NBD

NOSTRUM BIODISCOVERY

Rethink &
Accelerate

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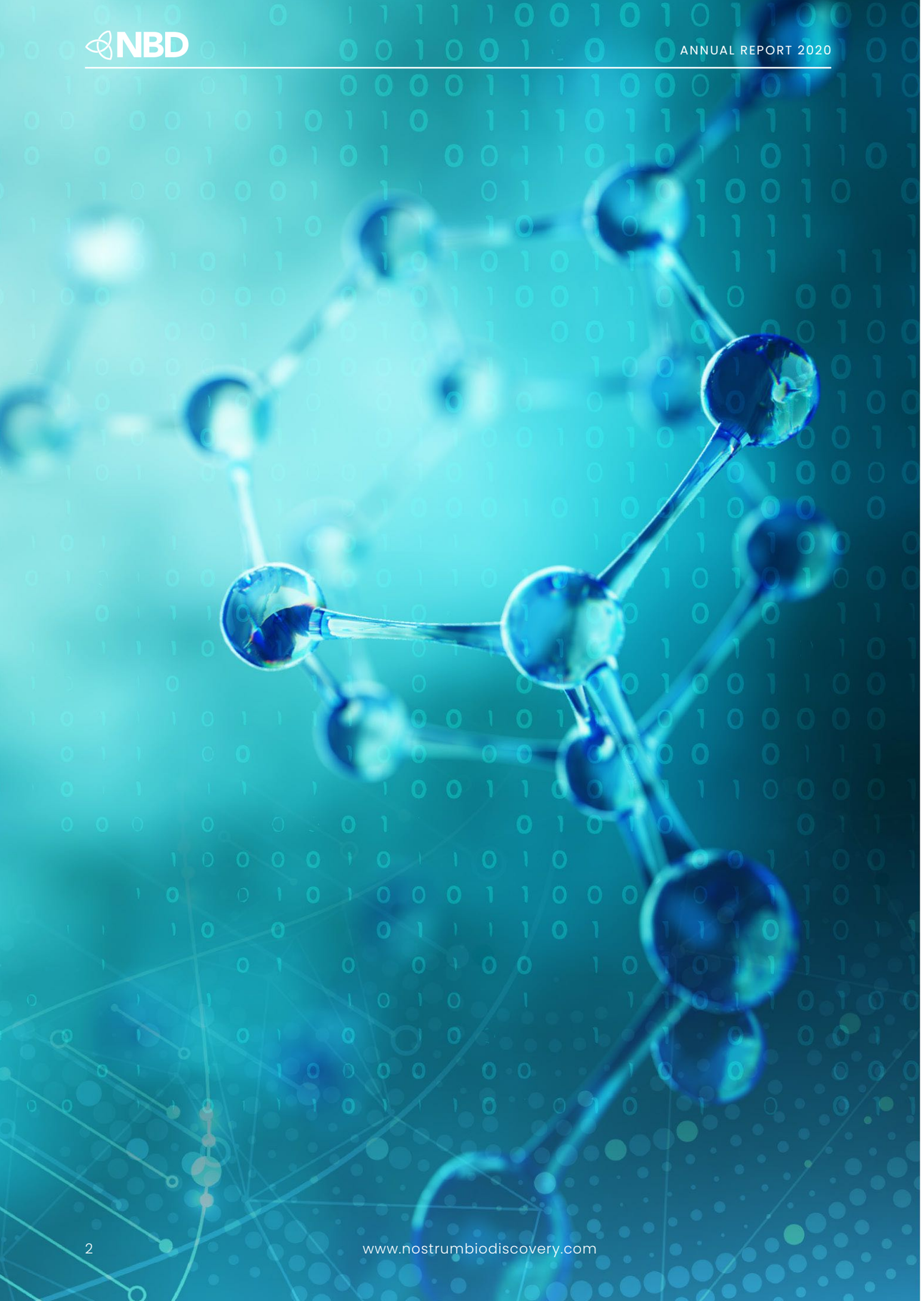
UNIÓN EUROPEA
FEDER
Fondo Europeo de Desarrollo Regional
Una manera de hacer Europa



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ANNUAL REPORT 2020

Mission Statement.

Our vision

We believe *in silico* modeling will drive future biotechnology projects. From NBD's perspective, this covers drug discovery/design for the pharmaceutical sector as well as the enhancement of the enzymes of industrial interest.

Our purpose

We want to deliver the modeling technology and expertise for the molecular design needs of the pharmaceutical and other industry sectors.

Our Mission

We believe in a world with better medicines that reach the market faster; we believe that industry production can be greener; and we believe that we can reach zero CO_2 emissions.

But nothing of it can be done without cutting-edge computational technologies that combine Simulations and Artificial Intelligence. **And this is what we are providing.**

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Our Team.

This 2020 has been a year of changes.

Changes in the Board of Directors.

On one hand, there have been changes in the Board of Directors. The departure of the former CEO/CSO - Robert Soliva, PhD -, was covered by Ezequiel Mas (CEO) and Gorka Etxebarria (CSO). Moreover, Lucía Díaz was also promoted to CBDO.

Commercial Takeoff & Increase in Workforce

In 2020, we were able to collect the results of years of very good business development operations. The growth in sales has led the company to significantly increase the workforce, from 6 to 12 employees this year, consolidating a structure organized by divisions with shared responsibilities between heads and directors.

Leadership Board

During 2020, the need of a better organization to control the fast growth and, at the same time, keep growing, made the company implement a new organigram with more intermediate roles for evolving from a one head to a semi-pyramidal organization.

In this sense, the new Board of Directors was formed by Lucía Díaz, Gorka Etxebarría and Ezequiel Mas, whose prioritary mission is to achieve the objectives marked by founders assuring the sustainability of the company

Since the company has grown to a certain point and it is foreseen to keep growing, the board of directors has established an operational body in charge of implementing all the technical aspects concerning clients and our internal R&D projects. This Leadership Board has been comprised by Lucía Díaz, Gerard Santiago, Daniel Soler, Gorka Etxebarría and Ezequiel Mas. Lucía Díaz has been in charge of the Drug Discovery division, Gerard Santiago has been managing the Enzyme Engineering division and, finally, Daniel Soler has been the head of the IT Team.

Boards of Directors / April 2021

Ezequiel Mas
PhD
CEO

Lucía Díaz
PhD
CBDO

Leadership Board / April 2021

= Board of Directors + Javier Iglesias (EE) + Marti Municoy (IT)

Full Team / April 2021

DRUG DISCOVERY (DD)

Suwipa Saen-Oon
PhD
Senior Project Manager

Chiara Pallara
PhD
Project Manager

Esther Sala
PhD
Project Manager

ENZYME ENGINEERING (EE)

Javier Iglesias
PhD
Head of EE

Joan Coines
PhD
Project Manager

INFORMATION TECHNOLOGY (IT)

Rosario Gago
MSc
IT Manager

Anna Gruszka
PhD student
IT vManager

Helena Martin
BSc student
IT Manager

Marti Municoy
PhD student
Head of IT

BUSINESS

Ali Hosseini
PhD
Business Development

Founders

Modesto Orozco
Full Professor at UB
Advanced ERC
Grant recipient

Group Leader of the IRN lab at IRB

Victor Guallar
Professor ICREA
Advanced ERC
Grant recipient

Group Leader of the EAPM lab at BSC

Special Thanks

NBD's Board of Directors and Founders are grateful to former workers : Robert Soliva (former CEO/CSO and co-founder of the company), Emiliana D'Oria (former Project Manager), Gorka Etxebarría (former CSO), Gerard Santiago (former EE Division Leader), Daniel Soler (former Head of IT) and Yvonne Westermaier (former Project Manager - DD divison). We wish you the best luck in your professional and personal lifes.

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BUSINESS

The different sectors.

Target Sectors

Pharmaceutical
Biotechs

Needs in

Drug Design
Drug Discovery

NBD Divisions Involved

Drug Design

Nucleic Acid

Target Sectors

Waste Management
Biomass

Needs in

Productivity issues solvable through enzyme engineering

NBD Divisions Involved

Enzyme Engineering

Target Sectors

Consumer Goods
Biotechs

Needs in

Enzymes as Final Product

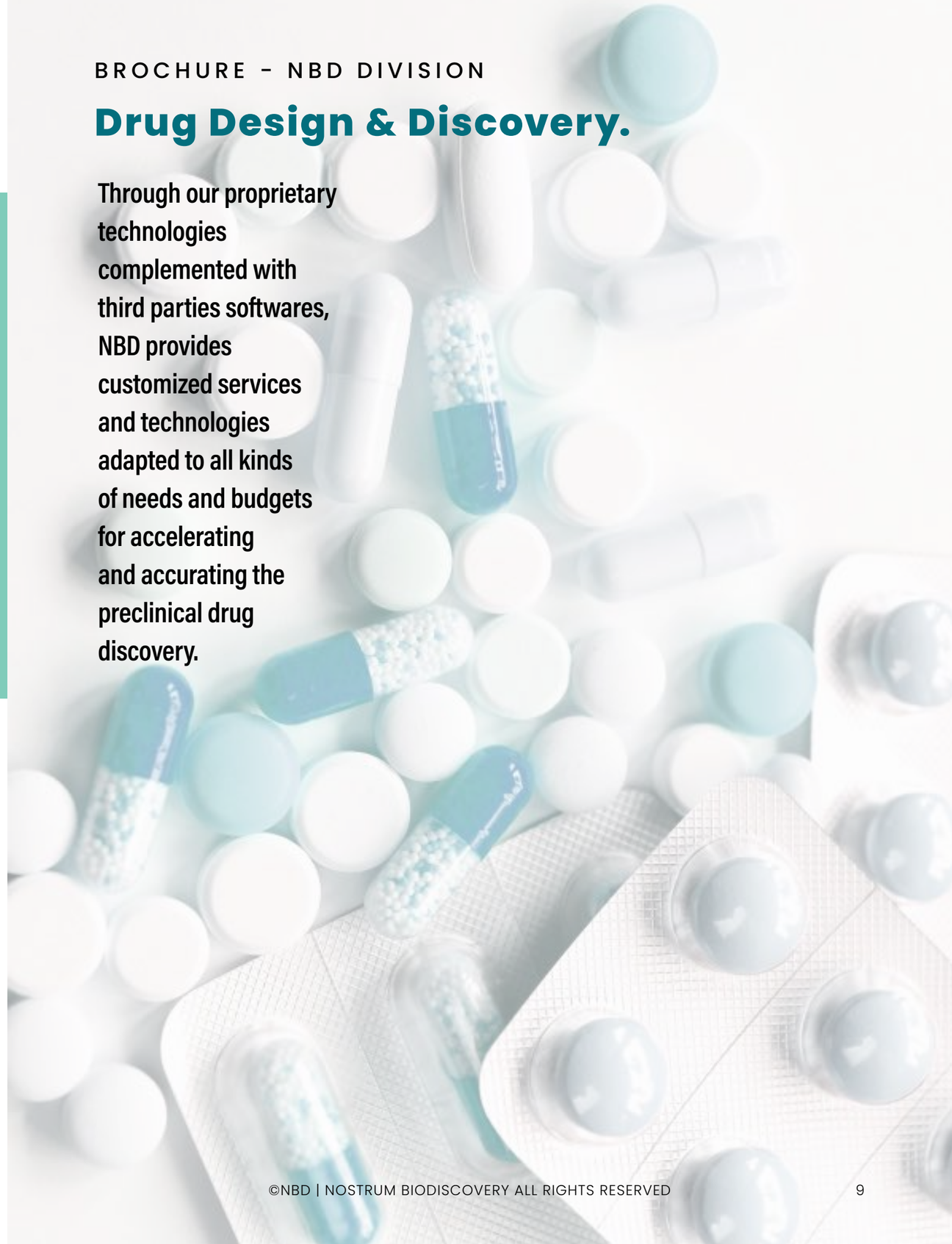
NBD Divisions Involved

Enzyme Engineering

BROCHURE - NBD DIVISION

Drug Design & Discovery.

Through our proprietary technologies complemented with third parties softwares, NBD provides customized services and technologies adapted to all kinds of needs and budgets for accelerating and accurating the preclinical drug discovery.



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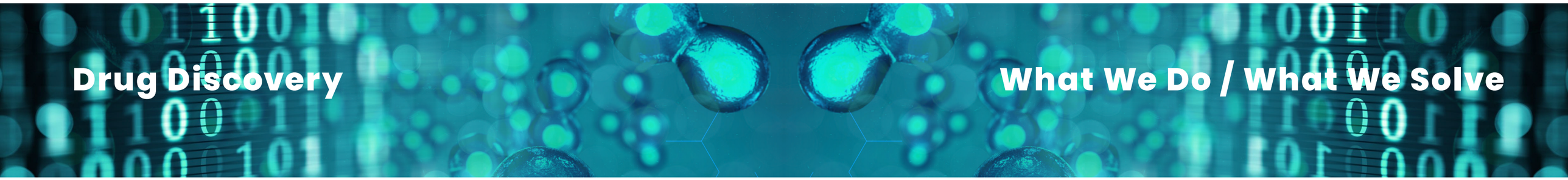

Drug Discovery

BioPharma Industry

The elevated cost of Drug Development (tens to hundreds of millions of USD) not only includes the expenses of conducting clinical trials, but also preclinical drug discovery (target identification and validation, hit identification, hit-to-lead and lead optimization).

Through our proprietary technologies complemented with third parties softwares, NBD provides customized services and technologies adapted to all kinds of needs and budgets for accelerating and accurating the preclinical drug discovery.

CROs

Although externalization of R&D processes to contract research organizations has been the prevailing model, these CROs are dealing with the same issues as biopharmaceutical companies, the low efficiency when discovering and optimizing hits for new therapeutic targets. Computational chemistry tools combined with one of the most powerful simulation-based platforms for biomolecular modeling (PELE), allows a faster and more efficient yield in the discovery and optimization steps of the preclinical phases.

Academia

Research groups from Universities and Research Centers are often encouraged to not publish new discoveries in order to look for a patentable new chemical entity that can have a therapeutic action to a given target. Due to funding constraints, screenings must be focused on a limited number of compounds.

NBD has its entire DD division devoted to help, promote and accelerate academic drug discovery programs.

The collaborations with Academia have successfully helped to build up NBD's Drug Discovery pipeline.

What We Do / What We Solve

NBD is highly specialised in providing custom made services and cutting-edge in silico technologies to biopharmaceutical and biotechnology companies, CROs and Academia in order to perform rational small molecule design.

With our proprietary technologies, we can reduce about 30% of the costs and time compared with traditional methods.

Rational Molecular Design

NBD expertise resides in the application of computational chemistry tools aimed at accelerating, streamlining and optimizing the design of small molecules in early discovery.

To this aim we created NBD software platform, a software platform based on its proprietary technology PELE (a biomolecular modeling program), combined with other proprietary (FragPELE, AquaPELE, Adaptive-PELE, MSM-PELE, PELE-MD/QM and AI tools) and non-proprietary technologies (Schrödinger, AMBER2020…).

These core technologies are designed to tackle a series of current limitations in the field of chemoinformatics and computer-aided drug design.

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What Our Clients Are Saying

Through a long-term relationship, we are using the in silico technologies of Nostrum Biodiscovery for studying a range of epigenetics targets to help us speed up our drug discovery programs.

Robert Soliva, Head of Drug Discovery of Oryzon Genomics

We have built up a collaboration with NBD on a novel cancer target and we have been able to find active new chemical entities in a very short period of time.

UB - Cancer Cell Biology Research Group, Vanessa Soto Cerrato

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We are very pleased with our collaborations with NBD, by using their technology we have been able to generate novel chemical entities targeting MAGL, and also we have identified novel binding sites at the CB1R for positive allosteric modulators. Also, the collaboration with NBD has been essential for our last publication in British Journal of Pharmacology.

Eduardo Muñoz
Professor of Immunology,
Founder and CSO of Emerald Health Biotechnology

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BUSINESS

The different sectors.

Target Sectors

Pharmaceutical Biotechs

Needs in

Drug Design
Drug Discovery

NBD Divisions Involved

Drug Design
Nucleic Acid

Target Sectors

Waste Management Biomass

Needs in

Productivity issues solvable through enzyme engineering

NBD Divisions Involved

Enzyme Engineering

Target Sectors

Consumer Goods Biotechs

Needs in

Enzymes as Final Product

NBD Divisions Involved

Enzyme Engineering

BROCHURE - NBD DIVISION

Enzyme Engineering.

Nostrum Biodiscovery can create an enhanced enzyme tailored to your particular needs through its proprietary *in silico* enzyme evolution methodology and through molecular modeling on mutated enzymes candidates. PELE efficiently maps the interactions between an enzyme and its substrate highlighting key residues.

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Enzyme Engineering

Consumer Goods

Consumer Goods companies are using enzymes in their production processes and as part of the final products (detergents, foods & beverages, cosmetics & hygiene products).

Moreover, enzymes are widely used as part of the production chain since they are more environmentally friendly and efficient.

Finding and evolving enzymes with enhanced properties is key to improve products and productivity in industry.

Waste Management

Unfortunately, most of the industrial waste is dumped into residual water that must be treated in wastewater plants. Furthermore, pig slurry treatment limits the meat industry growth. Finally, accumulation of non-degradable plastics, low paper reutilization efficiency and lignocellulosic biomass deposition represents a huge headache for governments.

Enzymes can be designed to degrade these widespread contaminants into non-toxic waste, or even to valuable components. This will contribute to the circular economy representing the only sustainable long-term solution.

Biomass

Biomass for Biofuels, Fertilizers, Livestock or Paper is undergoing a revolution.

Enzyme Engineering is improving production systems and making some of them already profitable without government grants.

The Lignocellulosic market is experiencing a huge demand increase due to the developments in terms of machinery and enzymes' performance.

In silico Enzyme Directed Evolution

This allows us to quickly test tens of thousands of mutant variants in short time, reproducing (and expanding) months of work in an experimental lab for just a few hours of computational time. The combination of PELE with powerful computational resources leads to a massive space screening.

PluriZyme

One enzyme, one active site. NBD breaks the dogma. Through our computational approach, we can introduce artificial fully functional active sites, crafting PluriZymes, a breakthrough in Biotechnology.

Computational Bioprospecting

Using our methodology, we can select the best enzymes from large databases. Computational Bioprospecting will save weeks of experiments using a combination of different computational tools.

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Exemple of success : Customers Opinions & Publications

Enzyme Engineering

Computer-aided laccase engineering: toward biological oxidation of arylamines

https://pubs.acs.org/doi/abs/10.1021/acscatal.6b01460

Rational enzyme engineering through biophysical and biochemical modeling

https://pubs.acs.org/doi/abs/10.1021/acscatal.6b00028

Increasing redox potential, redox mediator activity, and stability in a fungal laccase by computer-guided mutagenesis and directed evolution

PluriZymes

Rational engineering of multiple active sites in an ester hydrolase

https://pubs.acs.org/doi/abs/10.1021/acs.biochem.8b00274

Genetically engineered proteins with two active sites for enhanced biocatalysis and synergistic chemo-and biocatalysis

https://www.nature.com/articles/s41929-019-0394-4

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BUSINESS

Notable achievements in 2020.

R&D tax benefits

We have started a process of writing a Global R&D project embracing the 2019 - 2022 period. During this period, it is estimated that the company will invest more than 1,5 M€ in R&D+i activities. The expenses and the activities report for 2019 have been examined by external consultants and it has obtained a certification, an indispensable process for getting the approval from the Spanish tax agency.

2019-2022

R&D investment
1,5M€

Net Return
400k€

2019

R&D investment
200k€

Net Return
50k€

This year's R&D+i activities have risen almost 200k€ what will suppose a net return of around 50k€. For the total period, it is estimated that the net return will be around 400k€.

Revenues

We had a great year with an average increase of revenues of more than 70% !

70% +

% increase from 2019 to 2020

+61% invoicing

+90% grants and fellowship

Company Size

small-sized company

12 PEOPLE

Since the founding of the company, NBD has been considered a micro-company because of having less than 10 employees. This year we have overcome the threshold of the 10 employees becoming a small-sized company.

Implementation of a business management system

The growth of the company in both revenues and size have revealed the need of the professionalization of the processes that allows a proper and efficient management of daily activities of the company.

For this reason, through an external consultant, a business management system has been put in place. This system has highlighted the necessary processes and policies that the company was lacking and, thus, register all the relevant information.

The objective for this 2021 is that the whole Management Team assimilates the system making it essential for the appropriate day to day management.

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SCIENCE

Notable achievements in 2020.

Papers

NBD is a technology-based company, which strength is the excellence of these technologies. The excellence, reliability and accuracy of such tools can be demonstrated by high impact peer-reviewed scientific publications. For this reason and as part of its ambitious quality policy, NBD aims to publish at least 5 articles per year :

Monte Carlo simulations using PELE to identify a protein–protein inhibitor binding site and pose

https://pubs.rsc.org/en/content/articlehtml/2020/ra/d0ra01127d

FragPELE: Dynamic Ligand Growing within a Binding Site. A Novel Tool for Hit-To-Lead Drug Design

https://pubmed.ncbi.nlm.nih.gov/32027130/

Δ 9 -Tetrahydrocannabinolic acid alleviates collagen-induced arthritis: Role of PPARγ and CB 1 receptors

https://pubmed.ncbi.nlm.nih.gov/32510591/

DFFR: A New Method for High-Throughput Recalibration of Automatic Force-Fields for Drugs

https://pubs.acs.org/doi/10.1021/acs.jctc.0c00306

Exploring the Conformational Landscape of Bioactive Small Molecules

https://pubs.acs.org/doi/10.1021/acs.jctc.0c00304

Bioactive Conformational Ensemble Server and Database. A Public Framework to Speed Up In Silico Drug Discovery

https://pubs.acs.org/doi/10.1021/acs.jctc.0c00305

PluriZymes

One of the most important and impacting scientific achievements of Victor Guallar's research activity in the BSC-CNS during the last few years has been the development of a methodology for the design of the PluriZymes. Moreover, they also invented the name, which is being adopted by the whole scientific community.

During this 2020, NBD has started the promotion of these multicored / multifunctional enzymes puting special emphasis on it when sponsoring the virtual event Protein Engineering Summit EU. Thanks to this promotion, we are starting the first studies for creating PluriZymes for our clients.

Grants

Apart from the grants awarded, we were very active participating in H2020 proposals together with other institutions; specifically in 4 consortia and the EIC Accelerator Pilot. Unfortunately, none of these proposals have been awarded.

This pointed to the need of a better strategy when applying for funding. In the next years, we will focus on less opportunities but better preparing the proposals for increasing our chances of success..

6 months

Beneficiary	BSC
Amount	N/A
Intensity	N/A

EMPENTA program (ACCIÓ + ESADE Creatio) for establishing a strategy for the investment of PluriZymes

12 months

Beneficiary	BSC-CNS, CSIC and NBD
Amount	47.000 €
Intensity	100%

FONDO – COVID19 (ISCIII) for "Diseño de antivirales para SARA basados en polifarmacologia"

18 months

Beneficiary	BSC
Amount	15.000 €
Intensity	50%

ICEX NEXT (CDTi) for establishing and executing an Internationalization Plan for the DD division of NBD

3 years

Beneficiary	Chiara Pallara
Amount	83.160 €
Intensity	70%

Torres Quevedo fellowship (Ministry of Science) for "Desarrollo de una metodología computacional para crecer fragmentos dinámicamente en presencia de su macromolécula diana"

Although 2020 has been an outstanding year for NBD, in order to keep improving daily, we also have the responsibility of detecting and tackling those aspects that need to be corrected, improved or just avoided in the future. A dedicated register has been put in place to be reviewed and studied periodically. This year we have detected that obtaining grants was such an improvable aspect.

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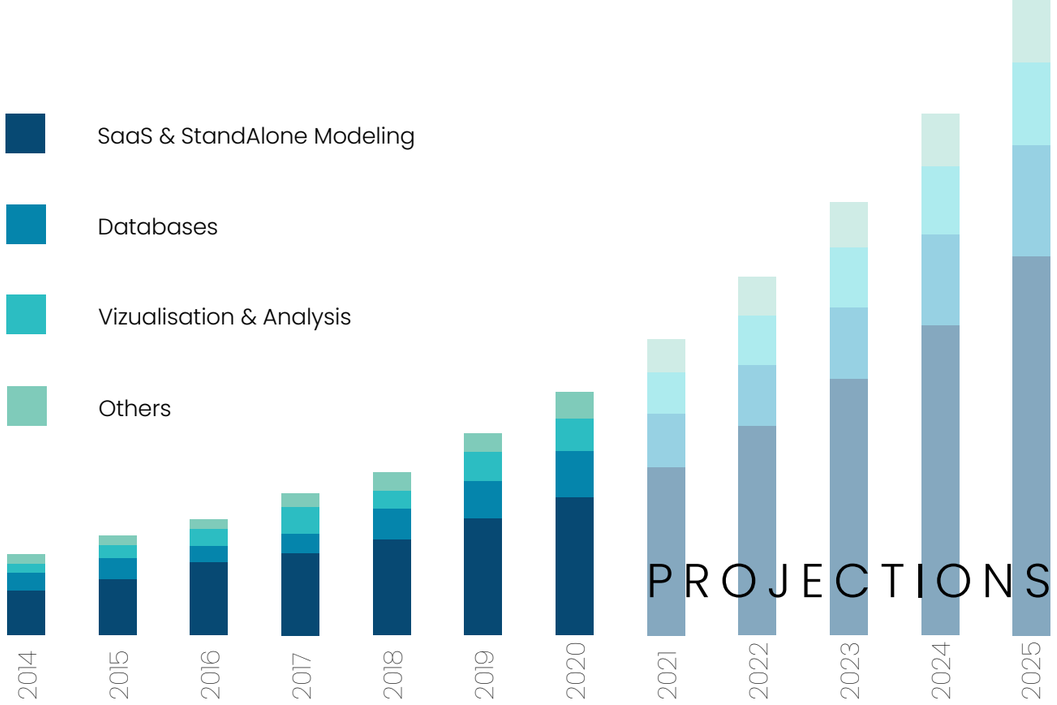
BUSINESS

Financials.

Profitable growth in pandemics time

Our business niche is the molecular modeling (MM) market, focused in drug discovery and enzyme engineering markets. Specially in the drug discovery sector, competence is huge and multiple technologies appear to be the definitive solution for overcoming the huge associated costs for bringing a new drug to the market. On the other hand, the use of simulation technologies in the enzyme engineering sector is quite new and, thus, unknown.

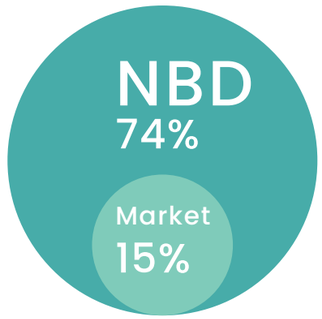
With all these considerations, NBD has achieved, during the 2020, a growth significantly faster than the MM market.



Profit and Loss

From January to December 2020, in euros

Net amount of turnover	596 416.96
Supplies	-989.86
Other operating income	306 837.38
Staff costs	-473 841.26
Other operating expenses	-303 457.48
Intangible amortization	-43 051.21
Other results	-2 996.60
OPERATING RESULT	**78 917.93**
Financial expenses	-657.01
Exchange Differences	-1 328.47
FINANCIAL RESULT	**-1 985.48**
RESULT BEFORE TAX	**76 932.45**
Taxes	174 100.90
RESULT OF THE YEAR	**251 033.35**



ANNUAL GROWTH 2015-19/20 (CAGR)

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BUSINESS

Financials.

Balance Sheet / Equity and Liabilities

From January to December 2020, in euros

EQUITY	**1 031 415.04**
Own funds	601 100.51
Capital	4 209.11
Capital deed	4 209.11
Issue premium	462 962.39
Reserves	-11 918.97
Other reserves	-11 918.97
Past Year Results	-105 185.37
Current Year Results	251 033.35
Grants, donations and heritages received	430 314.53
CURRENT LIABILITIES	**82 430.59**
Short-term debts	1 599.00
Debts with credit institutions	1 599.00
Trade creditors and other accounts payable	51 396.11
Other creditors	51 396.11
Short-term accruals	29 435.48
NET AND PASSIVE TOTAL EQUITY	**1 113 845.63**

Balance Sheet / Assets

From January to December 2020, in euros

NON-CURRENT ASSETS	**195 326.61**
Intangible assets	26 563.36
Material assets	46 234.05
Long-term financial investments	4 430.96
CURRENT ASSETS	**918 519.02**
Commercial debts and others bills to receive the pay	573 917.49
Customers sales and provision of services	78 090.25
Other debtors	495 827.24
Short-term financial investments	11 704.04
Short-term accruals	31 139.10
Cash and other equivalent liquid assets	301 758.39
TOTAL ASSETS	**1 113 845.63**

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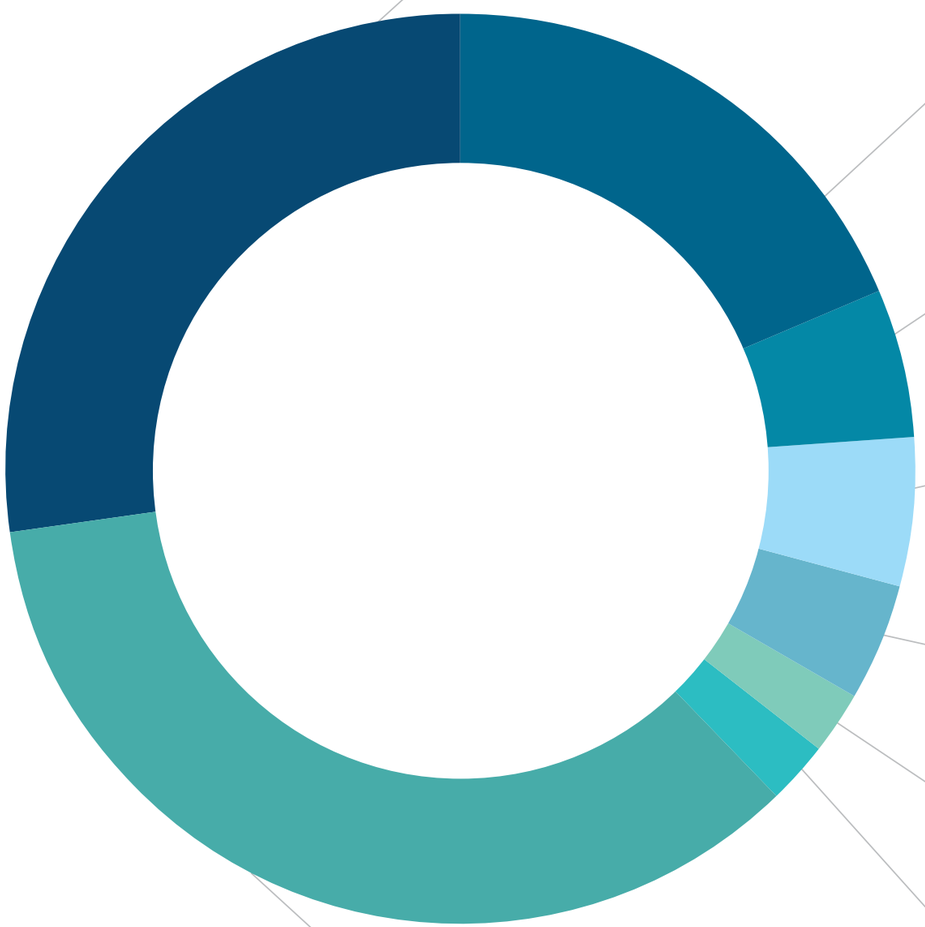
BUSINESS

Shareholders.



MODESTO OROZCO LOPEZ (PRESIDENTE)
27.34%

VÍCTOR GUALLAR TASIES (CTO)
18.41%

BSC-CNS
5.32%

Barcelona Supercomputing Center
Centro Nacional de Supercomputación

IRB BARCELONA
5.32%

ROBERT SOLIVA SOLIVA (former CEO)
4.26%

ICREA
2.13%

CULTURA INNOVADORA I CIENTIFICA UB
2.13%

Universitat de Barcelona
Facultat d'Economia i Empresa

FUNDACIÓN MARCELINO BOTÍN-SANZ DE SAUTOLA Y LÓPEZ
35.11%

Fundación Botín

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BUSINESS

Partners.

NBD has established, from the beginning of its operations, a co-development strategy for shareholding the future IPR as bartering instead of monetary exchange and, thus, bringing new assets to the market. When the company was founded, these projects were focused exclusively on developing new drugs to address unmet medical needs. This 2020, NBD has started a new co-development, raising the total projects to 7. These are listed on the next page.

Furthermore, this 2020, the company has also started the development of its own enzymes; specifically a PluriZyme that has been co-developed with the BSC-CNS and it's being transferred to NBD for finishing the development and finding a commercialization path. NBD has started conversations with a company based in Singapore interested in this asset.

Finally, the IT Team has been working hard to upgrade the different developments that we have in place with the final goal of having, by the end of 2021, the 2.0 version of the NBD's Software Platform. It is good to highlight the advances in the Fragment Growing technology, the publication of which brought a new client, and the development of the Artificial Intelligence software package, co-developed with one of the most innovative multinational companies.

Drug Discovery co-development projects

	INDICATION	EXPLORATORY	DISCOVERY	PRECLINICAL
NBD-01	ISCHEMIA			
NBD-02	AGING / ONCOLOGY			
NBD-03	ONCOLOGY			
NBD-04	SCHIZOPHRENIA			
NBD-05	PARKINSON			
NBD-06	ONCOLOGY			
NBD-07	ONCOLOGY			

Enzyme Engineering co-development projects

	USE	*IN SILICO* EVOLUTION	EXPERIMENTAL VALIDATION	INDUSTRIAL SET UP	LICENSING
NBC-01	BIOETHANOL PRODUCTION				
NBC-02	LIGNIN DEGRADATION				
NBC-03	UNDISCLOSED				

IT co-development projects

PACKAGE	DEVELOPMENT	VALIDATION	DEPLOYED
AI-Platform			
EnzymeEngineering Platform			
Macrocycles HRX/PELE			
OpenFF-PELE			
PharmacophorePELE			
PELEplat2.0			

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BUSINESS

Strategic Partnerships.

Apart from the co-developments mentioned, another important milestone has been achieved. NBD has signed a strategic alliance for its EE division with EvoEnzyme, giving birth to BioDiscovery Enzymes (BDE). EvoEnzyme is a Madrid based Contract Research Organization that provides direct evolution services for enzymes for the pharmaceutical, chemical and environmental industries through directed evolution. In other words, they perform the in vitro tasks that follow our in silico studies. The BDE alliance is important because many of our potential clients do not have the adequate facilities or the knowledge to implement the modifications that our in silico studies suggest. Thus, we can offer to the companies we approach the whole life cycle of enzyme enhancement, increasing our options of engaging new clients. In the same way, EvoEnzyme can offer to their clients better chances of success for their project by including our computational technologies. EvoEnzyme was founded by Miguel Alcalde, CSIC Research Professor, and frequent collaborator of Víctor Guallar.

(insert link to the presentation)

bde
biodiscovery enzymes

Future developments.

This 2021, NBD has started different projects to increase the pipeline of technologies and assets.

Regarding the DD division, the co-development with Dr Vanessa Soto (IDIBELL) and Roberto Quesada (UBU) has been renewed with a new focus by summing a repurposed drug with combinatorial therapy. We expect concluding results this year, which will allow us to patent or abandon the project.

Regarding the EE division, it is foreseen to start our own PluriZyme under the framework of the Torres Quevedo fellowship that Dr. Joan Coines has submitted at the beginning of 2021. This new development will be focused on degradation of biomass for the biofuel and cellulose industries.

Last but not least, as something logical in a technological company such as NBD, the IT Department is the one with more developments undergoing. Apart from the pipeline shown above, the most important project is the development of a Graphical User Interface (GUI). A GUI has been a requirement from different big and medium pharma companies since this would make the platform much more user friendly and also usable for computational chemists with low programming skills. For this matter, an external company has been contacted and funding is being searched. We expect to achieve this milestone during 2021.

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GLOBAL VIEW

2021 objectives

Internationalisation

Steady Growth

Technology

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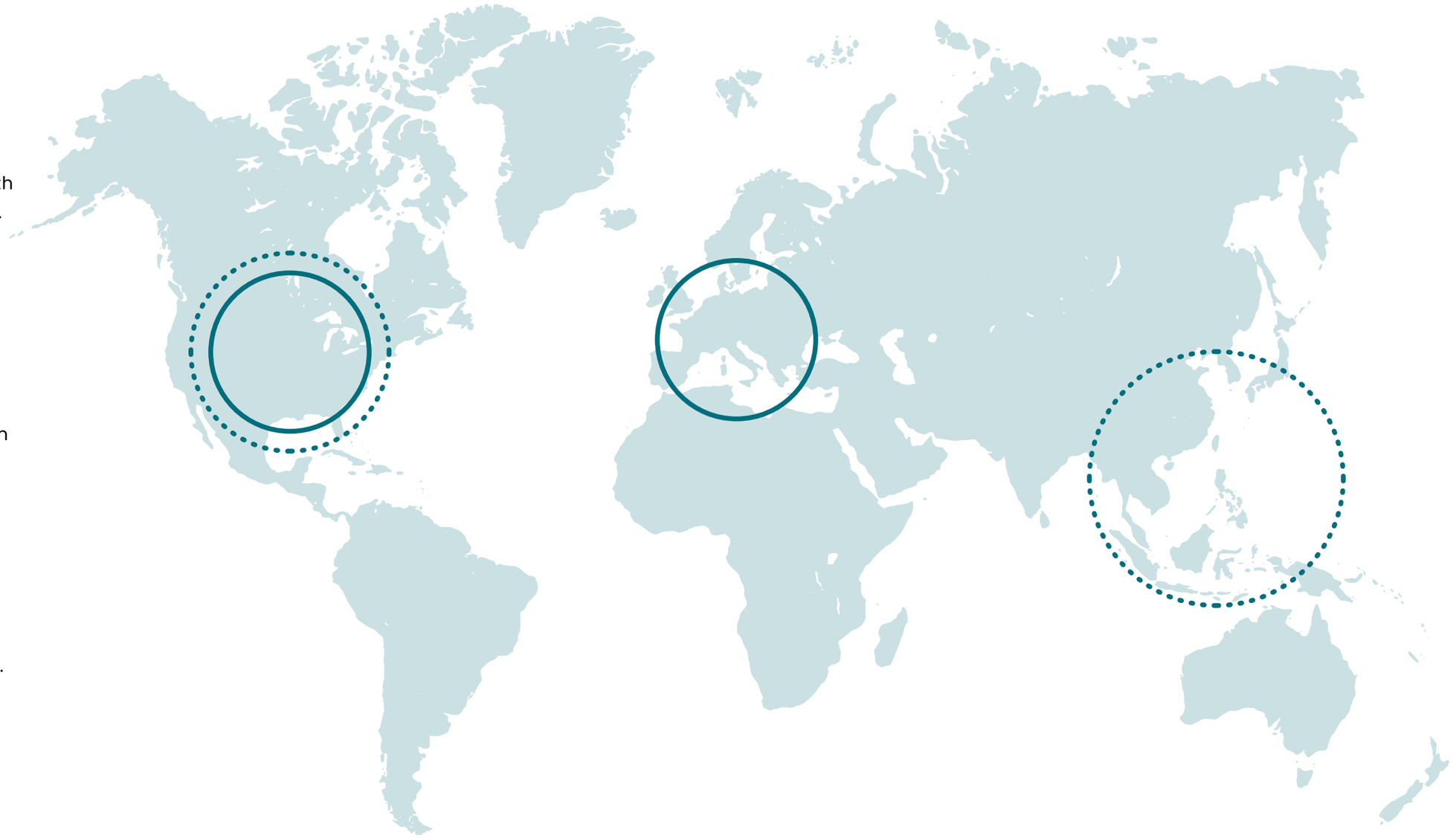
2021 OBJECTIVES

Internationalisation

2021 is foreseen as the consolidation of NBD in the European and North American markets.

Moreover, thanks to the ICEX NEXT grant awarded by CDTi, we plan to implement and ambitious internationalization strategy to strengthen our presence in North America and achieve important Asian markets; i.e. South Korea, Japan and Taiwan.



consolidation of NBD in the European and North American markets

strengthen and develop new markets (ICEX NEXT (CDTi) Grant)

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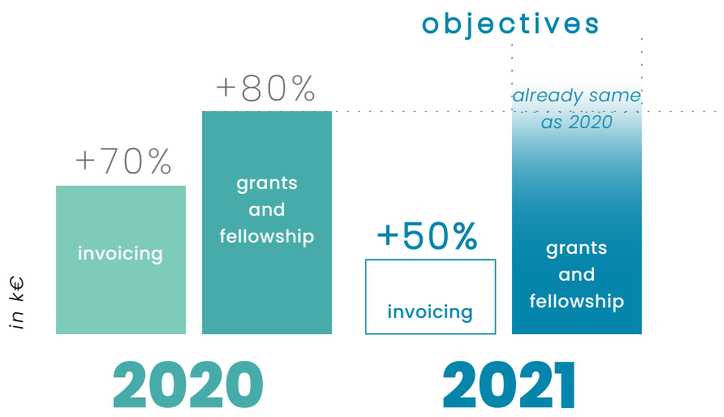
2021 OBJECTIVES

Steady Growth

In 2020, NBD experienced a growth of 70% in invoicing and 80% in grants.

Our aim is for our invoicing to increase by 50%. Regarding grants, we already have assured the same amount as for 2020.



To get 2 Torres Quevedo fellowships for our Project Managers Javier Iglesias and Joan Coines.

To get an Industrial Doctorate fellowship for Anna Gruzska.

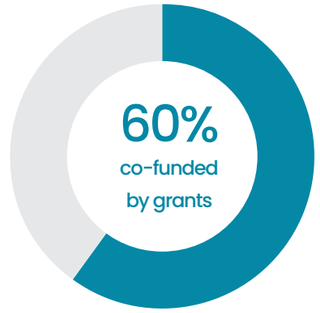
To get a TECNIOSpring fellowship for a new Researcher coming from outside Spain.

To be part of the consortium BioExcel-3.

To get funding for the GUI

Here, it is more likely to be a soft loan (ENISA) than a grant per se since this development is not considered as R&D but pure innovation.

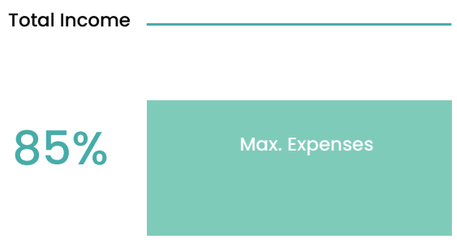
To control internal R&D funding



internal R&D projects

To keep controlling expenses

In particular we want to stabilize it at a level below the 85% of the total income.



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2021 OBJECTIVES

Technology

As already mentioned in Future Developments section, there are several objectives regarding the different internal projects we are carrying out :

1. Graphical User Interface

This is the main objective for 2021. The feedback received by our clients or potential clients about the platform are demanding this. Moreover, our market study has also determined that this is the best way for expanding our pipeline of clients in the most profitable business area of the company at this moment.

2. NBD Software Platform

It is planned that the version 2.0 will be finished by the end of 2021. This will include the following tools and updates:

MD/QM - PELE
Fragment Growing
Covalent Docking
PharmacophorePELE
Open Forcefield PELE
DockingPELE

3. NBD-01

This project is in a crucial moment. The next in vivo results will elucidate the real potential of our candidate and the feasibility of reaching the market. If the results are positive, during 2021 a joint spin-off together with the IRB Barcelona will be founded in order to keep the development, search for investors and, eventually, license the asset to a third party.

4. NBD-02

The agreement has been renewed to encompass a new approach for our repurposing molecule. The first agreed steps will be done during this 2021 and these will determine the viability of the project. With the preliminary results, we are going to patent the repurposing and the combinatorial strategy.
If the results are positive, the patent will be brought to the following next steps; otherwise, the project will be abandoned and the results published.

5. NBC-01

This project (a PluriZyme for enhancing the degradation of lignocellulose for the Bioethanol producers), is being transferred from the BSC. The main objectives for this project are to keep working on the improvement of the asset and to find a partner for the industrial pilots and the subsequent commercialization.

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COMMUNICATION

CEO’s Review.

As CEO of Nostrum Biodiscovery, I cannot be more proud of the principal asset of the company, its people. As a technology based company, the quality of our assets is key when approaching the clients. But we also provide services and the technology is in constant evolution. So, the spectacular results of the company during 2020 only have one reason taking into account the particular situation we had (pandemia and change of Board of Directors); the human resources. Every and each employee has demonstrated a commitment to the company in these struggling moments that was not anticipated. And the value of it is incalculable. I would also like to highlight the engagement of the founders to overcome the situation.

From this small section, I would also like to be grateful to our founders; their support and commitment is key for the success of the company.

2020 was a year of strong growth and forward-looking investments. Net sales grew by 70% and our strong profitability improved further, with our operating profit rising to 22%. Most of our growth was organic – our own sales staff acquired a record number of new customers. In 2020, too, we made substantial investments in R&D, reaching a certified R&D investment of almost 200k€.

We believe that our sector will increasingly adopt our technologies. Clients want ever-more proactive and effortless solutions for their needs. A comprehensive service experience is key. Those who can seamlessly combine services and technology into a single end-to-end solution in many channels will come out on top. We believe that, heading into the 2021, we are in great shape as our sector evolves in a more consultative and comprehensive direction. We will continue to make investments in effortless customer experience, further development of automation and the creation of new solutions to enable our clients to pursue their targets!

Ezequiel Mas
CEO

ANNUAL REPORT 2020

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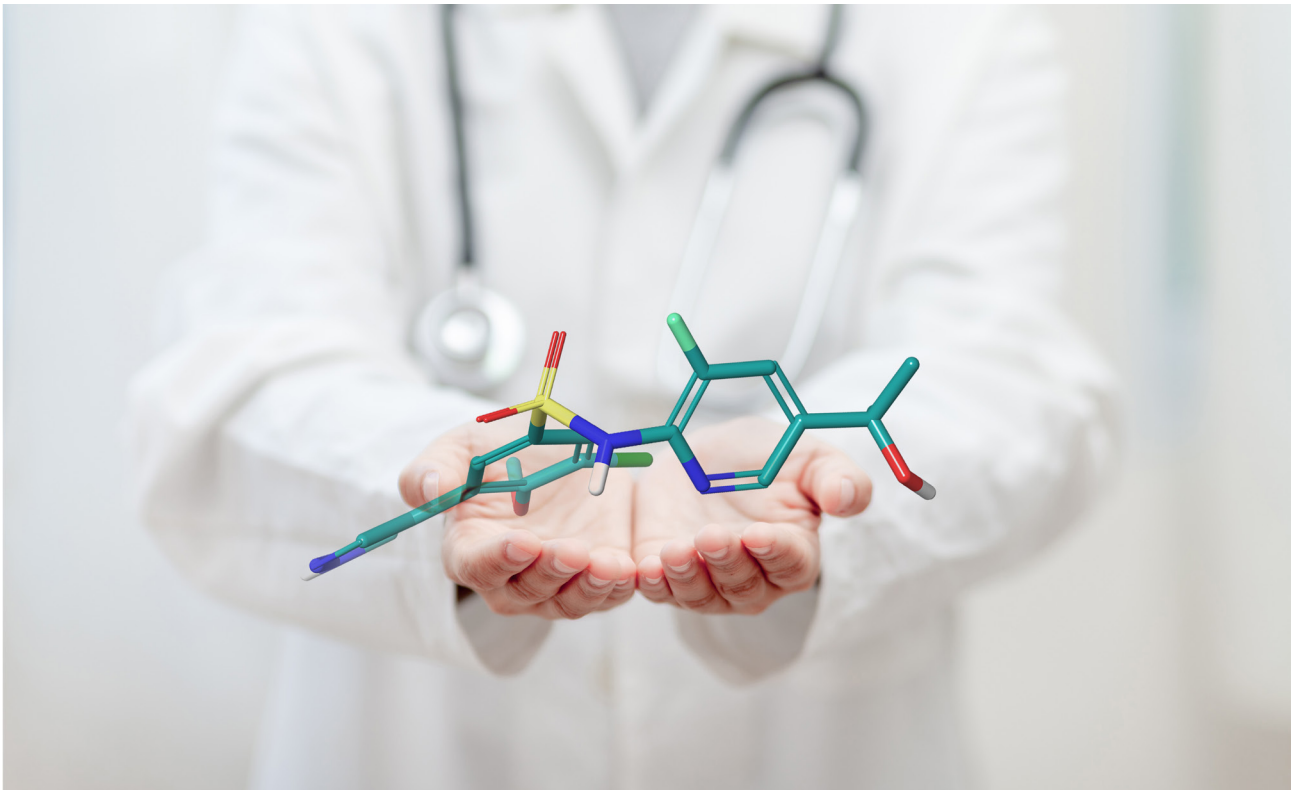
Rethink & Accelerate

DRUG DISCOVERY BROCHURE:

Speeding up Drug Discovery by combining outstanding molecular modeling tools and expertise



www.nostrumbiodiscovery.com

DRUG DISCOVERY

BioPharma Industry

The elevated cost of Drug Development (tens to hundreds of millions of USD) not only includes the expenses of conducting clinical trials, but also preclinical drug discovery (target identification and validation, hit identification, hit-to-lead and lead optimization). Through our proprietary technologies complemented with third parties softwares, NBD provides customized services and technologies adapted to all kinds of needs and budgets for accelerating and accurating the preclinical drug discovery.

CROs

Although externalization of R&D processes to contract research organizations has been the prevailing model, these CROs are dealing with the same issues as biopharmaceutical companies, the low efficiency when discovering and optimizing hits for new therapeutic targets. Computational chemistry tools combined with one of the most powerful simulation-based platforms for biomolecular modeling (PELE), allows a faster and more efficient yield in the discovery and optimization steps of the preclinical phases.

Academia

Research groups from Universities and Research Centers are often encouraged to not publish new discoveries in order to look for a patentable new chemical entity that can have a therapeutic action to a given target. Due to funding constraints, screenings must be focused on a limited number of compounds. NBD has its entire DD division devoted to help, promote and accelerate academic drug discovery programs. The collaborations with Academia have successfully helped to build up NBD's Drug Discovery pipeline.

Through our proprietary technologies complemented with third parties softwares, NBD provides customized services and technologies adapted to all kinds of needs and budgets for accelerating and accurating the preclinical drug discovery.

WHAT WE DO / WHAT WE SOLVE

NBD is highly specialised in providing custom made services and cutting-edge *in silico* technologies to biopharmaceutical and biotechnology companies, CROs and Academia in order to perform rational small molecule design.

With our proprietary technologies, we can reduce about 30% of the costs and time compared with traditional methods.

RATIONAL MOLECULAR DESIGN

NBD expertise resides in the application of computational chemistry tools aimed at accelerating, streamlining and optimizing the design of small molecules in early discovery.

To this aim we created NBD software platform, a software platform based on its proprietary technology PELE (a biomolecular modeling program), combined with other proprietary (FragPELE, AquaPELE, Adaptive-PELE, MSM-PELE, PELE-MD/QM and AI tools) and non-proprietary technologies (Schrödinger, AMBER2020…).

These core technologies are designed to tackle a series of current limitations in the field of chemoinformatics and computer-aided drug design.

WHAT OUR CLIENTS ARE SAYING...

Through a long-term relationship, we are using the in silico technologies of Nostrum Biodiscovery for studying a range of epigenetics targets to help us speed up our drug discovery programs.

Robert Soliva, Head of Drug Discovery of Oryzon Genomics

We have built up a collaboration with NBD on a novel cancer target and we have been able to find active new chemical entities in a very short period of time.

UB - Cancer Cell Biology Research Group, Vanessa Soto Cerrato

We are very pleased with our collaborations with NBD, by using their technology we have been able to generate novel chemical entities targeting MAGL, and also we have identified novel binding sites at the CB1R for positive allosteric modulators. Also, the collaboration with NBD has been essential for our last publication in British Journal of Pharmacology.

Eduardo Muñoz
Professor of Immunology,
Founder and CSO of Emerald Health Biotechnology

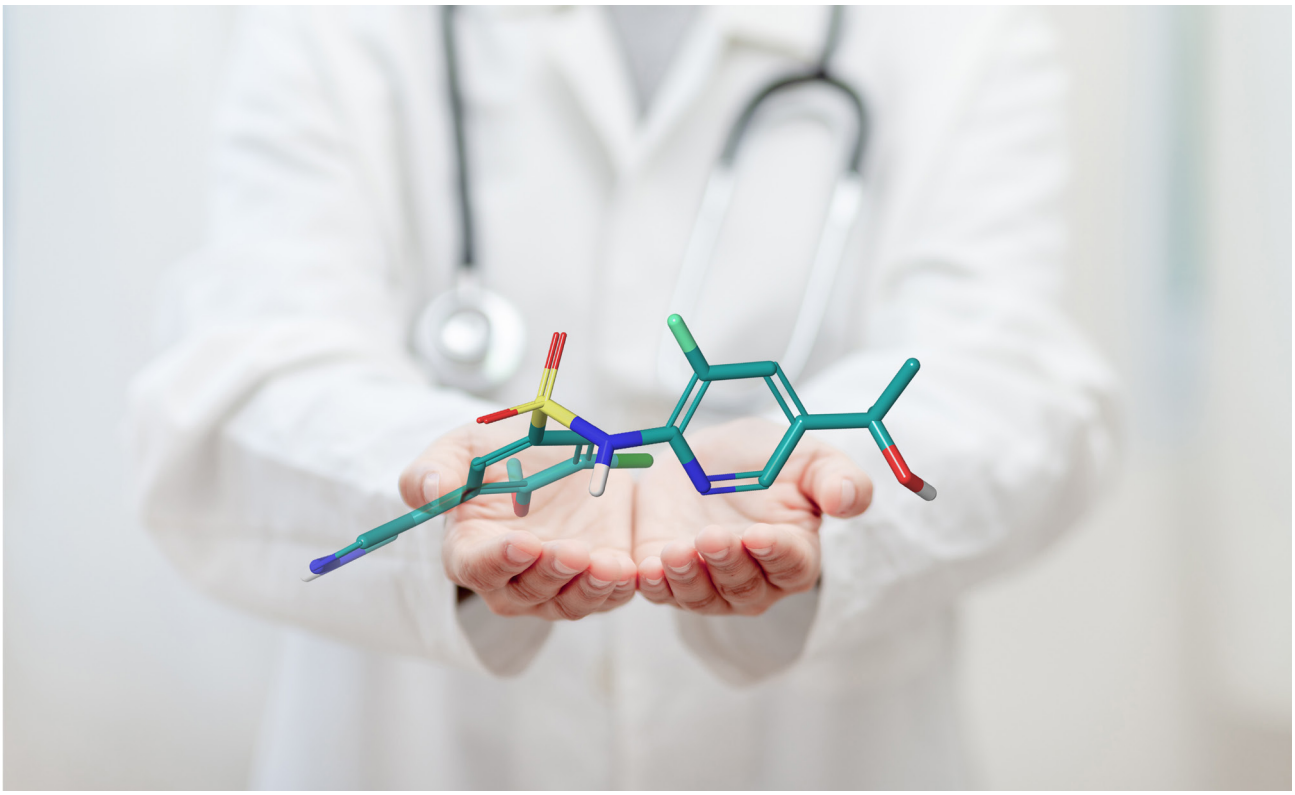
CO-DEVELOPMENTS

	INDICATION	EXPLORATORY	DISCOVERY	PRECLINICAL
NBD-01	ISCHEMIA			
NBD-02	AGING / ONCOLOGY			
NBD-03	ONCOLOGY			
NBD-04	SCHIZOPHRENIA			
NBD-05	PARKINSON			
NBD-06	ONCOLOGY			
NBD-07	ONCOLOGY			

NBD

NOSTRUM BIODISCOVERY

Rethink & Accelerate



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