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Scaling innovation: How Benelux could become Europe's leading biotech hub

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Benelux

Belgium
Netherlands
Luxemburg

Biotechnology has revolutionized medicine. Over the past 30 years, techniques have improved rapidly, yielding extraordinary new products and treatments, and growth is accelerating. Biotech already makes up about 25 percent of the global pharmaceutical market and is expanding by about 8 percent a year, faster than any other segment of the pharma industry.¹

Benelux plays a prominent role in the European biotech industry. Galapagos, Argenx, and UniQure are three examples of successful biotech firms with market capitalizations above €2 billion—collectively represent a market capitalization of some €19 billion at the time of writing and are helping Benelux to further develop as a hub for innovation. Meanwhile, the European Medicines Agency’s recent move from London to Amsterdam is likely to catalyze growth and attract more biopharma companies to the region.

The Benelux region has a high density of life science activity and with its excellent infrastructure and strategic position bordering the three largest economies of Europe, Benelux is attractive for life science businesses (Exhibit 1). Indeed, many established biotech companies conduct activities in countries across Benelux,

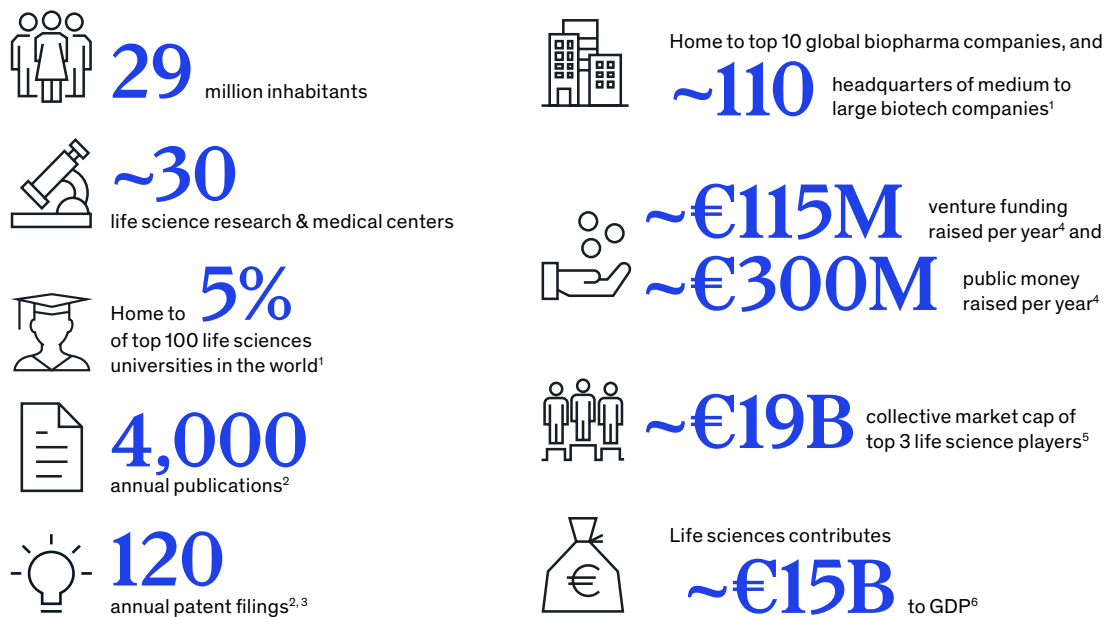
which is why we regard the region as a single hub. In this paper we focus our analyses on Belgium and the Netherlands—which have the largest life science R&D and operations—but our recommendations are applicable to Luxembourg. We present our view of the region’s strengths and what it can do to take a leadership position within European biotech.

Based on our research, we believe that Benelux can build on its many unique strengths and rapid growth to become the leading biotech hub in Europe—and a major player in the global biotech landscape. Scaling biotech innovation would create significant benefits for the region, including approximately 100,000 additional jobs (an increase of about 75 percent), and a potential additional annual GDP impact of some €7 billion (a 45 percent increase) by 2030 including direct, indirect, and induced impact (for definitions see page 23).

Alongside quantitative analyses, we have conducted some 25 interviews with CEOs of major biotech companies in the region, investment managers at venture capital firms, scientists, and specialists from anchor institutions.

Exhibit 1

Benelux has many of the resources it needs to become the leading biotech hub



1. 2019 2. Search terms: Service providers; Immunotherapy; Antibody; Vaccines; Cell and gene therapy; Antibiotics;

Drug delivery - including multiple search synonyms 3. 2005-18 4. 2012-18 5. November 2019

6. Including direct, indirect, and induced contributions. Data: Luxembourg from 2017; Belgium and Netherlands from 2016

Source: Bloomberg; CBS; Essenscia; EvaluatePharma; Innography (patent submissions 2005-2018); PitchBook; PubMed (articles published 2005-18); SILA; The Netherlands, Europe’s most attractive and innovative biopharmaceutical environments (Health-Holland).

¹ EvaluatePharma database, Evaluate Ltd, April 2019, evaluate.com.



Benelux is well positioned to become Europe's leading biotech hub

Benelux's biotech hub is one of the best performing in Europe

Benelux's biotech hub already ranks among the most robust in Europe, and it has many of the resources it needs for clear leadership in the field. It has become a center of knowledge-sharing among industry, academia, and government that attracts many young biotech companies. From

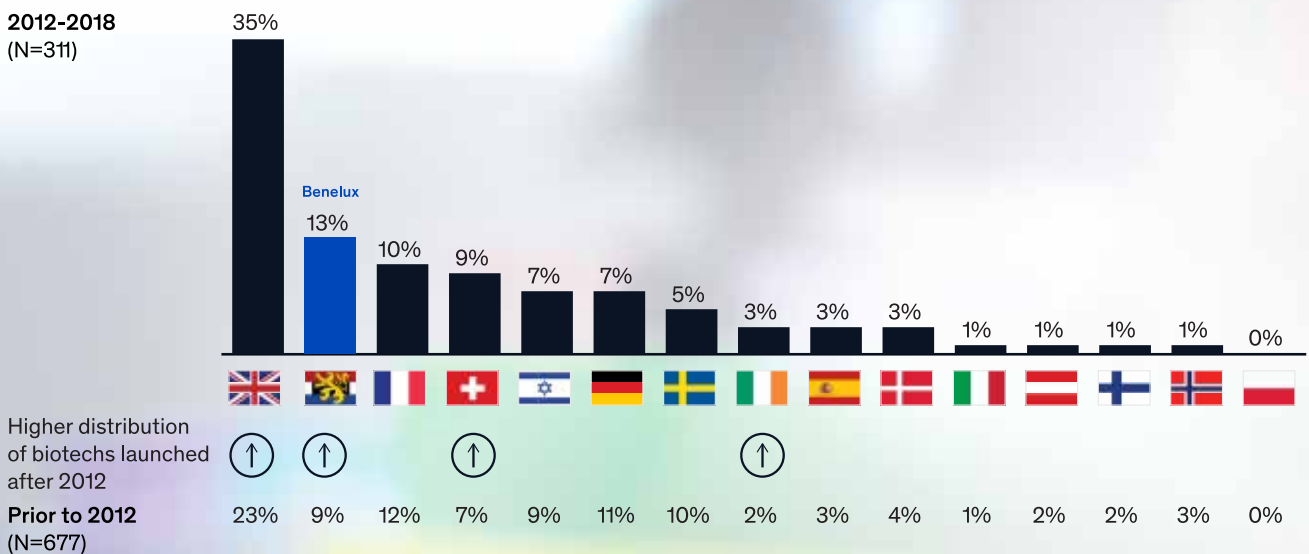
2012 to 2018, 13 percent of Europe's new biotech ventures were founded in Benelux, making it the second-most popular place for new biotech ventures in Europe after the United Kingdom (Exhibit 2).²

Moreover, these companies are highly productive: over the past seven years, 20 percent of FDA approvals for European biotech companies

Exhibit 2

Benelux hosted more biotech launches than anywhere else in Europe other than the United Kingdom from 2012 to 2018

Distribution of biotechs founded in EU



Source: McKinsey & Company's Start-up and Investment Landscape Analysis (SILA)

² McKinsey & Company's Start-up and Investment Landscape Analysis (SILA).

originated in Benelux—the same number as Switzerland and the United Kingdom.³

Additionally, biotech companies in Benelux are particularly active in the industry’s most promising areas with a growing investment focus, including immunotherapy and antibodies, cell and gene therapy, oncology, and the central nervous system (Exhibit 3). Investors are scrambling to participate in these “hotspots,” where Benelux is in the top three in terms of the number of companies active in these areas.⁴

Exhibit 3

European “hotspot” ranking, based on share of companies active in areas that appeal most to investors

Share of total number of European biotechs per hotspot

	Immunotherapy and antibodies	Cell & gene therapy	Oncology	Central nervous system
#1	24% - UK	28% - UK	30% - UK	24% - UK
#2	16% - Benelux	16% - France	15% - Benelux	20% - France
#3	13% - Germany	13% - Benelux	13% - Germany	11% - Benelux*

*Shared position with Sweden (11%)
Source: McKinsey & Company’s SILA database & PitchBook database

Benelux’s robust biotech ecosystem drives innovation

Strong science with world-class universities and connected medical centers

Benelux’s rich ecosystem is driving the development of the biotech hub (Exhibit 4). For example, the region is home to 5 percent of the top 100 life sciences universities in the world.⁵ In addition, 14 percent of Benelux universities’ publications rank among the top 10 percent of biomedical and health science publications worldwide, a share that rivals that of Europe overall and approaches that of the United States at 16 percent.

Initiatives that stimulate biotech activity and connectivity to other biotech hubs

The governments in Benelux initiate and stimulate biotech activity in the region, promoting public-private partnerships and offering tax benefits for R&D work. Regional investment funds in the Netherlands, including InnovationQuarter, OostNL, and the Brabant Development Agency (BOM), provide seed capital to early-stage companies. Several government initiatives have led to a wide range of small (pre-) seed funds, which stimulates short-term growth. Furthermore, the Benelux region is characterized by initiatives that support global connectivity and partnerships with other biotech hubs.

In Belgium, there are coherent biotech support and commercialization initiatives. The Flanders Institute for Biotechnology (VIB), for example, has created an ecosystem where valorization experts and researchers collaborate to translate scientific inventions into viable products quickly and efficiently. While VIB is in essence a research institute linked to five Belgian universities, it commercializes its research vigorously. So far, its efforts have helped create 17 spin-off companies that have raised approximately €2.4 billion in investments or partnerships and made acquisitions worth €3.9 billion.⁶

Following the same model, but with a focus on oncology, the Onco Institute was launched in the Netherlands in early 2018. It includes members of several leading research groups in oncology. By combining excellent fundamental research, relevant expertise and immediate proof-of-concept, and seed funds, this institute has the potential to boost the translation of cancer research in Benelux. Also RegMed XB (Regenerative Medicine Crossing Borders) and DCVA (the Dutch CardioVascular Alliance) are setting up a similar specialized valorization platform, focusing on regenerative and cardiovascular medicine.

High density of large VC funds

Benelux is home to major venture capital (VC) funds that represent about 22 percent of all European VC late-stage capital with a focus on life sciences.⁷ Late-stage funds in Benelux have

³ EvaluatePharma database, Evaluate Ltd, April 2019, evaluate.com.

⁴ PitchBook database, March 2019, pitchbook.com; McKinsey & Company’s SILA database, March 2019.

⁵ Top 100 based on The Times Higher Education World University ranking 2019, July 2019, timeshighereducation.com; publications ranking based on CWTS Leiden Ranking 2018 (ranking of University publications—2013–16), July 2019, leidenranking.com.

⁶ Annual report, VIB, 2018, vib.be.

⁷ Prequin database, Prequin Ltd, March 2019, prequin.com.

Exhibit 4

A wide range of stakeholders support a strong, innovative ecosystem for biotech in Benelux

NOT EXHAUSTIVE

Anchor institutions/associations

EMA	Biotech associations	Academic institutions	
European Medicines Agency	Essenscia (incl.Bio.BE)	Radboud UMC	Université libre de Bruxelles
	flanders.bio	Leiden UMC	Université de Namur
	HollandBIO	Erasmus MC	Université de Liège
	EuropaBio	UMC Utrecht	Gembloux Agro-Bio Tech
	lifetech.brussels	Maastricht UMC+	Ghent University
	Nederlandse	Amsterdam UMC	Université catholique de Louvain
	Biotechnologie Vereniging	UMC Groningen	Katholieke Universiteit Leuven
	Dutch LSH Alliance	Vrije Universiteit Brussel	
	BioWin		

Government support

Government organizations	Public Private Partnerships	Funds
Wallonia.be	Oncode Institute	Lifetech.brussels
Health~Holland	RegMed XB	BOM
Bruxelles Invest & Export	IMEC	LIOF
Rijksdienst voor Ondernemend Nederland	Health RI (Health Research Infrastructure)	NOM Investeren Ontwikkeling
Flanders investment and trade	VIB	European Investment Fund
Belgian foreign trade agency		Innovation quarter
		Biowin
		Oost NL

Incubators, TTO & VCs

Pre-seed financing	Incubators & accelerators	Corporate venturing	Late stage investors
UNIIQ	Bio-incubator	Briskr	Johnson&Johnson
Luris	BLSI	Pivot Park	DSM
Other TTOs and RDCs ¹	CEI Louvain	Innov2go	Merck Ventures
	Venture lab	Startit	
Seed to early stage investors	SBIC	VIB	
Imec.istart	Biopark	Leiden Bio	
Fund+	LifeSciences@work accelerator	Science Park	
Swanbridge capital		Brightlands	
Biogeneration Ventures			
Thuja Capital			
Aglaia			
Mutualitede cautionement			

Pharmaceutical companies with substantial local presence

DSM	Novartis
AbbVie	Amgen
Sanofi	AstraZeneca
GSK	Johnson&Johnson
MSD	Pfizer
Roche	Boehringer Ingelheim
UCB	Gilead

1. Regional Development Corporations

grown steeply since 2013. In the Netherlands alone, €3 billion of capital are available for life sciences, including €2 billion in late-stage funding.⁸

Global pharmaceutical companies have a presence in the region

Every top ten global biopharmaceutical company undertakes key activities in Benelux: for example, GSK and Janssen Pharmaceuticals have major production facilities and R&D facilities in the region. The Belgian pharmaceutical industry is ranked second in R&D intensity in Europe, after the United Kingdom.⁹ Alongside Belgium, several leading multinational pharmaceutical businesses have manufacturing facilities in the Netherlands.

Benelux is attracting investments that can nurture growth

The investment climate in Benelux is maturing. Benelux-based biotechs raised 2.5 times more private capital between 2012 and 2018 than between 2005 and 2011, driven mainly by early-stage funding (seed, series A, and series B funding), which quadrupled.¹⁰

Biotechs from Benelux are also doing well on public markets. Between 2012 and 2018 they raised seven times more than from 2005 to 2011. About 80 percent of the public capital was raised on Nasdaq, which increases exposure to global investors and to dedicated expert analysts, increases transparency, and offers credibility. At the time of writing, six biotech companies from Benelux trade on Nasdaq.

Benelux companies do well on the Nasdaq: the average Benelux biotech IPO raised €62 million, while the average US biotech raised €64 million (Exhibit 5).¹¹ Benelux biotech companies also tend to be successful in raising follow-on offerings, which are done only on Nasdaq. The mean size of capital raised during follow-ons by Benelux biotechs on US exchanges was 1.5 times larger than the European mean, driven mainly by the success of large companies such as Galapagos, Argenx, and UniQure.¹²

Benelux is also attractive for mergers and acquisitions. The average M&A deal over the period 2012–18—worth some €1.3 billion in 2018—was twice the size of the average European M&A deal. Moreover, 35 percent of recent deals worth over €400 million happened in Benelux—all acquisitions by large international players (Exhibit 6).

Recent events have intensified the interest of large international investors, which are looking more proactively for opportunities in Europe. These include Gilead's €4.5 billion investment in Galapagos to enable growth, and AM-Pharma's receipt of €116 million from a European investment syndicate for a large phase III study.¹³

⁸ Overview of funds and VC funds Life Science and Health, Health~Holland.

⁹ EFPIA 2015 from a presentation "Belgium, the place to be for biopharmaceutical R&D manufacturing and logistics," Essenscia, essenscia.be.

¹⁰ BCIQ database BioCentury, March 2019, bcicq.biocentury.com; PitchBook database, March 2019, pitchbook.com.

¹¹ Ibid.

¹² Bloomberg, July 2019, Bloomberg.com.

¹³ "Gilead and Galapagos Enter Into Transformative Research and Development Collaboration," Gilead, July 14, 2019, gilead.com.

Exhibit 5

Benelux companies tend to be successful in raising capital on US exchanges

IPOs between 2012 and 2018

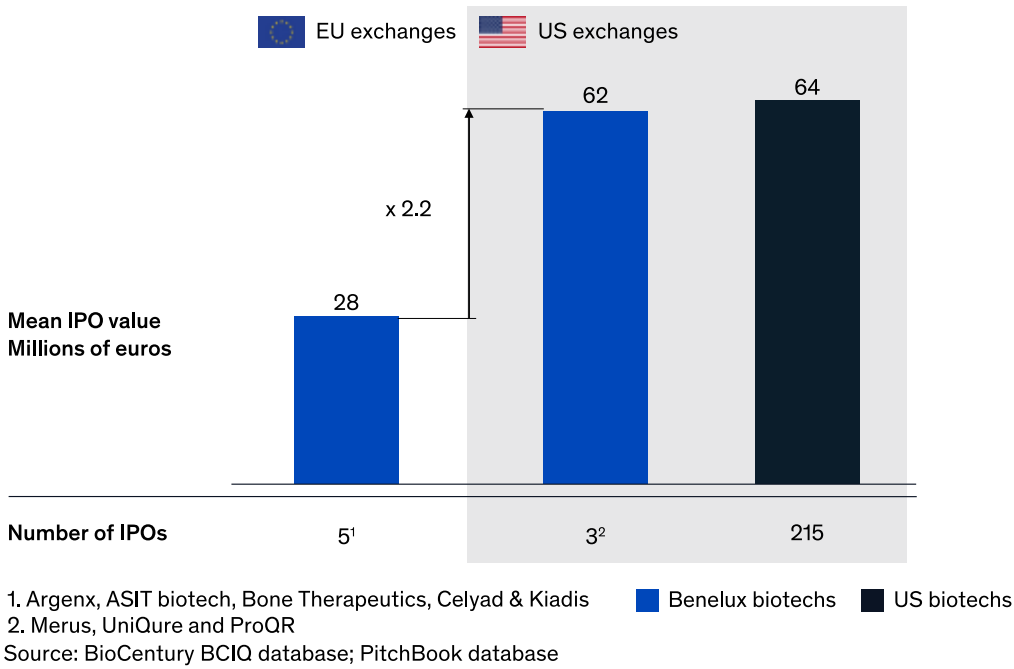
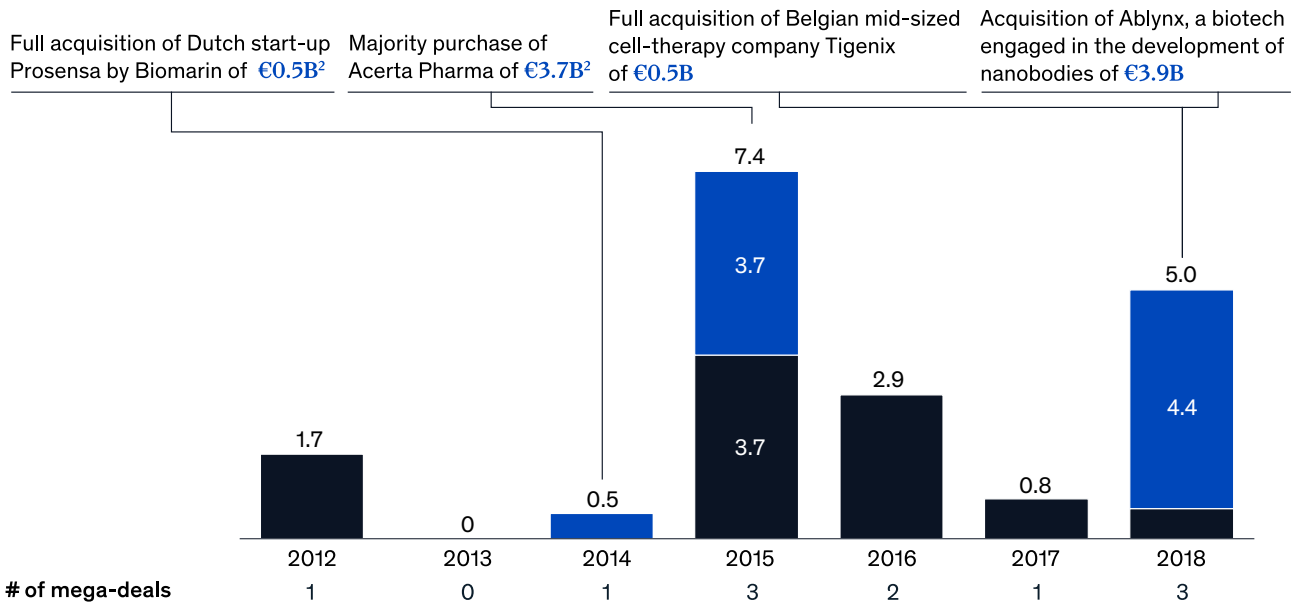


Exhibit 6

Approximately 35 percent of recent European M&A deals worth more than €0.4 billion took place in Benelux

Public M&A mega-deals in Europe from 2012-2018¹

Billion euros



1. Deals exceeding €0.4 billion in the Bloomberg database
 2. For the Benelux M&A deals, the Bloomberg values have been adjusted to the announced values
 Source: Bloomberg and respective company websites (AstraZeneca, Biomarín, Sanofi, and Takeda)

■ Benelux
 ■ Rest of Europe



Benelux can take three steps to support its biotech ambitions

Our research shows that, despite its many strengths, Benelux could take further steps to support its ambitions to become the leading biotech hub in Europe. We have identified three main areas for action:

1. The Netherlands can work to speed the translation of innovation.
2. Benelux can consider measures to help biotech companies attract, train, and retain talent.
3. The region needs to help biotech companies attract cornerstone investors to turbocharge growth.

However, implementing all three of these improvements will require a paradigm shift. The suggested measures need to be part of a comprehensive, coordinated approach involving the full biotech ecosystem, adjacent players, and significant commitment from government. To point the way, Brainport Eindhoven can serve as an example of how this can be done well.¹⁴ Below we describe the opportunities in detail and provide initial recommendations for specific stakeholders.

1. Strengthen capabilities to accelerate the translation of innovation

Although researchers in Benelux publish many high-impact papers, the patent-to-publication ratio is relatively low both in the region and across Europe as a whole. Especially for emerging topics such as gene and cell therapies, Benelux falls short in the patent-to-publication ratio with the patent-to-publication ratio in the United States twice as high as in Benelux (Exhibit 7).¹⁵ There is room for improvement—especially in the Netherlands—to translate top-level research into commercial applications. Accordingly, we see an important role for technology transfer offices (TTOs) and governments to support researchers during very early stages of the process.

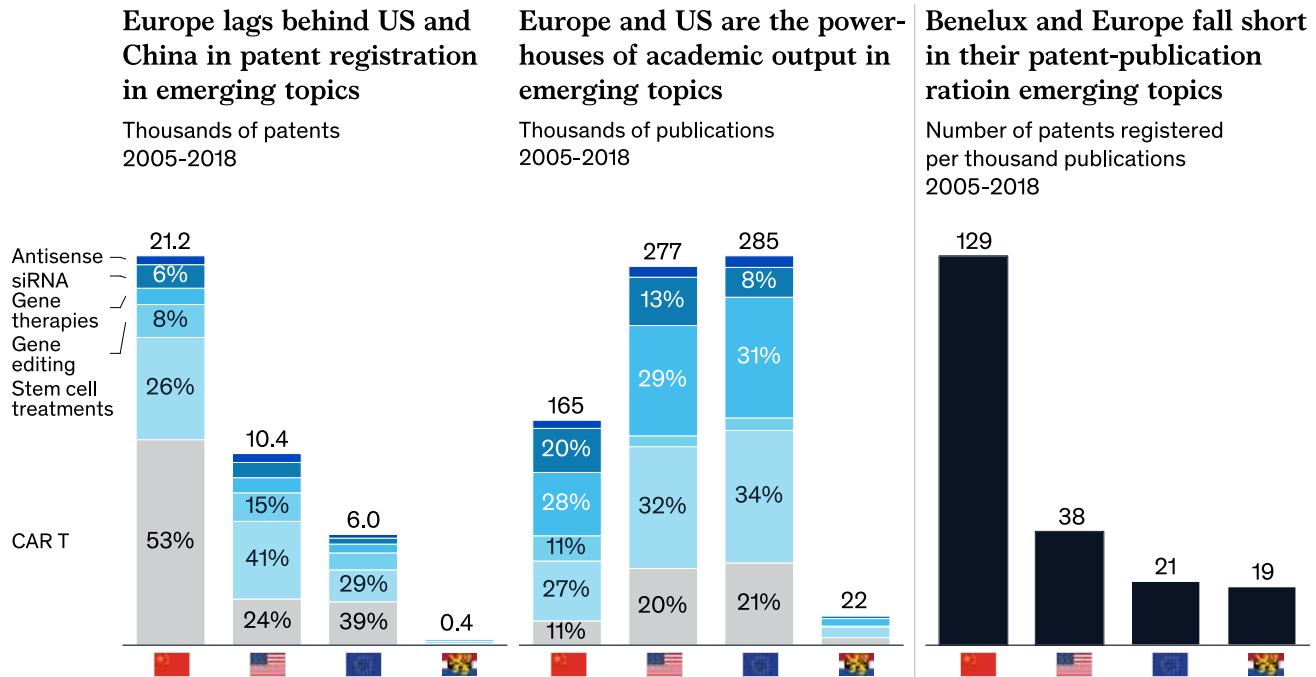
Equip TTOs with the means to perform well

TTOs are responsible for transferring technologies and helping to enable commercialization of university research, by linking academia and “the outside world” of industry and investors. TTOs

¹⁴ Brainport Eindhoven is a partnership of companies, knowledge institutions, and authorities that aims to maintain and strengthen the Eindhoven area as a key technology region.

¹⁵ Innography Patent Analytics, CPA Global, April 2019, cpaglobal.com; PubMed (articles published 2005–18), April 2019, ncbi.nlm.nih.gov/pubmed/.

For emerging topics Benelux and Europe fall short in the patent-to-publication ratio



Source: Pubmed (articles published 2005-2018), Innography (patent submissions 2005-2018)

help identify and prioritize inventions, support researchers in valorization, and provide proof-of-concept and seed funds to bridge the gap to venture capital.

Various TTOs in the Netherlands are making progress, but there are opportunities to speed advances by pursuing global best practices, such as those followed by the Massachusetts Institute of Technology (MIT) in the United States and Cambridge Enterprise at Cambridge University in the United Kingdom. These high-performing TTOs share several traits: they have clear objectives and focus on key tasks such as serving scientists and generating revenue solely to support the TTO; adhere to transparent processes and policies; give staff significant autonomy; acquire talented staff with specific expertise who “speak both academic and industry languages;” perform proactive

scouting and prioritization of ideas; and ensure rapid access to capital.

Learning from global best practices starts with top-level support from a university or institute, including a vision from the board regarding the value of driving the economic development of research. Next, the TTO needs capital and a mandate to act quickly when opportunities arise. In addition, it requires experienced staff with commercial know-how as well as biotech expertise. A creative climate, transparent procedures, and a mindset at universities focused on stimulating and rewarding student and staff entrepreneurial activities could also help boost spin-off numbers.

Empower researchers to start successful new ventures

The Netherlands can do more to position

researchers and new ventures for success by ensuring new venture funding is available at the right time and place. Each step in the early translation of research requires financial support within specific timelines, such as IP application and proof-of-concept studies. Early budget availability increases the chances of new venture success, for instance by allowing for solid data collection to strengthen a patent within the registration window.

While the volume of seed and early-stage venture capital in Benelux has risen, pre-seed funding can still be limited or not available continuously or immediately—sometimes due to long funding allocation timelines. And as series A funds get bigger, companies seeking less than €10 million may be left behind. Government institutions and pre-seed investors could work together to craft a more consistent strategy to help start-ups bridge tricky funding phases.

Stimulate public-private partnerships in academic research

Importantly, partnerships between academia and industry can speed the translation of academic research into value for patients. Collaborations can combine expertise from industry and academia to turbocharge research and the valorization of promising ideas. For example, research can be funded by an industry partner that receives a right to license the research outcomes—in a collaboration between Argenx and Belgium's Université catholique de Louvain, an antibody targeting a novel immuno-oncology target was discovered and patented. The patent was later licensed to Abbvie for \$40 million up front and \$20 million for preclinical milestones. On a regional level, partnerships also help strengthen biotech ecosystems.¹⁶

2. Help biotech companies attract, train, and retain talent

Thanks to the region's high density of life science institutes, there is plenty of local biotech talent. For example, Benelux has the highest number of PhD students in life sciences, statistics, and mathematics in Europe (per thousand population)—making it competitive with the US.¹⁷

Benelux also has a strong second generation of biotech entrepreneurs from Crucell and other successful companies. Despite this, senior executives tell us that it is still difficult to find people with exceptional technical talent and commercial mindsets and experience, particularly in late-stage development and launch. Consequently, attracting talent with US commercialization experience may help Benelux biotechs to prepare for launches in the United States, which is the top initial launch location for both US (65 percent of all recent biological launches) and European biotech (46 percent).¹⁸

Based on our research and experience in other industries around the world, we believe several approaches can help address this multifaceted problem:

- Universities could do more to stimulate students' commercial mindsets by offering programs and courses on entrepreneurship. The Cambridge Network, for example, links business and academia and offers business courses to scientists.
- Universities could more proactively stimulate commercialization of their research. For example, at the University of Maryland College Park and Baltimore campuses, an Entrepreneurs in Residence Program is available. In addition, universities might include commercialization activities in tenure evaluations, following the example of the University of Texas.
- Governments and biotechs could help make the move to Benelux financially more attractive for top talent. Offering the right compensation packages and climate for expats could attract significantly more talent from outside Benelux.
- A more attractive climate for biopharma companies to settle in Benelux is also important for talent flows within the industry, as it provides attractive exit opportunities and a higher variety of career options for biotech company employees.
- Associations could work with biotechs to increase the awareness of Benelux's evolution as a biotech hub and the attractive

¹⁶ Innovative Access Program, Argenx, argenx.com.

¹⁷ Eurostat 2016 data on students in natural sciences, mathematics, and statistics; number of PhD students consists partly of number of PhD students in the Netherlands in 2017 (no 2016 data available), July 2019, ec.europa.eu. Number of inhabitants based on 2016 data from Countries in the world by population, July 2019, worldometers.info.

¹⁸ Pharmaprojects database, April 2019, pharmaintelligence.informa.com.

job opportunities in the region. One model could be the Greater Copenhagen Life Science website, which features “Medicon Valley,” where visitors find comprehensive lists of specific health-tech opportunities and available jobs.

- A continuation of Benelux’s focus on global partnerships with leading biotech hubs such as Boston, MA, could also support the local talent pool, not only helping to attract US talent, but also by making commercial paths for local talent more attractive by increasing international career options.

3. Help biotech companies attract cornerstone investors

Biotechnology is a sophisticated and capital-intensive business that requires many person-hours and expensive facilities. Substantial financing is required, typically when technical challenges still need to be overcome or clinical trials lie ahead, which can present great uncertainty. Investors therefore need a

long-term perspective and a willingness to take risks. “Cornerstone” investors—those that take a significant share of a fundraising round—are often represented by institutional funds. They can bring established biotechs to scale in funding rounds of more than €100 million and enable successful IPOs.




Attract large amounts of capital to realize global aspirations before going to public markets

While overall private funding in Benelux has grown in recent years, late-stage venture financing often falls short—Benelux biotech companies raised only 3 percent of the total late-stage venture funding in Europe during 2012–18 (Exhibit 8). This was despite the growth of venture capital funds in Benelux, where only 15 percent of the capital was invested locally over that period.¹⁹

Meanwhile, Europe also lags in late-stage venture deals larger than €100 million (Exhibit 9).²⁰ This lack of late-stage funding often leads to early-stage exits via M&A and premature IPOs.

Exhibit 8

Benelux biotech companies received 13 percent of European money raised in 2012–18, but only 3 percent of late-stage funding

Billions of euros		 Capital raised by Benelux biotechs	Increase in capital raised	 Capital raised by European biotechs	Benelux share of European capital	 Capital raised by US biotechs
		2012-2018	2012-2018 vs 2005-2011	2012-2018	2012-2018	2012-2018
Private markets	Early stage funding	0.5	~4.0x	4.8	11%	18.0
	Late stage funding	0.1	~0.5x	1.7	3%	8.2
	Debt/non-disclosed funding	0.2	~6.0x	2.8	8%	8.4
Public markets	IPO	0.3	~1.5x	4.7	7%	15.0
	Follow-on offerings	1.8	~26x	8.1	22%	49.7
Total		~3	~5.0x	~22	13%	~99

Source: BioCentury BCIQ database, PitchBook database

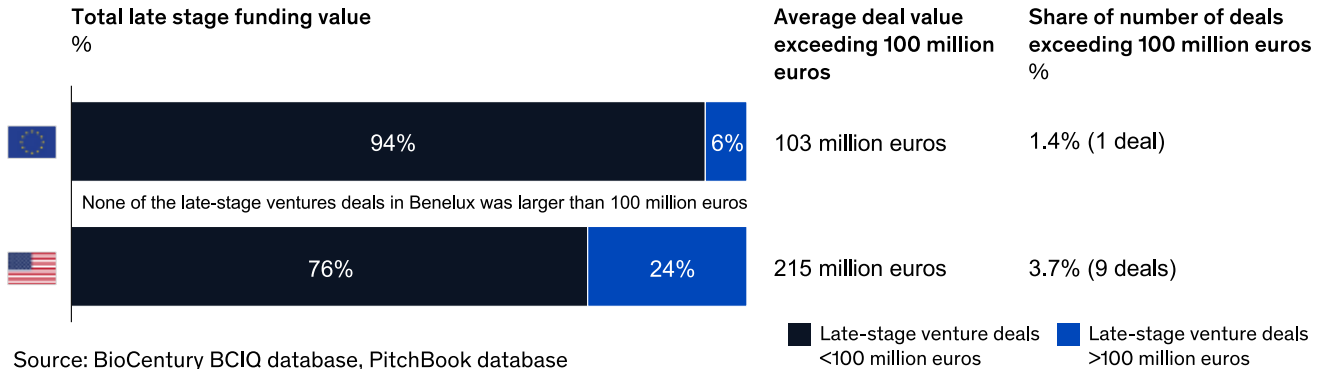
¹⁹ Prequin database, Prequin Ltd, March 2019, prequin.com.

²⁰ BCIQ database BioCentury, March 2019, bciq.biocentury.com; PitchBook database, March 2019, pitchbook.com.

Exhibit 9

Only 1 percent of late-stage venture deals in Europe exceed €100 million

Late-stage deal values between 2012-2018



Biotech companies and investors alike could benefit from longer-term perspectives. International VC funds are showing more interest in European biotech, and with a long-term strategy, biotechs and local VCs could help attract international players which can join both early- and late-stage financing rounds. Venture capital funds in Benelux may also consider partnering with large institutions to raise money more efficiently and make larger late-stage investments. Further, setting up a platform for investors and biotech companies to meet and discuss opportunities could stimulate different types of partnerships and create more exposure for investors and biotech companies alike.

On a more general note, Dutch entrepreneurs set relatively conservative aspirations and so may miss important opportunities. As one VC expert put it, “I have seen a US biotech raising more than €50 million and a Benelux biotech raising only €3 million with the same levels of technology and plans.” Young biotech companies should be aware of this and could learn from their American peers how to best present themselves and their business plans. Higher aspirations may strengthen their position in the United States, which will help in raising capital, attracting and retaining talent, and eventually launching products.

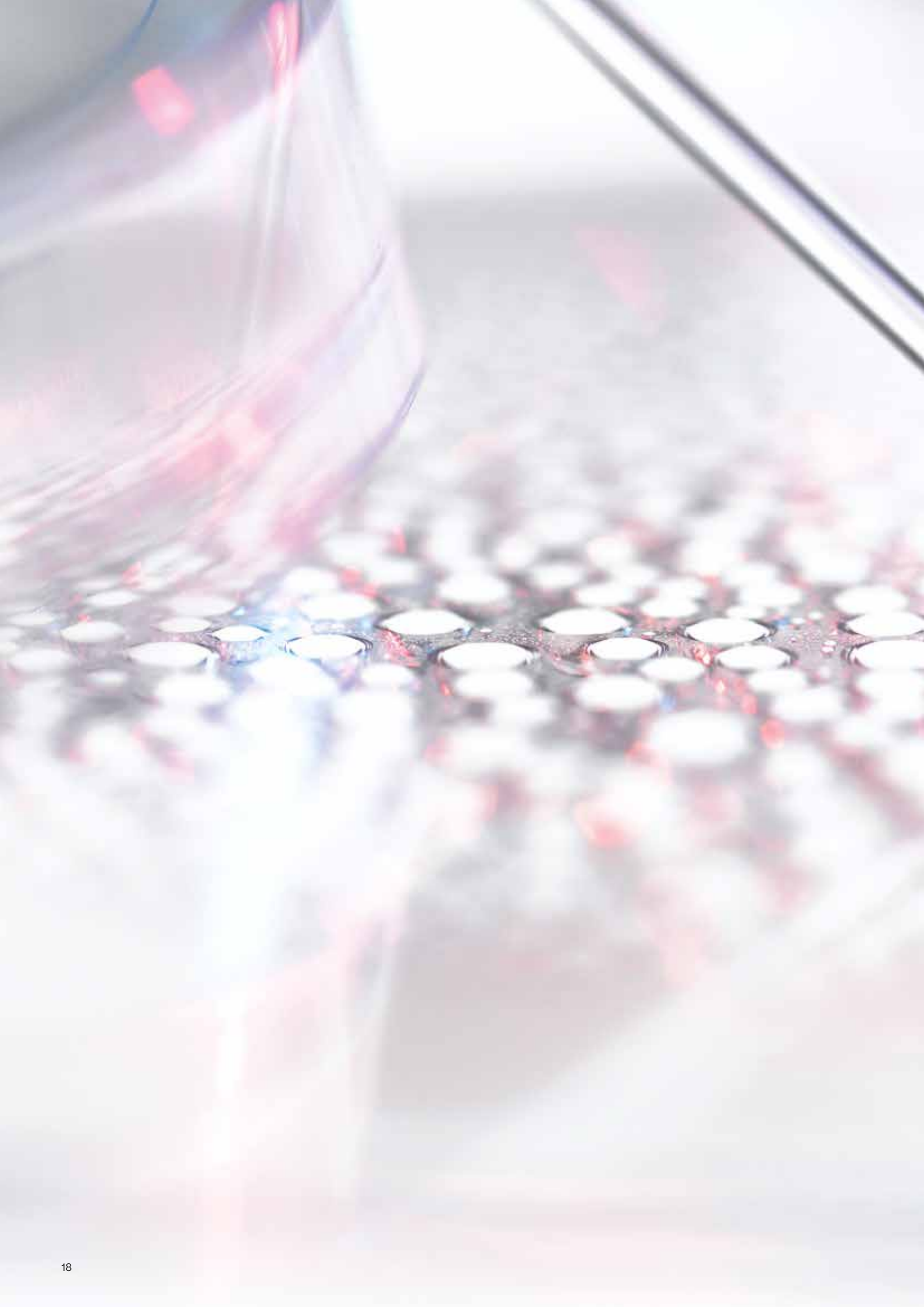
Incentivize institutional funds to invest in biotech in Europe

As noted, the Euronext exchange is not of sufficient size to raise large amounts of capital in an IPO; US exchanges yield 2.2 times more capital for Benelux biotech IPOs and are therefore much more attractive.¹⁹ However, some biotechs in Europe struggle to build high-enough valuation to make it to US markets.

Large mutual funds play an important role in the US market. In the United States, mutual funds are more mature than in Europe—and more ready to invest in biotech. These funds typically started investing in life sciences in the early 1990s, while European funds followed about ten years later. Perhaps most importantly, the funds are much larger. The five largest mutual funds in life sciences in the United States collectively represent a value of approximately €14 billion—five times the equity share of European funds, at €2.7 billion euros.²¹

Following US trends, we see investment opportunities for institutional funds in Benelux biotechs on European markets. Governments could consider what efforts they need to make to attract investors to participate in biotech IPOs and build awareness about the attractiveness of biotech investments.

²¹ McKinsey “Morningstar” Database.





Scaling biotech innovation in Benelux would create significant benefits for the region

Growth of the broader life science industry (for definition see page 19) could offer substantial economic benefits for Benelux. In 2017, the industry contributed about €15 billion to GDP and 140,000 jobs, including direct, indirect, and induced multiplier effects.^{22, 23, 24, 25, 26}

Through direct contributions alone, Benelux life science companies supported some 70,000 life science jobs, corresponding to 2.2 per thousand inhabitants in the Netherlands and 2.5 per thousand inhabitants in Belgium.^{23, 24, 25, 26} Direct contributions to GDP are about €4.5 billion in the Netherlands and €6.0 billion in Belgium. By contrast Boston today provides 6.2 life science jobs per thousand inhabitants, while London has about 3.3 per thousand.^{27, 28} Using these numbers,

we can compare life sciences' contributions to other regions and make forecasts for Benelux in 2030.

A realistic ambition for Benelux in 2030 is somewhere between Boston and London. Reaching Boston's standard in just a decade seems implausible, as Boston is the world's leading hub for young life science companies, while London's level for 2016 is not ambitious enough to for the region to become the leading biotech hub in Europe. Therefore, given current growth and assuming a comprehensive coordinated approach to addressing current challenges, we estimate that there could be 4.0 life science jobs per thousand inhabitants in Benelux in 2030.

²² Monitor topsectoren 2018, CBS, October 15, 2018, cbs.nl.

²³ Chemie, kunststoffen en life sciences in België Kerncijfers 2018, Essenscia, essencia.be.

²⁴ McKinsey Global Institute, Economic impact analysis: Input-output based multipliers based on World Input-Output Database & International Standard Industrial Classification revision 4.

²⁵ Centraal Bureau voor de Statistiek (CBS), July 2019, cbs.nl.

²⁶ Statbel—Belgie in cijfers, July 2019, stable.fgov.be.

²⁷ EMSI database, July 2019, economic modeling.com.

²⁸ Nomis labor market statistics, July 2019, nomisweb.co.uk.

That scenario would provide a total of 240,000 jobs (a 1.7 times increase), along with approximately a €22 billion annual GDP contribution (a 1.5 times increase), taking account of direct, indirect, and induced contributions. Compared to now, this would represent an additional €7 billion in GDP contribution and 100,000 more full-time jobs (Exhibit 10).

Here we have looked at the current landscape, yet we could envision a further scenario in which Belgian-Dutch research company Galapagos plus several other large companies become commercially active and would attract large pharmaceutical companies—thereby inducing an explosion of jobs. Looking at the example of New Jersey, we see that it is a true global hub for established life science companies with 12 of the top 20 pharmaceutical companies and 50 percent of the 2017 FDA approvals, at the same time providing 12.6 life science jobs per thousand inhabitants.²⁹

This ambitious scenario would lead to 750,000 jobs in total and the generation of €50 billion GDP in 2030.

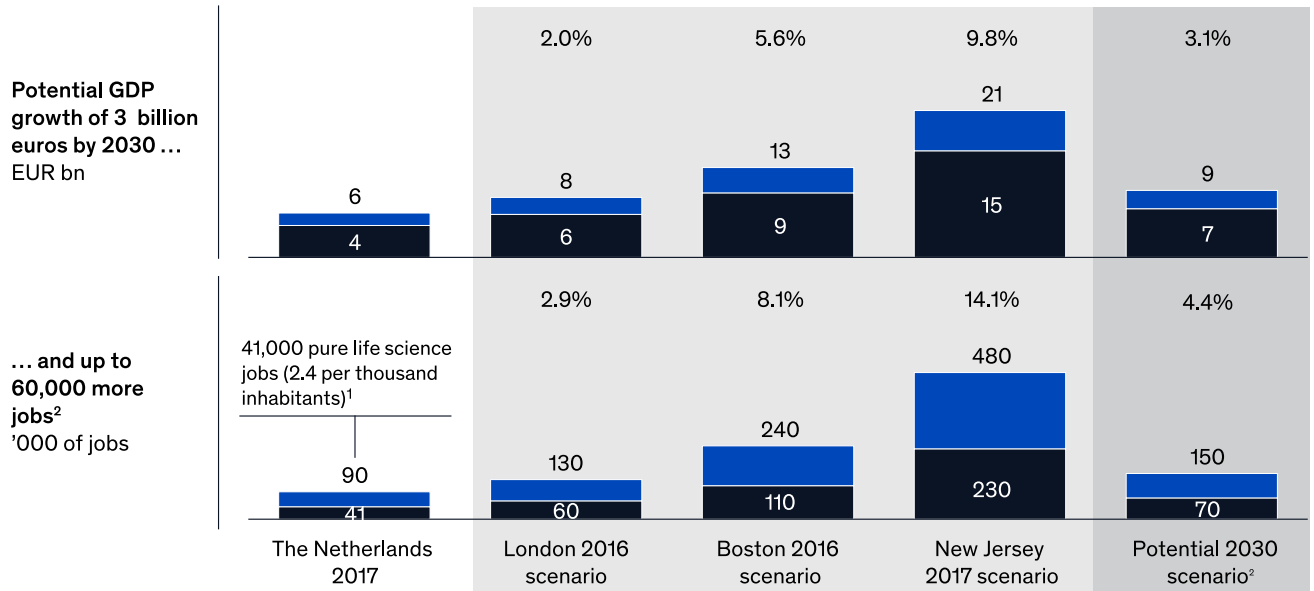
How we calculate multiplier contributions to GDP

- **Direct:** Direct: contribution of the life sciences sector through its direct operations and contribution of the first level of (immediate) suppliers to the life sciences sector
- **Indirect:** Contribution of suppliers of suppliers to the specific sector
- **Induced:** Contribution of spending by employees employed directly and indirectly by sector and its suppliers

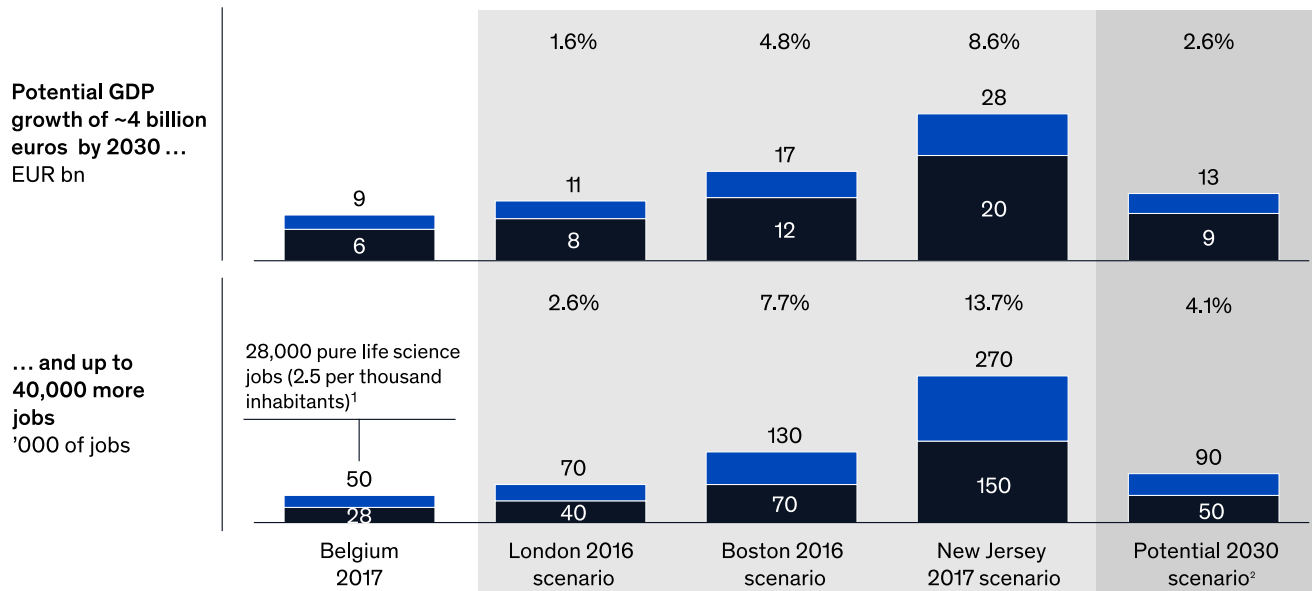
²⁹ Choose New Jersey, choosenj.com.

Scaling biotech innovation in Benelux could create approximately 100,000 jobs and raise annual GDP by some €7 billion by 2030

Current situation in the Netherlands Considered scenarios in the Netherlands for 2030



Current situation in Belgium Considered scenarios in Belgium for 2030



1. Based on 31.2% proportion of pharmacy in 2017 chemistry, plastics & life sciences industry in BE

2. Aspiring 4.0 life science FTE per 1000 inhabitants

Source: Centraal Bureau voor de Statistiek (CBS); Essenscia – Chemie,

kunststoffen en life sciences in België Kerncijfers 2018; EMSI database; McKinsey Global Institute, Economic impact analysis; Monitor topsectoren 2018; Nomis labor market statistics; Statbel—Belgie in cijfers; Choose New Jersey, choosenj.com

■ Indirect + induced impact ■ Other 2030 scenarios
 ■ Base + direct impact ■ Potential scenario for 2030
 X CAGR 2017-30

Next steps

The facts show that Benelux is in a prime position to lead Europe as a biotech hub and take its place among the industry's global powerhouses. By taking a comprehensive, coordinated approach to overcoming challenges, and building on its strengths, Benelux could advance its biotech industry to substantially boost GDP, create some 100,000 high-quality jobs, and make the world a healthier place.

In this paper, we have aimed to provide decision makers with ideas and inspiration to pursue a strategy to scale biotech innovation in Benelux. We believe a successful strategy will include bold steps in three dimensions:

- Strengthen capabilities to accelerate the translation of innovation in the Netherlands
- Help biotech companies train, attract, and retain talent in Benelux, especially commercial talent to complement its many academic strengths
- Support biotech companies in attracting cornerstone investors to realize their global aspirations

Success on this scale will require the insights, energy, and cooperation of scientific, academic, commercial, civic, and government leaders in Benelux. We stand ready to join them.

Use of Definitions

Biotechnology

Involvement of living systems and organisms to develop or manufacture products. In this paper, we focus on the use of biotechnology for the development of medical and pharmaceutical products, also known as “red biotechnology.”

Biotech companies

In this paper we refer to small-cap and mid-cap (less than \$50 billion) biotech companies.

Life science industry

In this paper we refer to all medical (bio-)technology and life science R&D work.

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