

Study on investment in the biomedical industry in Catalonia 2019



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1. Introduction

The III edition of this Study on Investment in the biomedical industry in Catalonia analyses the main trends in fundraising, R&D advances and the future outlook of the Catalan biomedical industry, with the aim of becoming a useful tool to identify global and local trends and reflect on the strategic decisions that need to be made to successfully navigate future challenges.

The study analyses a universe of more than 200 companies -the vast majority of them members of CataloniaBio & HealthTech-, among which are players that focus on product development (biopharma and medtech), scientific and non-scientific service providers and large pharmaceutical groups. Their insights, obtained via a survey, have been completed with information from public databases and a workshop held last March with the main investors based in Catalonia.

As a whole, this document provides a consistent picture of the overall Catalan biomedical ecosystem that shows its strength through solid investment figures that stay above 100 million year after year, and an increase in the

value of licensing agreements proof of the advances in R&D pipelines. The monitoring of relevant indicators is a key aspect in the evolution of our companies and will contribute to raise awareness on the leading research and the pioneering innovation that is being carried out on drugs and medical technology.

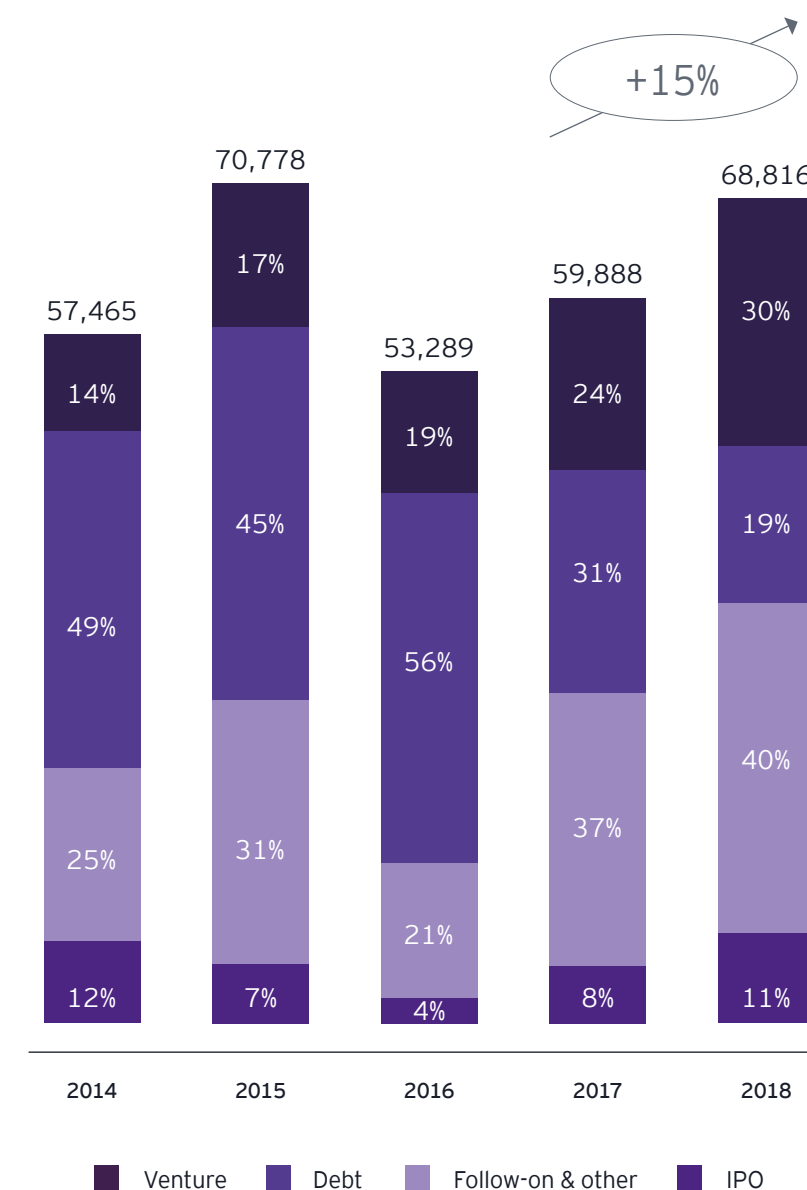
The Catalan biomedical ecosystem continues to show its strength and consolidation as a main economic player, establishing itself as an attractive sector for both foreign and domestic investment.

You can send us comments and suggestions to secretaria@cataloniabioht.org.



2. International biotech industry overview

Capital raised in the US and Europe (USD million) - Biotech sector, 2018



Globally, the biotechnology market is immersed in a period of stable growth that has allowed the sector in 2018 to get close to the peak level of 70 billion USD in capital raised globally in 2015. Therefore, the industry remains one of the most attractive markets for investors worldwide thanks to a good pipeline of privately held biotechs and a solid mix of projects available. Within the year, funding remained stable month after month, with 57% of capital raised during the first semester.

The most significant trend to be highlighted about 2018 is the decline in debt as a financing source, since for the first time in several years it represents less than a third of the total sources, specifically 19%. Another trend that had already been identified in previous years and can be now confirmed with the results of this year is the increase of capital invested by venture capital firms, which continue to be positioned as one of the main financing sources for the sector.



2018 has also been a positive year in terms of life sciences companies deal making, as this activity moved 198 billion USD worldwide, driven by players' need to build scale without adding complexity to their portfolio. Following this trend, mergers and acquisitions (M&A) between sector players increased by 22% in terms of volume and 65% in terms of value compared to 2017, although companies tapped just 16% of their available

capacity for acquisitions. These positive figures about deal making and M&A were mainly fostered by two drivers: health organizations performing critical moves outside their traditional business areas to consolidate larger segments of the health value chain; and companies investing in digital alliances to embrace digital transformation.

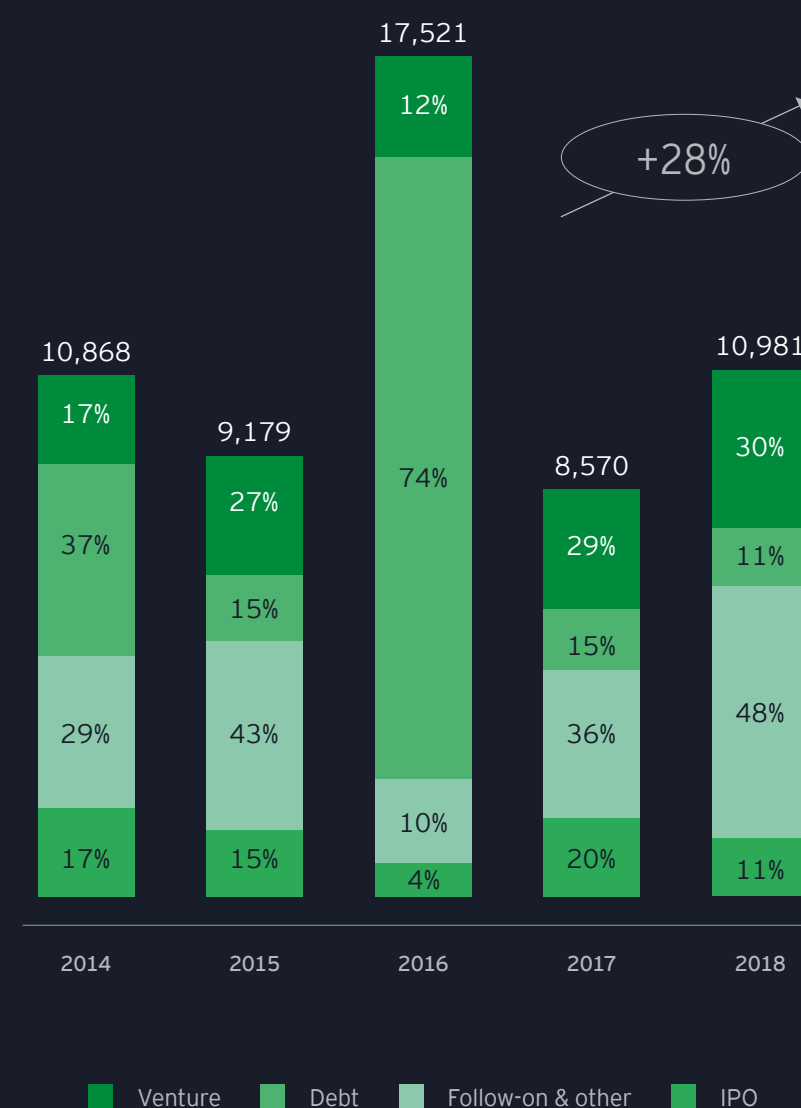
European biotech at a glance

If 2017 saw a relevant decline in fundraising in the European biotech industry, 2018 has been a year of positive results, with a 28% increase in capital raised by European players, twice as much as in the US, which increased by 14%.

After an uncommon 2016, in which debt represented 74% of the financing due to leveraged mega-deals, 2017 represented the return to values aligned with previous years. The deal flow registered in 2018 confirms the

current stability of the industry, which has recovered similar levels to those reached in 2014 in Europe. Regarding the mix of financing sources, they are still in line with the previous years, although there is an increase (+12 points) in follow-on operations and a decline (-9 points) in Initial Public Offerings (IPOs) due to geopolitical uncertainties.

Capital raised in Europe (USD million) - Biotech sector, 2018



What is coming?

An overview of the first few months of 2019 anticipates a strong private environment for the year ahead in which venture capital firms will continue to gain prominence and biopharma companies' interest in accessing innovation will continue to grow, either through investing in platform technologies or in early stage assets in specific areas to build therapeutic scale.

However, there is another significant trend that could transform the biomedical industry in the future. A group of other-industry players has been emerging in the last decade as a source of economic and market disruption that is expected to invest heavily in the healthcare market in the upcoming years. This group is mainly composed by large technology players that boast more acquiring capacity than 50 life sciences leaders combined. The challenge for biomedical companies is to anticipate and adapt in order to sustain their competitive advantage in this new paradigm.

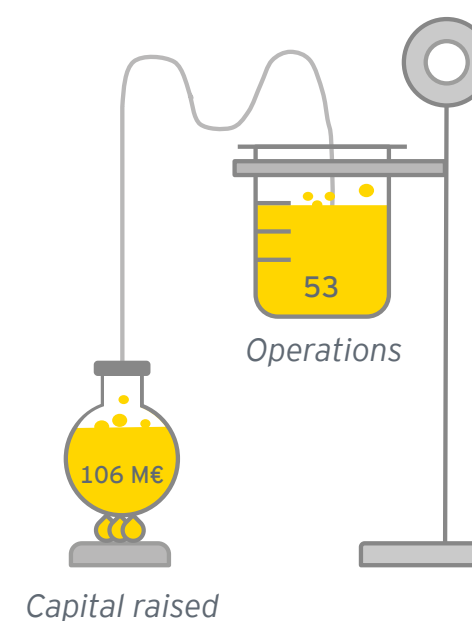
Using these acquired digital capabilities and therefore integrating data and analytics effectively across the care pathway - from diagnostics to therapeutics, monitoring and throughout care settings -, the healthcare industry will be able to offer insights to medical professionals and staff to enable more predictive, more efficient and more individualized patient care.

Finally, in terms of life sciences deal making and M&A, more divestitures, bolt-ons and asset swaps are expected, since there will be opportunities for portfolio optimization as companies tend to focus on their core therapeutic areas. This trend may generate more than USD 200 billion in future M&A opportunities.



3. Investment in biomedicine in Catalonia

Number of operations and capital raised in 2018

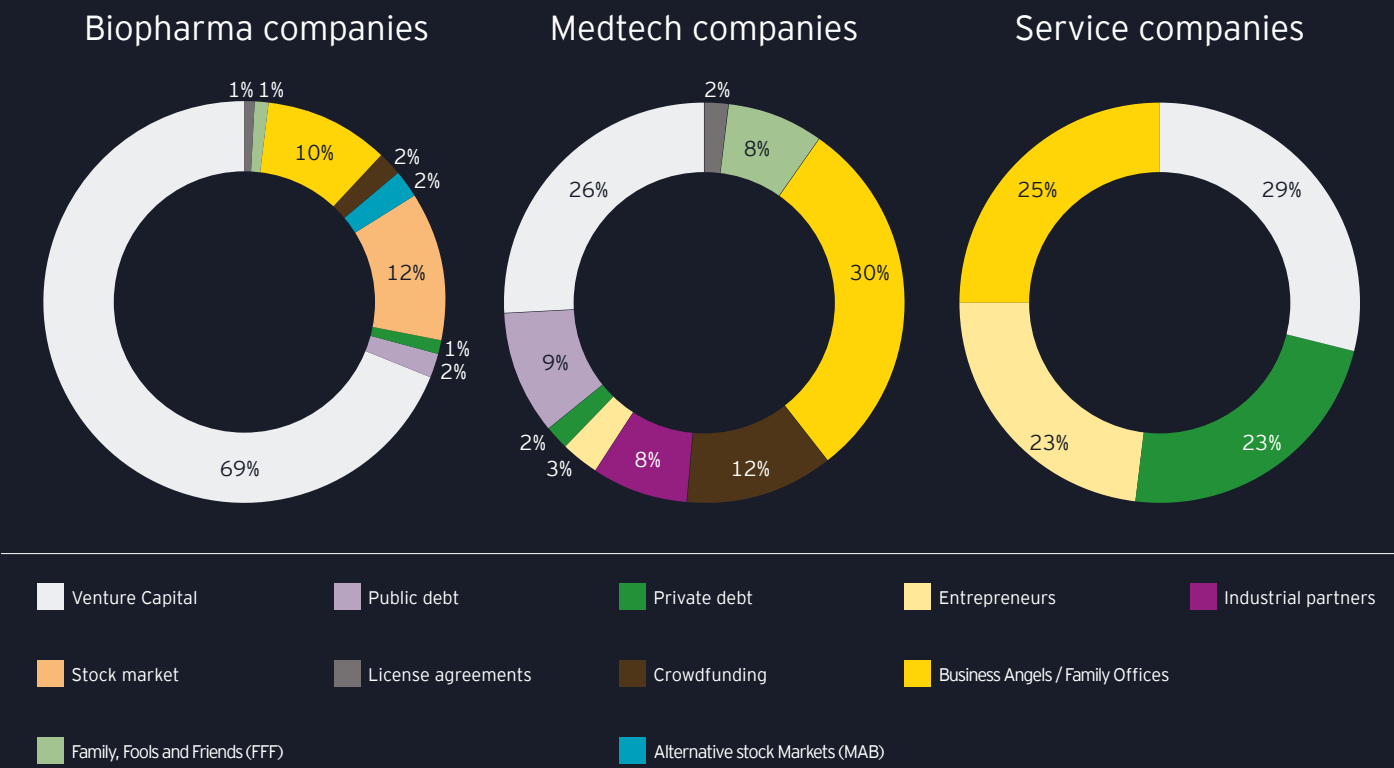


In 2018, 106 million euros were raised through 53 financing operations

53 financing operations were carried out in Catalonia during 2018, through which the sector raised 106 million euros to finance its growth.

2018 was a dynamic year in terms of volume of operations, although the average size per transaction in value was relatively low (1.95 million euros). Investments exceeding 10 million euros accounted for 6% of total transactions.

Financing sources for the operations in 2018



Venture capital firms consolidate themselves as the main investors (69%) in biopharma companies, which still rely of the stock markets (12%) for additional financing while business angels increase their presence in the sector (10%).

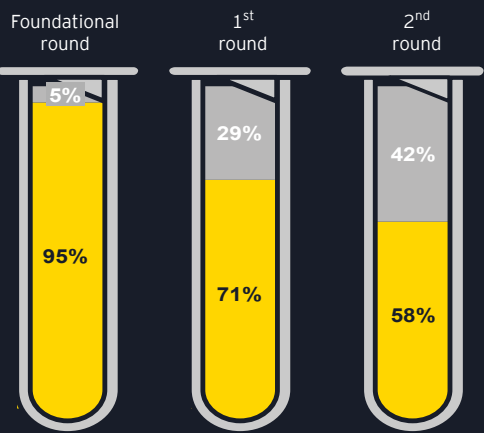
For medtech companies, both business angels (30%) and venture capital firms (26%) are the main investors, being crowdfunding, public debt, family, fools and friends (FFF), and industrial partners in a second level.

Service companies are financed almost equally by venture capital firms (29%), business angels (25%), private debt (23%) and entrepreneurs (23%). As this kind of companies has revenues, it is easier to obtain loans and for this reason private debt becomes more important than for other ones. In addition by not needing so much capital, entrepreneurs have more facility to finance part of the project.

Venture capital firms remain the main investor in the biomed industry, while business angels become more relevant



Shareholder mix after the different investment rounds in product development companies in 2018

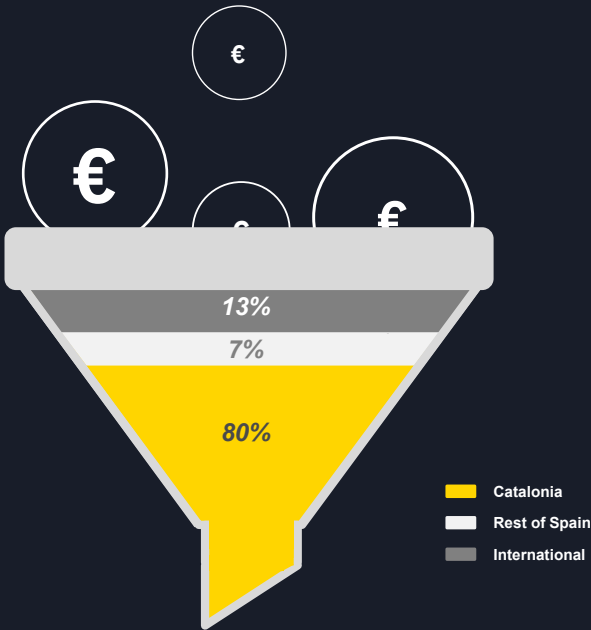


Founders retain more than half of the total shares after the initial investment rounds

Founders hold 95% of the companies' shares after the foundational round, but their share declines to 71% after the first investment round.

However, product development companies manage to retain a relevant percentage (58%) of their shares after the second round.

Geographical distribution of current investors in relation to the percentage of shares



8 out of 10 investors are based in Catalonia

The distribution of shares in terms of geographical origin remains stable compared to last year, with 80% of the capital coming from investors based in Catalonia. The remaining capital derives from national and international agents, contributing 7% and 13%, respectively.

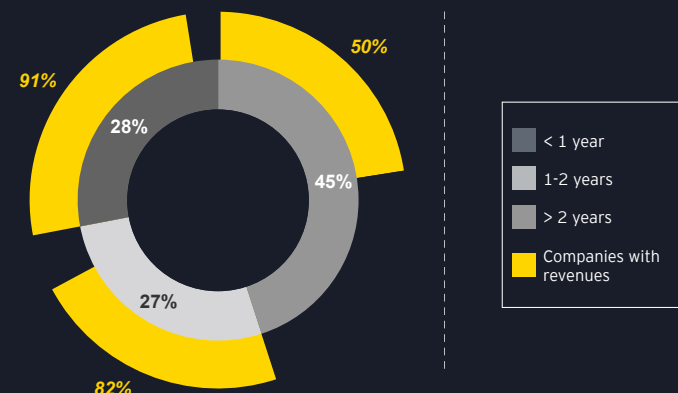


Time operating with the available cash without the need for new financing in product development companies

Almost half of product development companies will require new financing in less than one year

45% of the product development companies (biopharma and medtech) will need new financing in less than one year in order to continue with their operations. Half of the companies that are more pressed for cash already have revenues.

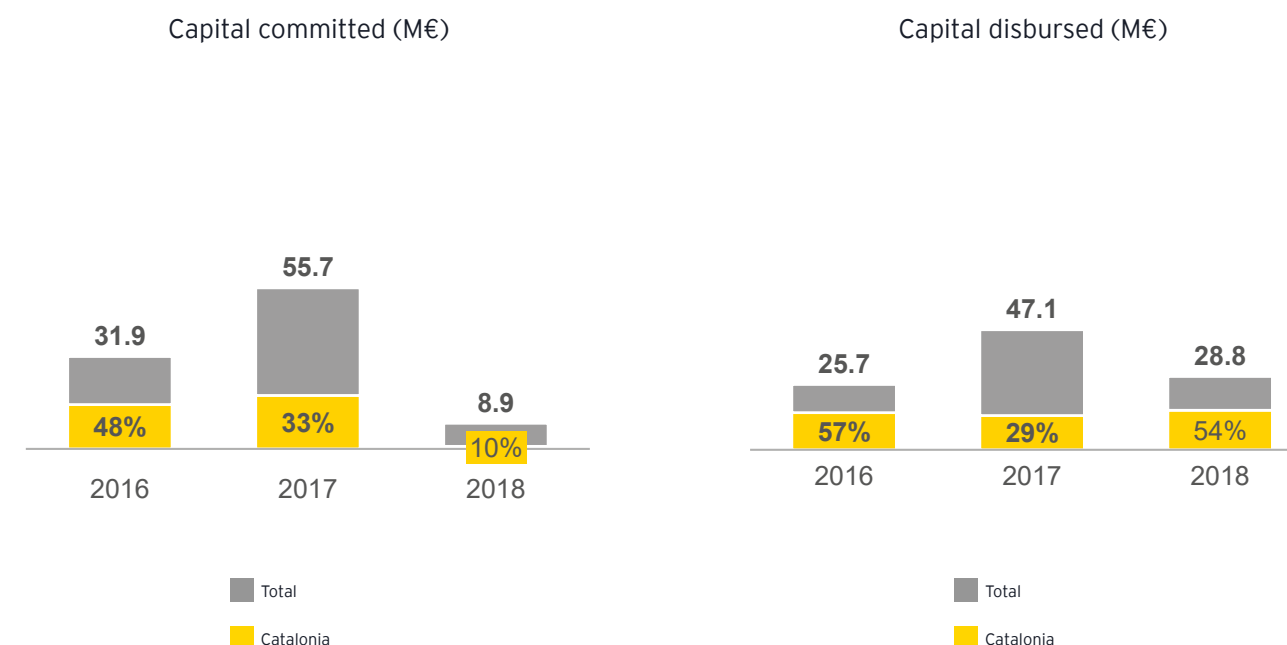
On the other hand, 27% state that they will not need additional financing until one or two years from now, and 82% of the companies in this category already have revenues. The remaining firms expect to be able to operate for more than two years without seeking for new financing.



Operations of Catalan Investment companies in 2018

Up to 50 investment operations have been performed in 2018

50 operations



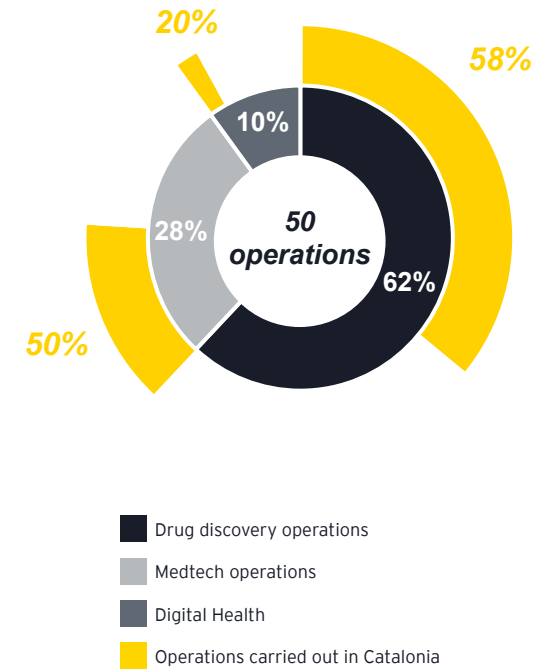
In 2018, Catalan venture capital firms carried out a total of 50 investment operations valued at 9 M€ in capital committed and 29 M€ in capital disbursed, being the amount of resources allocated in Catalonia of 10% and 54% respectively. These figures are lower than the ones registered in the previous year since 2018 was essentially a year of fundraising and follow-ons, in which the main Catalan investment companies were focused on loading their new funds.

Despite this lower investment activity, 2018 has been

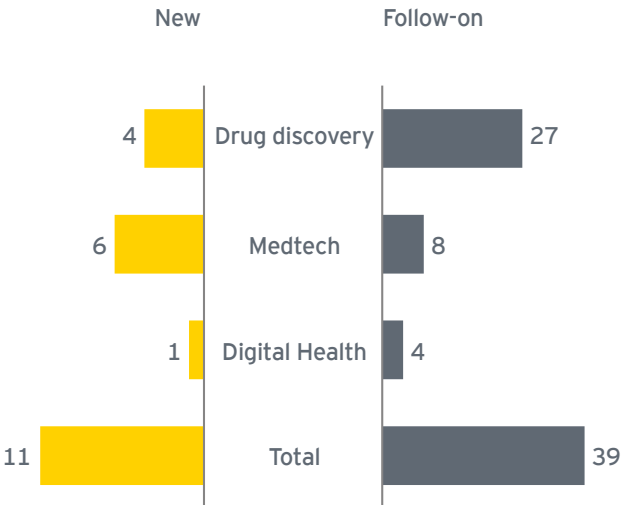
a positive year for the biotech industry in terms of financing, as stated previously. There are 2 main drivers that have allowed this fact:

- Increase of investments carried out by business angels, becoming one of the main investment players in the Catalan healthcare industry
- Large investments performed by international investment companies

Type of operations and Catalonia's contribution

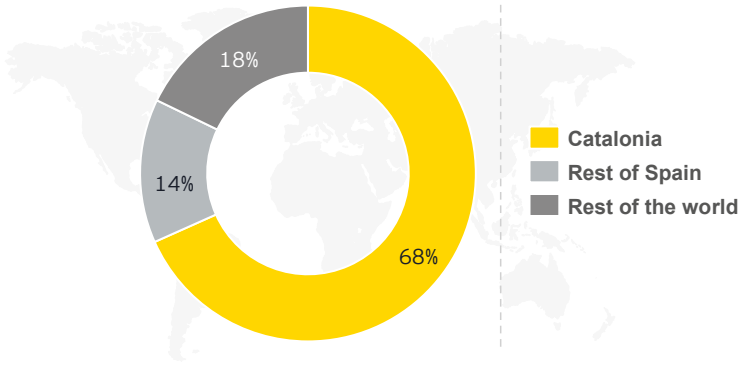


Total number of new vs follow-on operations



Destination of R&D investment in 2018

More than two thirds of the companies funds available for R&D were allocated in Catalonia



Approximately 70% of the financial resources that the companies devoted to R&D in 2018 were allocated to projects that took place in Catalonia, proof that in this region there is a very powerful network of research centers and service companies to support companies' R&D. International projects increased from 13% in 2017 to 18% in 2018.

Regarding the type of company in which investment firms focus their attention, Drug discovery companies continue to lead the investment rounds (62%), with an increasing number of financing rounds in Digital Health companies (10%). Medtech accounts for the remaining 28%, in the same proportion as 2017.

The larger proportion of follow-on investments versus new transactions is also proof of the major focus on fundraising during 2018, year in which only 22% of the operations were started from scratch.

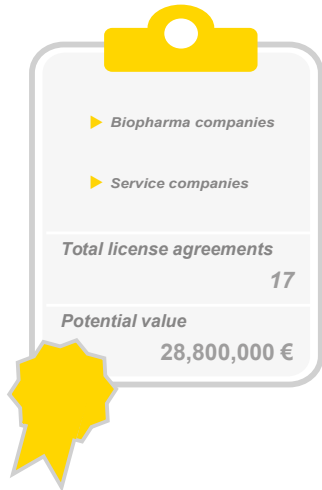
This tendency is expected to change in 2019. In view of the results for the first quarter, we expect figures similar to those reached in 2017. In fact, during the first few months of the year, the aggregate volume of capital committed has been similar to the funds committed in the whole of 2018, and new investment vehicles are starting to operate in the sector, guaranteeing additional resources in the following months



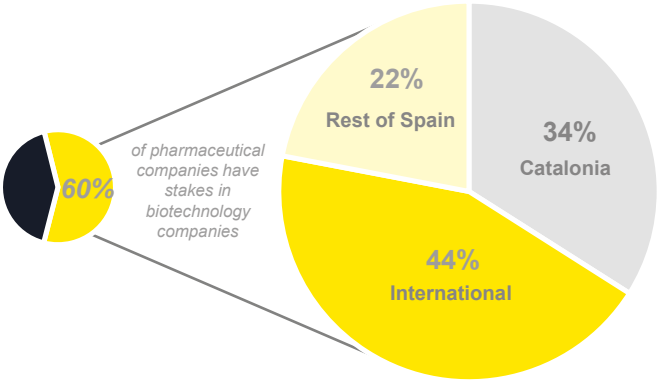
Licensing agreements and their potential value in 2018

License agreements signed in 2018 could generate 28.8M€ in upcoming years

Although the total number of licensing agreements signed in 2018 has decreased compared to 2017, the value per agreement has significantly increased, allowing to expect a future income of 28.8 million euros.



Pharmaceutical groups with stakes in biotechnology companies in 2018



60% of Catalan pharmaceutical groups hold shares in biotech companies

Pharmaceutical companies are increasingly carrying out open innovation and seeking synergies with new technologies developed by biomedical companies, and in 2018 more than half of them (60%) held shares in biotech ventures.

A geographical analysis reveals that while 34% of the invested projects are based in Catalonia, 22% are located in the rest of Spain and 44% of them are international, with a mild 4% increase in relation to 2017.

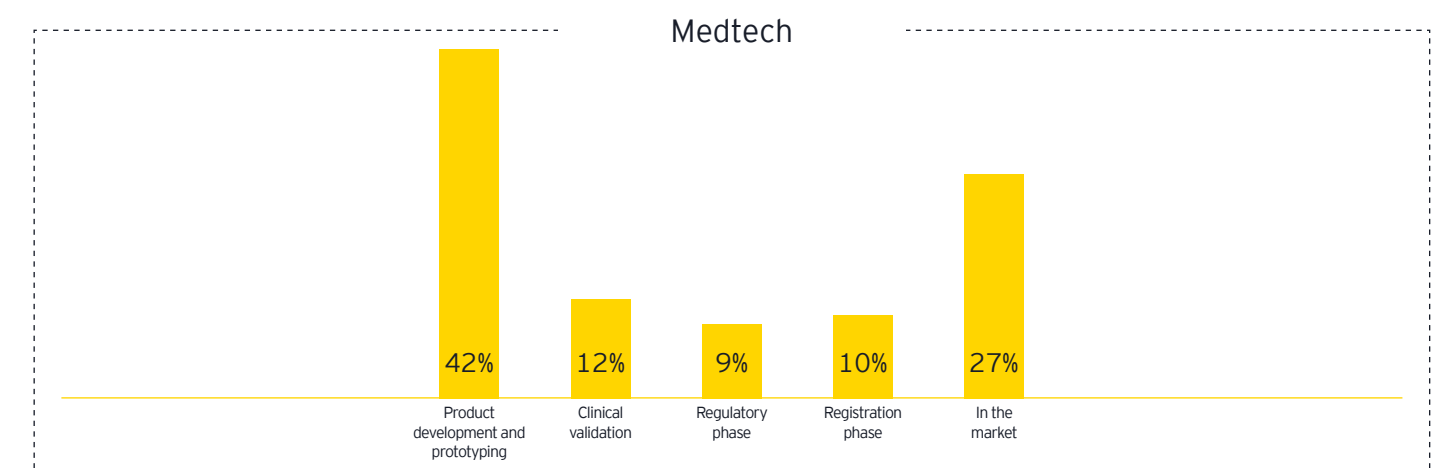
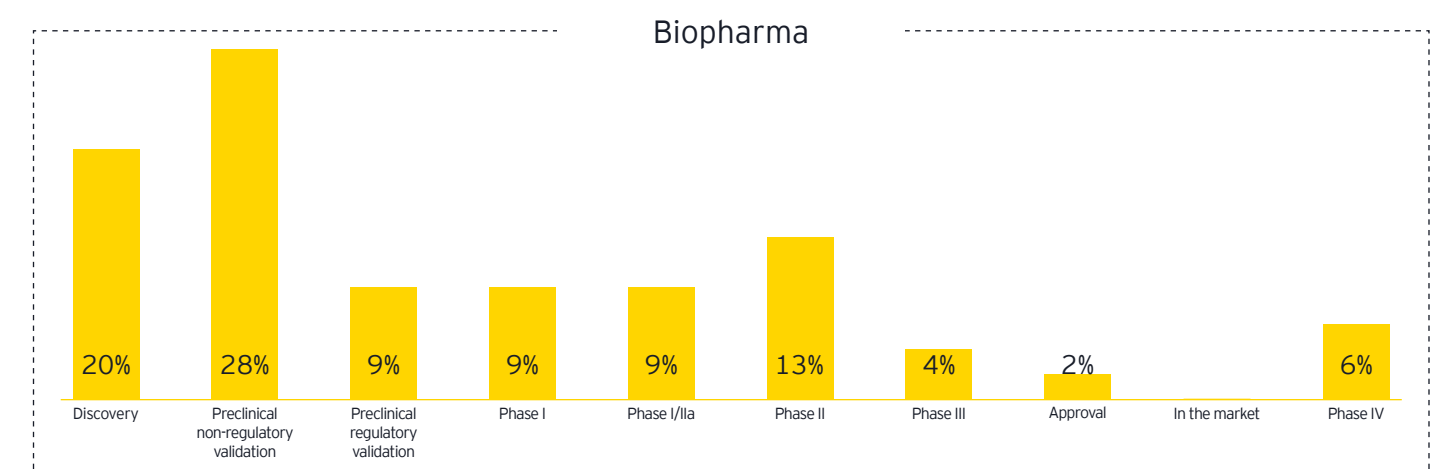
Commercialization in new countries in 2018

In the case of medtech companies, more than half of them (54%) have started commercialization in new countries, opening a total of 52 new markets.



4. Research and development (R&D)

Projects in pipeline by phase in 2018 - Product development companies

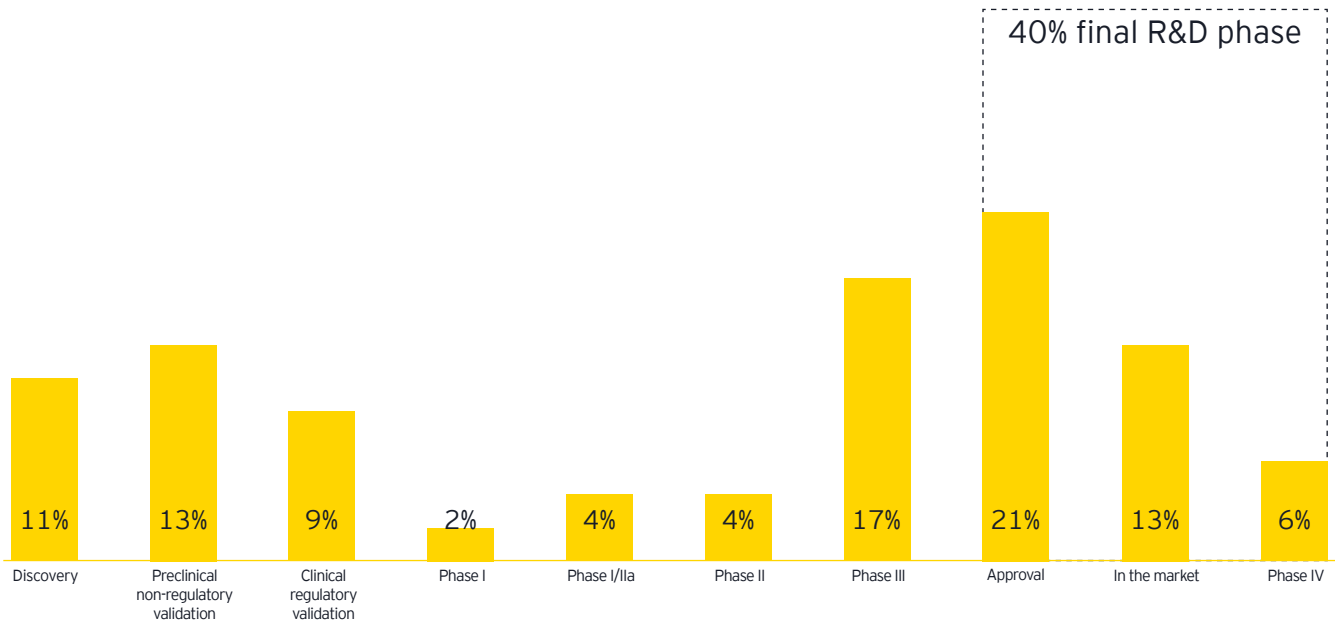


Both biopharma and medtech companies have more innovations near the market, while biopharma also experiences a rise in new projects

Biopharma companies have started developing new products, as shown by the increase in the number of projects in the discovery phase compared to the previous year (+7 points). As for the already existing projects, they have evolved to more advanced stages during 2018. Specifically, the percentage of products in phase IV has increased to 6% in 2018 as some of the products that have been approved in recent years are being evaluated in terms of safety, or for new uses and indications.

On the other hand, medtech companies have continued to increase the number of innovations both in registration phase and in the market, which means that this industry is in a growth dynamic, developing new products and constantly contributing with more products to the market.

Projects in pipeline by phase in 2018 - Pharmaceutical companies



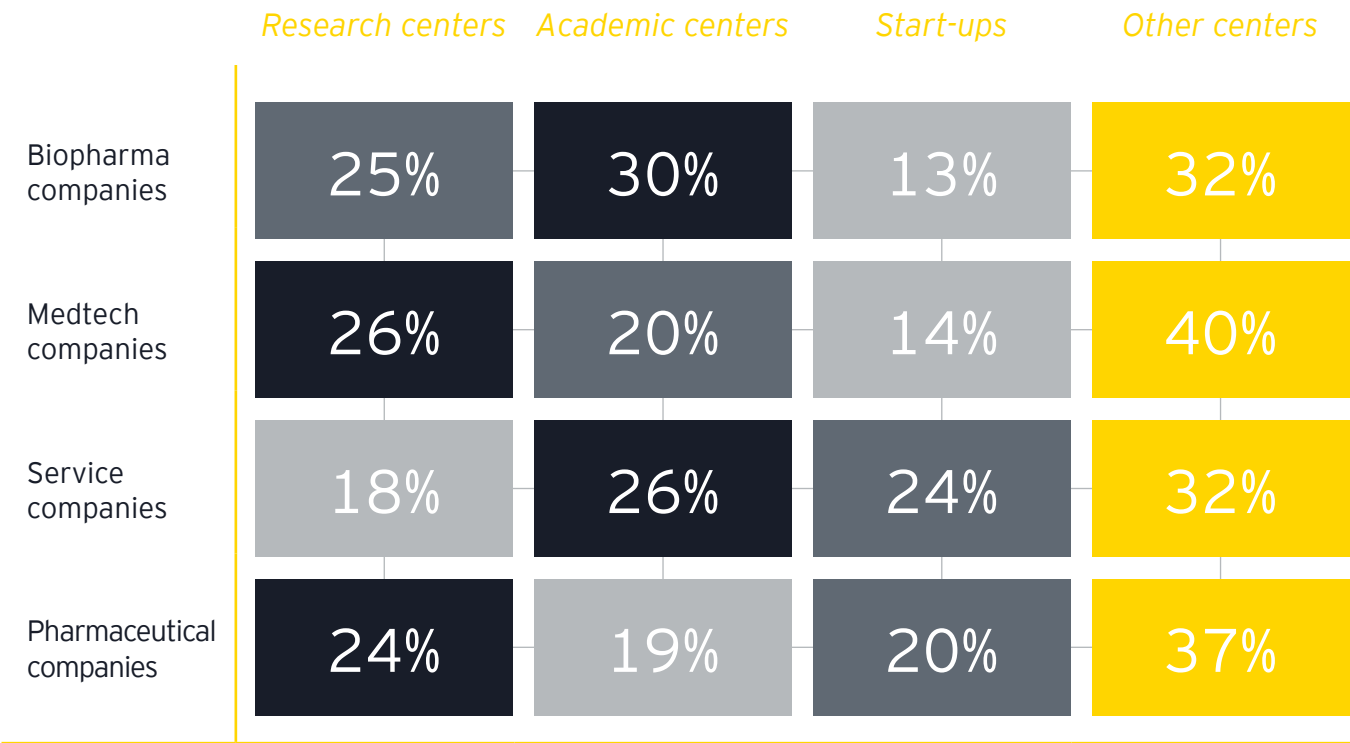
Almost half of the pharma R&D projects are in the final stages of development

40% of pharma R&D projects are concentrated in the final stages of the innovation process and near the market, 14 more points than the previous year. Half of them are waiting for regulatory authorization.

Previous stages concentrate a lower percentage of projects compared to 2017, but will probably grow in the following years as more innovations enter the pipeline.

Collaborative R&D projects started in 2018

Biomedical companies have signed up to 355 collaborative projects with other stakeholders in the ecosystem



355 collaborative projects



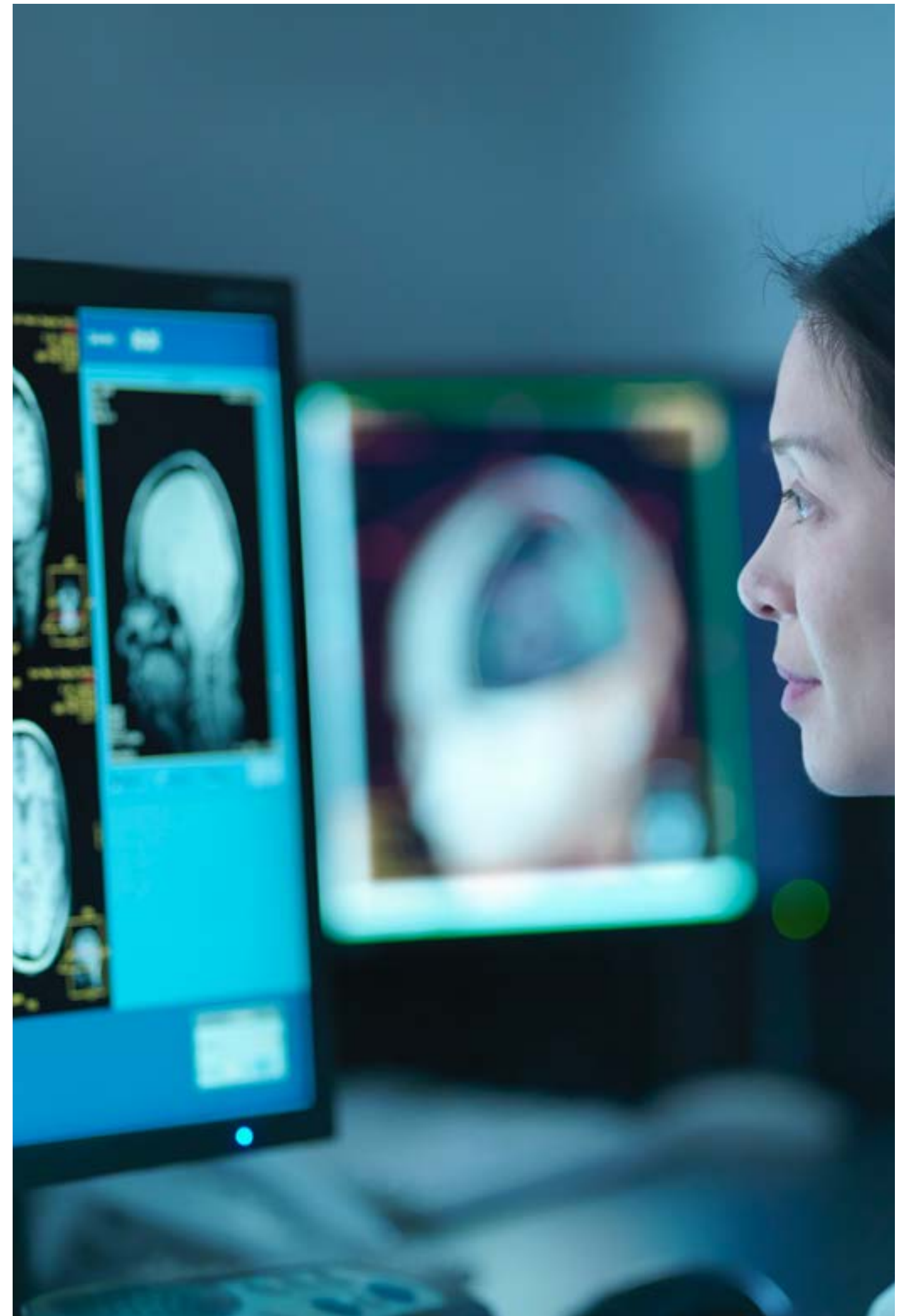
The Catalan biomedical ecosystem is showing solid signs of growth but also a very positive feature: an intense collaboration among its players. In 2018, 355 collaborative agreements were reached between biomedical companies and research centers, academic entities, start-ups and other centers, a significant increase compared to the previous year and boosted by relevant new projects launched by pharmaceutical companies.

The distribution of collaborative projects is balanced among all the stakeholders, although the other-industry companies (37%) have been the main players, especially in the agreements with pharmaceutical companies, which are innovating in digital transformation and new technologies. Research centers (24%) and academic centers (21%) maintain similar year-on-year figures, with a decrease in collaborations with start-ups.

5. Achievements and future challenges

The biomedical industry is showing solid figures of growth and investment activity year after year, and this trend is expected to continue in the future. However, in an ever-changing environment which will continue to evolve in the future at a rapid pace, taking the time to reflect on the road followed, and the one that lies ahead can be useful in order to make better decisions.

In order to build this chapter, we had the opportunity to reflect with the main Life Sciences investment companies based in Catalonia on the main achievements of the ecosystem in 2018 and the challenges for the years to come.



Achievements



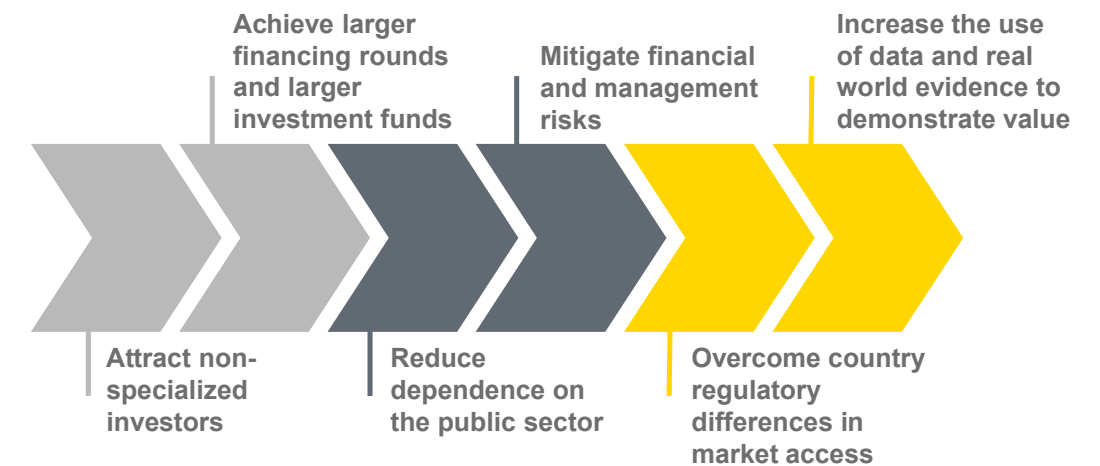
Investors consider that the main success achieved by the Catalan healthcare ecosystem is the growth in the number of international funds willing to invest in it. This is especially highlighted at a European level, where the collaboration between stakeholders from different countries is improving and is expected to increase both foreign investment in Catalonia and the investment of Catalan companies abroad.

It is also relevant that, although 2018 was a period dedicated to fundraising and follow-ons, a large number of investments in Catalan biomedical companies were

carried out, and for the third consecutive year, Catalan biomedical companies have raised more than 100 million euros. Investors also agree on the quality of the existing deal-flow and the general sensation that the sector is reaching a very positive level, with promising science and positive exits that strengthen the appeal among financing players.

The medtech and eHealth industry is also growing as part of the dynamic digital ecosystem that is developing in Barcelona, while investors are seeing a greater interest coming from corporate funds in the sector.

Future challenges



Despite the successes already achieved, there are still important challenges ahead in order to ensure the sectors' long-term viability and attractiveness.

Regarding financing, it would be positive to improve market attractiveness both for strategic international partners and non-specialized investors. These two types of players have been increasing their interest in the Catalan biomedical industry in the last decade, but there is still a large opportunity to maximize the industry's potential. Non-specialized investors need to increase their knowledge on sector metrics, dynamics and KPI's in order to ensure that there are no inflations in valuations, while the advances in R&D pipelines require a larger number of funds with the ability to participate in financing rounds of more than 25 million euros. These larger funds should coexist with the smaller ones, since there is still a great need of Seed and Series A financing.

In addition, the European biomedical industry as a whole still relies heavily on public financing when compared with the US. In the long term, the main Catalan healthcare investors believe that this dependence should decrease.

As management teams leading the local biomedical projects become more professional (a trend that has consolidated in the last few years), and larger funds are ensured, companies should be able to hedge management and financial risks, focusing on the scientific risks that are inherent to the sector.

Other key challenges, as pipelines evolve towards later stages in the R&D process, are the need to overcome differences in market access policies between countries and regions, and the importance of gathering real world evidence to support the value of innovation.

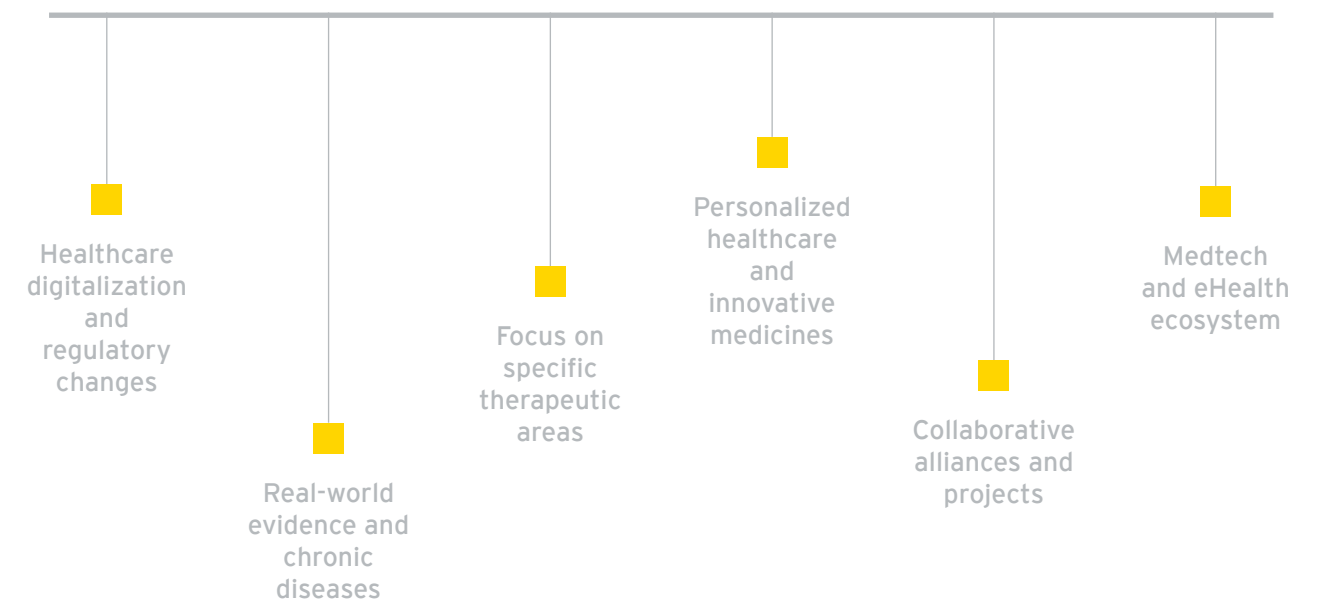


6. Biomedical industry trends

Life sciences companies are constantly adapting to changes and anticipating new trends to remain competitive in this ever-changing industry. Investing in digital capabilities, using real-world data, focusing in

specific therapeutic areas, researching for innovative medicines, and collaborating with R&D centers are the main trends for the healthcare companies in the years to come.

TRENDS





The world is digital and healthcare companies must adapt to the new dynamics and competitive forces that technology brings. Digitalization can lead to many improvements in health provision, resulting in great advances for the patients. The field for new products and innovations that can add value through technology and data analytics is growing, and the sector needs to ride this wave in order to sustain its competitive advantage over potential new players. In addition, digital transformation also brings new regulatory changes and updates that need to be taken into account.

Real-world evidence can demonstrate product value and is a useful decision making tool for healthcare authorities, especially when tackling with chronic diseases and long-term drugs. Improving medical outcomes in a faster way is critical in a world with an ageing population, in which the industry must handle the double challenge of improving patient care while guaranteeing the financial sustainability of healthcare systems.

In terms of research, there is growing evidence that companies with more focused portfolios are more likely to outperform their less focused counterparts. Actually, biomedical companies with specialized portfolios are growing faster than other players. This specialization is enhancing the emergence of innovative medicines and the possibility to provide healthcare services and treatments in a more personalized way.

This specialization and the growing need to innovate require more joint efforts among the different players in the ecosystem. The fact that this type of collaborations is growing in Catalonia is a sign that the sector is moving in the right direction. The local industry also benefits from a dynamic digital ecosystem, in which there is a fast-growing number of successful medtech and eHealth companies that is expected to increase in the upcoming years.

Specific trends in healthcare corporate finance

1	International investors as players in the Catalan ecosystem <ul style="list-style-type: none"> ▶ Growing interest in the Catalan healthcare market by international investors ▶ Enhancement in the communication between these investors and companies based in Catalonia
2	Increasing number of fund managers, funds and resources <ul style="list-style-type: none"> ▶ More investors, either specialized or not in healthcare, with interest in this market are emerging ▶ The amount of funds and resources that may be allocated in Catalan companies is still growing
3	Deal making and M&A <ul style="list-style-type: none"> ▶ These increasingly frequent alliances allow biomedical companies to focus on their core therapeutic areas of expertise while they acquire new capabilities, especially in digitalization and disruptive technologies
4	Growing resemblance between the biomedical and IT business models <ul style="list-style-type: none"> ▶ In biomedical companies, financial investors build strong relations with their investees from the start, since they tend to participate in the initial financing rounds ▶ We expect that healthcare business models will have more similarities with the IT ones in the future
5	Smaller financing rounds during the years of fundraising <ul style="list-style-type: none"> ▶ In years of fundraising, investment activities tend to be smaller, as resources are focused on securing new funds ▶ In terms of deal architecture, funds negotiate smaller initial rounds while ensuring larger follow-ons based on future milestones

7. Conclusions

The main conclusion of this edition of the *Study on investment in the Biomedical industry in Catalonia* is that the ecosystem continues to show its strength and consolidation as a main economic player, establishing

itself as an attractive market for both foreign and domestic investment. This statement is supported by the solid figures shown in the different topics of the study:

1	106 million euros of financing raised	<ul style="list-style-type: none">▶ In 2018, a total of 106 million euros were raised through 53 operations by biomedical companies based in Catalonia▶ These figures, in a period of fundraising by the main local VCs, confirm the stability and momentum of the ecosystem
2	Venture capital drives investment, with an increased relevance of business angels	<ul style="list-style-type: none">▶ Venture capital firms remain the main investor for biopharma, medtech and services companies, while business angels become more relevant among the mix of investors▶ 80% of the total capital invested in Catalan biomedical companies comes from investors based in Catalonia and 13% from international agents
3	Catalan investment companies performed 50 investment operations	<ul style="list-style-type: none">▶ Catalan venture capital firms carried out a total of 50 operations valued at 9 M€ in capital committed and 29 M€ in capital disbursed, positive figures considering that 2018 was a year of fundraising and follow-on operations
4	Positive evolution in the R&D pipeline	<ul style="list-style-type: none">▶ Biopharma companies are showing promising pipelines, as they are starting new research projects while the existing products are advancing towards the later R&D stages▶ Both medtech and pharmaceutical companies have a relevant number of products both in the final research stages and in the market
5	Increase in the value of license agreements and the number of collaborative projects	<ul style="list-style-type: none">▶ Although the number of licensing agreements signed decreased in 2018, their total potential value rose to almost 29 million euros▶ Up to 355 collaborative agreements were signed in 2018, with an increased number of agreements with new players, as digital becomes more relevant

8. Acknowledgments

The development of the *Study on investment in the biomedical industry in Catalonia 2019* of CataloniaBio & HealthTech has been performed with the collaboration of EY, professional services firm internationally recognized in the elaboration of reports for diverse economic sectors.

We appreciate the help of the more than 200 product development, medtech, services, pharmaceutical and

investment companies that have participated in the elaboration of this study, as their data and expert vision contributed towards building a true image of the ecosystem.

We also want to mention the involvement and support of Biocat in the preparation of this study in order to ensure an accurate picture of the sector.



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