

## 2012 gets a new deal

By Kai-Jye Lou, Staff Writer

SciBX's second annual comprehensive analysis of public-private partnerships and early stage venture financing activity reveals that government institutions and organizations are taking a significant role in forming and funding partnerships, and California-based companies are leading the way in public-private partnership activity. On the financing front, biotech startups in the San Francisco Bay Area took in the lion's share of early stage venture dollars despite a year-over-year decline in worldwide early stage venture investments in biotech.

The specific business areas that public-private partnerships (PPPs) focused on in 2012 closely mirrored 2011, with cancer taking the top spot both years (see Figure 1, "Business areas covered by 2012 public-private partnerships"). PPPs in the infectious diseases space—the second most active area in 2011—moved down a spot to third and swapped positions with PPPs working in diagnostics and pharmacogenetics (see Figure 1.I and Figure 1.II).

Of the 68 PPPs in the diagnostics and pharmacogenetics space, 31 are pursuing cancer-related projects and 11 are working in infectious diseases.

For early stage venture financings by business area, cancer also took the top spot both years. Between the two years, there was a noticeable drop in financing activity for companies working in endocrine and metabolic diseases (see Figure 1.III and Figure 1.IV).

Although business areas were relatively unchanged, a detailed look at the data shows regional shifts in PPP activity from 2011 to 2012. For example, Europe narrowed the gap in PPP activity with the U.S. The continent had 4% fewer PPPs than the U.S. in 2012. In 2011, Europe had 13% fewer PPPs (see Figure 2, "Regional breakdown of public-private partnerships in 2012 and 2011").

The European numbers were driven in part by a more than 60% uptick in disclosed PPPs involving U.K.-based companies and institutions, plus a jump in activity from the European Commission's Seventh Framework Program and Europe's **Innovative Medicines Initiative (IMI)**.

Overall, the U.S. continued as the leader in the PPP landscape in 2012, with U.S. institutions and companies involved in about two-thirds of the 387 disclosed PPPs for the year.

### Wild West

The 2012 U.S. regional data also highlight California's strong showing in both PPP activity and early stage venture financing (see Figure 3, "Further regional breakdown of public-private partnerships").

California companies and institutions combined to make the state the overall U.S. leader in PPP activity in 2012, followed by Massachusetts

and New York. California-based companies were by far the most active group on the PPP front, with 52 disclosed collaborations last year. New York-based institutions—the most active group in 2011—placed second with 36 disclosed PPPs (see Figure 3.I).

For the year, biotech worldwide raised \$959.2 million in disclosed seed and series A financings, a 25% dip from the \$1.3 billion raised from such financings in 2011. Those numbers are likely to change somewhat as time passes because seed and series A financings often are not disclosed in the year they are completed.

California-based biotech startups founded last year were the clear leaders in seed and series A financings. These startups raked in at least \$158.9 million and accounted for four of the five largest series A rounds—a big improvement over 2011, when California-based startups raised \$60.5 million and accounted for only one of the top five series A rounds (see Table 1, "Largest series A financing rounds for companies founded in 2012").

Six of the seven 2012 California startups that received venture financing are based in the San Francisco Bay Area.

U.K.-based startups founded in 2012 came in a distant second, raising \$29.2 million in disclosed seed and series A financings for the year.

The largest series A round in 2012—\$49 million—went to Massachusetts-based **Histogenics Corp.**, a regenerative medicine company focused on cartilage repair. The company was founded in 2000, and the financing was designed to recapitalize the company following its acquisition of ProChon Biotech Ltd. in May 2011.

### Across the pond

Regional data out of Europe showed that the U.K. was again the leader

**Table 1. Largest series A financing rounds for companies founded in 2012.** Four of the largest series A rounds for biotech founded in 2012 went to companies based in the San Francisco Bay Area. Among the 23 companies founded in 2012 that disclosed venture financing that year, there were 16 U.S. companies, 3 based in the U.K. and 1 each based in Australia, Belgium, Russia and Switzerland. The largest series A round in 2012 was \$49 million and raised by Histogenics Corp., a Massachusetts-based regenerative medicine company that develops products for cartilage repair. The company was founded in 2000 and thus was excluded from this table.  
Source: BCIQ: BioCentury Online Intelligence

Company	Business area	Location	Amount raised (\$M)
Global Blood Therapeutics Inc.	Hematology	South San Francisco, Calif.	40.7
MyoKardia Inc.	Cardiovascular disease	San Francisco, Calif.	38.0
Allakos Inc.	Inflammation	San Francisco, Calif.	32.0
Labrys Biologics Inc.	Neurology	San Francisco, Calif.	31.0
Aclaris Therapeutics Inc.	Dermatology	Malvern, Pa.	21.0
BioMotiv LLC	Cancer; cardiovascular disease; neurology	Cleveland, Ohio	21.0

**Table 2. Leaders in the number of public-private partnerships.** The NIH and European Commission took the top positions with respect to the number of disclosed public-private partnerships (PPPs) in 2012. The U.K.'s GlaxoSmithKline plc took the top spot on the company side, whereas Sanofi and Pfizer Inc. shared the second spot. Excludes deals that only involved IP transfer. Source: *BioCentury Archives*

Institute	Number of PPPs
NIH (includes the National Cancer Institute and National Institute for Allergy and Infectious Diseases)	17
European Commission (via the Seventh Framework Program)	16
BGI	9
Bill & Melinda Gates Foundation	8
Agency for Science, Technology and Research (A*STAR)	7
Harvard University	7
Innovative Medicines Initiative	7
University College London	7
The University of Texas (includes The University of Texas Medical Branch, The University of Texas MD Anderson Cancer Center and The University of Texas Southwestern Medical Center)	7
Company	Number of PPPs
GlaxoSmithKline plc (LSE:GSK; NYSE:GSK)	15
Pfizer Inc. (NYSE:PFE)	11
Sanofi (Euronext:SAN; NYSE:SNY)	11
AstraZeneca plc (LSE:AZN; NYSE:AZN)	10
Johnson & Johnson (NYSE:JNJ)	10

in PPP activity in 2012. U.K.-based companies signed on with 49 PPPs, and U.K.-based institutions were involved in 43 (see Figure 3.II).

On the industry side, Europe also showed a shift in PPP activity, with the U.K.'s GlaxoSmithKline plc replacing France's Sanofi as the

most active company in 2012. GSK disclosed 15 PPPs last year, and 7 of these involved the infectious diseases space, in contrast to just 2 of 6 in 2011.

Notable PPPs for GSK in 2012 include its participation in IMI's NewDrugs4BadBugs program to fund late-stage trials of pharma-backed antibiotic compounds<sup>1</sup> and a partnership with not-for-profit **The Centre for Drug Research and Development** to support research at academic institutions across Canada.<sup>2</sup>

In Asia, both Japan and China showed a pattern of PPP activity nearly identical to that of 2011, with Japanese companies and Chinese institutions showing the most activity (see Figure 3.III). Companies in Japan continued to partner with an even mix of institutions within the country's own borders and abroad, whereas Chinese institutions typically found partners abroad.

Shenzhen-based **BGI** was the single most active Asian entity on the PPP front, with nine disclosed genomics-related partnerships in 2012.

Singapore's **Agency for Science, Technology and Research (A\*STAR)** was the second most active entity in the Asia region, with a string of eight deals primarily related to the development of diagnostic tools and genomics research.

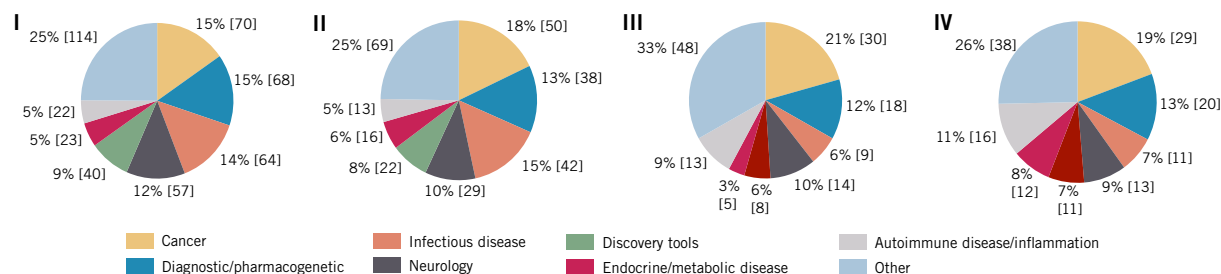
### Government relations

Among public funders, governments stepped up their PPP activity in 2012, with the NIH and the European Commission taking the top two spots and IMI and A\*STAR tying in fifth place (see Table 2, "Leaders in the number of public-private partnerships"). China's BGI took the third spot, and the **Bill & Melinda Gates Foundation** took fourth.

PPPs receiving direct support from national governments and/or government-run institutions also accounted for the largest PPPs by value, with an aggregate budget expected to exceed \$1.6 billion over the next 7 years (see Table 3, "Top public-private partnerships in 2012 by value").

The largest of these involves more than a dozen biopharma companies partnering with national governments, nongovernmental organizations and international health organizations to eliminate or control 10 neglected tropical diseases by 2020. The partners expect

**Figure 1. Business areas covered by 2012 public-private partnerships.** Breakdown of therapeutic areas covered by public-private partner-



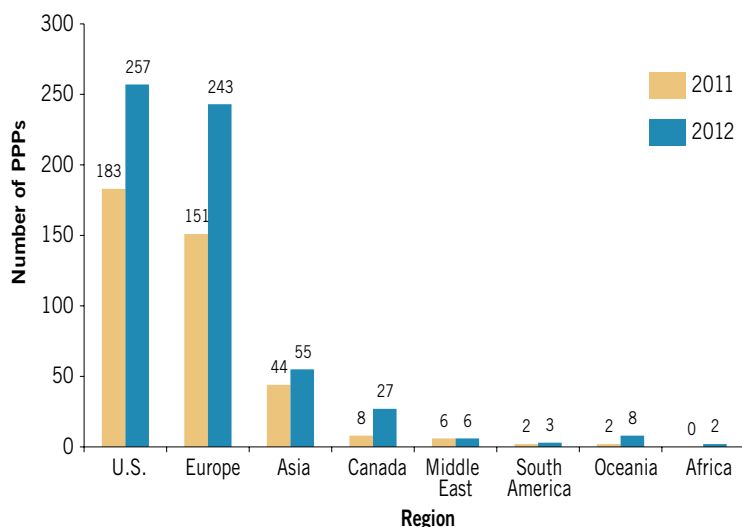
ships (PPPs; I) and seed or series A financings (III) in 2012. PPPs (II) and financings (IV) from 2011 are provided for comparison. For (I) and (II), percentages are out of the total number of PPPs worldwide; bracketed values are actual numbers. For (III) and (IV), percentages are out of total financing events across all therapeutic areas; bracketed values are the actual number of companies that received financing for a given therapeutic area. Data includes double counting because some partnerships and companies are tied to more than one business and/or disease area.

**Table 3. Top public-private partnerships in 2012 by value.** Two of the five largest 2012 public-private partnerships (PPPs) without direct government support were valued at \$100 million or more. PPPs that include grants, awards and/or other types of direct funding support from national governments and government institutions are included in the 2012 list but ranked separately from those without such support. Only 128 of the 387 PPPs reported in 2012 had disclosed dollar amounts. Excludes deals that only involved IP transfer.

Source: BioCentury Archives

Companies	Institutions	Disclosed value (\$M)
<b>PPPs without direct support from national governments and/or government institutions</b>		
Aeras	Bill & Melinda Gates Foundation	220
BioMotiv LLC	University Hospitals	100
Merck & Co. Inc. (NYSE:MRK)	California Institute for Biomedical Research	90
Pfizer Inc. (NYSE:PFE)	Cystic Fibrosis Foundation	58
Shire plc (LSE:SHP; NASDAQ:SHPG)	Fondazione Telethon	22
<b>PPPs with direct support from national governments and/or government institutions</b>		
Abbott Laboratories (NYSE:ABT); AstraZeneca plc (LSE:AZN; NYSE:AZN); Bayer AG (Xetra:BYN); Becton Dickinson and Co. (NYSE:BDX); Bristol-Myers Squibb Co. (NYSE:BMJ); Eisai Co. Ltd. (Tokyo:4523; Osaka:4523); Gilead Sciences Inc. (NASDAQ:GILD); GlaxoSmithKline plc (LSE:GSK; NYSE:GSK); Johnson & Johnson (NYSE:JNJ); Merck & Co.; Merck KGaA (Xetra:MRK); Novartis AG (NYSE:NVS; SIX:NOVN); Pfizer; Sanofi (Euronext:SAN; NYSE:SNY)	Bill & Melinda Gates Foundation; Drugs for Neglected Diseases initiative; Lions Clubs International Foundation; Mundo Sano; The Children's Investment Fund Foundation; The World Bank; United Arab Emirates government; U.K. government; U.S. government; World Health Organization	>785
Emergent BioSolutions Inc. (NYSE:EBS); GlaxoSmithKline; Kalon Biotherapeutics LLC; Lonza Group Ltd. (SIX:LONN); Novartis	The Texas A&M University System; U.S. Department of Health and Human Services	400
AstraZeneca; GlaxoSmithKline	Innovative Medicines Initiative	281.6 <sup>A</sup>
None yet	U.S. Department of Defense; U.S. Department of Veterans Affairs	108
Not applicable	Duke University; NIH; The Scripps Research Institute	31 <sup>B</sup>

<sup>A</sup>Reflects current budget, but program is estimated to utilize up to €600 million (\$755.3 million) over the next 7 years. <sup>B</sup>Reflects initial funding, but program is estimated to receive \$186 million or more over the next 6 years.



**Figure 2. Regional breakdown of public-private partnerships in 2012 and 2011.** Number of disclosed public-private partnerships (PPPs) worldwide in the respective year. Data includes double counting as some PPPs involve companies and/or institutions from more than one region. Values refer to the actual number of companies or institutions. Total number of disclosed PPPs is 387 for 2012 and 241 for 2011.

to provide more than \$785 million to support R&D and strengthen drug distribution and implementation programs.

In contrast, the top 5 PPPs without direct support from government agencies have an aggregate budget of about \$490 million.

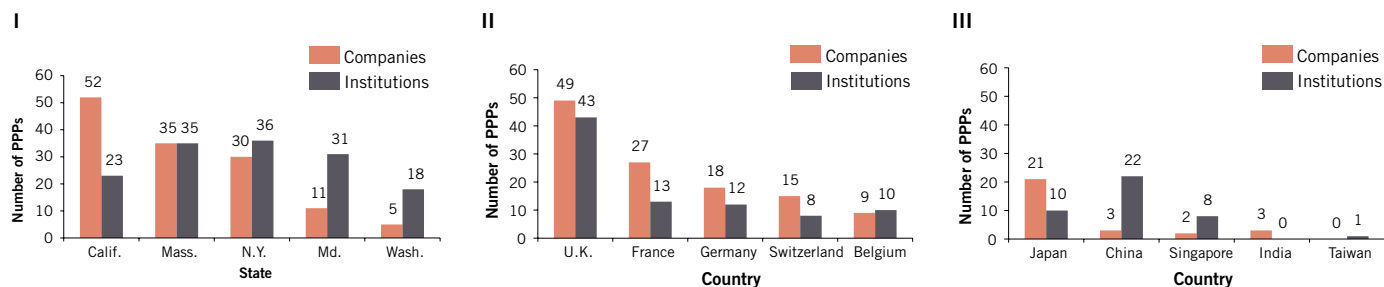
### Infectious influences

The disconnect that *SciBX* reported in 2011 between PPP activity and early stage venture financing for companies in the infectious diseases space<sup>3</sup> continued in 2012.

In aggregate, infectious disease companies raised \$70.9 million in disclosed seed or series A financing for 2012, down from \$107.1 million in 2011. Three companies did not disclose amounts raised. Only one infectious disease company founded in 2012—**Sequoia Vaccines Inc.**—received series A financing. The size of the round was not disclosed.

Nevertheless, the largest PPPs in 2012 by disclosed funding levels are in infectious diseases.

Of the top 5 such partnerships supported by national governments and/or government-run institutions, 4 are targeting infectious diseases and currently have an aggregate budget that is expected to exceed \$1.5 billion over the next 7 years.



**Figure 3. Further regional breakdown of public-private partnerships.** Regional breakdown of companies and institutions involved in public-private partnerships (PPPs) in the top five U.S. states (I), top five European countries (II) and top five Asian countries (III). Values refer to the actual number of companies or institutions. Data includes double counting as some PPPs involve companies and/or institutions from more than one state and/or country.

The largest PPP without direct government support is between the not-for-profit biotech **Aeras** and the Bill & Melinda Gates Foundation. The foundation will provide the biotech with up to \$220 million in grants over 5 years to support the development of vaccines for tuberculosis.

The disconnect between PPP activity and venture financing may change going forward as the FDA implements legislation passed last year in the U.S.

The Generating Antibiotics Incentives Now (GAIN) Act, which came into effect Oct. 1, 2012, provides added exclusivity for antibiotics and earmarks antibiotics for Priority Review.<sup>4,5</sup>

The act also mandates the creation of a pathogen-focused antibacterial drug development pathway and may remove some of the impediments to financing antibiotic drug development.

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## COMPANIES AND INSTITUTIONS MENTIONED

**Aeras**, Rockville, Md.  
**Agency for Science, Technology and Research**, Singapore  
**BGI**, Shenzhen, China  
**Bill & Melinda Gates Foundation**, Seattle, Wash.  
**The Centre for Drug Research and Development**, Vancouver, British Columbia, Canada  
**GlaxoSmithKline plc** (LSE:GSK; NYSE:GSK), London, U.K.  
**Histogenics Corp.**, Waltham, Mass.  
**Innovative Medicines Initiative**, Brussels, Belgium  
**National Institutes of Health**, Bethesda, Md.  
**Sanofi** (Euronext:SAN; NYSE:SNY), Paris, France  
**Sequoia Vaccines Inc.**, St. Louis, Mo.