator indicated for the treatment of anemia associated with chronic kidney disease. Roche already markets Mircera in Europe.

Although the drug has been approved in the U.S., Basel, Switzerland-based Roche is not expected to begin selling Mircera here until July 2014, pursuant to a settlement and limited license agreement with Amgen Inc., which has used its EPO intellectual property rights to block competition from the U.S. market. Amgen realized \$2.5 billion in worldwide sales of Epogen (epoetin alfa) and Aranesp (darbepoetin alfa) in 2010. (See *BioWorld Today*, Dec. 19, 2011.)

By monetizing the Cimzia and Mircera royalties to repay its debt, Nektar is allowing investors to focus on what's about to flow from its pipeline. For instance, top-line results from the NKTR-102 expansion study for refractory/resistant ovarian cancer are expected this quarter, Kasimov said. The investigational drug also is in a Phase III study for metastatic breast cancer and a Phase II study for colorectal cancer.

Perhaps of more significance are the Phase III KODIAC results for NKTR-118 in opioid-induced constipation, which are expected later this year, Kasimov said. Although NKTR-118 is partnered with AstraZeneca plc, Nektar stands to get sizable milestones and double-digit royalties from sales in both Europe and the U.S. London-based AstraZeneca expects to file for approval of NKTR-118 next year. (See *BioWorld Today*, Sept. 22, 2009, and Jan. 20, 2011.)

Nektar also has a royalty stake in MAP Pharmaceuticals Inc.'s Levadex, an inhaled migraine drug, and Affymax Inc.'s peginesatide, which both have PDUFA dates next month. (See *BioWorld Today*, Dec. 9, 2011.) ■

Other News To Note

- **Epitomics Inc.**, of Burlingame, Calif., said it reached an agreement for the supply of rabbit monoclonal antibodies based on its RabMab technology to **Leica Microsystems GmbH**, of Wetzlar, Germany. Financial terms were not disclosed.

- **Evolva Holding SA**, of Reinach, Switzerland, said it has completed its project with the Army Research Office (ARO), conducted as part of the Transformational Medical Technology Initiative's mission to prevent and address biowarfare threats. In particular, EV-035, a Type II topoisomerase inhibitor studied under the ARO program, has been found to be a promising antibiotic with good activity in preclinical models against a range of select agents and other bacterial pathogens. Evolva's work for ARO has focused on finding molecules that inhibit the growth of Gram-negative bacterial pathogen *Burkholderia pseudomallei*.

Clinic Roundup

- **BrainCells Inc.**, of San Diego, completed the Phase I single-ascending-dose study of BCI-838 and initiated the Phase I multiple-ascending-dose study of the oral prodrug for BCI-632, a compound aimed at central nervous system disorders. The study evaluated BCI-838 for safety, tolerability, pharmacokinetics and food effect in healthy males. The company said the drug was well tolerated, and no serious adverse events were reported.

- **Creabilis SA**, of Luxembourg, began the randomized, double-blind, placebo-controlled Phase IIb dose-finding trial of lead product CT327 in psoriasis vulgaris. The topically applied TrkA kinase inhibitor was developed using Creabilis' low systemic exposure technology. The global study is examining the efficacy and safety of a CT327 ointment formulation administered for up to eight weeks in patients with psoriasis. Results are expected by year-end. In October 2011, Creabilis raised €15 million (US\$20 million) in a Series B to advance its pipeline, including the dermatology product. (See *BioWorld Today*, Oct. 5, 2011.)

- **Essentialis Inc.**, of San Diego, said the double-blind, placebo-controlled Phase IIb trial of investigational compound DCCR demonstrated a 30 percent to 40 percent reduction in triglyceride (TG) levels in patients whose TG levels exceeded 500 mg/dL. Subjects were included in one of two subgroups, with about half randomized to DCCR 290 mg or placebo in combination with Lipitor (atorvastatin, Pfizer Inc.) 20 mg for 18 weeks. The rest were included in the monotherapy/Trilipix (fenofibrate, Abbott) combination subgroup, where they were randomized to DCCR 290 mg or placebo for 12 weeks, followed by co-administration of fenofibrate 135 mg for another six weeks. In the DCCR/fenofibrate arm, DCCR was shown to be additive to fenofibrate for all lipid fractions except LDL-C.

Avanir

Continued from page 1

products exceeding \$1 billion annually.

Avanir, of Aliso Viego, Calif., assumes overall responsibility for research, development and commercialization of d-DM, while Concert will provide manufacturing support for investigational new drug-enabling studies.

Dextromethorphan, in a class of medications called antitussives, is commonly known as a cough reliever. However, the compound also is a key ingredient of Avanir's Nuedexta, (dextromethorphan hydrobromide and quinidine sulfate), which was approved by the FDA in 2010 for pseudobulbar affect (PBA). (See *BioWorld Today*, Nov. 2, 2010.)

PBA, which occurs in neurological conditions such as amyotrophic lateral sclerosis and multiple sclerosis, is characterized by involuntary, sudden and frequent episodes of laughing or crying.

d-DM, developed using Concert's deuterated chemical entity platform, is a deuterium-containing analogue of dextromethorphan. The incorporation of deuterium into specific molecular positions of dextromethorphan maintains the pharmacology of dextromethorphan while providing enhanced resistance to CYP2D6 metabolism and improved plasma exposure in preclinical testing. As a result, d-DM has potential effectiveness in neurological and psychiatric disorders for which dextromethorphan has shown pharmacological activity, explained Roger Tung, Concert's CEO.

Concert – better known for its work in HIV and chronic kidney disease – has tested deuterium in dozens of compounds, with dextromethorphan a relatively early experiment, in the days prior to Nuedexta's approval.

"We saw quite a significant deuterium effect on the stability of the compound in our preclinical testing," Tung told *BioWorld Today*.

Tung mentioned those preclinical results to Keith Katkin, Avanir's president and CEO, at an industry conference they attended together, "but it didn't really make sense for us to go further with it at that time," he recalled.

By the time Nuedexta was commercialized, Concert had done additional characterization work on d-DM. Once Avanir began to generate sales from Nuedexta and could project a revenue stream for the product, "we re-engaged and relatively quickly came to this deal," Tung said.

The agreement covers all of Concert's analogues in which dextromethorphan has been modified by replacing certain hydrogen atoms with deuterium. Initially, Avanir's main interest is CTP-786, which has shown efficacy in pain and PBA in preclinical studies.

Although Nuedexta demonstrated sufficient efficacy in PBA to pass regulatory muster, the combination of dextromethorphan and quinidine also has suggested benefit in other indications – notably diabetic neuropathic

pain. Just last month, Avanir reported results from a 13-week trial in which 379 patients with neuropathic leg pain received AVP-923 or placebo once daily for seven days, and twice daily thereafter. The product showed efficacy as measured on an 11-point pain rating scale, with adverse events being mostly mild or moderate in character. (See *BioWorld Today*, Feb. 9, 2012.)

Reference data developed about the effect of dextromethorphan in Nuedexta are likely to apply to CPT-786, potentially accelerating that development program, Tung said.

For Concert, the deal offers the ability not only to progress a program the company couldn't finance on its own, but also to place the d-DM asset in the hands of a biotech with clinical and commercial expertise in dextromethorphan.

"We think it's significant that dextromethorphan is Avanir's lead and sole commercialized asset," Tung said. "They see our technology as a way to produce a true next-generation entity."

Although Tung declined to characterize Concert's runway in the wake of the deal, he said the economics of the deal will allow Concert to continue advancing other compounds in its pipeline. Since Avanir assumes responsibility for the majority of spending associated with the d-DM program, Concert doesn't need to take on additional staff and expense.

In 2009, Concert inked its first partnership with GlaxoSmithKline plc, of London, getting \$35 million up front, including a \$16.7 million equity investment, for three Concert compounds – including an HIV protease inhibitor – and the application of Concert's deuterium platform to three undisclosed GSK compounds. (See *BioWorld Today*, June 3, 2009.)

In June 2011, Concert achieved a milestone in the HIV protease inhibitor program and scored a \$4 million payment under the agreement, with the companies selecting lead compound CTP-298 as the deuterium-modified version of atazanavir for further development.

Clinical trials in that program are slated to begin this year. ■

Other News To Note

• **ImmunoCellular Therapeutics Inc.**, of Los Angeles, said Johns Hopkins University granted the firm an exclusive, worldwide license to intellectual property (IP) surrounding the tumor-associated antigen mesothelin, which is highly expressed in pancreatic cancer, ovarian cancer and mesothelioma. The company will use that IP to help develop and commercialize ICT-140, a multivalent, dendritic cell-based vaccine, in ovarian cancer. Financial terms were not disclosed. Shares of ImmunoCellular (OTCQB:IMUC) gained 33 cents, or 16.2 percent, to close Wednesday at \$2.37.

Financings Roundup

Continued from page 2

million shares outstanding.

Shares of Vivus (NASDAQ:VVUS) closed Wednesday at \$22.50, up \$1.24.

In other financings news:

- **Horizon Pharma Inc.**, of Deerfield, Ill., is bringing in \$50.8 million in a private placement of about 14 million units – each comprising one share of common stock and a warrant to purchase 0.25 shares – priced at \$3.62125 apiece. Proceeds, combined with existing cash, are expected to sustain the firm's operations into the second half of 2013 and will be used for the ongoing commercial launch of pain reliever Duexis (ibuprofen/famotidine) in the U.S., as well as to pursue regulatory approval for Lodotra, a delayed-release form of prednisone, in the U.S. and for working capital and other general corporate purposes. JMP Securities LLC, Cowen and Co. LLC and Stifel Nicolaus Weisel served as joint-lead placement agents for the financing., which is expected to close March 2.

- **Sernova Corp.**, of London, Ontario, said it closed the first tranche of its nonbrokered private placement of about 19.4 million units for gross proceeds of C\$3.5 million (US\$3.5 million). Each unit, which consisted of one common share and one common share purchase warrant, was priced at C18 cents. Proceeds are expected to fund R&D costs for the firm's Cell Pouch System, including the upcoming first clinical trial in diabetics receiving an islet transplant.

- **YM BioSciences Inc.**, of Mississauga, Ontario, said it closed its public offering of 35 million shares at \$2 apiece and said underwriters exercised in full their overallotment option for an additional 5.25 million shares, for total gross proceeds of \$80.5 million. Funds will be used to support ongoing drug development activities and for general corporate purposes and working capital. (See *BioWorld Today*, Feb. 27, 2012.) ■

Clinic Roundup

- **EyeGate Pharma Inc.**, of Waltham, Mass., said it started enrolling patients with anterior scleritis in its Phase I study of EGP-437 (dexamethasone phosphate ophthalmic solution 40 mg/mL). The randomized study will enroll up to 24 subjects with noninfectious, non-necrotizing anterior scleritis and will test the product's safety and tolerability at three ocular iontophoresis dose levels. Partial funding for the study is provided by an FDA orphan drug indication grant.

- **Polaris Group**, of San Diego, said it dosed the first patient in a Phase I trial testing lead cancer drug pegylated arginine deiminase (ADI-PEG 20) in pediatric patients with emphasis on leukemia, lymphoma and sarcoma cancers. Patients with advanced cancers who have failed current

therapy will be eligible for treatment, and a tumor specimen from those patients must be deficient in the enzyme argininosuccinate synthetase. The primary endpoints are safety and efficacy, and secondary endpoints will include finding the maximum-tolerated dose of ADI-PEG 20 in a pediatric tumor population.

- **Proximagen Group plc**, of London, began dosing in a Phase I trial of PRX167700, a vascular adhesion protein-1 (VAP-1) antagonist, in inflammation from rheumatoid arthritis and psoriasis. The oral drug candidate is expected to work by regulating the movement of immune cells from the blood to sites of inflammation, thereby modulating the underlying inflammatory process and relieving symptoms. The study is assessing the safety, tolerability and pharmacokinetics of single- and multiple-ascending oral doses of PRX167700 in healthy male subjects and the effect of food on the pharmacokinetics of a single oral dose. Top-line results are expected in the second half of this year. Proximagen has a development partnership with **H. Lundbeck A/S**, of Copenhagen, Denmark, that includes inflammatory disorders. (See *BioWorld Today*, Sept. 30, 2011.)

Pharma: Other News To Note

- **Boehringer Ingelheim GmbH**, of Ingelheim, Germany, expanded biopharmaceutical development and manufacturing capabilities at its cell culture and microbial sites in Biberach, Germany, and Vienna, Austria. The moves are designed to enhance cell line development with the company's Bi-Hex high-expression system and microbial strain and to expand process development services for contract manufacturing. Boehringer Ingelheim said it invested about €17 million (US\$22.7 million) in the expansion, which includes current good manufacturing practice cell banking, process science, cell line development and quality laboratories.

- **Merck Sharp & Dohme Corp.**, a subsidiary of Whitehouse Station, N.J.-based Merck & Co. Inc., is responding to an FDA warning letter relating to Januvia (sitagliptin) and Janumet (sitagliptin/metformin HCl) that cited the company for not fulfilling a postmarketing requirement for a three-month pancreatic safety study in a diabetic rodent model treated with sitagliptin. The safety study, required under the 2010 approval of supplemental new drug applications for the two diabetes drugs, was to have been completed by June 15, 2011. Instead, Merck submitted data from a 12-month independent rodent study. Merck said it will submit a final protocol for a new rodent study for review by March 18, revise it as necessary and start the study within six months. If Merck fails to meet the FDA's timeline, it could face civil monetary penalties of up to \$250,000 per violation.

U.S. Patent Disclosures

• **ARCA Biopharma Inc.**, of Broomfield, Colo., received U.S. Patent No. 8,080,578, titled “Methods for Treatment with Bucindolol Based on Genetic Targeting.”

• **Avaxia Biologics Inc.**, of Lexington, Mass., received U.S. Patent No. 8,071,101, titled “Antibody Therapy for Treatment of Diseases Associated with Gluten Intolerance,” which covers treating celiac disease using orally administered antibodies produced by the firm’s platform technology.

• **Cumberland Pharmaceuticals Inc.**, of Nashville, Tenn., received a notice of allowance relating to its new formulation of Acetadote (acetylcysteine) injection, which is used to treat acetaminophen poisoning.

• **Fate Therapeutics Inc.**, of San Diego, received U.S. Patent No. 8,071,369, titled “Compositions for Reprogramming Somatic Cells,” which claims a composition comprising a somatic cell having an exogenous nucleic acid that encodes an Oct4 protein introduced into the cell.

• **ImmunoCellular Therapeutics Ltd.**, of Los Angeles, received a notice of allowance for a patent, titled “Cancer Stem Cell Antigen Vaccines and Methods,” which covers various methods of using dendritic cells combined with antigens derived from glioblastoma cancer stem cells for treating glioblastoma multiforme.

• **Immunomedics Inc.**, of Morris Plains, N.J., was granted U.S. Patent No. 8,105,596, titled “Immunotherapy of B-cell malignancies using anti-CD22 antibodies.” It covers therapeutic compositions comprising any combination of conjugated or unconjugated anti-CD20 and anti-CD22 antibodies.

• **Indel Therapeutics Inc.**, of Vancouver, British Columbia, received a patent relating to its antimicrobial drug discovery platform technology.

• **Kythera Biopharmaceuticals Inc.**, of Los Angeles, received a notice of allowance for a patent covering a pharmaceutical formulation of ATX-101, an injectable drug in development for reducing submental fat.

• **Lixte Biotechnology Holdings**, of East Setauket, N.Y., received a patent for the use of lead compounds from each of two different types of drugs – protein phosphatase inhibitors and histone deacetylase inhibitors – for the potential prevention and treatment of neurodegenerative diseases.

• **Marina Biotech Inc.**, of Bothell, Wash., received a notice of allowance for a patent broadly claiming multiple sequence-independent and length-independent nucleic acid constructs having one or more unlocked nucleobase analogues.

• **Marshall Edwards Inc.**, of San Diego, received U.S. Patent No. 8,084,628, covering a number of the firm’s mitochondrial inhibitor compounds, including lead candidate ME-344, for the treatment of tumor or a tumor

mass. The company also received U.S. Patent No. 8,080,675, covering a number of its isoflavone-based compounds, including lead candidates ME-143 and ME-344, and their pharmaceutical compositions.

• **Nautilus Neurosciences Inc.**, of Bedminster, N.J., received U.S. Patent No. 8,097,651, titled “Diclofenac formulations and methods of use,” which relates to methods and formulations for treating migraine.

• **NuPathe Inc.**, of Conshohocken, Pa., received a notice of allowance for a patent relating to methods of treating a migraine by administering sumatriptan using an iontophoretic patch to achieve consistent therapeutic plasma levels with low patient-to-patient variability.

• **Ohr Pharmaceutical Inc.**, of New York, was awarded U.S. Patent No. 8,084,039, titled “Preparation of a Therapeutic Composition,” which includes claims related to the chemical structures, sequences of the peptide constituents and method of manufacture for OHR/AVRII8.

• **Omni Bio Pharmaceutical Inc.**, of Denver, received U.S. Patent No. 8,071,551, titled “Methods and Compositions For Treating Diabetes,” which covers methods for treating diabetes by administering alpha-1 antitrypsin (AAT) or a derivative of AAT.

• **Pharmacyclics Inc.**, of Sunnyvale, Calif., received U.S. Patent No. 8,088,781, titled “Inhibitors of Bruton’s Tyrosine Kinase,” which claims an inhibited tyrosine kinase comprising an irreversible BTK inhibitor having a covalent bond to a cysteine residue of a Bruton’s tyrosine kinase.

• **Precision BioSciences Inc.**, of Research Triangle Park, N.C., received a notice of allowance for a patent relating to a class of engineered meganucleases containing specific mutations that impact affinity for DNA.

• **Stellar Pharmaceuticals Inc.**, of London, Ontario, received U.S. Patent No. 8,084,441, titled “Cystitis Treatment with High Dose Chondroitin Sulfate,” relating to the treatment of interstitial cystitis/painful bladder syndrome by instillation of an optimized unit dose of chondroitin sulfate that is at least 350 mg or more.

• **Tris Pharma**, of Monmouth Junction, N.J., received a patent for its OralXR platform.

• **Unigene Laboratories Inc.**, of Boonton, N.J., received U.S. Patent No. 8,076,291, providing protection for peptides and pharmaceutical compositions containing such peptides for the suppression of appetite and treating obesity in warm-blooded animals, including humans.

• **Vaxiion Therapeutics Inc.**, of San Diego, received U.S. Patent No. 8,101,396, which encompasses compositions of matter related to the antibody-based targeted delivery of biologically active compounds using the firm’s minicell-delivery platform technology.

• **Xencor Inc.**, of Monrovia, Calif., received U.S. Patent No. 8,088,376, which covers antibody drug candidates and engineering technology to impart specific therapeutic properties, including antibody-dependent cell cytotoxicity, immunomodulation and increased half-life and efficacy.

Other News To Note

• **Islet Sciences Inc.**, of New York, said it agreed to acquire **DiaKine Therapeutics Inc.**, of Charlottesville, Va., in a stock deal, giving Islet rights to DiaKine's diabetes pipeline, including lead drug Lisofylline, which is designed to improve the function of insulin-producing islet cells and protect them from damage and premature death. Under the terms, Islet agreed to issue to DiaKine shareholders an aggregate of 200,000 shares of its Series C preferred stock in exchange for all issued and outstanding shares of DiaKine. Islet also agreed to issue to certain DiaKine creditors 100,000 shares of its common stock in satisfaction of DiaKine's liabilities.

• **ProMetic Life Sciences Inc.**, of Laval, Quebec, said it completed relevant milestones regarding its March 2011 agreement with **Celgene Corp.**, of Summit, N.J., for the worldwide rights to a commercial application of ProMetic's Protein Technologies. As a result, under the terms of the deal, a \$10 million long-term debt owed to Abraxis BioScience LLC, a wholly owned subsidiary of Celgene, has

been completely and irrevocably forgiven.

• **Sirona Biochem Corp.**, of Vancouver, British Columbia, said its lead compound for Type II diabetes, SBM-TFC-039, significantly reduced fructosamine levels in a chronic preclinical study. Results showed that the sodium glucose transporter inhibitor normalized diabetes and significantly lowered fructosamine, a standard biomarker reflecting glucose in the blood, in the 28-day chronic dosing study of obese diabetic rats. SBM-TFC-039 also reduced blood glucose levels by 48 percent compared to the nontreated group.

• **Synta Pharmaceuticals Corp.**, of Lexington, Mass., presented results at the International Association for the Study of Lung Cancer meeting in Santa Monica, Calif., showing that ganetespib, a heat-shock protein 90 inhibitor, was active in non-small-cell lung cancer and had a favorable safety profile as a monotherapy or in combination with docetaxel. The drug also showed evidence of synergy with docetaxel in preclinical models and has single-agent activity in ALK-positive lung cancer that is believed to be complementary to direct ALK kinase inhibitors.

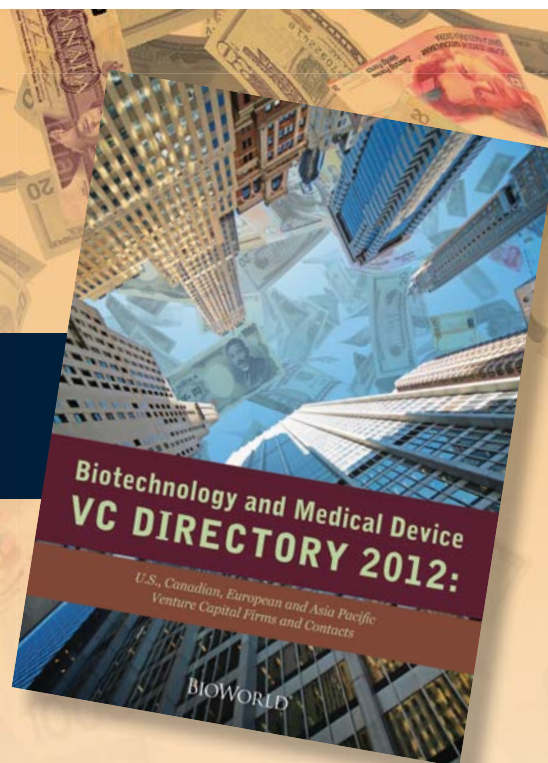
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