

GEN

Genetic Engineering & Biotechnology News

MaryAnn Liebert, Inc.  publishers



Magazine June 2020 Vol. 40 No. 6 Special Report Bioprocessing

Biomanufacturing Costs in Cities around the Globe

A new report from the Boyd Company ranks biomanufacturing hubs by cost, from the highest (Copenhagen) to the lowest (Bangalore)

By **John H. Boyd** - June 5, 2020  0

Source: blackred/Getty Images

A new study by our corporate site selection firm compares the annual costs of operating biomanufacturing plants in the top 25 biopharma hubs—a list that includes both U.S. and offshore hubs. Our study found that the most expensive hub—at \$58.7 million per year—is in Copenhagen, Denmark, and that the least expensive hub—at \$14.0 million per year—is in Bangalore, India. Among the U.S. biopharma hubs, annual costs range from a high of \$55.5 million, in New York, New York, to a low of \$37.3 million, in Raleigh/Durham, NC.

Operating costs in the study were scaled to a hypothetical 300,000-square-foot biologics production plant employing 300 workers. The analysis includes all major geographically variable cost factors such as labor, real estate, construction, taxes, and utilities (*Table 1*).

Biopharma site selection

Site selection is one of the most demanding and far-reaching decisions that corporate management can make. A less than optimal site can incur a high cost and compromise a company's competitive position, disadvantaging a company for years. While the site selection decision is a relatively infrequent event for most of our biopharma clients, we are constantly monitoring business climates, regulatory issues, labor conditions, cost trends, incentive programs, and other more subtle geographic variables often overlooked by those lacking experience or limited to general knowledge.

Our site investigations proceed in an independent fashion, free from the sometimes-conflicting influences of downstream commissions tied to real estate transactions or ancillary consulting packages. Our searches are also carried out on a highly confidential basis, maintaining the anonymity of our biopharma clients to avoid premature disclosure of relocation plans, preventing troublesome labor and competitive repercussions. Our commitment to confidentiality also insulates biopharma executives from disruptive outside sales pressures.

While every client's project has its own unique demands, the following seven elements are common to most of our site selection engagements within the biopharma industry:

- **Criteria development**—a start-up client consultation and tour of one of our client's existing plants or R&D centers. At this session, we determine the overall goal of the proposed new facility and develop an operating model reflecting requirements for labor skill sets, real estate, utilities, transportation linkages, and other quantitative and qualitative factors that will guide our search.
- **Primary search area**—a delineation of the geographic region, cluster of states, or off-shore countries where the location objectives of the proposed new biopharma facility can be maximized.
- **Feasibility costs and candidate cities**—the identification of a series of top candidate cities, the rationales for the rejection of less desirable cities, and the preparation of a detailed, factor-by-factor comparative operating cost analysis scaled to the proposed new biopharma facility in each of the top candidate cities.
- **On-the-ground field research**—regimented and confidential investigations carried out in the most promising cities assessing bioscience recruiting potential, available real estate, and availability of biopharma support services (as determined via liaisons with the local academic community, meetings with state and local political leaders, surveys of lifestyle considerations of transferees, and other client-specific field inquiries).
- **Final economic analysis**—a final determination of annual operating costs and financial incentives to help write down the cost of the move scaled to the proposed new facility on real estate sites within the most promising locations.
- **Client visitations**—meaningful and productive itineraries and supervised client visitations based on field research findings and local contacts within the most promising locations.

- **Post-site selection support**—ongoing monitoring of the legislative and regulatory climate at the preferred location as well as other client-requested locations that might be considered for other biopharma expansions or relocations.

Up-and-coming biopharma hubs

Table 1. Top 25 Global Biomanufacturing Hubs

Biomanufacturing Hub	Total Annual Operating Costs
Copenhagen, Denmark	\$58,700,079
Zurich/Basel, Switzerland	\$58,236,969
New York, NY	\$55,485,395
Paris, France	\$53,872,462
Frankfurt, Germany	\$50,462,680
San Francisco, Northern CA	\$49,111,676
Boston, MA	\$49,024,219
Melbourne, Australia	\$48,952,527
New Brunswick/Princeton, NJ	\$48,910,084
Chicago, IL	\$48,286,151
London, United Kingdom	\$48,232,030
Tokyo, Japan	\$44,550,756
Philadelphia, PA	\$44,474,797
LA/San Diego, Southern CA	\$44,470,599
Montgomery County, MD	\$43,876,417
Dublin, Ireland	\$43,746,361
Seattle, WA	\$42,699,339
St. Louis, MO	\$42,073,992
Singapore/Jurong East, Singapore	\$41,050,215
Pittsburgh, PA	\$40,887,260
Denver, CO	\$40,824,712
Austin, TX	\$39,429,433
Raleigh/Durham, NC	\$37,291,066
Tel Aviv/Petah Tikva, Israel	\$35,919,434
Bangalore, India	\$13,985,300

The U.S. locations in this list were selected based on the size and growth of local life sciences employment, the inventory of laboratory space, the level of NIH funding, the presence of academic and medical research institutions, the depth of the high-tech workforce, and other factors. The off-shore locations were selected based on their housing of major operations of global biopharma players: Copenhagen (Novo Nordisk), Paris (Sanofi), Frankfurt (Merck), Dublin (Allergan), Zurich/Basel (Biogen), London (GlaxoSmithKline), Melbourne (Mayne Pharma), Bangalore (Bal Pharma), Tel Aviv/Petah Tikva (Teva), Tokyo (Otsuka), and Singapore (Bestar).

Beyond the top 25 biomanufacturing hubs in Table 1, we are seeing heightened interest in new and emerging cities showing great promise for new biopharma operations. Four of these new hubs are as follows:

I-40 Corridor/Triad Region of

North Carolina: This region includes the Winston-Salem area, home of Wake Forest University’s Innovation Quarter focusing on advanced data analytics, clinical research, population health, and regenerative medicine. More than half a million dollars was recently awarded by the National Science Foundation to Forsyth Technical College in Winston-Salem for the creation of a biotechnology education center to further develop the skillsets needed by local life sciences employers Cook Medical, Wake Forest Institute of Regenerative Medicine, Carolina Liquid Chemistries, Carolina Biological Supply, and

Piedmont Pharmaceuticals. North Carolina offers a very positive business and right-to-work labor climate and a recently enhanced incentive program.

Columbia, MO: This city is home to the University of Missouri’s two new research centers: the NextGen Precision Health Institute, which brings together researchers from medicine, engineering, and veterinary medicine, and the Swine Somatic Cell Genome Editing Center, which focuses on biomedical treatments for human diseases such as cystic fibrosis. Columbia is centrally located between St. Louis—a bioscience hub in its own right—and Kansas City, which recently attracted the U.S. Department of Agriculture’s Economic Research Service and National Institute for Food and Agriculture from Washington, DC.

Jupiter/Boca Raton, FL: Palm Beach County is home to two biopharma concentrations: Jupiter and Boca Raton. Jupiter houses two world-renowned bioscience research institutions, the Scripps Florida Research Institute and the Max Planck Florida Institute for Neuroscience. Boca Raton is home to GE Healthcare, Akron Biotechnology, and Florida Atlantic University (FAU), which has been designated a “high research activity” institution by the Carnegie Foundation for the Advancement of Teaching. Palm Beach County now houses some 200 bioscience companies engaged in manufacturing and R&D in a range of pharma, biotech, and medical devices sectors.

Montreal, Canada: Greater Montreal is emerging as one of the Northeast’s major life sciences hubs with strengths in biopharmaceuticals, diagnostics, medical devices, health technologies, and the expanding field of artificial intelligence. A 29% tax credit for scientific research and experimental development distinguishes Montreal, along with a favorable exchange rate and low operating costs for a city its size. Led by the University of Montreal and McGill University, Montreal is Canada’s largest university research hub. Due to the work of prominent researchers like Yoshua Bengio—a founder of machine learning—Montreal is developing and attracting world-class experts in artificial intelligence.

COVID-19’s reshoring effect

Overextended and risky supply chains are no longer tolerable to our biopharma clients. COVID-19 is providing new and forceful momentum for the reshoring of manufacturing investment back to the United States from China and elsewhere. Our nation’s biopharma and medical devices sector—now dangerously concentrated in China—must be the first in line to disinvest there and reinvest back in the United States.

Today, over 70% of manufacturers of pharmaceutical ingredients supplying the United States are overseas, including 13% in China, according to recent U.S. Food and Drug Administration figures. A bipartisan bill sponsored by Senators Marsha Blackburn (R) Tennessee and Robert Menendez (D) New Jersey is designed to incentivize, and in some cases force, the return of biopharma jobs to the United States to address this dangerous state of affairs.

It is interesting to note that the Blackburn–Menendez bill is not a unique legislative reaction to the COVID-19 fallout. Japan also plans to pay firms to leave China and relocate production elsewhere as part of its coronavirus stimulus bill. More than \$2 billion of Japan’s record economic stimulus package will be used to help companies move production out of China.

Operating costs under the microscope

COVID-19 anxieties, trade wars, growing pressures for price controls for prescription drugs, along with regulatory uncertainties associated with the 2020 presidential election are all causing a heightened focus on operating cost structures by the biopharma industry. Cost differentials between an acceptable production site and an optimal location can be very substantial even within a given U.S. region. Itemized annual operating costs are detailed in *Table 2* for several high- and low-cost biomanufacturing hubs.

Table 2. Breakdown of Operational Costs in Selected Biomanufacturing Hubs: The Highs and Lows

	Highest Cost U.S. City					Lowest Cost U.S. City	Highest Cost Global City	Lowest Cost Global City
	New York, NY	San Francisco, CA	Boston, MA	Bethesda, MD	Austin, TX	Raleigh/Durham, NC	Copenhagen, Denmark	Bangalore, India
Labor Costs								
Weighted Average Annual Earnings	\$77,369	\$80,117	\$72,170	\$70,763	\$62,884	\$61,346	\$90,660	\$7,884
Annual Base Payroll Costs	\$23,210,700	\$24,035,100	\$21,651,000	\$21,228,900	\$18,865,200	\$18,403,800	\$27,198,000	\$2,365,200
Fringe Benefits	\$5,338,461	\$5,528,073	\$4,979,730	\$4,882,647	\$4,338,996	\$4,232,874	\$5,167,620	\$638,604
Total Annual Labor Costs	\$28,549,161	\$29,563,173	\$26,630,730	\$26,111,547	\$23,204,196	\$22,636,674	\$32,365,620	\$3,003,804
Electric Power Costs	\$2,006,400	\$1,213,200	\$2,328,000	\$1,032,000	\$584,400	\$784,800	\$3,240,000	\$828,000
Amortization Costs	\$15,438,023	\$14,764,583	\$14,641,730	\$13,814,279	\$11,373,872	\$11,070,948	\$16,160,653	\$7,645,431
Property and Sales Tax Costs	\$8,988,422	\$3,154,114	\$5,042,160	\$2,583,378	\$3,981,384	\$2,574,932	\$6,624,037	\$2,374,669
Corporate Travel Costs	\$503,389	\$416,606	\$381,599	\$335,213	\$285,581	\$223,712	\$309,769	\$133,396
Total Annual Geographically-Variable Operating Costs	\$55,485,395	\$49,111,676	\$49,024,219	\$43,876,417	\$39,429,433	\$37,291,066	\$58,700,079	\$13,985,300

The figures in this table include all major geographically variable operating costs for a 300,000-square-foot biomanufacturing facility employing 300 nonexempt workers. Source: The Boyd Company.

John H. Boyd founded and is a principal at The Boyd Company.