

Director's Report

INSTITUT D'INVESTIGACIÓ BIOMÈDICA DE BELLVITGE

8th of June of 2023, 12.30 h

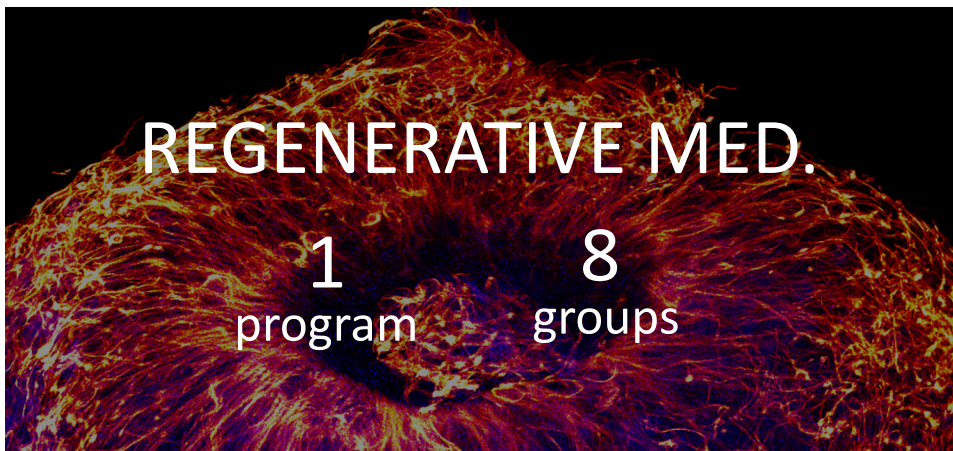
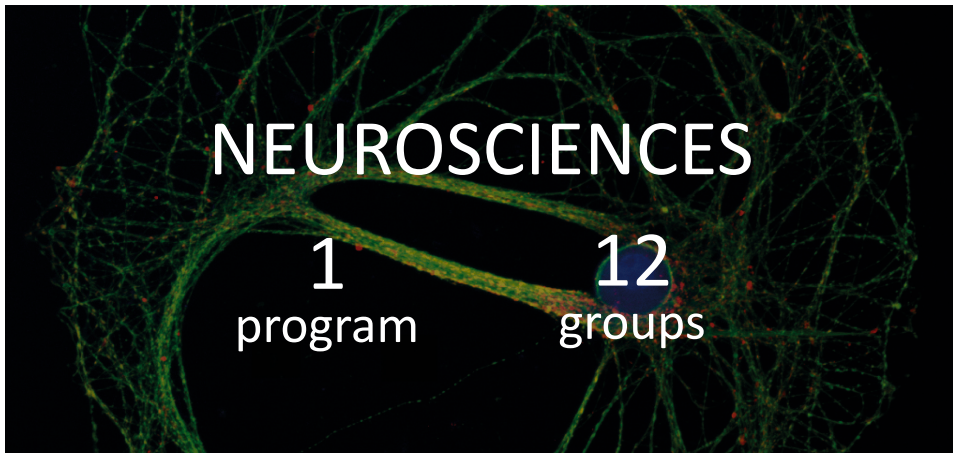
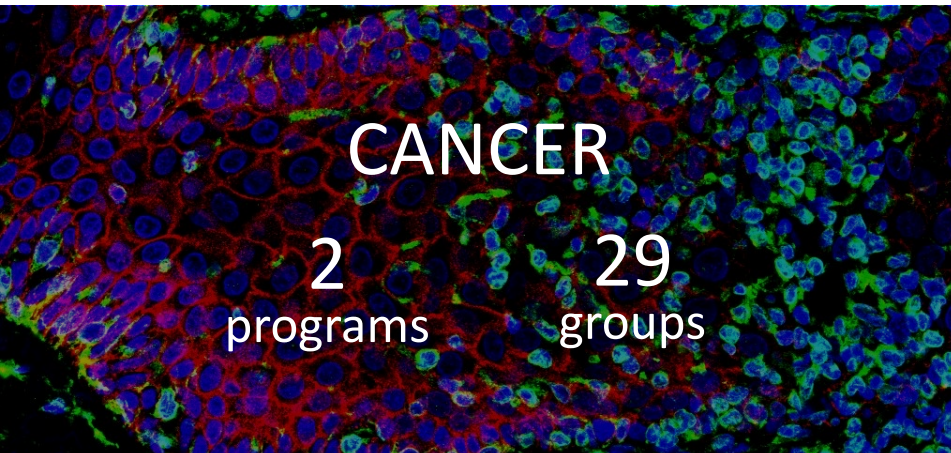
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1. Our community
2. Scientific production
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5. Business Development and Innovation
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8. A new Research building
9. Strategic Plan 23-27

1

Our community

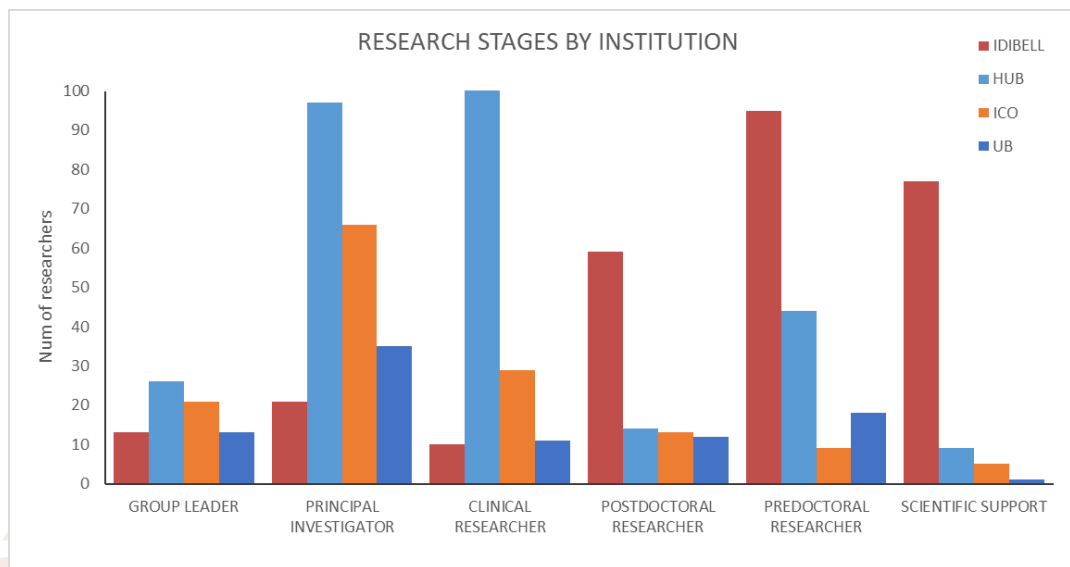
4 Research areas > 9 programs > 74 groups



IDIBELL Research Community

1207 Researchers and research support

303 on IDIBELL payroll



Group Leaders

82 for 74 groups

Women

34%

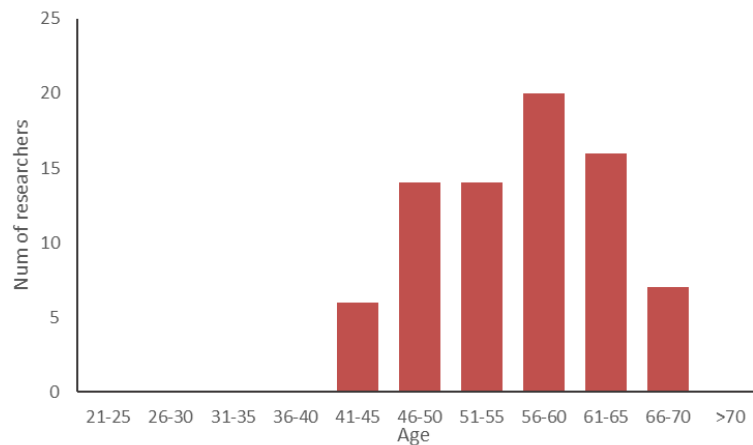
66%

International

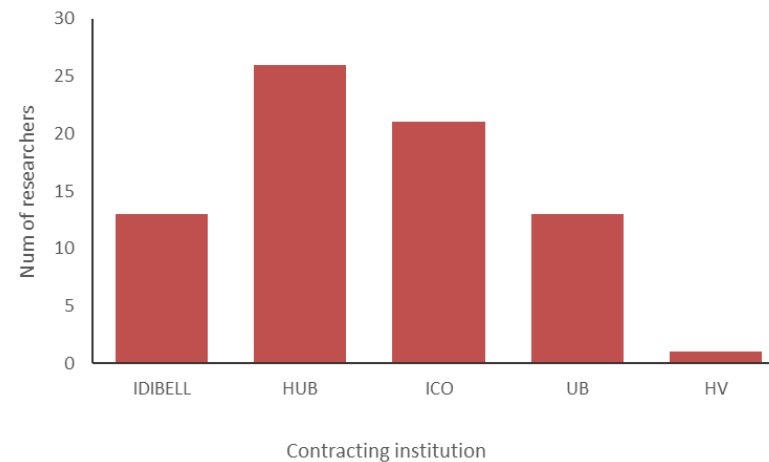
5%

95%

GROUP LEADERS



GROUP LEADERS



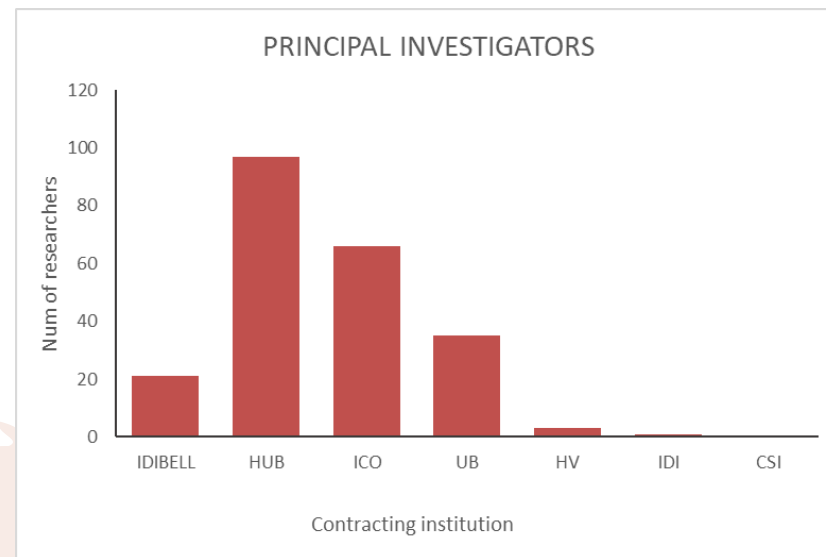
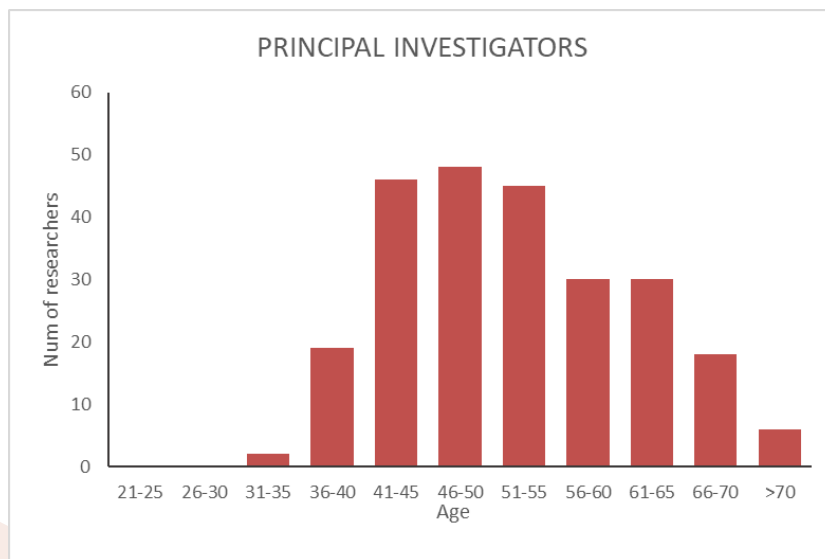
Principal Investigators

252

Women



International



Current Tenure-track

TENURED RECENTLY

Tenured in 2022



ESTELA
CÁMARA

ICREA in 2022



CAROLINA
FLORIAN

Tenured in 2023



DAVID
LLOBET



CANCER



REGENERATIVE
MEDICINE



NEUROSCIENCE



TRASLATIONAL
MEDICINE



ALSO GROUP
LEADERS

ACTIVE TENURE-TRACK



ÁLVARO
AYTÉS



RAÚL
ZAMORA



RUTH
RODRÍGUEZ



MIREYA
PLASS



MERITXELL
ROVIRA



JOAN JOSE
ROJAS



JORDI
GUIU



JORDI
BONAVENTURA



JOSÉ
ORTEGA



BARBARA
RIVERA



ELISA
ESPINET



ALBERT
ANTOLÍN

2023

2024

2025

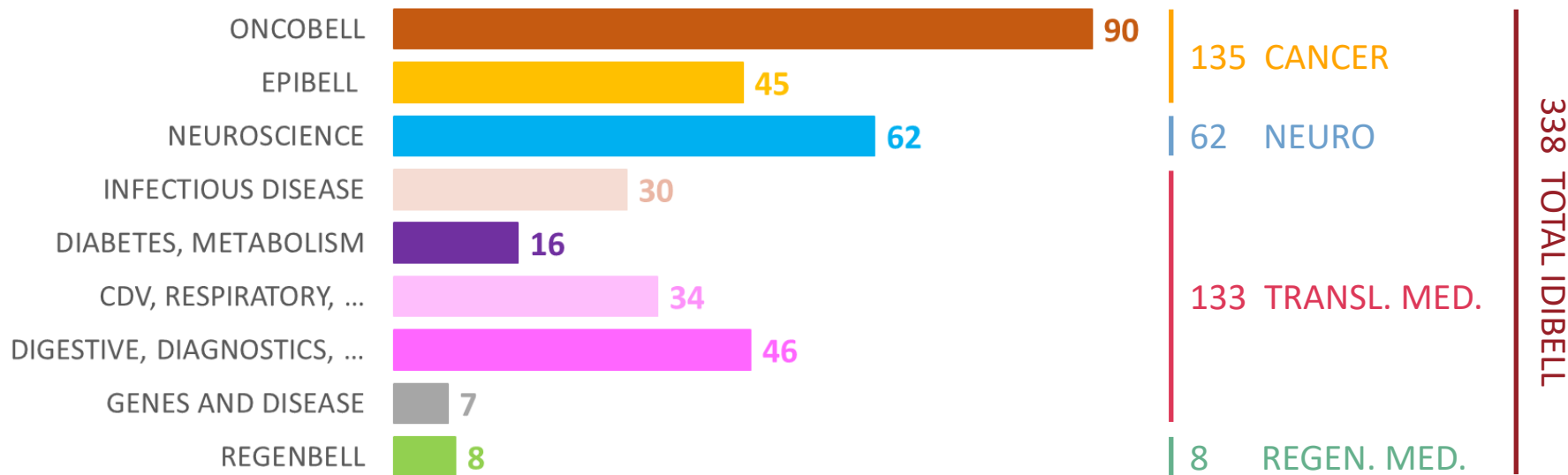
2026

2027

2028

2029

PIs + GLs in Research Programs



2

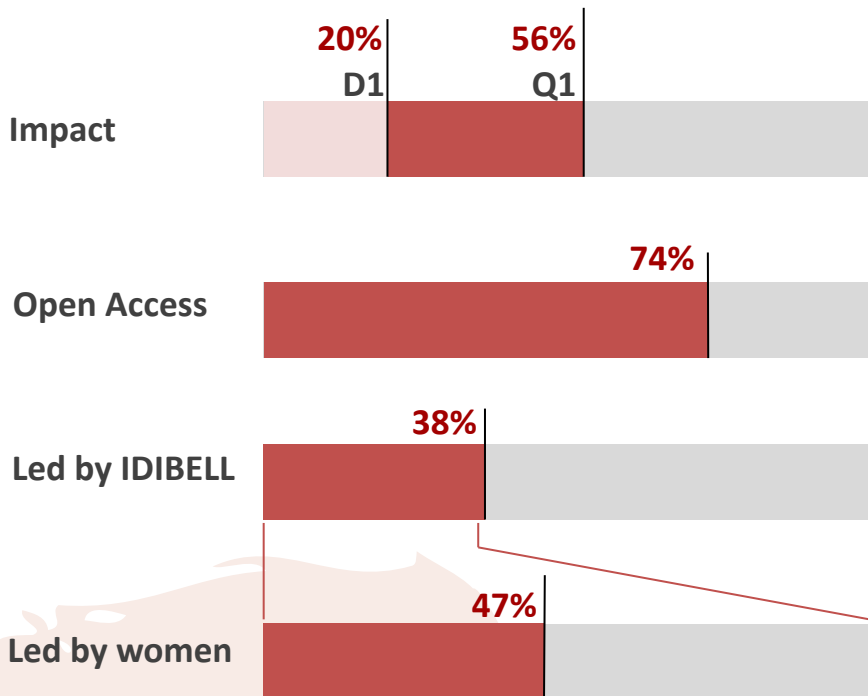
Scientific Production

2022 scientific production overview

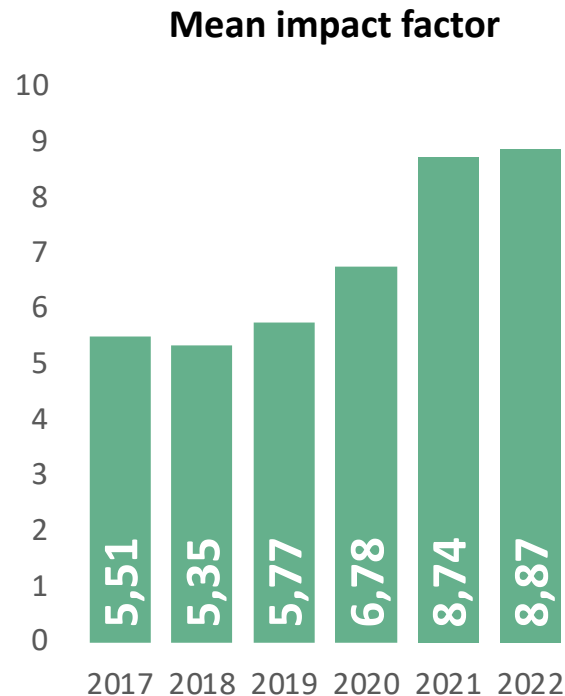
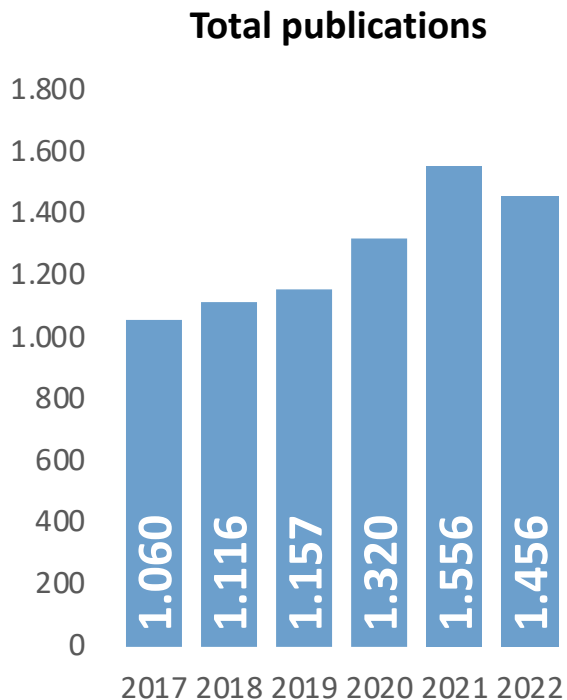


1.456

Scientific articles in indexed journals
(only articles and reviews are considered)

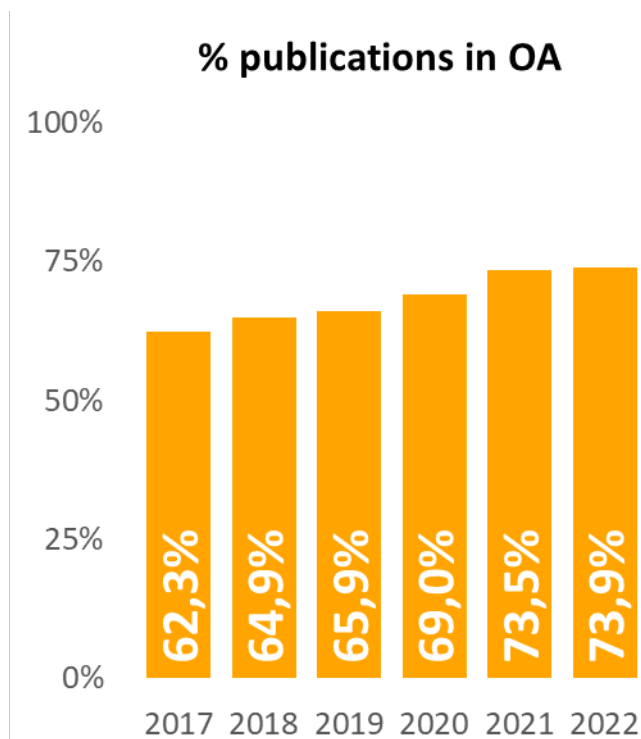


Evolution in publications

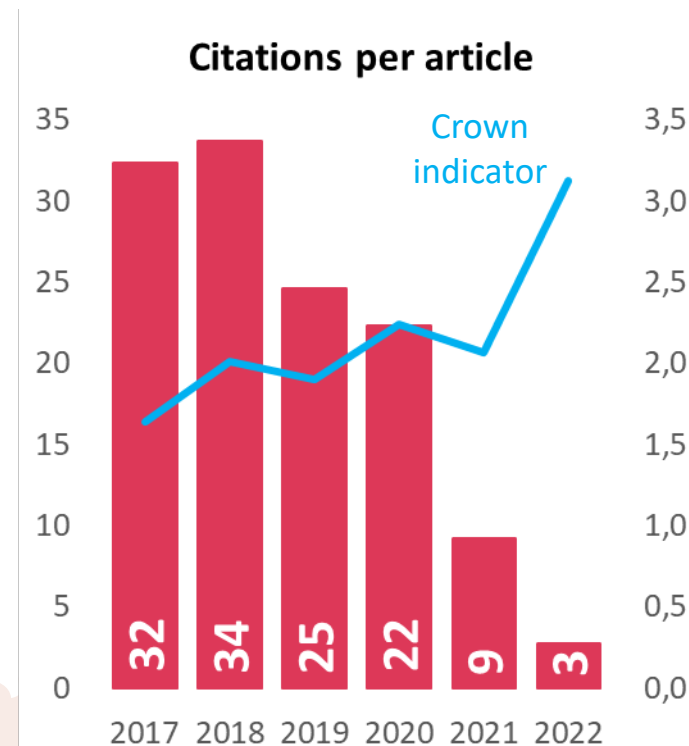


*Only scientific articles and reviews are considered

Evolution in publications



*Only scientific articles and reviews are considered



*Crown indicator: ratio between received citations and expected citations. A value >1 indicates that the overall performance of IDIBELL is higher than the world average

Highlighted papers

Cancer

Mateo F, [27 authors], Pujana MA. **Modification of BRCA1-associated breast cancer risk by HMMR overexpression.** Nat Commun. 2022 Apr 7;13(1):1895 (D1, IF: 17,7)



Peñuelas-Haro I, [13 authors], Fabregat I. **The NADPH oxidase NOX4 regulates redox and metabolic homeostasis preventing HCC progression.** Hepatology. 2022 Aug 3 (D1, IF: 17,3)



Nogueira SO, [10 authors]; TackSHS Project Investigators. **Non-smokers' and smokers' support for smoke-free legislation in 14 indoor and outdoor settings across 12 European countries.** Environ Res. 2022 Mar;204(Pt C):112224 (D1, IF: 8,4)



Favaro F, [8 authors], Muñoz-Pinedo C. **TRAIL receptors promote constitutive and inducible IL-8 secretion in non-small cell lung carcinoma.** Cell Death Dis. 2022 Dec 15;13(12):1046 (Q1, IF: 9,7)



Garcia-Carbonero R, [22 authors], Salazar R. **Phase I, multicenter, open-label study of intravenous VCN-01 oncolytic adenovirus with or without nab-paclitaxel plus gemcitabine in patients with advanced solid tumors.** J Immunother Cancer. 2022 Mar;10(3):e003255 (Q1, IF: 12,5)



Paytubi S, [10 authors], Costas L. **Everything causes cancer? Beliefs and attitudes towards cancer prevention among anti-vaxxers, flat earthers, and reptilian conspiracists: online cross sectional survey.** BMJ. 2022 Dec 21;379:e072561 (D1, IF: 93,3)



Highlighted papers

Translational Medicine

Vicencio J, [15 authors], Moreno-Mateos MA. **Genome editing in animals with minimal PAM CRISPR-Cas9 enzymes.** Nat Commun. 2022 May 12;13(1):2601 (D1, IF: 17,7)



Gonzalez-Franquesa A, [45 authors], Garcia-Roves PM. **Remission of obesity and insulin resistance is not sufficient to restore mitochondrial homeostasis in visceral adipose tissue.** Redox Biol. 2022 Aug;54:102353 (D1, IF: 10,8)



Romaguera R, [31 authors], SUGAR trial inv. **Amphilimus- vs. zotarolimus-eluting stents in patients with diabetes mellitus and coronary artery disease: the SUGAR trial.** Eur Heart J. 2022 Mar 31;43(13):1320-30 (D1, IF: 35,9)



Amorós-Galicia L, [6 authors], Suñé-Pou M. **Development of a Standardized Method for Measuring Bioadhesion and Mucoadhesion That Is Applicable to Various Pharmaceutical Dosage Forms.** Pharmaceutics. 2022 Sep 21;14(10):1995 (Q1, IF: 6,5)



Mils K, [6 authors], Aranda H. **A pilot randomized controlled trial on the utility of gastric conditioning in the prevention of esophagogastric anastomotic leak after Ivor Lewis esophagectomy. The APIL_2013 Trial.** Int J Surg. 2022 Oct;106:106921 (D1, IF: 13,4)



Senage T, [50 authors], Padler-Karavani V. **The role of antibody responses against glycans in bioprosthetic heart valve calcification & deterioration.** Nat Med. 2022;28(2):283-294 (D1, IF: 87,2)



Highlighted papers

Neuroscience

Steward T, [10 authors], Fernandez-Aranda F. **Dorsolateral prefrontal cortex and amygdala function during cognitive reappraisal predicts weight restoration and emotion regulation impairment in anorexia nervosa.** Psychol Med. 2022 Apr;52(5):844-852 (D1, IF: 10,6)

PSYCHOLOGICAL
MEDICINE

Parameswaran J, [14 authors], Fourcade S. **Activating cannabinoid receptor 2 preserves axonal health through GSK-3 β /NRF2 axis in adrenoleukodystrophy.** Acta Neuropathol. 2022 Aug;144(2):241-258 (D1, IF: 15,9)

Acta
Neuropathologica

Granero R, [19 authors], Jiménez-Murcia S. **Phenotype of Gambling Disorder Patients with Lotteries as a Preferred Form of Gambling.** Int J Ment Health Addiction. 2022 Mar (D1, IF: 11,6)

International Journal
of Mental Health
and Addiction

Regenerative Medicine

Montserrat-Vazquez S, [15 authors], Florian MC. **Transplanting rejuvenated blood stem cells extends lifespan of aged immunocompromised mice.** NPJ Regen Med. 2022 Dec 29;7(1):78 (D1, IF: 14,4)

npj | Regenerative Medicine

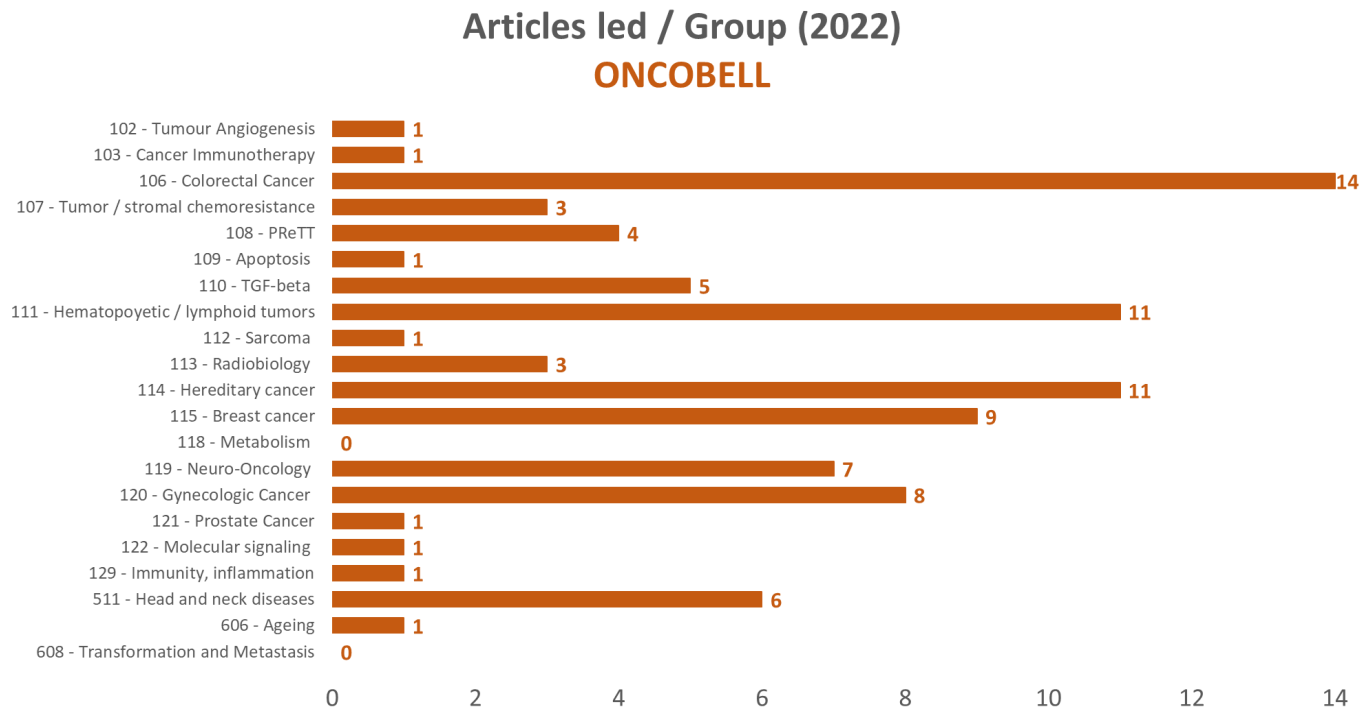
Carrasco B, [5 authors], Veiga A. **Male and female blastocysts: any difference other than the sex?** Reprod Biomed Online. 2022 Nov;45(5):851-857 (Q1, IF: 4,6)

RBMO
REPRODUCTIVE BIOMEDICINE ONLINE

Pesce M, Duda GN, [6 authors], Van Linthout S. **Cardiac fibroblasts and mechanosensation in heart development, health and disease.** Nat Rev Cardiol. 2023 May;20(5):309-324 (D1, IF: 49,4)

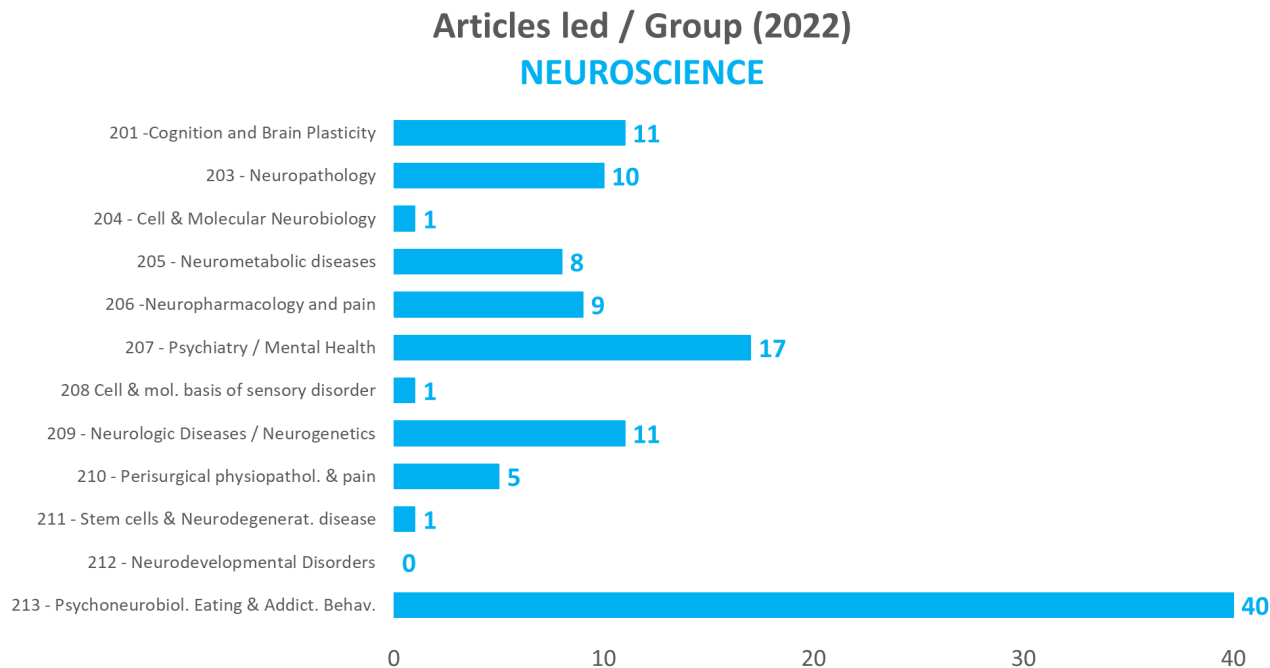
nature
REVIEWS CARDIOLOGY

ONCOBELL: group analysis



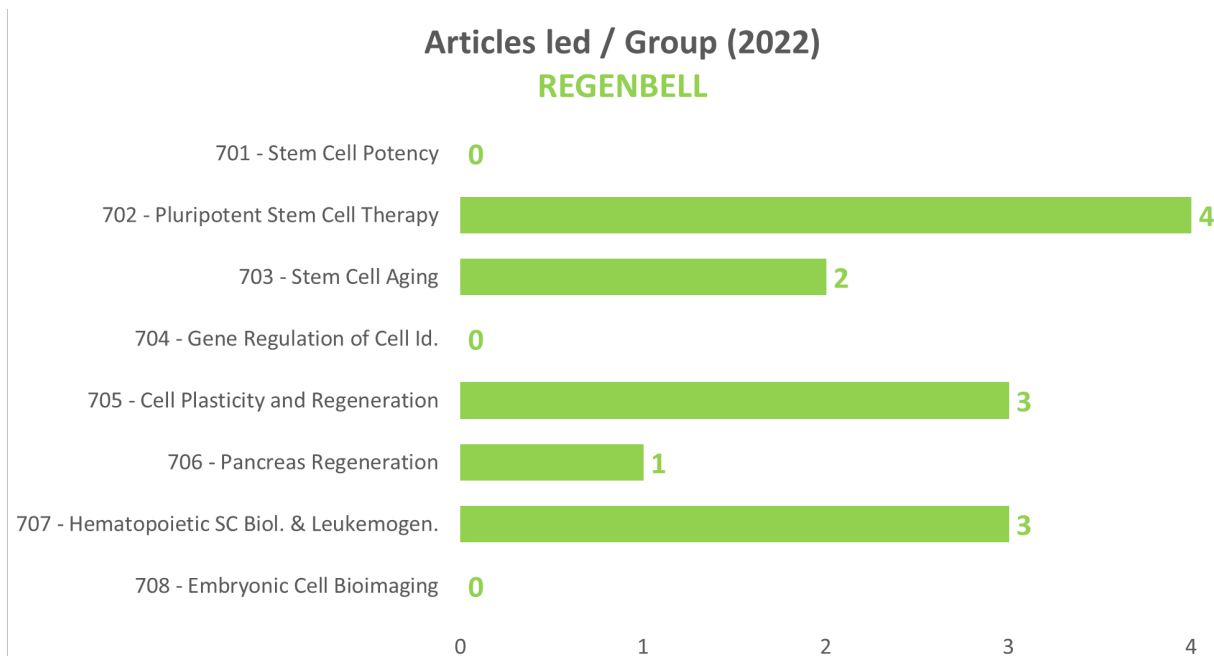
*Only scientific
articles and reviews
are considered

NEUROBELL: Group Analysis



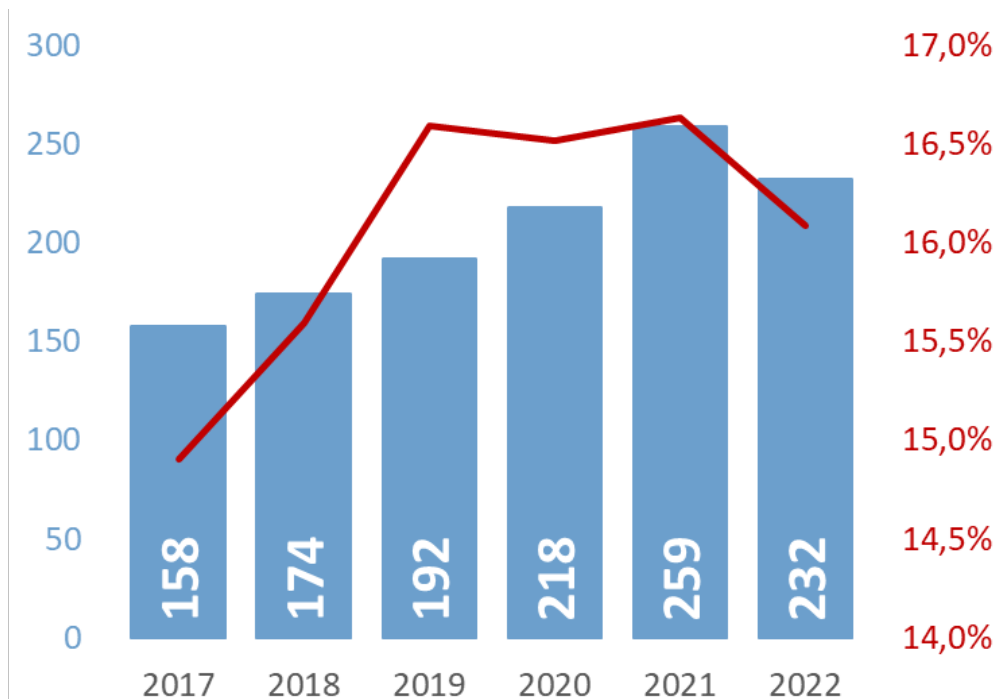
*Only scientific
articles and reviews
are considered

REGENBELL: Group Analysis



*Only scientific
articles and reviews
are considered

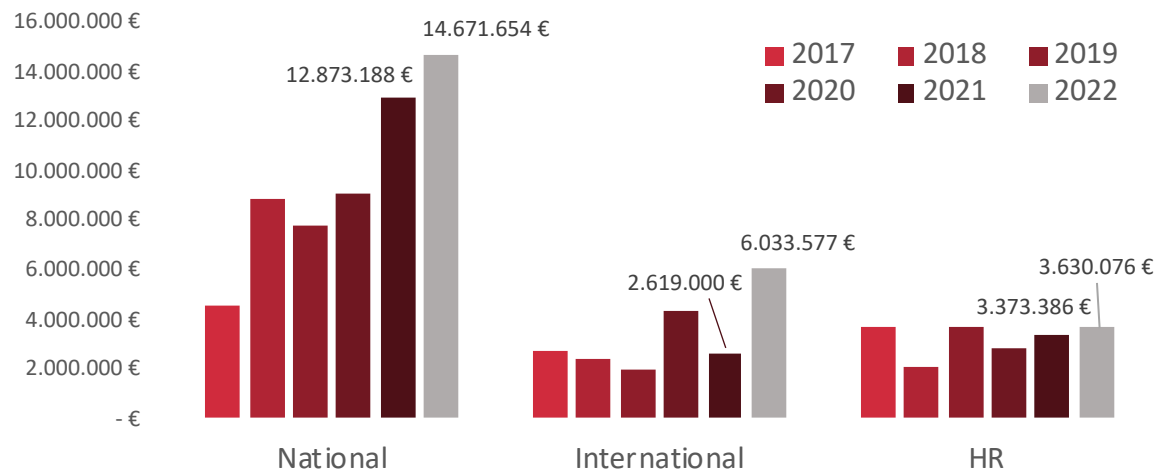
Publications in collaboration within IDIBELL groups



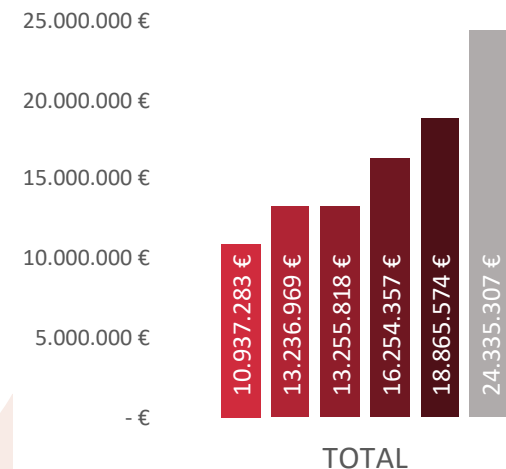
Projects & funds raised: 2017-2022

** Funds raised are predictive of future research activity*

2017-2022: Funds Raised* by Type of Project



competitive calls



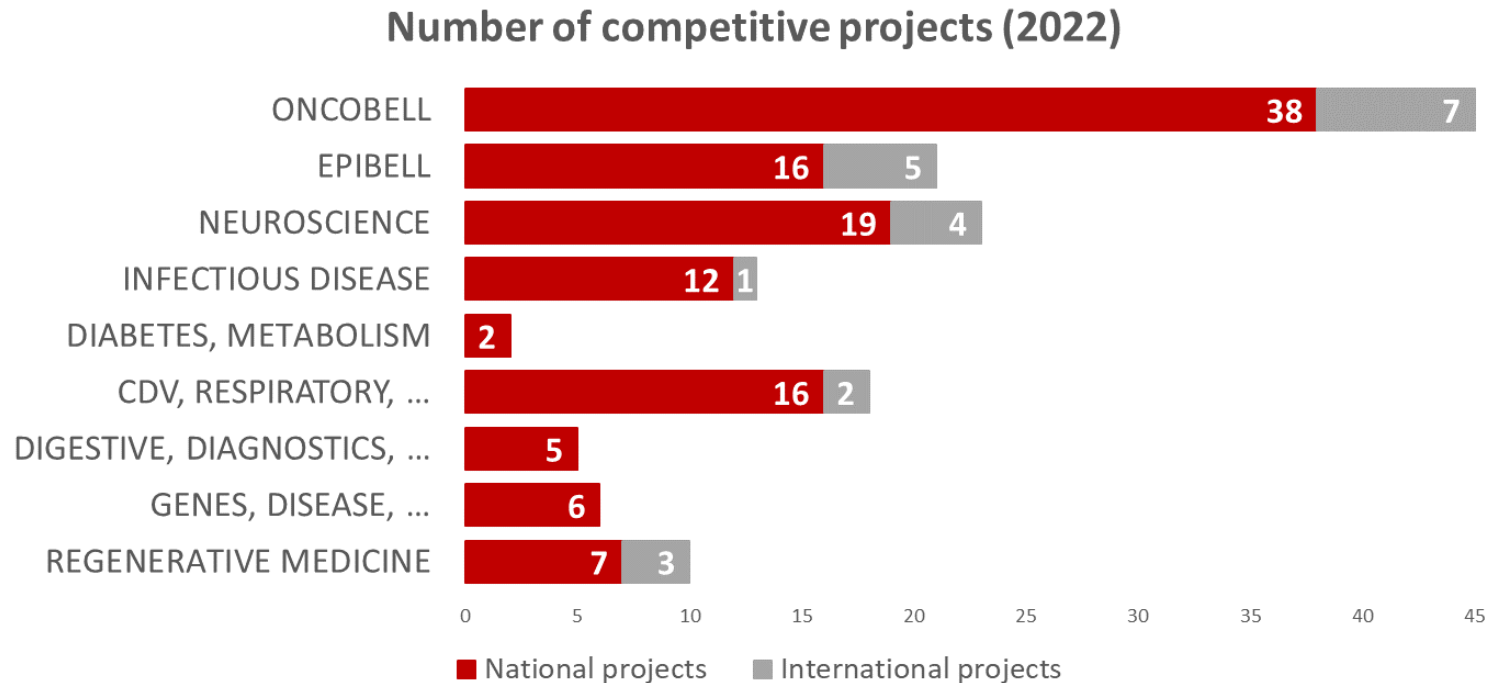
Total

* Funds raised are predictive of future research activity

Projects & funds raised: 2022

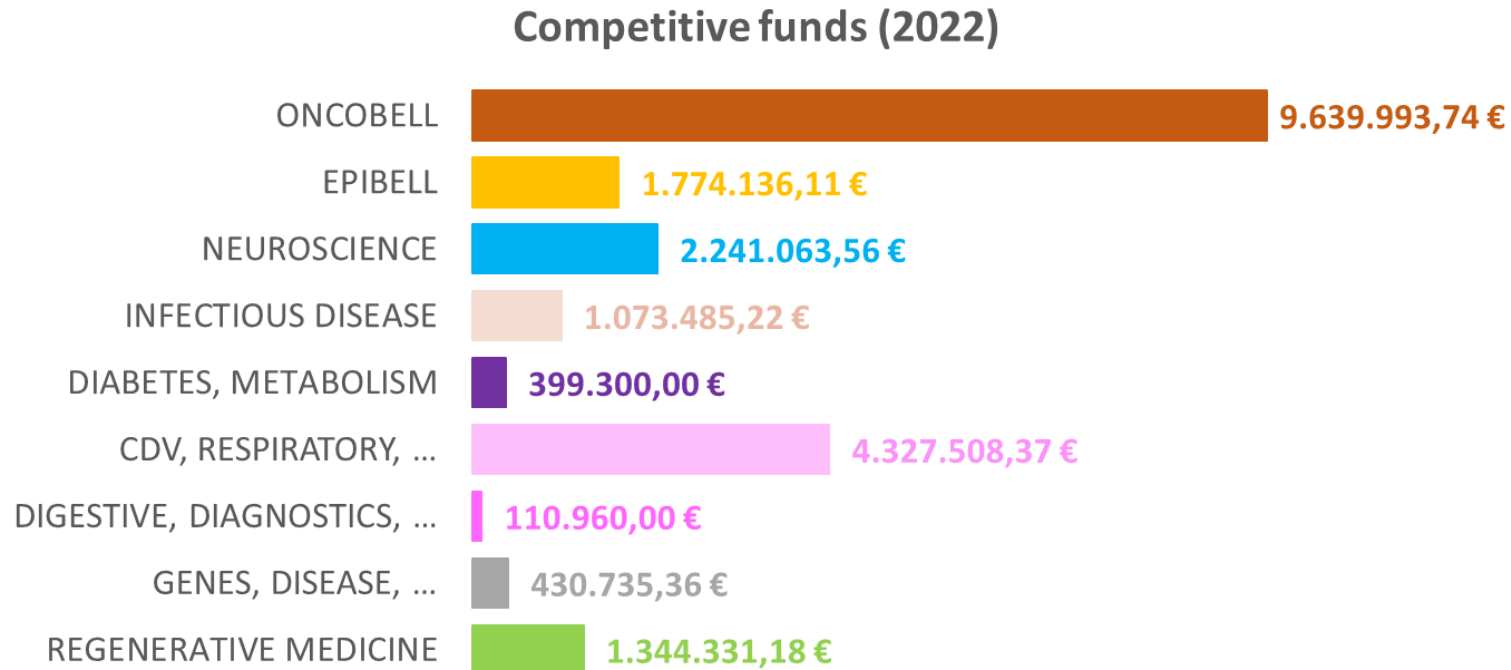
- 2022 data are shown as they have been carefully curated in the new ERP tool Fundanet
- This snapshot analysis intends to provide a partial picture that may vary if 3 years would have been analyzed. Groups that live on national money have a strong variation depending upon grant renewal date

2022: Competitive Projects per Program



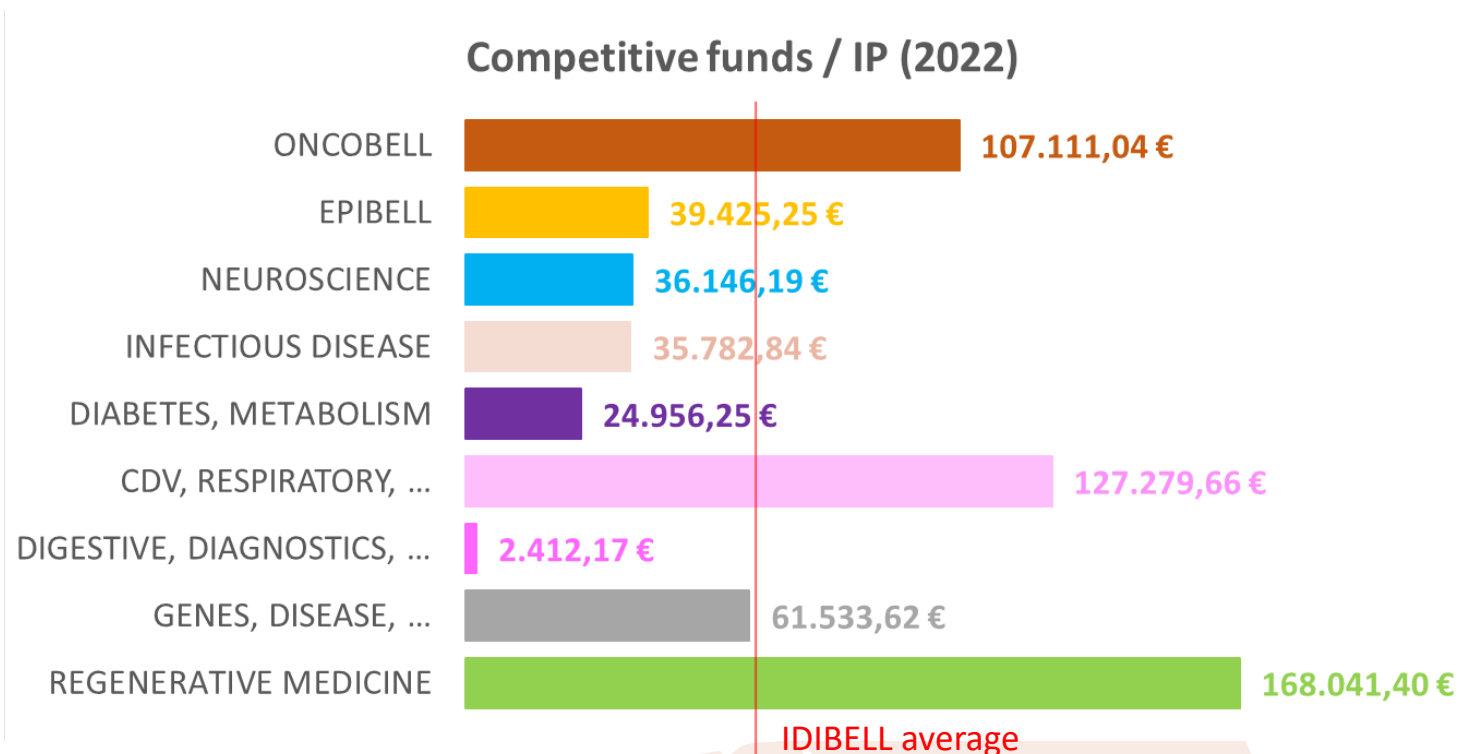
Public private collaborations and CT are not considered

2022: Competitive Funds Raised per Research Program



Public private collaborations and CT are not considered

2022: Competitive Funds raised per PI



Public private collaborations and CT are not considered

2022 Project Highlights: European Commission



PIECES

MISS-CANCER-2022-01-01 (coord)

IDIBELL budget: **2.083.000 €**

PI: Esteve Fernandez & Jordi Piera



HORUS

HORIZON-HLTH-2021-DISEASE-04-07 (collab.)

IDIBELL budget: **73.838 €**

PI: José Gonzalez



DISCERN

HORIZON-MISS-2021-CANCER-02-03 (collab.)

IDIBELL budget: **118.750 €**

PI: Víctor Moreno



BOOTSTRAP

HORIZON-HLTH-2022-STAYHLTH-01-01 (collab.)

IDIBELL budget: **164.500 €**

PI: José Menchon



PERCH

EU4H-2021-JA-02 (collab.)

IDIBELL budget: **407.297 €**

PI: Maria Brotons



UNDINE

HORIZON-HLTH-2021-DISEASE-04-07 (collab.)

IDIBELL budget: **77.354 €**

PI: Aurora Pujol



MELCAYA

HORIZON-MISS-2021-CANCER-02-03 (collab.)

IDIBELL budget: **110.000 €**

PI: Josep Maria Borràs



ePrObes (coord. CIBER/ 9,875,071.25 €)

HORIZON-HLTH-2022-STAYHLTH-01-05 (collab.)

IDIBELL budget: **283.000 €**

PIs: Fernando Fernandez-Aranda/Susana Jiménez



ONCODIR

MISS-CANCER-2022-01-01 (collab.)

IDIBELL budget: **134.437,5 €**

PI: Josep Maria Borràs



PROTECT-EUROPE

EU4H-2021-JA-08 (collab.)

IDIBELL budget: **161.975 €**

PI: Clàudia Robles

2022 Project Highlights: Other international



Prostate Cancer Research Program (Coord)

IDIBELL budget: 805.703€

PI: Alvaro Aytes (Oncobell)



Cost Action (Coord)

IDIBELL budget: 125.000€

PI: Anna Veiga (Regenbell)



ERAPERMED

IDIBELL budget: 198.442€

PI: Juliana Bordignon (coord)
(Infectious & Transplant)



TRANSCAN3

IDIBELL budget: 314.442€

PI: Victor Moreno (coord)
(Oncobell)

IDIBELL budget: 245.529€

PI: Carolina Florian (collab)
(Regenbell)

IDIBELL budget: 302.600€

PI: Elisa Espinet (collab)
(Oncobell)

2022 Project Highlights: National calls

AES 2022



Projects	9.146.830 €
19 awarded projects	2.431.520,00 €
2 DTS projects awarded	185.350 €
2 Personalized Medicine projects (coord. IDIBELL)	6.229.960 €
1 Equipment acquisition (<i>institutional</i>)	300.000 €

Grants for HHRR	1.184,110 €
3 intensification contracts	180.000 €
4 Río Hortega contracts	260.000 €
1 Sara Borrell contract	95.000 €
5 PFIS contracts	449.700 €
1 Research Management contract*	80.700 €
3 Grants for mobility M-AES	44.735 €
3 Grants for mobility M-BAE	74.175 €

2022 Project Highlights: National calls



RETOS / Knowledge generation

Total IDIBELL : **1.319.384 €** (n=6 awarded projects)
PIs: I. Fabregat, A.Raya, C.Florian, S. Jimenez-Murcia,
A. Rodriguez-Fornells, O. Martinez-Tirado.

Projects in public-private collaboration

Total IDIBELL : **1.251.299,43 €** (n= 5 awarded projects)
PIs: L.Costas, P.Cardona, F.Guedea, J.A. Gomez, O. Martinez-Tirado.

Strategic Projects Oriented to the Ecological Transition and the Digital Transition 2021 (TED21)

Total IDIBELL : **1.628.400 €** (n=1 awarded project)
PI: V.Moreno; Subproject PI: G.Capella, E.Nadal, J.Comín,

Grants for the preparation and management of European projects. (Institutional)

Total IDIBELL : **172.912 €**
PI: F. Fernandez-Aranda

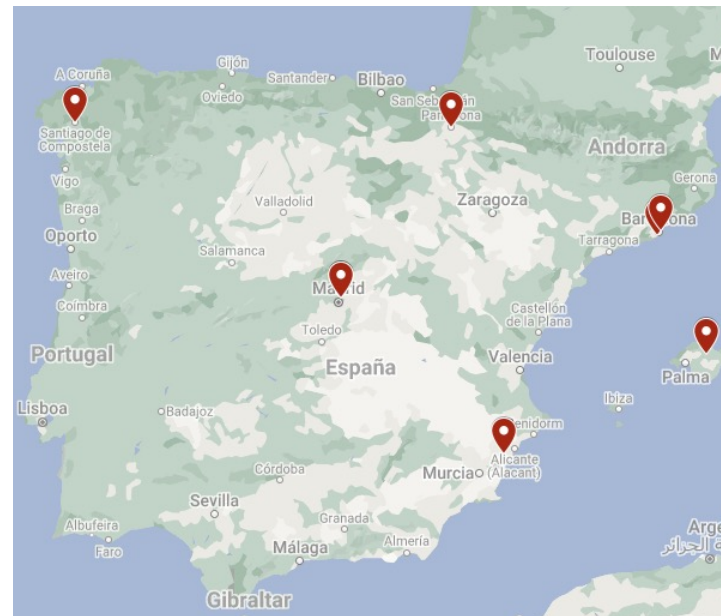
Proyecto Medicina Precisión 2022 IMPaCT_VUSCan

Aims:

1. Multi-omics profiling of IMPaCT-Genómica (n=172) and IMPaCT-VUSCan (n=150) cohorts to help prioritize variants for subsequent functional studies.
2. Predictive in silico tools for further candidate variant prioritization.
3. Functional assessment platform for VUS classification.
4. Validation and implementation of AI-based tools to improve variant classification and clinical decision making.



Conxi Lázaro
Project coordinator



WP1- COORDINATION

IMPACT
VUSCan



cnio

NAVARRABIOMED
CENTRO DE INVESTIGACIÓN BIOMÉDICA

HOSPITAL DE LA
SANTA CREU I
SANT PAU
UNIVERSITAT DE BARCELONA

Hospital Universitario
La Paz

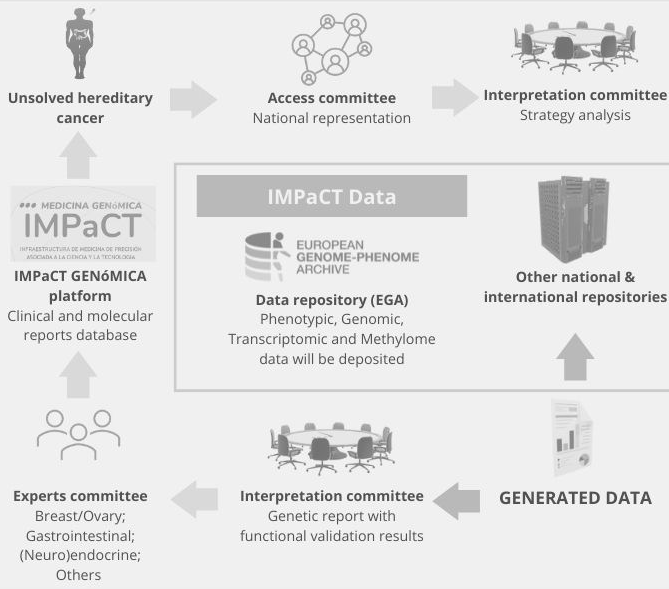
GRUPO DE
MEDICINA
XENOMICA

Fundació
Fisabio
Fundación para el Fomento de la Investigación
Sanitaria y Biomédica de la Comunidad Valenciana

IdiSSC
INSTITUTO de
INVESTIGACIÓN SANITARIA
Hospital Clínic San Carlos

Institut
d'Investigació Sanitària
IIS Balears

IMPACT GENÓMICA



WP5 - AI-BASED TOOLS INTEGRATION

AI-based support system that improves clinical decision making

VALIDATION
150 new families

WP2 - FULL PROFILING

Current IMPACT GENÓMICA strategy

	Blood DNA	WGS
Proband	Tumor DNA	WES
	Tumor RNA	RNASeq
Relative 1	Blood DNA	WES
Relative 2	Blood DNA	WES

IMPACT VUSCan:

Added multi-omics

- a) **Methylation** profiling
- b) Extra tumors: **WES**
- c) Extra tumors: **Transcriptomics**
- d) **WGS of relatives**

If unsolved:

Blood RNAseq and/or optical mapping

IMPACT-GENÓMICA-associated sequencing nodes

WP3 - DATA INTEGRATION FOR CANDIDATE VARIANT PRIORITIZATION

- a) *In silico* prediction tools
- b) Integration of the **multi-omics** data
- c) **Score calculation**
- d) Development of **Machine Learning based algorithms**

improved prediction of pathogenicity

CANDIDATE VARIANT PRIORITIZATION

WP4 - FUNCTIONAL ASSESSMENT

Types of potentially affecting variants:

- **splicing**
- **regulatory regions**
- **protein 3D structure**
- **in genes involved in specific mechanisms or pathways**

Model systems:

- Stable expression of candidate variants
- gene editing of cell lines
- organoids

Fundació Fisabio

cnio

IDI BELL

WP6 - ANALYSIS OF STRATEGIC DECISIONS

HOSPITAL DE LA SANTA CREU I SANT PAU

IdiSSC

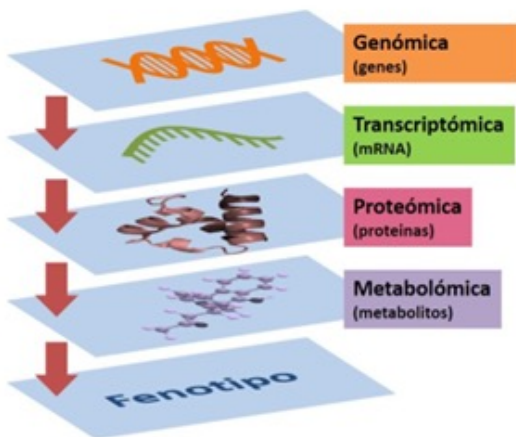
Institut d'Investigació Sanitària IIS Balears

Standardize pipelines and protocol for NHS implementation

Integration of the AI-based tools in gene-specific guidelines

INTERSTITIAL LUNG DISEASES (ILDs):

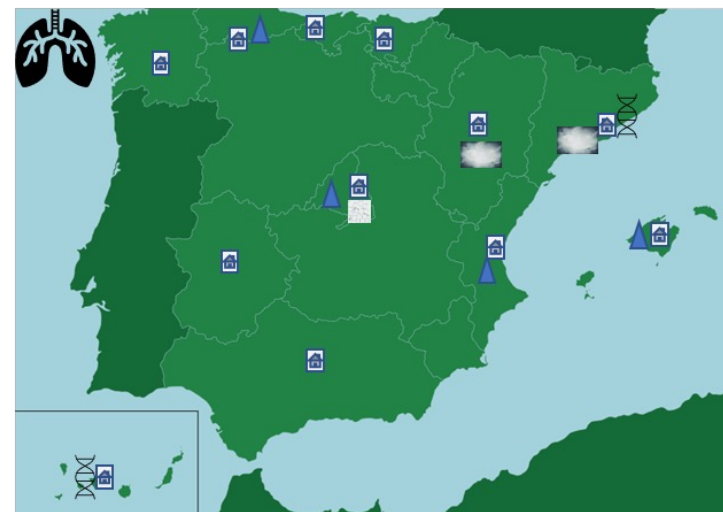
- 75% of Rare Respiratory Diseases
- Fibrotic ILDs are progressive and lethal due to respiratory failure
- The consensus diagnostic and therapeutic approach is not efficient



Maria Molina
Project coordinator

National consortium: 22 sites

- Multidisciplinary
- ILD expertise



Recruiting sites



Experimental sites



Environmental analysis



Genomics

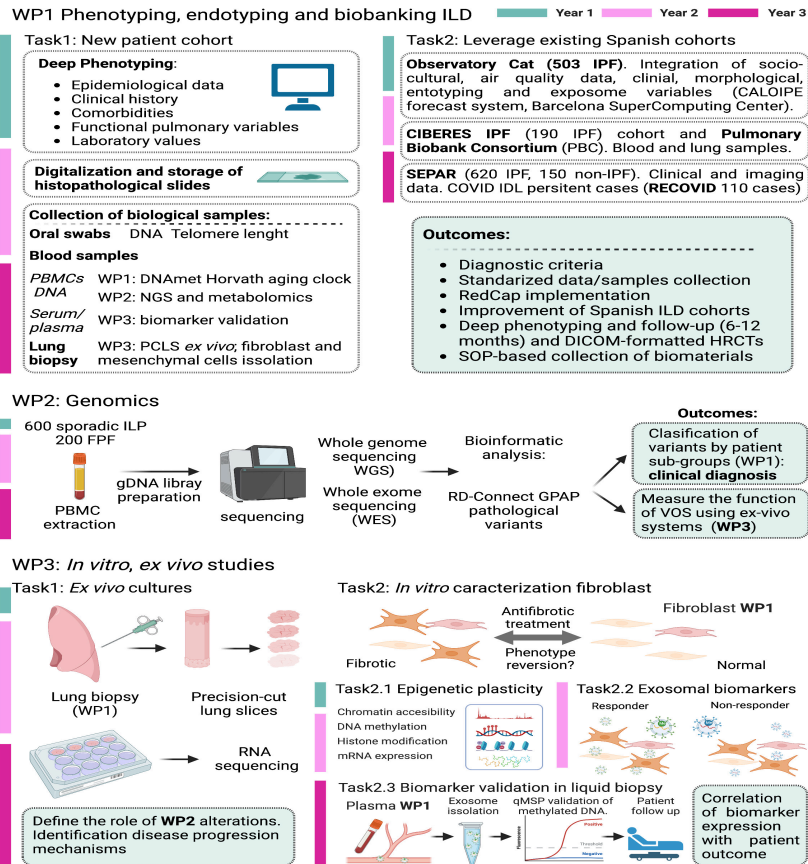


Metabolomics

Proyecto Medicina Precisión 2022 IMPaCT_PRECISION-ILD

MAIN OBJECTIVES:

1. **Deep phenotyping** Spanish fibrotic **Interstitial Lung Diseases (ILD)** patients and understanding their biological clues (genotype, endotype, environmental interactions) for improving diagnosis and treatment
2. Looking for **predictive factors** of disease progression and therapeutic response



Excellence Research Networks ISCIII-CIBER (2022)

- 1 Bioingeniería, biomateriales y Nanomedicina **CIBER-BBN** - **A. Raya**
- 1 Enfermedades raras **CIBERER** - **A. Pujol**
- 2 Epidemiología y Salud Pública **CIBERESP** - **L. Alemany** and **V. Moreno**
- 1 Enfermedades hepáticas y digestivas **CIBEREHD** - **I. Fabregat**
- 2 Obesidad y nutrición **CIBEROBN** - **X. Pinto**, **F. Fernandez-Aranda** and **S. Jiménez-Murcia**
- 1 Diabetes y enfermedades metabólicas **CIBERDEM** - **E. Montanya**
- 3 Enfermedades respiratorias **CIBERES** - **E. Fernández**, **C. Ardanuy** and **M. Molina**
- 1 Salud mental **CIBERSAM** - **JM. Menchón**
- 1 Cáncer **CIBERONC** - **G. Capellá** , **X. Matias-Guiu**
- 1 Enfermedades infecciosas **CIBERINFEC** - **J. Carratalá**
- 1 Enfermedades Cardiovasculares **CIBERCV** - **J. Comín**

2022 Annual Report

<https://annualreport2022.idibell.cat/>



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[SOCIETY](#)



OUR GOALS

**Research.
Innovation.
Society.**

BELLVITGE BIOMEDICAL RESEARCH INSTITUTE

ANNUAL REPORT 2022

Integrity

Discipline at work,
honest results.

Trust

Capable of achieving
our goals

Transparency

Accessible results,
responsible management

Ambition

People's health, our
goal

Passion

Step by step, always
forward

Commitment

The patient always on
our mind

Business Development and Innovation

Alliances – AIISEM

MEDITERRANEAN ALLIANCE FOR INNOVATION AND INDUSTRIALIZATION IN THE MEDITERRANEAN ARC | ISCIII

FUNDING

- **TOTAL:** 298.650,00 €

DESCRIPTION

Lead by IDIBELL, alliance of the Innovation Units at IDIBELL, IISPV, IDIAP, IIS La Fe, INCLIVA, FISABIO, ISABIAL, IMIB and IdISBa.

- OBJ 1. Promote collaboration with industry.
- OBJ 2. Create a portfolio of innovative initiatives.
- OBJ 3. Improve the translation of solutions to the SNS (National Health System).
- OBJ 4. Improve training and resources in Innovation.
- OBJ 5. Improve coordination and complementarity with other Innovation Units.



Alliances – XarSMART

PROGRAM FOR THE VALORIZATION AND TRANSFER OF RESEARCH RESULTS TO THE MARKET | AGAUR XARXES

FUNDING

- **TOTAL:** 698.000,00 € PI Miguel A. Souto Mora

DESCRIPTION

1. Increase the market value of precision medicine and Smart Health projects of Xarsmart members.
2. Improve the translation of solutions to the national health system.
3. Enhance training within the innovation ecosystem.
4. Increase collaborative work among Xarsmart members. Development of a grant search platform.
5. Improve resource acquisition.



Alliances – Internationalization

IDIBELL as **COORDINATOR OF INTERNATIONALIZATION COMMISSION** of ITEMAS PT20

- ✓ Exploration of international models of innovation support.
- ✓ Search and promotion of strategic alliances of high value.
- ✓ Detection of funding opportunities internationally.
- ✓ Broaden visibility of ITEMAS within and outside the borders.



IDIBELL as **LEADER OF WORK PACKAGES** in **EUROPEAN PROJECTS**: Innovation, Business Development and Regulatory

EXAMPLE AN INTERACTIVE ENDOCRINE VIRTUAL TWIN OF THE ADRENAL GLAND (AI-DRENAL)
Budget by BDI Area: **346,615.75 €**
Submission: 13th April 2023



IDIBELL as **EATRIS EXPERT CENTER** to top-tier academic centres and industry across Europe and providing services of:

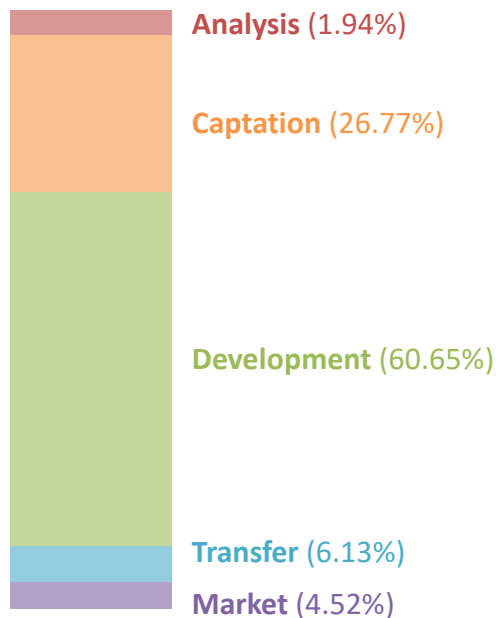
- ✓ Business Development
- ✓ Innovation
- ✓ Regulatory of medical devices



Overview of the projects in the portfolio

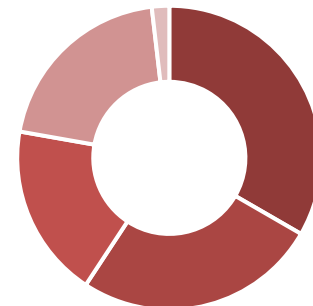
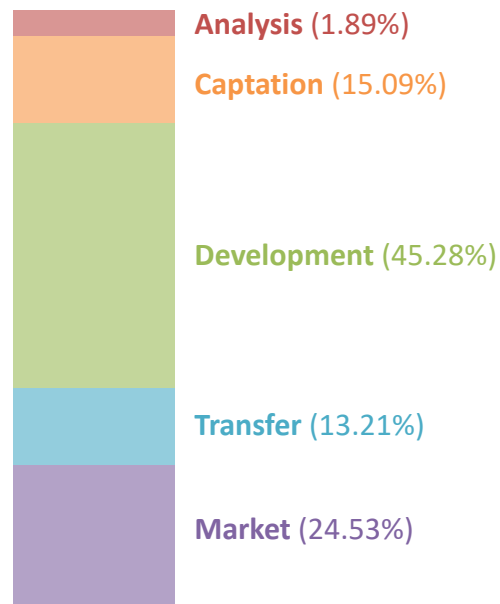
Total of projects in the portfolio

310



Prioritized projects

53



- Drug
- Biomarker
- Medical Device
- Software for clinical use
- Other

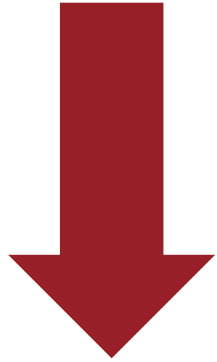
5

New location of the Management Support offices

Alternatives for IDIBELL offices Summary of Options

We need a **stable location for the administrative offices**. Ideally, **Direction and Management Departments should be close and together** to improve efficiency and strengthen sense of belonging. Due to renewal at DiR Building we must move.

We asked the Board of Trustees for advice and help putting on the table three options



Option 1: Whole BIOPOL'H Building

Option 2: Whole Edifici Recerca HUB-IDIBELL

Option 3: Temporary building in DiR and going back to the current location

Alternatives for IDIBELL offices Summary of Options

We need a **stable location for the administrative offices**. Ideally, **Direction and Management Departments should be close and together** to improve efficiency and strengthen sense of belonging.

Due to renewal at DiR Building we must move.

We need up to 700 sqm:

We will propose fully occupying floor 1 of Biopol'H building (450 sqm).

We will keep using those spaces at Edifici Recerca HUB-IDIBELL

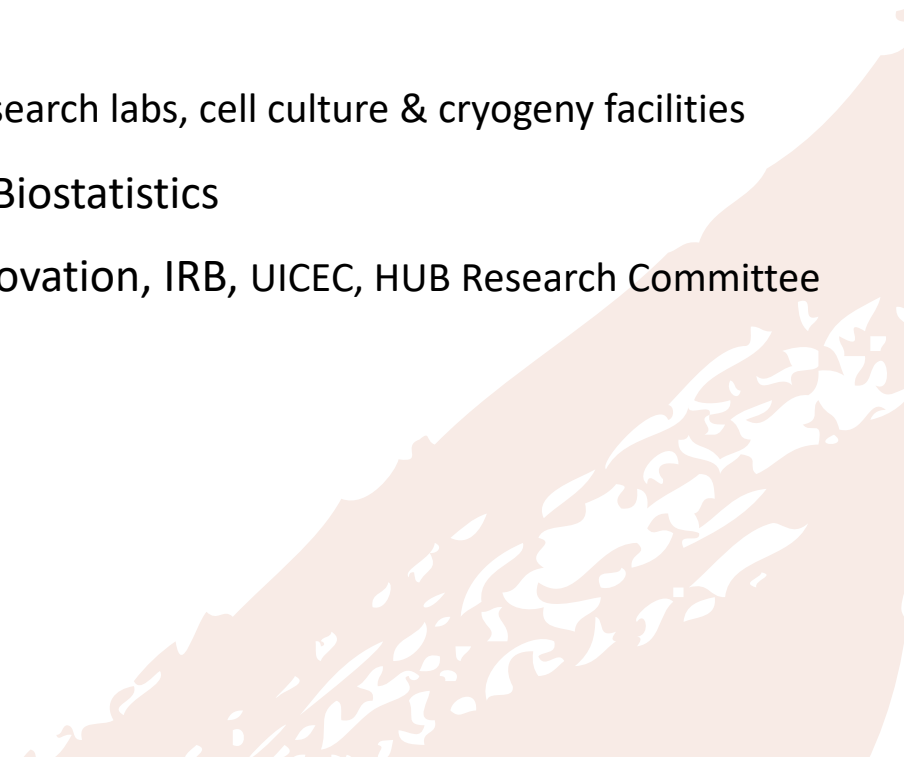
As well as spaces in the temporary building

8


A new Research building in Campus

Current situation in multiple locations

IDIBELL has built or habilitated many of the research infrastructures on Campus although it owns none and its facilities are widespread:

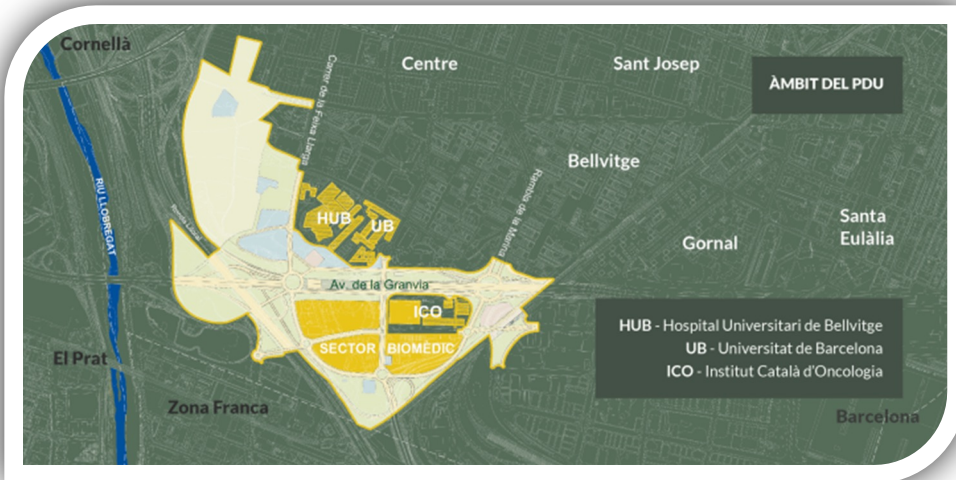
- **DiR building:** Management, Core Facilities, Research labs, cell culture & cryogeny facilities
 - **Biopol building:** Legal, Bioinformatics and Biostatistics
 - **HUB-IDIBELL Research Offices:** BD and Innovation, IRB, UICEC, HUB Research Committee
 - **HUB:** Biobanc, USRC
 - **Edifici UB:** Criogeny
- 

Assumed impact of the current dispersion

- Image – Visibility – Internal/External communication
 - Duplicated platforms and resources
 - Do not facilitate synergies
 - Loss of collaborative research opportunities
 - Loss of decision capacity
 - Impact on the sense of belonging
- 

New research building on Campus

**20.000/25.000 m2 key to centralize
research in a single building in Campus**



USABLE space (sq m)	20000
Laboratories	7500
Offices	1000
Administration/meeting rooms	1000
Storage	900
Animal Facilities	1000
Freezer rooms/Cryogeny	1200
Support Services	3500
Canteen	500
Conference Room	300
Other uses (bioincubator?)	3100
TOTAL SPACE	25000

*Ongoing discussion with Trustees

7

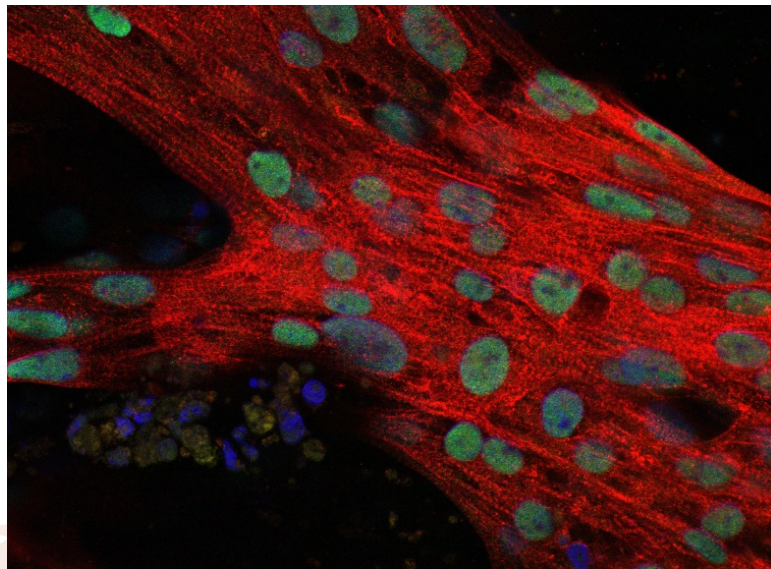
Strategic Plan 23-27

Strategic Plan

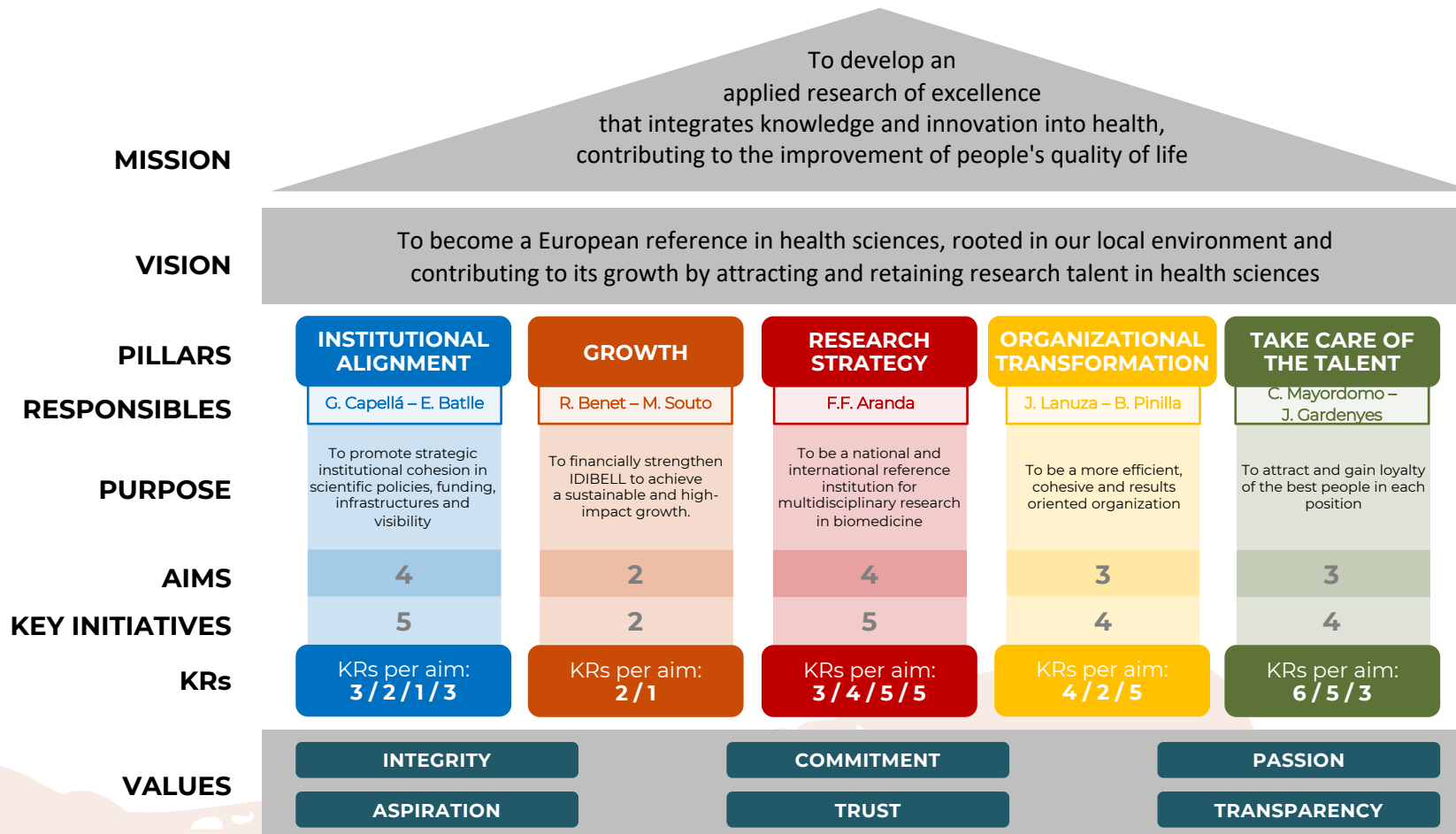


Main points of the development of the Strategic Plan:

- ✓ Interviews with Board of Trustees and relevant Stakeholders
- ✓ Working meetings with an extended management team:
 - ✓ SWOT analysis
 - ✓ Definition of strategic pillars
 - ✓ Definition of strategic objectives
 - ✓ Designation of Pillar Owners
 - ✓ Evaluation Mission and Vision
- ✓ Plenary session with researchers:
 - ✓ Strategic initiatives of each pillar
 - ✓ Prioritizing Initiatives (Impact-Effort Matrix)
- ✓ Elaboration of initiative files (1st Implementation Wave)



Strategic House



Strategic Pillars – Purposes



SAB initial feedback to Trustees and Direction

SAB initially highlighted 3 points:

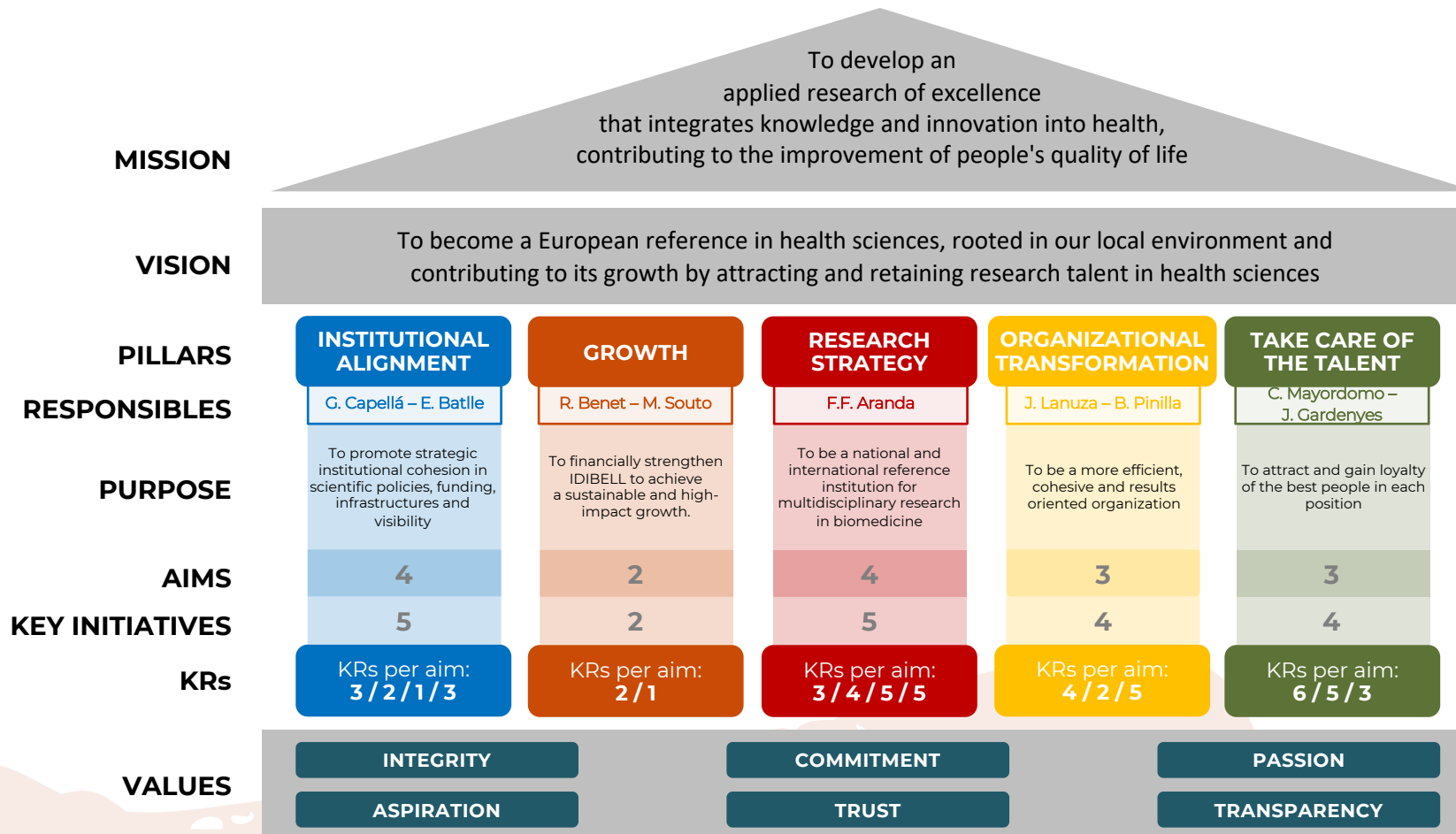
1 Talent is rightly included in the strategic plan (**focus on young researchers, career plan for researchers between the different partners, clarify expectations**)

2 The different institutions should also agree on the strategic research lines, the sharing of facilities and the prioritizing of equipment

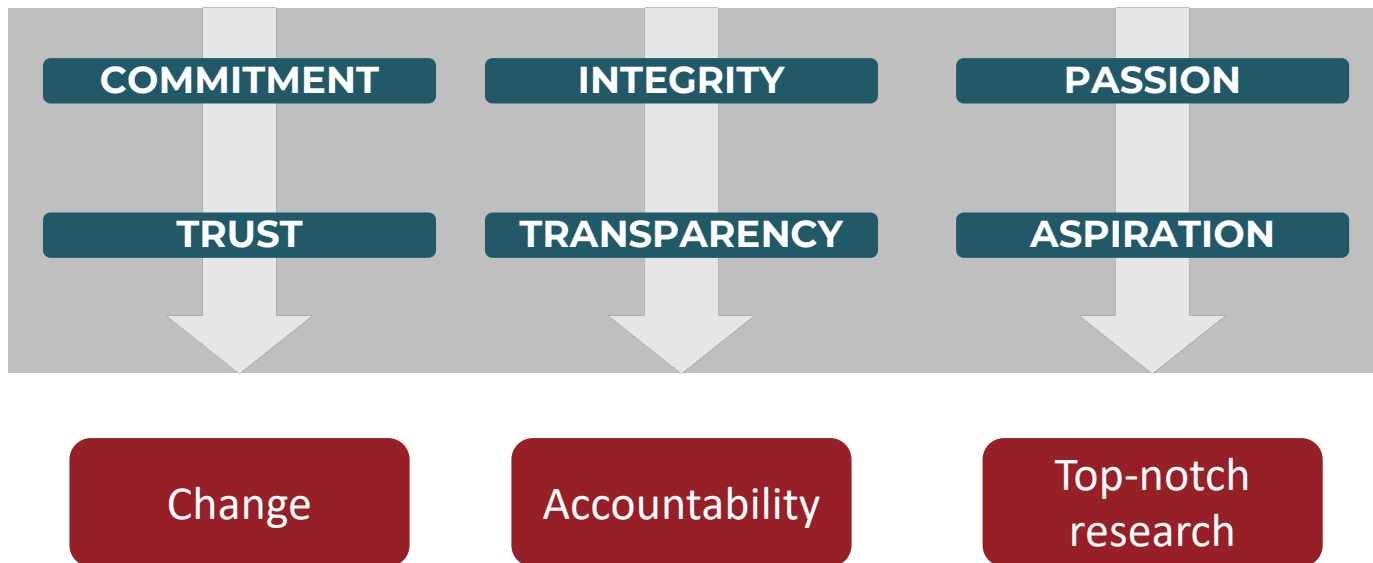
3 They commented that **research areas are very heterogenous**, and it might be beneficial to **focus** on some topics, maybe **ageing** where IDIBELL could grow



Strategic House



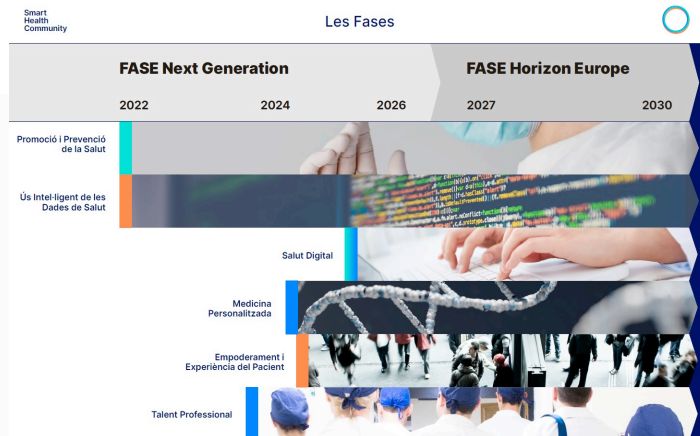
Root in our values, grow in our vision



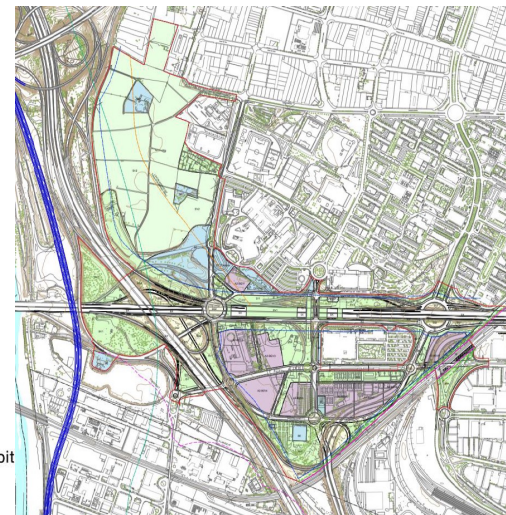
To become a European reference in health sciences, rooted in our local environment and contributing to its growth by attracting and retaining research talent in health sciences

Looking into the future rooted in our environment

Smart Health Community



Biocluster



consorci per a la reforma de la
granvia a L'Hospit

To become a European reference in health sciences, rooted in our local environment and contributing to its growth by attracting and retaining research talent in health sciences

