

INSTITUT D'INVESTIGACIÓ SANITÀRIA PERE VIRGILI STRATEGIC PLAN

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0. LISTS

0.1. Abbreviations

AMURG: Agency for the Management of University and Research Grants

PHC: Primary Health Care

BioCat: Catalonia BioRegion

ESC: External Scientific Council

ISC: Internal Scientific Council

AEC: Animal Experimentation Centre

ECCR: Ethical Committee for Clinical Research

CIBER: Biomedical Research Centre in Xarxa

COTEC: Foundation for Technological Innovation

SWOT: Strengths, weaknesses, opportunities and threats

DEK: Department of Enterprise and Knowledge (department responsible for research)

DH: Department of Health (department responsible for health)

SFHTC: Spanish Federation of Health Technology Companies

GR: Research group

Grupo SAGESSA: Health and Social Assistance Group

UHTJ23: University Hospital Tarragona Joan XXIII

UHSJR: University Hospital San Joan de Reus

PUHIPM: Psychiatric University Hospital Pere Mata Institute HTVC: Hospital de Tortosa Verge de la Cinta

H2020: Horizon 2020

CIH: Catalan Institute of Health

SICAT: Statistics Institute of Catalonia

IMI: Innovative Medicines Initiative

ISCIII: Health Institute Carlos III

JCR: Journal Citation Reports®

MEIC: Ministry of Economy, Industry and Competitiveness

ITPO: Industrial Technological Prospective Observatory

PEST: Analysis of political, legal, economic, social, cultural and technological factors

SMES: Small and medium sized enterprises

TNCHR: Themed Networks for Cooperative Health Research

R&D: Research and development

SNS: National Health System

ICT: Communication and Information Technology

TKT: Technology and knowledge transfer

RVU: Rovira i Virgili University



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1. INTRODUCTION

The Health Research Institute Pere Virgili (hereinafter IISPV) is an institution resulting from scientific collaboration between the following institutions: the Catalan Institute of Health (CIH) [University Hospital Tarragona Joan XXIII (UHTJ23), Hospital Tortosa Verge de la Cinta (HTVC), Primary Health Care Area (PHC)], Grupo Sagessa [University Hospital Sant Joan de Reus (UHSJR), Primary Health Care Area (PHC)], Grupo Pere Mata [Psychiatric University Hospital Pere Mata Institute (PUHIPM)] and Rovira i Virgili University (RVU).

The natural territorial scope of these institutions are the regions of Camp de Tarragona and Terres de l'Ebre. The portfolio of activities and services offered by these institutions includes health care services, undergraduate and postgraduate teaching, specialised health training, continuing education and biomedical research, among others.

The main reason for the creation of the IISPV is that, within the strategic planning of the aforementioned institutions that comprise the Institute, there is a need to coordinate, foster and assess the health research activities carried out by each institution individually, with the purpose of adapting this planning activity to: an increasingly competitive environment, the regulations and guidelines stipulated by the agents that fund the research and users' needs.

The IISPV assumes the challenge of creating conditions of excellence to become an instrument of socio-economic dynamism and a knowledge transfer tool, both within its territory and globally.

This emphasises the need to develop a new biomedical research organisational model, which should lead the transition from a group-based research model to an entrepreneurial focus, where interactions between basic, clinical and epidemiological research are directed towards models of applied research and knowledge and technology transfer. Thus, a qualitative change of the model is proposed, to one where health research institutes are a fundamental pillar of innovation in the health system, together with government administrations and private companies.



The new biomedical research conceptual and organisational model should facilitate:

- Bringing basic and clinical research closer together, and strengthening the concept of hospitals as research centres.
- The creation of synergies between areas of knowledge.
- Optimisation and reinforcement of intramural and extramural technological resources.
- The transfer of generated knowledge, so as to enable interactions between the different actors involved in biomedical research and epidemiological, clinical, basic, technological and IT sciences.
- The transfer and implantation of knowledge acquired from this biomedical research integrating process to the clinical practice, in order to improve users' health care service and their quality of life.

Hospital, university and primary care activities are carried out in the IISPV, which aims to be an essential structure for the development of this integrated biomedical research model. The IISPV must continue guiding and fostering its research activities towards quality research, which will increase its renown, acclaim and external impact, and in this way continue to drive translational research. There is also a commitment to certain local and external strategic areas of action. This should make it possible to strengthen and maintain pre-existing synergies and competitive advantages in the medium and long term.

The IISPV context potentially has the ideal conditions to develop a robust model for this to happen, as three conditions have occurred simultaneously: hospitals and universities act as a source of knowledge; government administrations and civil society have created and maintained the necessary climate for economic and social development, and there is an entrepreneurial and industrial fabric with the will and capacity to apply the innovation generated.

The IISPV has been commissioned to design and implement the transformation of the biomedical research activity carried out in the Camp de Tarragona and the Terres de l'Ebre regions towards a highly competitive production, management and exploitation model of excellence. To achieve this goal, we have worked on this Strategic Plan, now in its third edition.



This document aims to define the strategy to be followed in the coming years by analysing the internal and external situation and defining strategic objectives.

This document is structured into three sections:

I. Analysis of the situation (context and internal). Initially, all the necessary information, both qualitative and quantitative, has been collected to subsequently give a diagnosis and estimate of the IISPV volume of activity. Techniques such as SWOT and PEST analyses have been used.

II. A strategic model has been developed, in which IISPV's mission, objectives and values in research have been defined and which outlines the prioritisation of strategic areas.

III. Operational definition, which defines future strategic objectives.

INSTITUT D'INVESTIGACIÓ SANITÀRIA PERE VIRGILI

3rd edition

2. MISSION, VISION AND VALUES

MISSION:

IISPV's mission is to efficiently manage its own resources and provide the best service available to health professionals, so that by promoting, consolidating and translating research in the field of health care, the health and well-being of the Camp de Tarragona and Terres de l'Ebre population (preferably) is improved.

VISION:

The IISPV should be a national and international reference in research and biomedical translation, at the service of its users and a tool for health centres within its context.

VALUES:

This quality system is based on the values promoted by the directorate:

- Autonomy: IISPV members develop their work freely, and adapt to general and generic standards.
- Responsibility: each IISPV member is aware of the relevance of their work, and assumes the implications of their actions
- Teamwork: tasks are not left in the hands of a single person, and information about them flow continuously.
- Adaptability: aware of the complexity of the environment, IISPV members constantly incorporate changes and adjust rhythms and expectations.
- Efficiency: provide efficient service and ensure permanent improvement.
- Sustainability: in the management of resources and the environment.



3. CONTEXT ANALYSIS

To assess IISPV's research and knowledge generation potential, its contextual situation has been analysed, considering current and international, Spanish and Catalan research trends and policies, users' health-care needs, the scientific offer available and the business environment. Thus, the biomedical research situation has been analysed from a double perspective - contextually and internally - following the steps shown in the following figure:



Figure 1. Situation analysis stage.

Source: Prepared by IISPV (2017).



3.1. Global analysis of biomedical research

3.1.1. Global analysis of biomedical research

The IISPV context is determined by the social, economic and political environment and its influence on IISPV institutions.

The IISPV context is such that that investigations follow guidelines set by the government administration and its agencies; private foundations, which sometimes indirectly represent patients, and industry itself (pharmaceutical and diagnostic, mainly). Also, research carried out by the IISPV takes place essentially within the health system and, additionally, the university.

According to government administrations, guidelines for biomedical research are reflected in the plan, such as the Research and Innovation in Health Strategic Plan (RIHSP) from 2016 to 2020, Strategic Actions in Health initiative included in the State Plan for Scientific, Technical and Innovation Research, and European programmes (Horizon 2020).

In general, the policies developed in these plans highlight new research organisation paradigms and the need to articulate them, taking into account the need to solve users' health issues. Translational research and network and collaborative research must also be emphasised.

A few years ago, the biomedical research carried out in Spanish hospitals was characterised by a quantitative - but not a qualitative - increase in published papers. This perception was based on the fact that few research groups from these hospitals had international recognition. The research groups located in the hospitals, almost all clinical, seemed disconnected from basic research groups that were working at universities: the Higher Council for Scientific Research (CSIC); CERCA centres and in industry companies. Likewise, the research carried out in hospitals, including the clinical research conducted there, often does not translate into improvements in care services.

During the last 15 years, the pharmaceutical industry has been increasingly requesting the results of clinical research carried out in hospitals, mainly in the form of clinical trials. These trials are usually phase III and phase IV, but there is also a need for phase I and II. Currently, research promoted by the



pharmaceutical industry exceeds research driven by public and private research funding agencies. This has resulted in: the engagement of clinical teams that have not previously dedicated themselves to research; a supply of new resources, and additional help, even for those whose research is not only associated with clinical trials.

Conversely, from 2016 to 2020 the Generalitat of Catalonia RIHSP aims to increase the quality of the research that is carried out in the health field, in order to guarantee the excellence of our health system by intensifying the practical application of knowledge generated by researchers to the care processes. On this basis, priority is given to services oriented to the needs of people.

The following outlines the main sectors that IISPV research will focus on. Thus, in Spain and Catalonia the biotechnology and medical technologies sector (source: BioCat, April 2016) provides the following information:

- Turnover and employment: companies in the sector turnover 14.360 billion euros, 7% of GDP in Catalonia (2014 data) and employ 42,133 people. This amount is broken down as follows:
 - € 6.852 billion from pharmaceutical companies (48%)
 - \in 2.910 billion from biotechnology companies, the segment that has experienced the highest growth since 2011
 - € 3.092 billion from medical technologies
 - \in 1.514 billion from other companies, of which \in 16 million are from digital Health

Thus, by turnover, the pharmaceutical and medical technology sectors are the biggest players.

- Investments: between 2013 and 2015 BioRegion companies raised more than 100 million euros in investments
- Creation of companies: between 2013 and September 2015, 75 new BioRegion companies were created.
- **R&D** investment: investment in public and private R&D in Catalonia has fallen by almost 11% between 2009 (year that marks the turning point after a decade of constant increases) and 2014. Despite this fall, R&D expenditure is still 1.47% of Catalonia's GDP (data for 2014), above the



state average (1.23%). In addition, Catalonia leads in biotechnology R&D investment in Spain, receiving a total of \in 416 million (28.7% of the total) (2014 data).

- Scientific excellence: Catalonia obtains 53% of all European Research Council (ERC) grants awarded to scientists in Spain (180), 35% of which corresponds to life sciences. In terms of scientific production in life sciences, Catalonia represents 3.15% of European publications, 0.99% of global publications and 29% of publications in Spain.
- Research staff: in Catalonia there are 43,898 people working in R&D (across all sectors), of whom 25,474 are researchers. One in five researchers (21%) from Spain works in Catalonia.
- **Students:** The 11 Catalan universities that teach life sciences and health studies generate 5,500 graduates every year.
- Hospitals: Catalonia has 15 university hospitals and nine research institutes, employing approximately 5,000 researchers.

BioRegion has 734 companies: 221 biotechnological, 46 pharmaceutical, 94 innovative medical technology, 208 suppliers and engineering, 130 professional services and consulting and 26 active investment companies. The following figure shows BioRegion's ecosystem.



Figure 2. The BioRegion Ecosystem



Source: Biocat (2016)

In addition, the following figures shows BioRegion companies' operating income data.



Figure 3. BioRegion's operating income at 2014



Source: Biocat (2016)

Overall, companies in the life sciences sector employ 42,133 people. The figure below shows the number of employees by sector.



Figure 4. Employees working in BioRegion companies (2011-2014)



Source: Biocat (2016)

The distribution of BioRegion companies is shown in the following figure by territorial scope.

Figure 5. BioRegion companies geographical distribution





Medical devices section

The European medical technology industry employs more than 575,000 people. Germany has the largest share in terms of total employment. This high level of employment shows that the medical technology industry is an important part of the European economy. By comparison, the US medical technology industry employs some 520,000 people, while the European pharmaceutical industry employs 675,000 people (Source: MedTech Europe).

The following figure shows the main global and EU markets by geographical area.



Figure 6. Geographical segmentation of medical device market

Source: MedTech Europe (2016)

The European market totals approximately 100 billion dollars and represents 30% of the world market, being the second largest market in the world after the United States, which represents 40% of the world market. Its diagnostics segment is the largest in the world within the sector of sanitary devices, as shown in the following figure:





Figure 7. Market segmentation of medical devices by product type

Source: MedTech Europe (2016)

As seen in the previous figure, the in vitro diagnostic segment is expected to grow by approximately 5% during the 2012 to 2018 period.

In Europe, Member States allocate an average of 10.4% of gross domestic product (GDP) to healthcare. Of this figure, approximately 7.5% is assigned to medical technologies. Spending on medical technology varies considerably among European countries, ranging from 5% to 10% of spending. The total healthcare expenditure on medical technologies per capita in Europe is approximately \in 195 (weighted average), compared to \in 380 in the US.





Figure 8. Health expenditure per EU patient

Therefore, the EU average expenditure on in vitro diagnosis is \in 20.8 per inhabitant/year on average, bringing the total in vitro diagnostics expenditure to 10.6 billion euros per year (Source: European Union).

Meanwhile BioRegion (Source Biocat 2016) has a group of 94 companies that are part of Grupo Medical Technology, whose focus is research, development, production and marketing of medical systems and devices. Business activities in the medical technologies field also extends to: 93 companies included in the category of Suppliers & Engineering (distributors; producers of medical instrumentation; manufacturers of laboratory equipment and consumables; engineering and electronics companies), 11 biotechnology companies producers or distributors of in vitro diagnostic devices (IVD) - and 2 information technology service companies included in the Professional Services & Consulting category. In total, there are 200 companies active in the techmed sector.

The following figure shows the activity of companies that focus on medical technologies.

Source: European Union (2016)



Figure 9. BioRegion medical technology companies areas of activity (R&D)

Gràfic 24 Àrees d'activitat de les empreses de tecnologies mèdiques de la BioRegió (R+D)



Font: BiotechGate / Directori Biocat Cada empresa pot estar inclosa a més d'una categoria

Source: 2016 Biocat report

Additionally, BioRegion has another 40 companies that are active in digital health. Their focus is to apply digital technologies to health challenges; discover new mechanisms of disease; design new medicines through bioIT; create new medical services web platforms and design computer applications for health monitoring or neurorehabilitation, among many other activities.



The Pharmaceutical sector

The pharmaceutical sector is expected to reach sales of \$ 1.3 trillion in 2018 and reached the one-trillion-dollar mark in 2014 (Thomson Reuters).

The following figures show the main pharmaceutical markets by geographical area.

Figure 10. Segmentation of the pharmaceutical market by sales and geographical scope



BREAKDOWN OF THE WORLD PHARMACEUTICAL MARKET – 2015 SALES

<u>Note;</u> Europe in dudes Turkey, Russia and Ukraine

Source: IMS Health (MIDAS), May 2016 (data relate to the 2015 audited global retail and hospital pharmaceutical market at ex-factory prices)

Source: Thomson Reuters (2015)

The United States and Europe are the main markets for both new drug releases and market share (48.7% US and 22.2% EU).

At a European level, the following figures detail the evolution of the pharmaceutical industry in Europe (Source EFPIA 2016).



Figure 11. The European pharmaceutical industry in figures

	INDUSTRY (EFPIA total)	2000	2010	2014	2015
	Production	125,316	199,400	221,088	225,000 (e)
•	Exports (1) (2)	90,935	276,357	324,452	361,500 (e)
	Imports	68,841	204,824	251,427	275,000 (e)
e	Trade balance	22,094	71,533	73,025	86,500 (e)
٨	R&D expenditure	17,849	27,920	30,887	31,500 (e)
	Employment (units)	534,882	670,088	723,448	725,000 (e)
	R&D employment (units)	88,397	117,035	118,052	118,000 (c)
	Total pharmaceutical market value at ex–factory prices	86,446	153,118	183,924	192,000 (e)
	Payment for pharmaceuticals by statutory health insurance systems (ambulatory care only)	76,909	129,464	124,273	126,000 (e)

Values in € million unless otherwise stated

(1) Data relate to EU–27, Norway and Switzerland since 2005 (EU–15 before 2005); Croatia and Serbia included since 2010; Turkey included since 2011; Russia included since 2013

(2) Data relating to total exports and total imports include EU–28 intra–trade (double counting in some cases)

Source: EFPIA member associations (official figures) – (e): EFPIA estimate; Eurostat (EU–28 trade data 1995–2014)

Source: EFPIA (2016)

Following this, the pharmaceutical industry R&D expenditures at the development stage are shown in the figure below.



Figure 12. Pharmaceutical industry R&D expenditures by development stage



ALLOCATION OF R&D INVESTMENTS BY FUNCTION (%)

Source: EFPIA (2016)

The above expenses include the necessary costs in the scenario a molecule has a problem-free development. In addition, according to bibliographic data, it takes between 12-13 years to develop a drug, and the cost is approximately \in 1.926 billion. While on average, only between 1 and 2 molecules out of 10,000 synthesised in laboratories will make it to market.

It should be noted that these values are high because they also include all the molecules that do not make it to market.

Meanwhile, as mentioned above, the turnover of BioRegion pharmaceutical companies is \in 6.852 billion. The areas of activity of the BioRegion companies that work in therapies and diagnosis are shown below:



Figure 13. Areas of activity of the BioRegion companies that work in therapies and diagnosis





Font: Directori Biocat Cada empresa pot estar inclosa a més d'una categoria.

Source: Biocat (2016)

The therapeutic areas in which BioRegion biotechnology and pharmaceutical companies mainly work, are shown in the following figure:



Figure 14. Therapeutic areas in which BioRegion biotechnologies and pharmaceuticals work

Gràfic 22 Àrees terapèutiques en què treballen biotecnològiques i farmacèutiques de la BioRegió



Font: BiotechGate / Directori Biocat Cada empresa pot estar inclosa a més d'una categoria

Source: Biocat (2016)



3.1.2. IISPV Competitors

As indicated in the Biocat 2015 report, Catalonia has 780 research groups working in the life sciences and health fields, totalling 47% of the 1,652 consolidated research groups in these areas (2014 to 2016).

The same report states that the 41 research centres working in biosciences and related subjects have a total workforce of 8,716 people, including 5,499 researchers. Additionally, the global annual budget of the 44 CERCA centres combined, total \in 400 million; 32 of these 44 centres are active in the life sciences. The Generalitat Government funds approximately 40% of its resources.

The following figures show the centres that are completely and partially dedicated to disciplines focused on health sciences.



Figure 15. BioRegion companies geographical distribution

Taula 2. Centres de recerca de la BioRegió que treballen en biociències i disciplines vinculades

Centre	Dependència
Centre de Medicina Regenerativa de Barcelona (CMRB)	CERCA
Centre de Recerca en Epidemiologia Ambiental (CREAL)	CERCA
Centre de Recerca Matemàtica (CRM)	CERCA
Centre de Regulació Genòmica (CRG)	CERCA
Centre de Visió per Computador (CVC)	CERCA
Centre Internacional de Métodes Numérics en Enginyeria (CIMNE)	CERCA
Institut Català de Recerca de l'Aigua (ICRA)	CERCA
Institut Català d'Investigació Química (ICIQ)	CERCA
Institut de Bioenginyeria de Catalunya (IBEC)	CERCA
Institut de Ciències Fotòniques (ICFO)	CERCA
Institut de Física d'Altes Energies (IFAE)	CERCA
Institut de Medicina Predictiva i Personalitzada del Càncer (IMPPC)	CERCA
Institut de Recerca Biomèdica de Barcelona (IRB Barcelona)	CERCA
Institut de Recerca Biomédica de Lleida (IRB Lleida)	CERCA
Institut de Recerca Contra la Leucèmia Josep Carreras (IJC)	CERCA
Institut de Recerca de la Sida (Irsi-Caixa)	CERCA
Institut de Recerca en Energia de Catalunya (IREC)	CERCA
Institut de Recerca i Tecnologia Agroalimentàries (IRTA)	CERCA
Institut de Salut Global de Barcelona (ISGlobal)	CERCA
Institut d'Investigació Biomèdica de Bellvitge (IDIBELL)	CERCA
Institut d'Investigació Biomèdica de Girona Dr. Josep Trueta (IdiBGi)	CERCA
Institut d'Investigació Biomèdica Sant Pau (IIB Sant Pau)	CERCA
Institut d'Investigació en Ciències de la Salut Germans Trias i Pujol (IGTP)	CERCA
Institut d'Investigació Sanitària Pere Virgili (IISPV)	CERCA
Institut d'Investigacions Biomèdiques August Pi i Sunyer (IDIBAPS)	CERCA
Institut Hospital del Mar d'Investigacions Médiques (IMIM)	CERCA
Vall d'Hebron Institut de Recerca (VHIR)	CERCA
Vall d'Hebron Institut d'Oncologia (VHIO)	CERCA
Centre de Recerca en Agrotecnologia (Agrotecnio)	CERCA/UdL
Centre de Recerca en Agrigenòmica (CRAG)	CERCA/CSIC
Institut Català de Ciències Cardiovasculars (ICCC)	CERCA/CSIC
Institut Català de Nanociència i Nanotecnologia (ICN2)	CERCA/CSIC
Institut de Biologia Evolutiva (IBE-CSIC-UPF)	CSIC
Institut de Biologia Molecular de Barcelona (IBMB-CSIC)	CSIC
Institut de Ciència de Materials de Barcelona (ICMAB-CISC)	CSIC
Institut de Diagnòstic Ambiental i Estudis de l'Aigua (IDAEA-CSIC)	CSIC
Institut de Microelectrònica de Barcelona. Centre Nacional de Microelectrònica (IMB-CNM-CSIC)	CSIC
Institut de Química Avançada de Catalunya (IQAC-CSIC)	CSIC
Institut de Robòtica i Informàtica Industrial (IRII-CSIC)	CSIC
Institut d'Investigació en Intel·ligència Artificial (IIIA-CSIC)	CSIC
Institut d'Investigacions Biomèdiques de Barcelona (IIBB-CSIC)	CSIC

Source: Biocat (2016)



The IISPV is an essential part of the Catalan biomedical research ecosystem, and more specifically is the framework that brings together University Hospitals and related research institutes. On this basis Biocat attributes the following characteristics to this group.

The Catalan hospital system includes 195 establishments, of which, 65 are publicly owned hospitals (13 of which are university hospitals), 36 private (2 of which are university hospitals), 62 social-health entities (working with government funding), 17 psychiatric and social-health institutions (working or not with government funding) and 15 psychiatry institutions (working with government funding).

The group employs more than 89,000 individuals, of which approximately one third work at the 15 university hospitals.

The 15 hospitals and the 9 associated research institutes contract approximately 5,000 researchers. Likewise, the hospitals and their institutes produce 32% of published scientific papers (2007-2011), contract 24% of the accredited research groups in the life sciences and health fields and generate 7% of patents applications filed with the OEPM (figures for 2014).

Thus, the IISPV can consider the following biomedical institutions to be competitors, within a Catalan context - understanding a competitor to be an entity that has competing resources or provides similar services to the scientific community and industry:

- Health research institutes:
 - University Hospital Vall d'Hebron Research Institute (UHVH-RI)*
 - Bellvitge Biomedical Health Research Institute (BBHRI)*
 - Germans Trias i Pujol Biomedical Health Research Institute (GBHRI)*
 - Clinical Hospital Agustí Pi i Sunyer Biomedical Research Institute (ABRI)*
 - Hospital Santa Creu i Sant Pau Research Institute*
 - Lleida Biomedical Research Institute (Lleida BRI)*
 - Hospital del Mar Biomedical Research Municipal Institute (BRMI)*
 - Girona Dr. Josep Trueta Biomedical Research Institute (GBRI)*
 - Parc Taulí University Institute Foundation BAU

^{*} Health Research Institutes accredited by the Carlos III Health Institute.



Although these entities may be classified as competitors, a significant amount of collaboration takes place between the different agents and they often work together in joint projects, given that the aim of all these health institutions is to improve the well-being and general health of its users. An example of the collaboration and integration between these Institutions is the IRISCAT initiative.

At the state level, the competition focuses mainly on university hospitals and their research foundations. The following are some examples:

- Hospital Gregorio Marañón, Foundation for Biomedical Research (GMFBR)
- University Hospital La Paz, Foundation for Biomedical Research (UHLPFBR)
- University Hospital 12 de Octubre, Foundation for Biomedical Research
- Hospital Virgen del Rocío, Foundation for Biomedical Research
- Hospital La Fe in Valencia, Foundation for Biomedical Research
- Hospital de Cruces
- Santiago de Compostella, Foundation for Biomedical Research

3.2. Technological scientific policies within the health context

The research activity carried out by the IISPV falls within an organisational framework of autonomous community, state, European and private levels.

The purpose of both public and private research investment initiatives is to increase the capacity to generate knowledge. The main European and state planning instruments used to achieve this purpose are the EU Framework Programme for Research and Technological Development (H2020), the Strategic Action in Health initiative, the National Plan for R&D (NP) and the 2016-2020 research and innovation in health Strategic Plan (RIHSP) programmes. Meanwhile, the regional governments also have access to research policy planning instruments: the Catalonian Research and Innovation Plan (CRIP) and the National Pact for Research and Innovation.

The following table details the chronology of actions carried out in the Spanish and Catalan context that have contributed, and continue to contribute, to bringing together hospital or mixed research groups and universities.



Table 1. Chronological evolution of the most significant Catalan or Spanish institutions that have driven biomedical research

YEAR		EVOLUTION OF BIOMEDICALRESEARCH	
	1980	Creation of the Health Research Fund (FIS)	
		Constitution of the National Institute of Health (INSALUD)	
		♥ Ministry of Health and Consumption	
		Creation of the Interdepartmental Commission for Research and Innovation (CIRIT) with the support of the Institute of Catalan Studies (IEC)	
		Ļ	
		Department of Economy and Finance	
	1981	Creation of the Catalan Institute of Health (ICS) - Dept. Health - Generalitat de Catalunya	
	1990	Constitution of the Carlos III Health Institute (ISCIII)	
	1991	Creation of the Catalan Health Service - Department of Health - Generalitat de Catalunva	
	1992	Creation of the Directorate General for Ordering Research and Training (DGOIF)	
	2001	Establishment of the Agency for Management of University and Research Grants (AGAUR) - Department of University and Enterprise Innovation	
	2002	Start of the program of Thematic Naturarks for Cooperative Research	
	2002	in Health (RETICS) - ISCIII	
	2004	Constitution of the DisDegion Foundation of Catalonia (Constaliant do	
	2004	Catalunya and Barcelona City Council)	
		Dromotion of Dublic Administrations for the establishment of	
		Institutes of Health Research.	
	2005		
	2006	(CIBER) - ISCIII	
	2007	Law 14/2007 of biomedical research	
	2009	Accreditation of the first institutes of health research for the ISCIII	
	2014	European call, HORITON 2020 publication	
	2015	Creation of RIS3CAT communities	
	2017	Call for proposals Strategic Plan for Research and Innovation in Health (PERIS)	

Source: Own preparation (2017)



3.3. The Camp de Tarragona and Terres de l'Ebre context

The Camp de Tarragona and the Terres de l'Ebre areas have recognised business operations in the field of chemistry, food and health. Specifically for chemistry, more than 45% of all chemical production in Spain is produced in Tarragona, and specifically for health, various hospitals, some of them university hospitals, also carry out teaching and research activities and have primary assistance centres.

The hospitals in Tarragona and the Terres de l'Ebre area are:

- University Hospital Tarragona Joan XXIII
- University Hospital San Joan de Reus
- Psychiatric University Hospital Pere Mata
- Hospital Tortosa Verge de la Cinta
- Hospital Sant Pau i Santa Tecla
- Hospital Pius de Valls
- Regional Hospital Móra d'Ebre
- Hospital del Vendrell

Additionally, the territory has the following scientific and technological parks and CERCA centres:

- Scientific and Technological Park of Tarragona, specialised in chemistry and chemical engineering, and complemented by a high-quality chemical and industrial hub. The Technological Centre of Chemistry of Catalonia (TCCC) and the Technological Centre of Amposta fall under the Eurecat umbrella.
- The Catalan Chemistry Research Institute (CCRI), a centre of reference in catalysis and renewable energies and a CERCA recognised centre.
- Nutrition and Health Technology Centre (NHTC), part of Eurecat: This centre focuses on nutrition and health, and the activities it carries out include technical assistance, R&D projects and technological services for companies. These services include providing consultation in accordance with current regulations and the verification of the efficacy of foods, extracts, nutraceuticals and/or functional ingredients.



- The Tourism and Leisure Science Technology Park has two missions: to become an international tourism knowledge-economy hub and to create the ideal environment for R&D in tourism investment.
- The Oenology Industry Science and Technology Park aims to promote coherence between the science-technology-business axes in the wine sector and promote R&D activities into areas the sector has identified as priority, while generating technological and specialised services that add value

The main objective of the strategy developed by the RVU in collaboration with the Southern Catalonia Campus of International Excellence (SCCIE), is to provide the territory with a knowledge structure that is internationally visible and recognised, cohesively consolidating the territory and the institutions and agents within the area, including the IISPV. The SCCIE is structured into five strategic sub-campuses; one of them is the nutrition and health campus.

Thus this context is favourable to developing competencies and strategic actions to consolidate IISPV's activity.

The institutions that comprise the IISPV are those shown in the following figure:



Figure 16. Map of Institutions that comprise the IISPV



Source: Own preparation 2017


3.4. SWOT analysis

It was decided a SWOT analysis of the general environment was essential in this section. The external macroenvironment is schematically explored and an analysis of the political/legal, economic, social and technological factors (PEST) is conducted.

A PEST analysis was carried out based on the information obtained, as shown in the following table:

POLITICAL FACTORS	ECONOMIC FACTORS
 Legislation (Law) Regulations (protocol) Government plans and projects Growing power of pressure groups (government, patients) Grouping research centers (IRISCAT) 	 Necessity of control of health expenditure Difficulties to access public funding Role of the pharmaceutical industry Corporate social responsibility Increase in competition for financing Limitation of the contributions of the partners Patents, licenses, translationality as a result of the search Globalization
Р	EST
SOCIAL FACTORS	TECHNOLOGICAL FACTORS
 Demography Lifestyles or trends Greater prevalence of chronic diseases and / or related to aging Increase in demand for health services Value of the image of biomedical research Involvement of patients in the treatment of their diseases Alliance between patients, professionals and training 	 Integration of the different technologies Application of new information technologies Acceleration of the obsolescence of medical technology Integration of the value chain in the health sector

Table 2. IISPV PEST analysis

Source: Own preparation (2017)

The result of the PEST analysis can be used to identify what aspects have been influential in the past and to what extent they may continue to do so in the future. These aspects will be helpful to define the IISPV strategic objectives discussed in point 7 of this document.

3.5. Society requirements



In general, the population's health needs include:

- Prevention and control of acute diseases
- Prevention and control of chronic diseases
- Increase in life expectancy and aging.
- Increase in the quality of life
- Increase in global well-being
- Greater empowerment of patients in the management of their illness
- Promotion of health prevention policies.
- The Tarragona request to be considered is:

The population in this area is clearly aging and there has been a certain stagnation in the number of births in the last 10 years. This has resulted in a decrease in the under-15 population and a marked increase in users over 65. The population is expected to grow globally by 22% during the 2008-2021 period ("Projections of the Catalan populations from 2021 to 2041", 2009).

This is why one of the IISPV's objectives is to redirect focus to patient and disease research, in accordance with established priorities identified by the IISPV and framed within the H2020, RIHSP and ISCIII Strategic Action in Health programmes, in addition to clinical practice and health services research.



3.6. Requests for business research and innovation

Regarding business innovation, the technological field in which IISPV's activity is carried out is biomedicine and health technologies. The characteristics of these markets were described earlier in this document.

The health sector and its associated technologies currently cover a wide range of end markets, ranging from ICT to biomedicine and medical devices.

This means that the possibilities of valuing and transferring technology and knowledge to the industrial sector are wide ranging, but the most appropriate strategy to do that has not yet been identified, as it depends on the end market to which they are directed.

According to the BioRegion (BioCat) Foundation, the Catalan medical technologies sector presents the following trends:

- Convergence between sectors, i.e. the traditional boundaries between the different life and health sciences sectors (suppliers, pharma, biotech, tecmed, digital health) are blurring.
- Each subsector must respond to new challenges. Each of the subsectors (suppliers, pharma, biotech, tecmed, digital health) is experiencing new challenges. Over the next decade, much talent (intelligence) soft skills (collaboration and interdisciplinary work), and multidisciplinary will emerge to respond to the new demands and trends of the health sector.
- Collaboration as a lever for a new configuration of the ecosystem. On this basis, those who collaborate more will be better placed to generate and deliver value and also capture value. The sustainability of health systems and cities-regions-countries as axes of economic development in the future will depend on this collaboration.

In this sense, the general promotion of knowledge based on freedom of research, is an indispensable pillar that must continue to support the Catalan science and technology system.



4. ANALYSIS OF THE INTERNAL SITUATION

4.1. **IISPV** origin and structure

This internal analysis is based on an assessment of the IISPV and its institutions' activity and research results from over the last five years. This section aims to define the positioning of the Institute, from the perspective of both its organisational structure and its research aims, in order to identify its capabilities, strengths, weaknesses, opportunities and threats.

To do this, the following is necessary:

- Define the IISPV.
- Quantify its available HR.
- Quantify its infrastructures.
- Determine funding sources and quantify the volume of funding.
- Determine priority research areas.
- Outline the activity developed by the IISPV.

4.1.1. **IISPV** origins

To analyse the origin and transformation of the institutions that made the IISPV possible, we need to look back almost fifty years. At the end of the 60s of last century, the Social Security opened Hospital Joan XXIII (HJ23) in the city of Tarragona, a centre that quickly went on to attain accreditation to train internal and resident doctors (IRDs). A few years later, 2 operating large hospital in the city of Reus (Hospital de San Juan [HSJR] and Pere Mata Institute [IPM]) began their transformation into hierarchical hospitals, with an efficient and modern care and management structure, also attaining accreditation to train IRDs. During that time, in 1977, the University of Barcelona established its Faculty of Medicine (which would later go on to add "and Health Sciences" to its name) in Tarragona.

This period was the beginning of a continuous joint collaboration between the University of Barcelona and the three mentioned hospitals, whose purpose was to promote teaching and research in the health sciences.

The department of Medicine Studies is established in Reus in 1981, and on December 30th, 1991 the Catalan Parliament approves Law 36/1991, paving the way for the construction of Rovira i Virgili University (DOGC, January 15th, 1992). This law determined that the Rovira i Virgili University (RVU) was responsible for integrating and organising the different university courses



currently taught in its regions, including those in the Faculty of Medicine and Health Sciences.

In 1984 the Ministry of Health recognised the Clinical Research Unit at the Reus, RVU San Juan Hospital Faculty of Medicine and Health Sciences, as a unit of the REUNI (network of units recognised by the FIS). That year, the Joan XXIII Hospital Research Unit is also recognised as a unit of the REUNI.

In 1993, collaboration agreements were signed between the RVU and HJ23, and the HSJR and IPM, establishing commitments between the institutions to promote, cooperate and foster teaching, assistance and research in the field of health and medicine. With these agreements, the three hospitals became university hospitals and changed their name: University Hospital San Juan de Reus (UHSJR), Psychiatric University Hospital Pere Mata Institute (PUHIPM) and University Hospital Tarragona Joan XXIII (UHJ23). Foundations were created around these hospitals aimed at specifically managing research activities and funds: the Joan Abelló Foundation in Reus and the Joan XXIII Hospital Private Foundation in Tarragona. In the city of Tortosa, the Dr. Ferran Foundation was created for the Hospital Tortosa Verge de la Cinta (HTVC). Research groups and areas were established as well as specific research laboratories for the two general university hospitals.

In December 1995 the Jordi Gol i Gurina Foundation was set up to plan and promote research in the primary care field in Catalonia, which was the first of its kind in Spain. After more than 10 years working to consolidate research teams and encourage and foster the creation of new research groups, in 2000 the Foundation was renamed the Jordi Gol Primary Care Research Institute (Jordi Gol PCRI).

With the intention of creating a structure to reorganise and improve the management of resources in the field of research in Reus, in 1997 discussions began between the Reddis Private Foundation, PUHIPM, UHSJR and RVU culminating in 1999 with the creation of the Research Institute in Health Sciences Foundation (RIHSF). For years, the RIHSF has managed and strengthened biomedical research and scientific production in the city of Reus. The results are found in the scientific research reports that have been published. The Joan XXIII Hospital Private Foundation in Tarragona has the same objectives.

In 2004, the RVU, Catalan Institute of Health (hereinafter, CIH), Grupo Sagessa (entity that manages the UHSJR) and Grupo Pere Mata (entity that manages the PUHIPM) signed an agreement of intention to create a health



research institute whose purpose was to promote, develop, manage and disseminate health and biomedical research and research training in the field of health sciences, with a specific focus on the Camp de Tarragona and the Terres de l'Ebre region. The result of this agreement was the creation of the Pere Virgili Health Research Institute Private Foundation, registered on May 29th, 2006 in the Generalitat of Catalonia Foundations Register as number 2206.

Through an addendum to the agreement signed in 2004, the signatory institutions committed themselves to ensuring the Hospital Joan XXIII Foundation and the RIHSF Foundation Board of Trustees subrogate their activities to the IISPV. The Joan XXIII Hospital Foundation approved the transfer of all its activity (contracts, projects, clinical trials and provision of services, under the same conditions as the aforementioned institution) on December 5th, 2007. For its part, the RIHSF Foundation Board of Trustees, in execution of the addendum signed in 2004, approved the transfer in a December 18th, 2007 session, for December 31st, 2007. Likewise, in a December 21st, 2007 meeting, the IISPV Board of Trustees approved the subrogation of activities managed by the RIHSF from January 1st, 2008. As a result, the IISPV took over all contracts, projects, clinical trials, post-authorisation studies and, in general, all the transfer, research and provision of services activities from the RIHSF under the same conditions with which this institution operated.

In 2009 agreements were signed with CIBER centres, where the IISPV converts two of them into a consortium: CIBERobn (Centre for Biomedical Research in the Pathophysiology of Obesity and Nutrition Network) and CIBERdem (Centre for Biomedical Research in the Diabetes and Associated Metabolic Diseases Network).

On December 23rd, 2010, the IISPV Board of Trustees approved modifications to its founding statutes. This reform allows Generalitat of Catalonia political actors, who work in the health and research departments, to participate on the Board. As specified in the Statutes, the IISPV is responsible for promoting, developing, transferring, managing and disseminating research, scientific and technological knowledge, teaching and training in the field of life sciences and health, mainly in the Camp de Tarragona and the Terres de l'Ebre region. Its purpose is also to promote and strengthen relations and the exchange of knowledge between researchers and research groups belonging to the various centres and entities in the biomedical field that act mainly in the Tarragona context; promote collaboration with other institutions and entities, while



prioritising the execution of joint projects; raise funds to finance research activities of interest to those centres and systems, and manage resources available to the research studies entrusted by its various institutions and entities.

The chronological evolution of the IISPV is shown in the following table:



Table 3. Evolution of IISPV creation

YEAR	EVOLUTION OF THE CONSTITUTION OF THE IISPV
Previous	Hospitals with MIR accreditation:
	Reus: Hospital Sant Joan de Reus (HSJR)
	Institut Pere Mata (IPM)
	Tarragona: Hospital de Tarragona Joan XXIII (HJ23)
	Tortosa: Hospital de Tortosa Verge de la Cinta (HTVC)
1077	
1977	Creation of the faculty of medicine by the University of Barcelona, as
	(האנא, האבא, ואויז)
1981	Establishment of medicine studies in Reus
1901	
1984	Recognition of experimental clinical research units HJSR and HJ23 as a
	REUNI unit
1991	Creation of the Rovira i Virgili University. Integrates the Faculty of
	Medicine as a university education
1993	Signature of a collaboration and commitment agreement between the
	URV, HSJR, HJ23 and IPM for the promotion, cooperation in teaching,
	assistance and research in the field of health and medicine.
	As of that moment, they become university hospitals
	Constitution of the Dr. Foundation Ferran (HTVC)
	constitution of the Dr. Foundation remain (mixe)
1996	Establishment of the Private Foundation of the Joan XXIII University
	Hospital (FHUJ23)
1998	Creation of the teaching units of the FMICS in the university hospitals
	HUSJR and HUTJ23
1999	Establishment of the IRCIS Foundation (Private Foundation REDDIS,
	HPUIPM, HUSJR and the URV)
2004	LIDV JCC Crups Segress, Crups Pers Mate and LITVC sign an
2004	ORV, ICS, Grupo Sagessa, Grupo Pere Mata and HTVC sign an
	agreement of intent to create a health research institute
2005	Constitution, registration and drafting of the statutes and
2000	appointment of the scientific director of the IISPV
2008	Subrogation of activity FHUJ23
	IRCIS liquidation and transfer of activity
2012	CERCA Center

Source: Own preparation (2017)



4.1.2. IISPV structure

The following figure shows the evolution of the IISPV structure in regard to its hospital, teaching and research units. The structure assigns the Institute the responsibility of managing and designating health and biomedical research activity and research training, mainly in the Camp de Tarragona and Terres de l'Ebre region.

Figure 17. IISPV institutional structure and management model



Source: The role of the autonomous communities in the accreditation of Health Research Institutes (2008) and own preparation (2017)



4.2. IISPV organisation

The IISPV is organised following the government structure below:





Source: Own preparation (2017)

The Board of Trustees is the Foundation's governing and administrative body, it represents and manages the Foundation and assumes all the faculties and functions needed to cover the foundation's stated objectives.

The Board of Trustees appoints, from among its members, a Delegated Commission comprising 7 members. The Delegated Committee informs the Board of any activities conducted.

The External Scientific Council is the body responsible for advising on the Foundation's scientific activities and of ensuring its scientific quality. This body does not hold, in any case, management or representation functions.

The purpose of the Internal Scientific Council is to advise the Directorate. This body does not hold, in any case, management or representation functions.

The Directorate:



The Director must lead, organise and manage the Institute's research activities, among other functions. The Director is appointed by the Board.

The Steering Committee is the advisory body to the Director, its composition and functions are regulated by the Steering Committee Regulation approved by the Board.

Various other Working Committees emerge from the Steering Committee:

Figure 19. IISPV committees



Source: Own preparation (2017)

Management: The person responsible for Management is appointed by the Board of Trustees, where the Director may put forward a name. This role's functions include the financial management of the Institute and the preparation of its annual accounts, among others.

The functions and composition of the bodies described are specified in the IISPV's Statutes and Internal Operating Regulations.

4.3. **IISPV** researchers and research groups



IISPV's researchers, research support personnel and research groups are an essential pillar of the research activity carried out within the IISPV, its reason to exist.

The IISPV defines its researchers as associate researcher and ascribed researcher.

An ascribed researcher:

- Is a member of the staff of any of the institutions that comprise the IISPV or of another health institution after its evaluation by the Steering Committee.
- Has the title of doctor.
- Has published at least 5 scientific (original articles) papers in a journal with impact factor in the last 5 years. These 5 papers must have been published in journals that are in at least the 1st or 2nd quartile ranking for their speciality according to Journal Citation Reports.
- Participates as a main researcher or collaborator in a research project with competitive funding (current or in the last 3 years).

An associate researcher:

- Is a member of the staff of any of the institutions that comprise the IISPV or of another health institution after its evaluation by the Steering Committee.
- Is a main researcher in a clinical trial or collaborates in a research project.



There are currently 55 ascribed researchers and 230 associate researchers. The document of criteria, procedures and benefits for IISPV researchers is attached as Annex I

Figure 20. IISPV researchers Source: Own preparation (2017)

The IISPV defines a research group as a group of researchers working under

the direction of a team leader on joint projects and publications.



Research groups are the engine of IISPV's scientific development. The IISPV research groups programme approved by the External Scientific Committee and the Institution's Board of Trustees, categorises the groups and criteria. The same programme also includes the steps to be taken to request access to the IISPV as a research group, results to be achieved and their evaluations.

The IISPV has categorised two research groups:

Consolidated research groups

- Groups structured around an Ascribed Researcher working on a specific topic, which can be accredited by publications, grants and joint projects.
- The group can comprise one or more ascribed researchers.
- The group must have a stable and continuous scientific experience of more than 5 years.
- The team leader must be a Main Investigator of at least one competitive research project (current or in the last three years).
- They must have produced consolidated and stable publications, accredited by articles published within the last 3 years that are indexed to the original SCI with an accumulated Impact factor greater than 35.

Emerging research groups

- Groups structured around an Ascribed Researcher working on a specific topic, which can be accredited by publications, grants and joint projects.
- The group can comprise one or more ascribed researchers.
- The group leader must have a stable and continuous scientific experience of more than 3 years.
- The group leader must have published at least 2 scientific papers per year during the last 3 years.
- The head of the group must have a proven ability to obtain public or private resources for research.
- The group must not have more than 10 years' scientific experience.

The IISPV Research Groups Programme is attached as annex II



Figure 21. IISPV consolidated and emerging research groups



Source: Own preparation (2017)

The following image shows the research groups categorised into consolidated and emerging.

4.4. Strategic areas

During 2015 and 2016 there has been a qualitative and quantitative change in IISPV's research activity. The strategic areas were evaluated, redefined and prioritised. This task was achieved thanks to an exhaustive analysis of the





projects, scientific production, transfer and ascribed and associated researchers in each area.

This study was also applied to the research groups, redefining the IISPV research groups map.

The Board of Trustees, External Scientific Committee, Steering Committee and Internal Scientific Committee approved the prioritisation of the strategic areas and the new research groups map.

Figure 22. IISPV strategic and research areas



Source: Own preparation (2017)

The following research areas are considered priority. They include biomedical and public health issues, new technological interests, maintenance of users' health and improvement of the health services available.

Below is a map of the Institute's research groups categorised into their strategic area:



Figure 23. Map of IISPV research groups



Source: Own preparation (2017)



Correspondingly, given that the IISPV has been commissioned by health institutions and the University to manage, disseminate and promote all the biomedical research carried out in the territory, the scientific production carried out by researchers and groups not included in these four strategic areas has been categorised in the "Other areas of biomedical research" section.

Figure 24. Other research areas groups

Other areas of research

- Solid tumors: clinical and molecular pathology
- Oncology and bioinformatics pathology

Source: Own preparation (2017)

Likewise, given that the IISPV agglutinates and is responsible for all the biomedical research that is carried out in the region, the groups that do not comply with consolidated or emerging group criteria are considered IISPV associate groups.

The following figure shows the number of consolidated and emerging research groups according to strategic areas:







Source: Prepared by IISPV (2017)



4.5. Technical office

The human capital available to IISPV for the operation of its technical office is described in the Institute's job description document.

The following lists the services the Technical Office offers its researchers:

Figure 25. Technical office



Source: Own preparation (2017)

The Technical Office has two locations:

- One is located in the University Hospital Tarragona Joan XXIII, Modular de Docencia e Investigación Building.
- The other can be found in the Rovira i Virgili University, Docencia e Investigación Building.

The resources used as software to manage R&D activity and document the research results are:

- FÈNIX, accounting and treasury management software.
- A3NOM, intended for the management of contractual relationship with employees (administration of persons).



4.6. Description of structural resources and research space

As explained in point 4.1. "IISPV origin and structure", the IISPV needs spaces to carry out its research.

To this end, the IISPV signed an agreement with all its institutions, establishing specific mandates to manage those institutions' spaces and facilities. Currently, work is being conducted in research spaces at the University Hospital Joan XXIII and University Hospital Sant Joan de Reus. The IISPV Action Plan for Research Spaces and Infrastructure will be updated with future changes. All the research spaces are highlighted in the buildings plans to facilitate their visibility and identification.

IISPV facilities related to research and teaching are detailed in the following table.

Type of facility	Laboratory	Teaching	Technical office
UHSJR	Х	Х	Х
UHTJ23	Х	Х	Х
PUHIPM	Х	Х	
HTVC	Х	Х	
RVU	Х	Х	Х

Table 4. IISPV facilities for research and teaching

Source: Own preparation (2017)

In addition to the aforementioned spaces, there are other spaces that can also be used, which are duly included in the IISPV's Occupational Risks Plan.



IISPV cross-sectional platforms:

Figure 26. IISPV cross-sectional platforms



Source: Own preparation (2017)

IISPV Biobank is Pere Virgili Health Research Institute (IISPV) cross-sectional services platform. The platform is made up of two biobanks, authorised by the Generalitat of Catalonia on September 10th, 2013, and registered in Carlos III Health Institute's National Biobanks Registry:

- IISPV Biobank University Hospital Joan 23 (UHJ23-IISPV), B.0000853.
- IISPV Biobank University Hospital San Joan de Reus (IISPV-UHSJR), B.0000854.

The IISPV Biobank is defined as a biobank network with one Coordination Nucleus and three operational nuclei.

The Clinical Studies Unit (CSU) is a crosssectional platform which the IISPV makes available to all its researchers to support research activities.



The CSU offers a comprehensive services programme for researchers of the supervised centres, from the start of the project until its completion, for the promotion of clinical trials and development of clinical research projects, guaranteeing interest in and competitiveness of IISPV biomedical research. The **Data Analysis** Platform supports the researcher in different ways:

Multivariate data analysis





- Application of statistical tests to biodata
- Prediction
- Editing of scientific material
- Providing support for defining and writing up research projects

4.7. IISPV interaction with other institutions and entities

The IISPV is committed to state-of-the-art biomedical research and seeks to apply its scientific advances into improving people's health. One of the objectives of dissemination and communication is to emphasise the link between agents, society and science.

4.8. Associations with the foundations and entities that finance research

The IISPV and its institutions have recently been encouraging collaboration between their research groups and groups from other centres through participation in cooperative research networks in health (CRNH), biomedical research centres (CIBER) and recognised research groups (RRG), among others. UHTJ23 and UHSJR have been recognised as Clinical Research Units (REUNI) since 1984.

Of the 21 IISPV groups, the majority belong to stable competitive research structures, and are distributed as follows:

- **CIBER:** CIBER is comprised of 5 IISPV groups 5 CTRED which are categorised into the following areas: Diabetes and Associated Metabolic Diseases, Pathophysiology of Obesity and Nutrition and Mental Health. **TNCHR**: 1 group belonging to the AIDS Network PLATFORMS: The IISPV collaborates with the
- Biobank Platform and the Innovation Platform in Medical and Health Technologies

CIDER	5
CIBERDEM	3
CIBEROBN	1
CIBERSAM	1
RETICS	1
RIS	1
PLATAFORMAS	2
Biobanco	1
Itemas	1
SGR	16

- **Recognised AMURG research groups:** (Agency for Management of University and Research Grants)
 - Generalitat of Catalonia. There are 16 IISPV research groups.

IISPV research groups mainly work with the following funding public agencies:

ISCIII 100



- MEIC
- Department of Health
- AMURG
- European Commission
- Local organisations

IISPV research groups mainly request projects with the following foundations:

- TV3 La Marató Foundation
- European and international foundations
- Others

IISPV has a policy of collaborative research, cooperation and internationalisation which it promotes across all its sections.

4.8.1. Associations with external structures and research groups

Many IISPV research groups collaborate, either sporadically or continuously, with external organisations. Some examples:

- The Catalan Family and Community Medicine Research Group
- The Spanish Breast Cancer Research Group (SBCRG)
- The Spanish Group for the Treatment of Digestive Tumours (TDT)
- The Spanish Lung Cancer Group (SLCG)
- The Germinal Group (GG)
- The Spanish Group for the Study, Treatment and Other Experimental Strategies of Solid Tumours (SOLTI)
- The Catalan and Balearic Psycho-oncology Group (CBPOG)

The IISPV research groups also collaborate with European and international networks:

- Antiretroviral cohort (ART-CC) collaboration (EU)
- Collaboration of Observational HIV Epidemiological Research Europe (COHERE) (EU)
- Strategy to Control the SPREAD of HIV Drug Resistance (SPREAD) (EU)
- Optimising testing and linkage to care for HIV (OptTest) (UE)
- HIV Cohorts Analysed Using Structural Approaches to Longitudinal Data (HIV-Causal) Collaboration (NIH)
- The Epidemiology and Registration of Cancer in Latin Language Countries Group



- European Network of Cancer Registries
- International Association of Cancer Registries
- Public Health Practitioner, Health Improvement Division
- Collaborations within a European framework of projects financed by the EU.

This type of relationship translates into scientific collaborations, research projects, scientific production and collaborations in conferences, etc.

4.8.2. Associations with scientific and other types of societies

In addition to collaborative research and interacting with other external research structures, ISCIII research groups collaborate with other scientific societies and committees.

Below are some examples of these collaborations:

- Alliance for Patient Safety. Generalitat de Catalunya
- European Cancer Prevention Organisation (ECP)
- European Society of Clinical Microbiology and Infectious Diseases
- Catalan Intensive and Critical Medicine Society (CICMS), since 2007
- Catalan Internal Medicine Society
- Institute of Catalan Studies, Catalan Nutrition Centre (ICSCNC)

4.8.3. Associations with the industrial sector

The IISPV works with pharmaceutical and biomedical companies within the following areas:

- Clinical Trials
- Pharmaceutical
- Biotechnology
- Diagnosis
- Food (nutrigenomics and functional foods)
- Medical devices (health technologies)
- ICT
- Chemistry

4.8.4. Associations with society

IISPV researchers maintain alliances with representatives and structures of the social fabric through:



- Associations with regional municipalities
- Associations with the Regional Council of Tarragona
- Associations with non-university education institutes
- Associations with patient organisations
- Associations with the media

4.9. Scientific production

This section of the Strategic Plan describes and evaluates, using a standardised bibliometric index (Journal Citation Reports), the scientific production the Institute has generated in recent years.

The following graphs show the evolution of the Institute's impact factor and number of articles it has published, which is also analysed by strategic area.





Source: Prepared by IISPV (2017)



The following figure shows the evolution of scientific production by quartiles:





Source: Prepared by IISPV (2017)

The above figure on the distribution of publications by quartiles confirms that every year, more than 50% of the papers published are done so within the 1st quartile.

More than 75% of publications are published in the 1st and 2nd quartile, showing that the research published is of excellent quality.

It is worth noting that in 2016, 23% of publications fell into the first decile.





Figure 4 Impact factor (2014-16) according to strategic areas of research

The scientific production reflected in the previous figures are categorised by strategic areas of research defined by the IISPV: nutrition and metabolism, neurosciences and mental health and health and the environment. The figures show that Nutrition and Metabolism is the area where production is highest, followed by Health and the Environment. This is influenced by the number of research groups in each aforementioned area.

With regard to positioning, the following tables describe the positioning of the IISPV within the Catalan biomedical bibliometric map. Firstly, the positioning of the centres for their category will be shown.

Figure 27. Bibliometric indicators according to the organisational structures

INDICADODEC	CECUM ECTRUCTI	IDAC ODCANIZATIVAC
	SECTIVES BUILT	IRAS DRI-ANIZATIVAS
INDICADONES	JEGON ESTRUCT	

Estructura Organizativa	Docs	Citas	RCI	HCP	RHCP	Int	Mul
CERCA	32.178	801.059	1,140	818	2,542	34,5	3,0
Centros Acreditados ISCIII	30.489	773.208	1,145	793	2,601	34,5	3,1
ICREA	63	2.235	0,829	1	1,587	73,0	0,0

Source: Bibliometric map of Spain 1997-2011. Biomedicine and health sciences

Source: Prepared by IISPV (2017)



As such the IISPV is currently located within the Grupo CERCA.

Categorised into areas, the following figure shows the main areas of scientific production in Catalonia.

Figure 28. Scientific production according to research fields by Catalan health research centres



PRODUCCIÓN CIENTÍFICA EN DOCUMENTOS SEGÚN CAMPOS DE INVESTIGACIÓN

Source: Bibliometric map of Spain 1997-2011. Biomedicine and health sciences

Similarly, the thematic areas show a similar trend at a State level.

Figure 29. Scientific production according to research fields by Spanish health research centres

Análisis temático

Análisis de la producción científica según la clasificación temática de las revistas científicas en las que se han publicado.





Source: *Bibliometric map of Spain 1997-2011. Biomedicine and health sciences* The bibliometric indicators per institution are those shown in the following figure.



Figure 30. Bibliometric indicators by Catalan institutions

			Contraction of the second s
INDICADORES	BIBLIOMÉTRICOS	SEGUN	INSTITUCIÓN
11101010100001000			

	Institución	Docs	Citas	RCI	HCP	RHCP	Int	Mul
-	Institut d'Investigacions Biomèdiques August Pi i Sunyer (IDIBAPS), Barcelona	12.069	319.143	1,162	345	2,859	34,5	2,6
=	Institut d'Investigació Biomèdica de Bellvitge (IDIBELL)	5.782	147.662	1,175	145	2,508	34,4	6,7
	Institut de Recerca Vall d'Hebron (VHIR), Barcelona	5.614	145.788	1,141	136	2,423	29,5	2,8
-	Institut d'Investigació Biomèdica Sant Pau (IIBSantPau), Barcelona	4.659	93.630	1,058	93	1,996	30,0	3,1
	IMIM-Institut Hospital del Mar d'Investigacions Mèdiques, Barcelona	3.949	107.610	1,242	108	2,735	39,2	3,8
-	Instituto d'Investigación Ciències de la Salut Germans Trias i Pujol (IGTP), Badalona	2.681	71.597	1,178	77	2,872	30,2	3,0
	Institut d'Investigació Sanitaria Pere Virgili (IISPV), Tarragona	1.308	23.342	1,124	19	1,453	22,2	2,7
	Institut de Recerca Biomèdica de Lleida (IRBLLEIDA)	875	16.660	1,129	13	1,486	22,3	2,4
-	Institut de Recerca Biomèdica de Barcelona (IRB)	705	12.846	0,857	13	1,844	43,8	0,1
-	Institut de Recerca Oncològica (IRO), l'Hospitalet de Llobregat	531	19.754	0,968	9	1,695	37,1	3,0
-	Centre de Recerca en Salut Internacional de Barcelona (CRESIB)	358	5.963	1,186	12	3,352	75,7	2,2
	Centre d'Investigacions en Bioquimica i Biologia Molecular (CIBBIM), Barcelona	255	6.247	0,892	1	0,392	43,9	2,0
	Fundació Parc Taulí-Institut Universitari Parc Taulí-UAB (FTP-UI), Sabadell	252	4.313	1,088	3	1,190	17,9	0,4
-	Institut de Neuropatologia (INP), Hosp. Bellvitge, L'Hospitalet LI.	246	5.484	1,150	2	0,813	30,9	2,4
-	Centre de Genética Médica Molecular, Barcelona	234	8.009	0,957	2	0,855	37,6	4,3
-	Institut d'Investigació Biomèdica de Girona (IdIBGi)	219	3.406	1,382	7	3,196	26,5	5,0
-	Unitat de Recerca en Informàtica Biomèdica (GRIB), Barcelona	215	14,265	0,959	8	3,721	59,5	6,0
-	ICO Hospital Germans Trias i Pujol, Badalona	189	4.420	1,191	5	2,646	42,3	5,3
-	Institut de Bioquímica Clínica, Barcelona	183	2.467	0,842	0	0,000	49,7	1,6
-	Institut d'Investigació i Recerca en Atenció Primària (IDIAP Jordi Gol), Barcelona	157	1.163	1,095	1	0,637	19,7	1,9
-	Institut Guttmann, Badalona	142	2.625	1,152	9	6,338	57,7	0,0
-	Fundació de Lluita contra la SIDA, Badalona	138	2.389	1,166	3	2,174	36,2	1,4
-	Institut Català Farmacologia (ICF), HVH-UAB, Barcelona	122	1.089	0,613	0	0,000	24,6	0,0
	Fundació Institut Català de Farmacologia (FICF), HVH-UAB, Barcelona	119	1.075	0,623	0	0,000	22,7	0,0
	Centr d'Investigació en Salut Laboral (CISAL), Barcelona	78	1.136	1,109	1	1,282	75,6	0,0
	Institut d'Oncologia, Hosp Vall Hebron (VHIO), Barcelona	70	1.836	1,187	6	8,571	51,4	7,1
-	Centre d'Esclerosi Múltiple de Catalunya (CEMCAT), Barcelona	70	1.122	1,238	4	5,714	45,7	10,0
=	Fundació ACE Institut Català de Neurociències Aplicades, Barcelona	54	1.894	1,699	3	5,556	40,7	7,4

Source: Bibliometric map of Spain 1997-2011. Biomedicine and health sciences

Thus, as shown in the previous figure, the IISPV is seventh in Catalonia in the Bibliometric indicators list.

In Spain, the IISPV occupies the twenty-second position in the Bibliometric indicators list, as shown in the following figure:



Figure 31. Bibliometric indicators by Spanish institutions

INDICADORES BIBLIOMÉTRICOS SEGÚN INSTITUCIÓN

	Institución	Docs	Citas	RCI	HCP	RHCP	Int	Mul
	Institut d'Investigacions Biomèdiques August Pi i Sunyer (IDIBAPS), Barcelona	12.092	319.691	1,164	346	2,861	34,5	2,6
	Institut d'Investigació Biomèdica de Bellvitge (IDIBELL)	5.792	147.791	1,177	146	2,521	34,3	6,8
	Institut de Recerca Vall d'Hebron (VHIR), Barcelona	5.631	145.990	1,139	136	2,415	29,4	2,9
	Institut d'Investigació Biomèdica Sant Pau (IIBSantPau), Barcelona	4.677	93.895	1,057	93	1,988	30,1	3,1
1000	Instituto de Investigación Sanitaria IdiPAZ, Madrid	4.033	65.484	1,079	61	1,513	22,2	3,1
	IMIM-Institut Hospital del Mar d'Investigacions Mèdiques, Barcelona	3.955	107.724	1,242	108	2,731	39,2	3,8
	Instituto de Investigación Sanitaria La Fe (IISLAFE), Valencia	3.812	71.403	1,117	66	1,731	25,1	3,4
1000	Instituto Ramón y Cajal de Investigación Sanitaria (IRYCIS), Madrid	3.761	68.128	1,078	37	0,984	22,2	2,1
1000	Inst. Investigación Hospital 12 De Octubre (I+12), Madrid	3.746	72.713	1,059	59	1,575	21,9	2,6
1000	Instituto de Investigación Sanitaria Gregorio Marañón (liSGM), Madrid	3.151	53.195	1,033	39	1,238	21,0	2,7
1000	Instituto de Investigación Sanitaria Gregorio Marañón (liSGM), Madrid	3.150	53.195	1,034	39	1,238	21,0	2,7
1000	Instituto De Investigación Sanitaria Del Hospital Clínico San Carlos (IdISSC), Madrid	3.102	51.165	1,057	45	1,451	22,2	2,8
8 8	Instituto de Investigación Biomédica de Salamanca (IBSAL)	2.925	56.219	0,978	25	0,855	31,9	2,2
	Instituto d'Investigación Ciències de la Salut Germans Trias i Pujol (IGTP), Badalona	2.682	71.617	1,178	77	2,871	30,2	3,0
- S	Instituto de Biomedicina de Sevilla (IBIS)	2.423	36.770	1,032	29	1,197	18,2	2,3
****	Instituto de Investigación Sanitaria Fundación Jiménez Díaz (IISFJD), Madrid	2.307	46.993	1,008	27	1,170	30,5	1,8
1000	Inst. Invest. Sanitaria Hosp. Universitario de la Princesa (lis-Princesa)	2.279	48.327	1,085	24	1,053	20,7	1,9
	Inst. Invest. Sanitaria Fund. Investigación Del Hosp. Clínico De Valencia (INCLIVA)	2.254	44.454	1,079	38	1,686	20,1	2,4
1	Instituto Investigación Sanitaria de Santiago (IDIS)	1.921	28.808	1,054	28	1,458	19,8	2,6
8	Instituto Maimónides de Investigación Biomédica de Córdoba (IMIBIC)	1.884	31.041	1,089	23	1,221	25,5	2,4
***	Instituto de Investigación Sanitaria Puerta del Hierro (IDIPHIM), Majadahonda	1.561	25.286	0,961	7	0,448	16,8	1,8
	Institut d'Investigació Sanitaria Pere Virgili (IISPV), Tarragona	1.312	23.496	1,125	19	1,448	22,2	2,7
	Institut de Recerca Biomèdica de Lleida (IRBLLEIDA)	893	16.990	1,122	13	1,456	22,3	2,5
	Institut de Recerca Biomèdica de Barcelona (IRB)	705	12.846	0,857	13	1,844	43,8	0,1
Ж	Instituto de Investigación Sanitaria BioDonostia (IIS BioDonostia), San Sebastián	532	9.964	1,193	9	1,692	20,1	5,1
	Institut de Recerca Oncològica (IRO), l'Hospitalet de Llobregat	531	19.754	0,968	9	1,695	37,1	3,0
ww.	Instituto Reina Sofía de Investigación Nefrológica (IRSIN), Madrid	436	11.149	0,970	7	1,606	17,4	0,5
	Centro de Investigación del Hospital La Fe, Valencia	428	8.439	1,039	0	0,000	24,3	1,6
	Centre de Recerca en Salut Internacional de Barcelona (CRESIB)	358	5.963	1,186	12	3,352	75,7	2,2

Source: Bibliometric map of Spain 1997-2011. Biomedicine and health sciences

4.10. Projects and economic activity

4.10.1. Economic description of the research activity conducted

Below is the evolution of the project revenues and managed research contracts financed by public bodies and private entities in recent years. This Table also shows the evolution of revenue from donations, training courses and other research services.



Table 5.	Evolution	of project	revenue,	R&D	contracts	and	other	income
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TYPE OF PROJECT	2014	2015	2016	TOTAL
COMPETITIVE AIDS	1.477.434	1.306.457	1.320.269	4.104.159
COMP. EUROPEAN-INT AIDS	0	228.950	71.878	300.828
CLINICAL TRIALS	481.145	464.526	658.358	1.604.028
RESEARCH SERVICES	270.729	193.208	169.416	633.353
TRAINING	7.360	22.282	18.331	47.973
DONATIONS /SPONSORSHIPS	438.000	290.143	167.444	895.587
TOTAL	2.674.667	2.505.565	2.405.696	

Source: Prepared by IISPV (2017). Note: Amounts are in euros





Source: Prepared by IISPV (2017). Note: Amounts are in euros



As shown in the table and figure, revenue from competitive grants in 2015 decreased compared to the previous year, but they are currently stable. It should be noted that in 2014 IISPV began to work on European and international tenders, and personnel contracts and projects started to come in through H2020 tenders and other European and international foundations and companies.

The significant decrease of income obtained through donations and sponsorships is also worth noting. As well as the slight increase in revenue obtained through clinical trials.

The following table shows the Institute's success rate in public and competitive tenders in recent years:

	2014	2015	2016
Projectes			
FIS	11%	38%	35%
Marató	0%	29%	21%
PERIS (proj col·lab)	-	-	86%
H2020	-	0%	25%
Altres conv europees o internacionals	0%	50%	12%
Redes	-	-	100%
Altres conv estatals	6%	22%	24%
Personal			
Marie Curie	33%	25%	0%
Miguel Servet II	-	-	100%
Ramón y Cajal	100%	-	-
Sara Borrell	25%	100%	0%
Juan de la Cierva	-	50%	25%
Postdoctorals (PERIS)	-	-	67%
Intensificació (PERIS)			56%
Predoctorals	11%	11%	22%
Tècnics	50%	80%	0%

Table 6. Successful tender ratio (2014-2016)

Source: Prepared by IISPV (2017)





ISCIII's annual success rate since 2015 in FIS tenders and the success rate of RIHSP tenders should be emphasised.

In addition to the success rate in European and international tenders.

Indicators measuring the number of projects and contracts and economic revenue are reviewed on a quarterly basis.

4.10.2. Economic description of clinical trials

According to data from the "Biocat 2015 Report", the clinical studies conducted during the 2012-2014 period within the Barcelona Clinical Trials Platform (BCTP) are shown in the following figure:

Figure 32. Clinical studies conducted by therapeutic area by the BCTP during the 2012-2014 period



Source: Biocat 2015

35% were carried out in the field of oncology, placing it firmly in first place. These data coincide with trends observed in the BEST report for tests carried out throughout 2015.



Figure 33. Clinical studies performed by therapeutic area according to the 2015 BEST report.



Source: BEST project

Of the tests carried out on the BCTP platform, 44% are phase III, 25% phase IV, 17% phase II and 5% phase I, as shown in the following figure.

Figure 34. Clinical studies performed by clinical phase by the BCTP during the 2012-2014 period.



Source: Biocat



Similarly, the BEST platform indicates similar trends as shown in the following figure.



Figure 35. Clinical studies conducted by clinical phase during 2015

Data from the BEST project (Best Practices in Palliative Care in Europe) - whose purpose is to create a platform of excellence in the field of clinical trials - is used to calculate IISPV's position compared to its Catalan and Spanish competitors

As indicated above, the majority of clinical trials conducted in Spain are in the field of oncology. Conversely, the majority of IISPV's clinical trials are in the area of nutrition and metabolism.

Source: BEST project



4.11. The transfer of technology and knowledge, and the translationality of biomedical research

The current status of knowledge transfer in Europe can be summarised as (Source, 2010 to 2012 Knowledge Transfer Study):

- Income form license are highly concentrated in the top 10% of research centres and European universities which generate approximately 85% of income from license.
- 88.8% of the income from license (346 million euros) are a result of biomedical inventions.
- On average, income from licenses represent 1.5% of total R&D expenditures in the EU, while they represent 4% in the United States.
- The number of personnel dedicated to knowledge transfer tasks has a direct impact on the income from licenses generated (more personnel leads to better results).
- Intellectual and industrial property management policies are published by less than 33% of the total number of institutions in the EU. This fact is contrary to the EU's good practice policy.
- The only factors that effectively encourage research personnel to participate in knowledge transfer processes are economic. In the EU, the return on researchers is 40% of the total income generated on average.
- The main objectives of the technology transfer offices are to:
 - generate collaborative research
 - promote the dissemination of science and technology
 - generate income for their institutions

On the other hand, data at the Catalan level, the most relevant data, is the following (source RIS3CAT). Catalonia's business base basically comprises micro-companies, which in January 2012 represent 94.5% of the total. A summary of this type of companies is:

- The majority have no employees on salary (56.4% of the total), while those with between 1 and 9 employees represent 38.1%.
- Of the remaining 5.5%, 4.3% are small companies that employ 10 to 49 workers; 0.9% of the largest companies are companies that employ 50 to 199 employees, and 0.4% are companies that employ more than 200 employees.


In conclusion:

- Catalan companies do not interact much with public knowledge generation centres.
- Company R&D investment stood at 0.89% of GDP in 2010.
- 77% of company R&D investment is focused on pharmacy and chemistry, automotive and transport material and ICT.
- 50% of R&D expenditure is concentrated in 169 large companies.
- 54% of innovation spending is concentrated in logistics, storage and other services.
- Catalan and state companies generate few patents and little industrial protection in general

We need to innovate more, improve our productive system and the provision of services. Consequently, the transfer of knowledge generated by hospitals and for universities must be accelerated. To cover this deficit, public agencies have carried out various policies to boost technology and knowledge transfer.

What do we mean by technology and knowledge transfer? The process by which the knowledge accumulated in hospitals and universities and that result from research projects, are transferred to the business, commercial and institutional sectors.

The concept of technology should not be understood in the strict sense of the term. It includes elements as varied as equipment, products, software, project designs and plans, research and production processes, management techniques, analysis methodologies and scientific and technical knowledge or skills.

Thus the terms technology, knowledge or research results can be used interchangeably.

The IISPV commits to this challenge and has designed a structure (Technical Office) and a circuit (see the following figure) to enhance the research carried out by its groups and to facilitate the running and management of the transfer process.







Source: Own preparation (2017)



Another characteristic of biomedical research is its poor translationality. Currently, few biomedical publications are translated into healthcare policies and practice that improve the health of its users.

The IISPV currently has 2 patents and one spin-off in operation: BiosferTeslab, which develops in vitro diagnostic tests to improve cardiovascular risk assessment in high-risk patients.

Among its objectives, the IISPV aims to promote the translationality of basic research and, especially, clinical research.

4.12. IISPV analysis in accordance with Carlos III Health Institute accreditation process criteria

The following table shows the new draft assessment criteria which must be complied with to become a Carlos III Health Institute Health Research Institute. The IISPV column shows compliance or non-compliance by our Institute.



N⁰	Indicator	Standard	IISPV
2.2.1.1	Total surface dedicated to the IIS under the direct responsibility of the Scientific Director	≥2.000 m2	
2.2.2.7	Number of Principal Investigators (IP's) with competitive national public projects of the State or International Plan in the last year	≥40	23
2.2.2.8	Proportion of assistance IPs with national competitive public projects of the State Plan or international in the last 5 years	≥45%	57%
2.3.1.1	Number of competitive national public projects of the State or International Plan obtained during the last 5 years	≥110	42
2.3.1.5	Proportion of European projects on the total of competitive public projects obtained during the last 5 years	≥5%	2%
2.3.2.1	Citation rate: Number of citations per publication (last 5 years)	≥4	7,42
2.3.2.2	Proportion of publications ranked in the first quartile in the last 5 years	≥ 40%	58%
2.3.2.6	No. of granted patents or products marketed during the last 5 years by 4M euros of public subsidies	1	-

Table 7. IISPV standards in accordance with ISCIII accreditation process criteria

Source: *Health Research Institutes* assessment criteria draft (2017)



5. SWOT ANALYSIS

In order to design IISPV lines of action, an analysis of the Institute's current situation has been made through an assessment of its strengths, weaknesses, opportunities and threats. This analysis has been carried out using the SWOT technique.

SWOT is a method of analysis that uses brainstorming sessions to assesses the strengths (S), weaknesses (W), opportunities (O) and threats (T) of an initiative or activity. These concepts are grouped into those that analyse the "internal context" (S and W) and those that analyse the "external context" (O and T). The PEST analysis has been used for this last grouping, which considers political (P), economic (E), social (S) and technological (T) factors, analysed in point 3.4 of this document.

The data obtained in the SWOT analysis are represented as a matrix, as shown in the following figure.

Figure 37. Representative matrix of the SWOT analysis



Source: Own preparation (2017)



Table 8. IISPV SWOT analysis

STRENGTHS	WEAKNESSES
 Able to create own research policy through the Institute ECCR A sizeable critical mass The institute collaborates closely with the health-care and teaching sectors Personnel are highly motivated Highly qualified teaching personnel Metabolomics/COS platform Multidisciplinarity Good operational and collaborative integration with founding and associated institutions Efficient management tools and professional management Cutting-edge research activity in certain strategic areas	 Technology transfer and translationality Financial resources Difficulties in recruiting personnel Communications policy Lack of a clinical trials unit (CTU) Lack of alliances Lack of European funding Lack of a bioIT platform Competitiveness Location Fragmentation of the centres
	TUREATO
IRISCAT: grouping/merging of Catalan research institutes New facilities for research laboratories (HJ23, HSJR) Accreditation as a health research institute Infrastructure and technological improvements Increase in the amount of projects Fill knowledge and technology gaps Attract talent Improve management Technologies portfolio to exploit Exploitation of the biobank Revitalisation of the biomedical research areas in the Camp de Tarragona and Terres de l'Ebre regions Collaboration with primary health-care Implementation tools for translational research (networks and institutes) Agreements with centres and large regional and state technological facilities	 Lack of visibility and belonging to the IISPV Lack of industrial fabric in the biotechnology and pharmaceutical areas in Tarragona and Terres de l'Ebre regions Legislative changes Ability to access funds to conduct concept testing for technology transfer Lobbies from competing institutes Decapitalisation of the industrial fabric stemming from the economic crisis Peripheral situation Competition from other institutes Insufficient public resources assigned to R&D Uncertainties in the cohesion and coordination of research networks and institutes

Source: Own preparation (2017)



The SWOT analysis has identified and defined distinctive capacities:

- A good integration of the institutions comprising the IISPV
- Portfolio of technologies to exploit
- Scientific publications with high impact factor
- Greater participation of health and teaching personnel in research
- Cutting-edge research activity in strategic areas:
 - Nutrition, diabetes, obesity, arteriosclerosis (Nutrition and Metabolism)
 - Toxicology, microbiology, infectious diseases and HIV/AIDS (Health and Environment)
 - Neurosciences and mental health
- Multidisciplinarity: Basic, clinical, translational/applied and epidemiological research, grouped under the same idea and institution
- Consolidated clinical research structure (ECCR, research spaces and equipment)



6. HUMAN RESOURCES EXCELLENCE IN RESEARCH



In 2015, the IISPV was accredited with and awarded the official European seal on human resources HR Excellence, and its 2015 Action Plan was given approval by the European Commission.

This recognition demonstrates that the IISPV HR EXCELLENCE IN RESEARCH endorses the general principles of the European Charter for Researchers and the Code of Conduct for the Recruitment of Researchers (Letter and Code), and is fully committed to the improvement of its internal policies and procedures.

The Institute adhered to the Charter and the Code in 2014 and in 2015 underwent an internal analysis that resulted in an action plan for that period. The action plan was approved by the European Commission in April 2015. During this time, the IISPV has worked on different actions and their implementation, which are all related and interconnected.

At the end of 2016 and the beginning of this year, an internal evaluation was carried out with the participation of researchers and the initial working group, that resulted in a new Action Plan for the next two years. This new plan follows from the previous one, redefining some dates and nuances and takes into account new European Commission directives and the Open, Transparent and Merit-based recruitment processes.

Throughout this period, the institute has worked on the development of the approved Action Plan and its implementation.

The Action Plan and the documents approved and in implementation are attached as annexes III-IX:

- Professional Career
- Training Plan
- Recruitment Policy
- Equality Policy

 Protocol for the prevention and management of harassment and violence in the workplace

Welcome manual



This Strategic Plan includes the policies and practices included in the European Charter for Researchers and the Code of Conduct for the Recruitment of Researchers.

The IISPV will continue working on the next Plans with the policies described and the 2017-2020 Action Plan.



7. DEFINITION OF STRATEGIC OBJECTIVES

The strategic objectives for the period 2017-2021 emerged from the situation and SWOT analyses carried out by the IISPV:

- 1. Align strategies with Employer research and innovation policies.
- 2. Increase the generation and transfer of knowledge for the benefit of society.
- 3. Foster socially responsible research (focused on responding to the population's demands)
- 4. Increase actions directed towards society
- 5. Continue to implement the HRS4R Action Plan
- 6. Attract and retain talent
- 7. Increase participation in European and international projects
- 8. Increase the number of projects carried out with industry
- 9. Improve the Institute's visibility
- 10.Awaken a feeling of belonging to the Institute
- 11.Define IISPV's spaces and infrastructures model

Apply indicators to these objectives to measure and assess their implementation, achievement and consolidation. These will be presented and evaluated by the Institute's Board of Trustees.



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9. ANNEXES

- Annex I. Ascribed and associated researchers policy
- Annex II: IISPV research groups programme
- Annex III. HRS4R action plan
- Annex IV. Professional career
- Annex V. Training plan
- Annex VI. Recruitment policy
- Annex VII. Equality policy
- Annex VII. Protocol for the prevention and management of harassment and violence in the workplace
- Annex IX. Welcome Manual



Institut d'Investigació Sanitària Pere Virgili (IISPV)

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