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Introduction

The following is GEN's annual European cluster ranking effort, which ranks nations on these five criteria:

Public research funding—Figures taken from the publicly available European Union Community Research and Development Information Service (CORDIS) website of grants issued through Framework Programs 5, 6, and 7 under the subject "biotechnology," as well as the current Horizon 2020 research funding program.

Venture Capital (VC) funding—Combines figures compiled by Invest Europe—with figures furnished by some of the countries themselves, either on their own websites, in publicly available reports, in public announcements, or as responses to email queries from GEN.

Patents—Based on the number of "biotechnology" and "pharmaceutical" patents granted to, plus biotech and pharma patent applications made by, countries in Europe, as furnished by the publicly available European Patent Office database of granted patents per field of technology and per country of residence during 2017. **Number of biotech companies**—Combines figures furnished by representatives of the countries themselves, either on their own websites, in publicly available reports or public announcements, in news ports, or as responses to email queries from GEN. Where known, figures reflect companies with an "exclusive" or "pure" focus on biotech.

Jobs—Based on various sources from industry groups, regional life sciences campuses, public and/or private economic development groups, and press articles when written by or directly attributed to an industry source. Where possible, medical device or "medical technology" job numbers normally included in "life sciences" employment numbers were excluded, leaving job numbers more closely focused on biotech and pharma.

Credit: https://www.genengnews.com/lists/top-10-european-biopharma-clusters-5/

#1. United Kingdom

The United Kingdom remains Europe's top biotech cluster–at least for now—despite continuing uncertainty over the future of the kingdom once it completes its "Brexit" separation from the European Union, which has already sent the London-based European Medicines Agency packing its bags for Amsterdam (See The Netherlands, above). The government insists the cluster will survive Brexit and remain number-one: "The U.K. remains a fantastic place for innovation, with broad academic, regulatory, and clinical expertise which works at a national and global level and that won't go away post-Brexit," Ian Hudson, M.D., CEO of the U.K. Medicines and Healthcare Products Regulatory Agency (MHRA), insisted last month.

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#2. Germany

While better known for pharma giants like Bayer and Boehringer Ingelheim, Germany has also strived to grow a top-tier cluster with larger biotechs and smaller enterprises. One of those biotechs, BioNTech, inked an up-to-\$425 million collaboration with Pfizer to develop mRNA-based flu vaccines in August. Also that month, Göttingen-based pharma and lab equipment supplier Sartorius' nonprofit "Life Science Factory" division disclosed plans to open a namesake accelerator space for startups consisting of labs, coworking spaces, and consulting services. The Factory will make available a 500-square-meter (5,382-square-foot) space starting next year, and expand to a 3,000-square-meter (32,292-square-foot) site at the new Sartorius Quarter in 2021..

#3. France

While France has built upon its heritage of pharmas like Paris-based Sanofi to grow a biopharma industry that is among the top three in Europe, the nation sees opportunity for additional expansion. French President Emmanuel Macron in March announced his country would spend €1.5 billion (\$1.7 billion) to become a global leader in Al— where the U.S. and China are now dominant—by building up capabilities and companies focused on "healthcare" as well as the environment, transportation, and defense/security; €100 million (about \$115 million) would be invested in startups..

#4. The Netherlands

The Netherlands is due to welcome the newest anchor for its biopharma cluster by the end of March: the European Medicines Agency, which is set to open its doors in Amsterdam, a relocation from London following the U.K. "Brexit" vote to leave the European Union. "This will be a magnet to Holland and [Belgium's] Flanders (which already have strong pharma industries) for inward drug company investment and for divestment from the U.K.," Prof. John Hardy of University College London predicted last year. Yet the Netherlands need not depend on Brexit for growth: VC firm Forbion, based in Naarden as well as Munich, Germany, on October 1 completed an oversubscribed €360 million (about \$414 million) fourth life-sci fund. And in May, Nijmegen-based Xenikos, developer of an acute graft-versus-host disease therapy, won a \$30 million Series B financing.

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#5. Spain

Spain's biopharma industry has expanded and matured over the past decade into a growth-focused cluster that had reason to celebrate its progress at last month's BIOSPAIN conference: "When we started back in 2007, there were literally no life science investors here. Now, we have a real Spanish biotech community, we have national investors attracting the international ones and we have this event," Joan Perelló, CEO of calcification disorders drug developer Sanifit, based in Palma with a San Diego subsidiary, told European Biotechnology. Most recently at deadline, investors in and outside Spain, including Roche Venture Fund, partnered on the €21.3 million (\$24.52 million) Series B financing completed by Mataró, Barcelona-based rare disease drug developer Minoryx Therapeutics..

#6. Switzerland

Switzerland has seen many of Basel-headquartered Novartis' deepest job cuts lately. Last month the company announced plans to eliminate 1500 jobs in Basel as well as Stein, Locarno, and Schweizerhalle, and shift 700 business services positions from Switzerland to service centers overseas. Basel-based Roche warned in September of its own cost reductions as longtime blockbusters gear up for competition from biosimilars. Not all Swiss giants are retrenching: Lonza on September 20 announced a CHF 400 million (\$403 million) expansion of its Visp biopark to grow its Ibex[™] Solutions business with two new offerings, IbexTM Design and IbexTM Develop, designed for biotechs with preclinical- to commercialization-stage antibody therapies..

#7. Belgium

Two of Belgium's largest biotechs have made big news in recent months. Mechelen-based Galapagos last month joined partner Gilead Sciences in reporting strong Phase III results for their JAK1 inhibitor candidate filgotinib in adults with moderately-to-severely active rheumatoid arthritis. In addition to good clinical news, filgotinib has also generated forecasts of blockbuster sales ranging from \$4 billion (Berenberg) to \$6 billion (Jefferies). And Ghent-based Ablynx was acquired by Sanofi for €3.9 billion (nearly \$4.5 billion) in a deal completed June 19. Small companies have also grown in Belgium: Most recently on September 27, Louvain-la-Neuve-based microbiome startup A-Mansia, a co-spin-off of the University of Louvain and Wageningen University, said its Series A financing swelled to €18 million (\$20.7 million)..

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Published 21st February, 2019. Last updated 21st February, 2019. Page 2 of 2.

#8. Sweden

Sweden has a solid research base that includes the Karolinska Institute and Lund, Uppsala, and Göteborg Universities, not to mention an equally solid presence of younger biotechs and a pharma heritage reflected in Astra (now AstraZeneca) and Pfizer-acquired Pharmacia. Yet the nation isn't resting on its laurels. In February, Sweden created a government Office of Life Sciences tasked with developing a national strategy for the life sciences. In May, Sweden's R&D funding agency Vinnova committed the nation to expanding in AI for purposes that include "products, services and processes for diagnostics, drugs, and healthcare." And in August, Sweden's government partnered with GE Healthcare to open a SEK 145 million (approximately \$16 million) innovation center in Uppsala focused on advancing manufacturing capabilities and commercializing new life sciences technologies..

#9. Italy

After Milan lost a coin toss to Amsterdam for the London-leaving European Medicines Agency, Italy's life sciences industry group Assobiotec, part of the Italian chemical industry federation Federchimica, is demanding a concrete commitment to advancing biopharma from Italy's new populist government led by Giuseppe Conte, which took office in June. Italy "has all the credentials to compete internationally with its competitors, which are not perhaps the United States or China, but other European countries today do better than us in research and innovation," lamented Assobiotec President Riccardo Palmisano, M.D., who is also CEO of Milan-based cancer therapy developer MolMed, according to Italian news agency Adnkronos..

#10. Denmark

The nation's largest home-grown drug developer has not been spared from big biopharma's worldwide job cutting: On September 18, Bagsværd-based Novo Nordisk said it will eliminate 400 R&D jobs in Denmark and China. But the company also plans to create R&D jobs in Copenhagen, where two of four "Transformational Research Units" will be established. Also in Copenhagen, Bothell, WA-based CDMO AGC Biologics plans in November to bring online a Single-Use Bioreactor (SUB) 6Pack™ suite, consisting of six 2000-L production bioreactors and a 2000-L seed train. And in July, Copenhagen-based Genmab inked a potentially \$2.8 billion-plus cancer immunotherapy collaboration with Immatics Biotechnologies..

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