

BIOTECH in FLANDERS

A Stunning Story

Jo Bury – Johan Cardoen – Dirk Reyn

BIOTECH in FLANDERS

A Stunning Story

Witsand Publishers

'Biotech in Flanders: a Stunning Story' is a book by
flanders.bio, VIB (Vlaams Instituut voor Biotechnologie) and Witsand Publishers,
with the support of FIT (Flanders Investment & Trade)

www.flanders.bio
www.vib.be
corporate.flandersinvestmentandtrade.com
www.witsand.be

Witsand Publishers
Ertbrandstraat 256
B-2950 Kapellen
Belgium

Copyright © 2023, Witsand Publishers and the authors
D/2023/12.051/4
NUR 740
ISBN 978-94-9329-226-0

Editorial guidance: Geerdt Magiels and Peter Raeymaekers

All rights reserved.

No portion of this book may be reproduced in any form without written permission from the publisher or author, except as permitted by copyright law.

This publication is designed to provide accurate and authoritative information in regard to the subject matter covered. It is sold with the understanding that neither the author nor the publisher is engaged in rendering legal, investment, accounting or other professional services. While the publisher and author have used their best efforts in preparing this book, they make no representations or warranties with respect to the accuracy or completeness of the contents of this book and specifically disclaim any implied warranties of merchantability or fitness for a particular purpose. No warranty may be created or extended by sales representatives or written sales materials. The advice and strategies contained herein may not be suitable for your situation. You should consult with a professional when appropriate. Neither the publisher nor the author shall be liable for any loss of profit or any other commercial damages, including but not limited to special, incidental, consequential, personal, or other damages.

Contents

Prefaces	12
Introduction - Biology is everywhere ... and technology follows in its footsteps	17
A landscape of science	18
Knowing, being able, doing	18
A rich ecosystem	21
Chapter 1 - On the shoulders of giants	23
The double helix	23
Noble roots	25
Jules Bordet - from basic researcher to vaccine producer	25
From antibodies and complement factors ...	25
... to a series of diagnostic tests ...	27
... to a vaccine against pertussis ...	27
... and in recognition a Nobel prize	27
Jean Brachet - from animal DNA and plant RNA	29
to central dogma	
Don't believe everything you read in books	29
The dogma of molecular biology	30
A crucial experiment	31
The Groupe Rhode	32
Christian de Duve - The cell dissected	33
An accidental discovery consigns insulin research	33
to the wastepaper basket	
Nobel prize for lysosomes	35
Piet(er) De Somer - entrepreneur, physician and researcher	37
From 'balatum' to 'penicillin made in Belgium'	37
R.I.T. and GSK Vaccines	38
The Rega Institute - an independent research institute	39
A powerhouse for antiviral drugs	42
Paul Janssen - world champion in drug development	43
Apprenticeship in the US and with Corneille Heymans	43
A drug research company	45
More than seventy drugs	46
The genius of Paul Janssen	47
Dr. Paul: "What's new?"	49
A cool lover of biotech	49
Center for Molecular Design	50
<i>THE LIFE OF THE CELL - PART 1: EXPEDITION TO THE INTERIOR OF THE CELL</i>	52
Chapter 2 - Founders of Flemish biotech	59
In the footsteps of Watson and Crick	59
Walter Fiers - molecular bioengineer 'avant la lettre'	61
Godfather of modern genomics	61
Interferon, interleukin and the human immune system	63
The entrepreneur in Walter Fiers	64
Focus on influenza	64

Jeff Schell	67
Marc Van Montagu	69
Désiré Collen – researcher, physician, entrepreneur, philanthropist and financier	73
From laboratory concept tot potential medicine	73
A chance meeting – ‘the daughter of a guest speaker’	74
Recognized as a medicine	75
Royalties for spin-off creation and societal added value	76
Herman Van den Berghe – pioneer in human genetics	77
From the basement of the hospital	77
Policy maker behind the scenes	79
<i>THE LIFE OF THE CELL – PART 2: THE LANGUAGE OF LIFE</i>	81
Chapter 3 – The entrepreneurial research university	89
From the universitas ...	89
... to the researching university ...	89
... to the triple helix for innovation	91
Stanford University – classic example of the triple helix	93
The first tech transfer offices	94
Tech transfer and biotech	94
The European paradox	94
Tech transfer in Belgium – LRD as pioneer	97
Chapter 4 – The first Flemish biotech companies	99
DIRV provides the tailwind	99
A grim period	99
Flanders Technology International	100
A new industrial context for biotechnology	100
Plant Genetic Systems, genetic access to the kingdom of plants	102
Plasmid on the map	103
The plasmid puzzle	105
Plasmid world news	106
Business and patents	107
A green future	108
Biogent, a first introduction to the ‘red’ biotech industry in Flanders	111
Fiers’ academic cloning machine turned into a company	112
Innogenetics, the largest European biotech of its time	115
Harvesting from academics and seeking funding	115
Theranostics – an innovative model	116
Revenue over capital contribution – and then go public	118
The therapeutic arm	120
Phenomenal growth ...	121
... until the first cracks show themselves	121
All hope in the hepatitis C-vaccine	122
Takeover after takeover	123
The legacy of PGS and Innogenetics ... the beginning of an ecosystem	124

Chapter 5 - VIB, the Flemish Institute for Biotechnology	127
A strike, a demonstration and a theater in Mechelen	127
A new competence center	129
Starting from a blank sheet of paper ...	129
An institute without any walls	131
An ingenious duo job	132
A bumpy start, from strategic plans to the Cambridge model	133
Still, a flying start, also in technology transfer	135
The spider in the biotech web	136
Outstanding international science ...	136
... supported by state-of-the-art technology	137
Own walls after all: incubators, accelerators, own labs	139
Technology transfer and value creation	139
25 years of impact	141
Chapter 6 - The ABCs of financing biotech	145
Cooking costs money	145
Only costs, not revenues	145
Eureka! ... and then?	147
First action is protection	148
Making a choice - licensing or starting a spin-off?	149
Seed money financing	150
Banks and fff's	150
<i>GOVERNMENT PIONEERS WITH GIMV IN START-UP FINANCING</i>	151
Tech transfer offices	153
Scholarships and grants	153
The helping hands of the Flemish government	154
Federal tax support for innovation	156
Europe's horizon	157
Venture capital	158
Business angels	159
Venture capital and private equity	161
Venture capital active in the Flemish ecosystem	162
Government 'venturing' too	164
From seed over series A to ... ?	165
Stay on board or get out?	167
Growth funds	168
Going public	168
<i>EASDAQ, THE FIRST PAN-EUROPEAN TECH EXCHANGE, WITH FLEMISH ROOTS</i>	171
Strategic collaborations and alliances	174
Mergers and acquisitions	175
Every financing has its advantages and disadvantages	177
Still a role for (investment) banks?	177
Money in abundance, and yet ...	179
A crucial transition phase	180
Sitting on the fence	181

Chapter 7 - The great biotech wave	185
On the fast track	185
 <i>FUNCTIONAL GENOMICS: IN THE SLIPSTREAM OF THE GENOME PROJECTS</i>	 188
Devgen, from genome screener for pharma companies to rice enhancer	189
C. elegans, an unsightly roundworm as a model organism	189
RNA interference	191
Researcher becomes CEO by necessity	192
Devgen Therapeutics and Devgen Crop Protection	193
Transformative deal with Monsanto	194
An irresistible offer	194
Tibotec en Virco, personalized medicine for HIV	195
An epidemic holding everyone spellbound	195
Dr. Paul's last major concern	197
Robot conquers the lab	197
Rapid build-up of resistance	199
Most important HIV database worldwide	200
A shortage of funds	201
Biocartis, rapid and decentralized DNA diagnostics	203
Pocket laboratories	203
Going public now	204
Multiplicom, algorithm at the base of a diagnostics company	205
From CE marking ...	205
... to NIP testing	206
Ten times the stakes	207
Galapagos, biological explorers	209
The promise ...	210
Cold virus as a shuttle vehicle	211
Crucial Flemish start-up funding and third-party services	212
Proprietary development: JAKs and the birth of filgotinib	213
2005, the year of 'nothing ventured, nothing gained'?	214
Successive partnerships for rheumatoid arthritis	215
On to the magical year 2019 - approval and the 3.5 billion deal	217
Like a bolt from the blue	218
A new standard-bearer	220
 <i>HEALING WITH PROTEINS AND CELLS</i>	 221
ThrombX and ThromboGenics, from t-PA for the poor to eye drugs	223
A byproduct of Yakult	223
Fifty working years condensed into three calendar years	224
Protein production and money	224
ThromboGenics	225
A succesful IPO - with 'Désiré' in the background	225
Peak years	227
Great added value for patients	228
D-Day for Jetrea	229
Sales are not succesful, share price collapses	230
Protein drugs by other biotechs	232
Aelin Therapeutics, turning the world upside down	232
against cancer and infections	

Orionis Biosciences, newly designed signaling proteins lead defense against cancer	234
TiGenix, pioneer in stem cell therapy	235
Focus on cartilage and joints – something absolutely new	236
A merger and a modified strategy	237
Interest from Japan	238
GST, cell therapy for animals too	239
ActoGenix, working with lactic acid bacteria	240
Lactic acid bacteria and therapeutic proteins	240
Trapped for days	241
Rock-solid foundations	242
New technology = unsuspected challenges	242
From a partner to Precigen ActoBio	243
MRM Health, ‘bugs as drugs’	244
<i>THE LIFE OF THE CELL – PART 3: AUTOMATION, MINIATURIZATION AND DIGITIZATION</i>	246
<i>FROM FIELD TO FORK, THE GREEN BRANCH OF BIOTECH</i>	252
The legacy of PGS and Marc Van Montagu	252
The useful hybrid	254
CropDesign, betting on systems biology of plants	255
Fusion, branching and fertilization	257
Growth and flowering of a green ecosystem	259
Deep in the cells of plants	261
Closing the circle	262
<i>PLANT GENES ON THE (SOCIAL) FIELD</i>	265
<i>CAMELS, LLAMAS, ANTIBODIES, NANOBODIES AND DERIVATIVES – A SEQUOIA IN THE ECOSYSTEM</i>	267
Stubborn students cause unintended major breakthrough	267
Camel blood from the freezer	267
In search of a camel	268
Valorization, an unknown activity at the university	269
Then let’s apply for a patent ourselves ...	269
Washing powder with nanobodies	269
VIB steps into the breach	270
Ablynx, pioneering with nanobodies	271
A bolt from the blue	277
The demise of a Flemish gem?	278
The Argonauts of Argenx	280
Innovative and ambitious, yet difficult at the beginning	280
SIMPLE Antibody Platform	283
Betting on brand new targets	283
FcRn receptor and myasthenia gravis as leading examples	283
From new guest at the table to approval for market launch	284
Other flagship products	285
An investment path full of thorns	285
Making the impossible possible	288
Rare diseases	288

The real satisfaction	289
New shoots on the sequoia	290
Sustainable agriculture thanks to llamas from Biotallys	292
Biotech veterans tackle ‘pourriture grise’	292
Reinventing food protection	293
2021 - a ‘grand cru’ year	294
Support from unexpected quarters	295
Alfabodies, synthetic target finders	295
Deep into the cell	295
A bioinformatician and a serial biotech entrepreneur	296
 <i>SMALL MOLECULES, BIG IMPACT</i>	 299
Biotechnology changes R&D strategy of big pharma companies in the 1990s	299
Janssen Pharmaceutica and its spin-outs: Tibotec, Barrier, Movetis and PharmaNeuroBoost	301
American investors in Barrier get to know Flanders	302
Movetis or how persistence brings an ‘abandoned’ product to the patient	303
PharmaNeuroboost: even small molecules are no guarantee for success	307
Okapi Sciences or how animals also benefit from small molecules	307
ReMYND: tackling Alzheimer’s disease with small molecules	309
 <i>THE LIFE OF THE CELL – PART 4: KNOWING, BEING ABLE, DOING</i>	 311
Chapter 8 – The network of networks	321
The invisible network as a breeding ground	321
Imec as a junction between medicines and medical technology	321
Data en Vito as tangent to biotechnology	325
Via biotechnology and ITG towards solutions to tropical diseases	326
ILVO, the food issue and a new agro-incubator	328
Towards more sustainable food sources through biotechnology – the Protelnn Club	331
JLABS as an additional breeding ground for ideas – both worldwide and in Flanders	334
Confidence and understanding	338
 <i>FLANDERS.BIO AS CATALYST OF THE ECOSYSTEM</i>	 339
Chapter 9 – The dynamics of the Flemish biotech ecosystem: a bird’s eye view: how the puzzle pieces fit together	347
More than three hundred companies and partners	347
The foundations of the Flemish biotech ecosystem	348
FOUNDATION 1 – An exceptionally broad knowledge base	348
FOUNDATION 2 – Strong and above all sustainable funding for fundamental academic research	349
FOUNDATION 3 – A long tradition of focus on valorization at knowledge institutions	350
FOUNDATION 4 – A cleverly investing government: a policy aimed at supporting innovation and market oriented research	351
FOUNDATION 5 – Unique cross-fertilization with pharma and agrotech players	352
FOUNDATION 6 – Home to a large number and broad spectrum of quality clinical studies	353
FOUNDATION 7 – VIB, a unique spider in the web	354
FOUNDATION 8 – A healthy and comprehensive investment story	355
FOUNDATION 9 – Euronext Brussel	357

FOUNDATION 10 – A broad diversity of professional services and competences are part of the ecosystem	357
FOUNDATION 11 – Acces to a pool of well-trained young talents	358
FOUNDATION 12 – Modern infrastructure for research and development	359
FOUNDATION 13 – A strong network with international experience and dimensions	360
FOUNDATION 14 – Success stories get attention and inspire	361
FOUNDATION 15 – Connecting federations and clusters, with flanders.bio at the forefront	362
THE UNIQUE FLEMISH CEMENT: a strategic vision, driven by ambition, shaped by pragmatism	363
<i>TEAM VESALIUS</i>	367
Chapter 10 – What does it bring in?	369
The ivory tower pulled down	369
Social value added	369
Helping more than two million patients a year	369
Many thousands of acres	371
A helping hand to a society weighed down with a pandemic	372
Getting biotech work done in Flanders (and elsewhere)	373
Financial value added	374
Eleven euros returned for every euro invested in VIB	374
Reinvestments by biotech and pharma industries	375
Return for financial investors	375
Attracting domestic and foreign investments	375
A European Amgen?	377
Flemish biotech brio	377
Epilogue – challenges ahead	379
An even faster translation of innovation to businesses	381
Flanders, an ideal breeding ground for new collaborations between biotech, ICT and medtech	384
With a more mature ecosystem, the need for more growth capital increases	387
Increasing attractiveness and liquidity of Euronext for biotech / tech companies	389
Continued need for a stable investment climate	390
Time to attract, train and retain more talent	391
The road to 2050	394
Contributors to this book	396
Provided financial support for this book	397
Note on the authors	399

Preface by Joy Donné

When bright minds work together, the results follow suit

It's no coincidence that Flanders is home to one of the world's most vibrant life sciences & health ecosystems. This book offers an inside look at how the region positions itself as a leading hub for life sciences and biotech research and innovation in Western Europe through a deliberate and strategic approach.

The region's recipe for success includes some well-known ingredients. Think, for example, of its strategic location and its vivid network of global life sciences players and scientific institutions. There's also the fact that Flanders provides proactive support, financial incentives and top-notch talent. By highlighting these unique opportunities, Flanders Investment & Trade (FIT) plays a vital role in attracting biotech and life sciences firms to Flanders. But one other element stands out as particularly convincing. It's the glue that holds everything together: collaboration.

After all, innovation doesn't happen in a vacuum. It requires uniting the right people and organizations to create the right synergies at the right time. True to this spirit, Flanders has implemented a comprehensive and integrated approach to developing a knowledge-based innovation ecosystem. How? By attracting and retaining talent, promoting open innovation, focusing on key industries, forging international partnerships, investing in research infrastructure, and more.

This has helped create a collaborative ecosystem that unites academia, businesses, civil society and government entities. It also enabled Flanders to leverage R&D for economic development and innovative competitiveness. The figures tell the tale. In 2020, 3.60% of Flanders' GDP was spent on R&D by the private, public and academic sectors combined. This makes Flanders number 1 among all EU member states. Secured by FIT, foreign direct investment (FDI) only added – and continues to add – to the sustainable progress of Flanders' innovative ecosystem. To highlight just one example, 1 in 4 new jobs created through FDI in 2022 was connected to R&D.

When bright minds think and work together, the results follow suit. FIT walks the talk in this regard as well. As such, we work closely with biotech cluster flanders.bio and VIB, Flanders' strategic research center for life sciences & biotech. In addition, we strive to identify and multiply innovative opportunities across national borders. To this aim, we have expanded our international network with ten Science & Technology Offices for health, digital and climate tech: in New York, Palo Alto, Paris, London, Copenhagen, Munich, Mumbai, Singapore, Guangzhou and Tokyo.

What ties all these efforts together is a firm belief in the power of research, innovation and internationalization for our global economy and prosperity – and vice versa. As you read through this book, I am confident you'll join us in this vision.

May it inspire your plans as you discover the unique story of biotech in Flanders.

Joy Donné
CEO of Flanders Investment & Trade (FIT)

Preface by the authors

In 2023, it will be exactly forty years since the first Flemish biotech company saw the light of day. In those forty years, a lot has happened and many tales have been written, which today form the basis of the so-called Flemish biotech 'ecosystem'.

In those forty years, Flemish researchers and pioneers have made discoveries that have resulted in seventeen drugs, which affect the lives of more than two million patients per year. In addition, numerous discoveries have been made that are used daily in agriculture, in our labs and medical cabinets, which only few know have come from Flanders. Entrepreneurs and their teams have had hundreds of meetings to convince investors to support these Flemish innovations and choose them over all other investment proposals that land on their desks. With success. More than 10 billion euros found its way through Euronext, Nasdaq, Easdaq or through private investment to Flemish biotech companies. Every euro invested in the sector is worth at least four euros ten years later. Every euro the Flemish government invested in VIB's research is worth eleven euros today. In 2023, sixty thousand people work directly or through supporting jobs in the Flemish biotech sector. That is a stunning story, without question. It is a story of people and teams. Of perseverance, of trial and error and of chance discoveries and encounters.

The idea for this book came about during a conversation at Knowledge for Growth (the annual high mass of Flemish biotech) between the undersigned, when we reflected on the fact that some of the giants and iconic pioneers of the Flemish biotech story were quietly retreating and became less visible. While retrieving anecdotes and memories of achievements of companies of the past, it immediately became clear that a lot of knowledge would be lost if we did not carefully put it down in a book. We could make this book coincide with the milestone of at least forty years of biotech history in Flanders.

Instead of proceeding chronologically and describing history step by step, we looked for similarities between these remarkable stories and what we found in terms of information about the (bio) technology, the innovations and the companies.

Thus, the book is structured around information about antibodies, nanobodies or small molecules rather than around companies or people or timelines. It was not to be a book that would focus on particular individuals because that would probably not recognize others. Moreover, we especially wanted to keep ourselves from making mistakes caused by the not always verifiable nature of certain anecdotes and storylines surrounding certain events. It had to be an objective book, without the inherent obligation to overload it with references. It had to focus on the key events, companies and milestones that have determined the growth of the Flemish biotech 'ecosystem' and what it now offers. The book had to be accessible to the experienced biotech researcher, the investor and manager, as well as to their family members and acquaintances and the interested reader. It had to be a book that could be used to tell the story to foreign friends and colleagues. It is up to the reader to judge whether these goals have been too ambitious or not.

The book is based on interviews with several privileged witnesses and on a great many public documents and reports. It would never have come about without the efficient collaboration with Peter Raeymaekers and Geerd Magiels and access to their memory and fluent pen. The teams from Kempen, IQVIA, KBC, VIB and flanders.bio also provided critical support and materials. We also thank, of course, the many private sponsors and the companies that gave this project their unconditional support on the basis of nothing but a brief summary.

Belgium and Flanders have a worldwide reputation for products like chocolate and beer. With this book we want to convince the reader that in recent decades another quality product has been added namely the Flemish biotech 'ecosystem'.

Jo Bury, Johan Cardoen and Dirk Reyn



Introduction

Biology is everywhere ... and technology follows in its footsteps

Our lives are permeated by an intimate connection between biology and technology. The products and processes that make our lives pleasant, exciting, tasty and comfortable are very often the result of applied biological knowledge. Washing powders that break down dirt at low temperatures thanks to enzymes, vaccines based on the genetics of pathogens, beer, cheese and bread made with yeasts, immunotherapies against cancer, bacteria that purify waste water, the wide variety of fruit, vegetables and animals, DNA traces that help solve crimes, genetic tests that detect diseases ... the list is long.

Knowing the biology of genes, proteins, molecules, cells and organisms helps to make our world safer, healthier and more sustainable. The life sciences, which try to understand all aspects and forms of life, are a young discipline. In half a century they have evolved from the first tentative sketch of the DNA molecule to in-depth insights into the role of genes, proteins, sugars and fats in the health and disease of humans, animals and plants. Many of these complex processes of life are not yet fully understood, but science continues to search for causes and effects in the complex networks of biological systems, from the smallest to the largest, from the derailed cell division in an individual cancer cell to the conversion of carbon dioxide that plays a role in climate change.

Life sciences and biotechnology are indispensable to meet the challenges of the future, on a planet with more than eight billion human inhabitants, where biodiversity and ecological capacity are under increasing pressure and pandemics, hunger and poverty are taking their toll. We are on the threshold of new developments whose outcome is difficult to predict. What we do know is that over the past century, Belgian and Flemish researchers and entrepreneurs have made significant contributions to them, creating a rich breeding ground on which a diverse landscape of life science research, development and entrepreneurship now flourishes and where products are created that help millions of patients worldwide. This book tells that history. It is a story of local events and global dimensions, of serendipity and tenacity, of human, financial and material capital, and above all of curiosity and daring, but also of trial and error.

That history does not stop here and now, but points to the future. More than ever, and thanks to life sciences, we realize how much man holds the fate of himself and all life in his hands. The challenges of the coming decades are great, and science and entrepreneurship will be indispensable in ensuring a safe, healthy and sustainable future for all that lives.

A landscape of science

Flanders is a world player in life sciences, or the study of all life forms, and in particular in biotechnology, the practical application of that knowledge using technology. Thanks to a fruitful cross-fertilization between high quality health care, excellent scientific research, bold entrepreneurship, high-risk financing and a supportive government, an academic and industrial network has emerged in recent decades, building on the pioneers of the 1980s, that is perceived as unique in Europe.

This is not promotional talk but speaks from the reality of the 'Flanders biotech valley', between Meuse and North Sea. Belgian biotech and pharma companies together employ more than forty thousand people directly, more than double the European average per capita. The supporting industry and supply companies employ at least another one to two times as many people.

Knowing, being able, doing

With 12 universities (two of which are in the Reuters top 100 list of most innovative universities) and seven university hospitals, Belgium has an enormous pool of knowledge, expertise and skill in healthcare. Within the European Union, Belgium and Flanders rank in the top three in terms of the number of clinical trials per capita and held for a long time the number one spot in terms of the speed with which early clinical trials can be set up. This gives patients access to the most innovative treatments and medicines. In addition, three thousand young people graduate each year from Belgian universities with a degree in life sciences, a solid reservoir of future talent.

The strength of the innovative Flemish cluster in life sciences is supported by research centers such as the Flemish Institute for Biotechnology (VIB) or imec, the research center for nanoelectronics and digital technology that is increasingly focusing on e-health applications. The presence of incubators for pioneering start-ups, science parks and cluster organizations such as flanders.bio, MEDVIA or Catalisti, catalysts of value creation through innovation, also provide a rich breeding ground.

Moreover, Belgium and Flanders have a solid base for research and development and a strong focus on innovation. As a small country and region, we are among the leaders as far as innovation is concerned. In terms of absolute value of investments in biotechnological and pharmaceutical research, we are among the top in Europe. Moreover, investments grew by 14% per year between 2015 and 2020.

Top global biopharmaceutical companies, such as JNJ (with Janssen), Pfizer, GSK or UCB, have important company sites in Belgium. Some of them were created and rooted here. Belgium has become an incubator for the development and production of vaccines and different types of drugs, both in terms of research, development and production. We are number one in vaccine exports and rank third worldwide in per capita drug exports. We exported more than 50 billion euros worth of vaccines and medicines in 2020. Many dozens of home-grown drugs, from the labs of small start-ups and large pharma houses, help more than two million patients worldwide, with common conditions to rare diseases.

Flanders is also an important player in agro-biotech, not least because of and thanks to the foundation of green gene technology with which researchers from Ghent helped to initiate the genetic modification of plants in the 1970s and also pioneered the creation of university spin-offs.

In addition, Belgium has a diverse and growing landscape of biotech companies, from young start-ups to established local companies. Some have grown into publicly traded multinationals. Belgium is home to an impressive proportion of lifescience companies listed on the Euronext exchanges.

Beginning entrepreneurs can raise support and financial resources from an extensive local and international network of investors to give their plans concrete form and turn their dreams into a valuable and, hopefully, successful product. Moreover, they find a benevolent Flemish government that supports budding companies in their development and growth.

All this has led to a large number of drugs – seventeen to date – and diagnostic tests that would never have come about without the Flemish biotech ecosystem. In agriculture, too, a range of new crops and protectants are the fruit of this ecosystem.



A rich ecosystem

This biotech landscape can also be described as an ecosystem, biologists' word for the totality of life and non-life, of organisms, soil, water and minerals interwoven in a complex network of interdependence, connected by the flows of matter and energy that nourish and guide the whole.

That image is an imaginative metaphor to describe the whole of biotechnological activity in (Belgium and) Flanders. In experimental models, test tubes, pilot plants, test batteries, animal and computer models, greenhouses, growth mediums, laboratories, computer models and hospitals, scientists from dozens of disciplines gather and test knowledge, interact, refine and pass it on, develop it into biological building blocks and techniques that can be converted into useful products and services.

An ecosystem exists by grace of interaction in a multi-layered network of information and energy in which various actors enrich and reinforce each other. In this respect, the lifescience cluster in our country is an integrated ecosystem: the result of a layered interplay of various (f)actors that has led to a dynamic environment, a living web of interconnected people and organizations, in networks through which knowledge, material and financial resources flow. It is a network of universities, hospitals, research centers, biotech, pharma, food and manufacturing companies, funders, government, support and logistics organizations. An ecosystem also in which people with inspiration and courage are the engine of innovation, running on the fuel of ideas and money. That system did not happen overnight. In nature, too, a natural ecosystem begins with pioneering vegetation in virgin territory. In the life sciences, the first seeds fell in fertile Flemish and Belgian soil early into the previous century.