

BIO DIGITAL 2021 - USA





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- Why Choose to Invest in Lazio
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At the forefront of the Covid-19 response

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## WELCOME TO LAZIO

## REGION OF ROME, HEART OF EUROPE AND CENTER OF THE MEDITERRANEAN AREA

- Lazio boasts a geopolitical position of global importance: in the heart of Europe and at the center of the Mediterranean region, a crossroad towards the Middle East and South-East Asia
- Rome is Italy's number one destination in Italy for international tourists and one of the most visited city in the world (with over 20 million tourists per year)







### **LOGISTICS & MOBILITY**

THANKS TO ITS VERY CENTRAL LOCATION, ITS INFRASTRUCTURES AND SERVICES, THE REGION IS ITSELF A STRATEGIC LOGISTICAL PLATFORM IN ITALY, IN THE MEDITERRANEAN, AND IN EUROPE



2 International Airports: **Fiumicino** and **Ciampino**, with over 50 million passengers and 363,000 national and international flights per year. Fiumicino Leonardo Da Vinci Airport is the first stopover in Italy and the first European airport for the satisfaction of travelers.



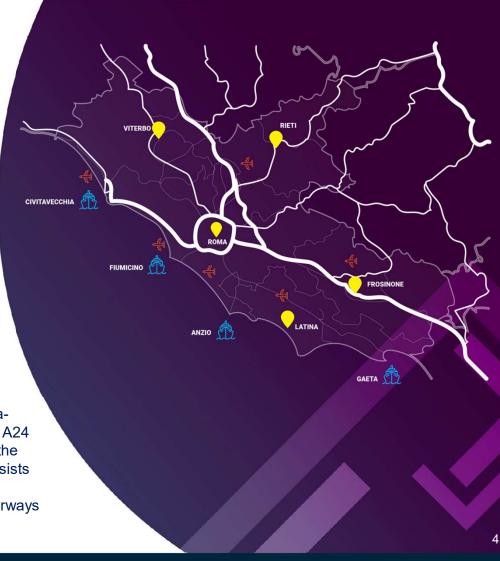
Civitavecchia Port is the major Italian touristic port, the 2nd in Europe and 7th in the world for number of passengers (3 million per year). Freight traffic is taking on increasingly an important role, boasting a movement of 10 million tons of goods a year.



2 main railway stations: **Termini** and **Tiburtina** which guarantee high speed rail connections with all major Italian and European cities. Lazio is part of the Trans-European Networks - Transport (TEN-T).



Main Highways: A1 Milano-Roma-Napoli, A12 Roma-Civitavecchia, A24 Roma-L'Aquila. The extension of the road network in Lazio Region consists of approximately 10 thousand kilometres, of which 473 are motorways and 553 national roads.







### LAZIO AT A GLANCE

**Lazio** is the 2nd Italian Region for Gross Domestic Product (GDP) with **198 Bn euros**, contributing to **11,2% of Italian national GDP** (2018). It is one of the **most important R&D systems in Italy**.

GDP per capita is equal to € 33.600, above the Italian and the EU average. Lazio is the sixth Italian Region in terms of GDP per capita.

Lazio is the **location of important industrial and multinational groups with their own R&D centres**, and the Italian Region with the highest level of specialization in manufacturing and in high-tech knowledge intensive sectors.

Lazio's **share of exports in global leading sectors** is twice the national average (in percentage terms 72% vs 32%).







## LAZIO KEY **INDICATORS**

74 BN

INCOMING FOREIGN DIRECT INVESTMENT

111BN

**OUTGOING FOREIGN DIRECT INVESTMENT** 

**POPULATION** 

静 10.618

27 BN EURO ALPORT

1.419



1,8% [

**R&D EXPENDITURE ON** REGIONAL GDP

17.242 SURFACE AREA

**198 BN EURO** 





**船 5.896.693** 

SMEs THAT EXPORT

155.866

**INTERNATIONAL COMPANIES** 



33.600 EURO

## ALL ROADS LEAD TO ROME

THE STRATEGIC ROLE OF ROME FOR THE ATTRACTIVENESS OF THE LAZIO REGION

#### **TOURISM**



Rome, with over **20** million **tourists a year**, is the most visited city in Italy and one of the most visited in the world.

#### **VATICAN STATE**



Rome is home to the Vatican State, with its own 85 diplomatic representations of the main countries, residence of the Pope and home to the Basilica of St. Peter, the Vatican Museums and the Sistine Chapel.

#### **DIPLOMACY**



Rome hosts 209 diplomatic missions (embassies, consulates, permanent missions and other diplomatic representations) according to Global Diplomacy Index 2019.

#### **ROME AS A STRATEGIC HUB**



2 International airports: Fiumicino and Ciampino. Fiumicino Airport is connected to Rome by the direct train "Leonardo Express". Travelling time: only 32 minutes, trains run every 15 min.



3 major railway stations: Termini, Tiburtina and Ostiense. Head office of the important logistics center: CAR - the ROME AGRI-FOOD CENTRE (agroalimroma.it).





### **HEALTH EXCELLENCES**



32 HOSPITAL



4 UNIVERSITY POLYCLINICS



**8** IRCCS, i.e. HOSPITALS OF EXCELLENCE that pursue research purposes, mainly clinical and translational, in the biomedical field and in the organization and management of health services. Among them, the INMI SPALLANZANI HOSPITAL and the IFO HOSPITAL.



**EUROPE AN BRAIN RESEARCH INSTITUTE** 



IRBM - "PIERO ANGELETTI" MOLECULAR BIOLOGY RESEARCH INSTITUTE



CENTRES OF EXCELLENCE IN THE FIELDS OF ONCOLOGY, NEUROSCIENCE, GENETIC THERAPY AND STEM CELLS

## INTERNATIONAL ORGANISATIONS HEADQUARTERS BASED IN ROME



FOOD AND AGRICULTURAL ORGANISATION



INTERNATIONAL FUND FOR AGRICULTURAL DEVELOPMENT



WORLD FOOD PROGRAMME



INTERNATIONAL GENETIC RESOURCES INSTITUTE



INTERNATIONAL CENTRE FOR THE STUDY OF THE PRESERVATION
AND RESTORATION OF CULTURAL HERITAGE





## WHY CHOOSE TO INVEST IN LAZIO

#### **GROWTH POTENTIAL**

- . Strong growth of exports in technological niches of excellence
- Presence of large companies, even multinationals, capable of stimulating SMEs' growth through innovative demand
- Significant growth, in quantity and quality, of incubators, accelerators and other organizations and initiatives to support startups

#### **TERRITORIAL ATTRACTIVENESS**

- Geopolitical position of global relevance
- . High international attractiveness of the metropolitan area of Rome
- Presence of important industrial and multinational groups with their own R&D centers
- . High number of public and private research infrastructures
- Strong presence of international organizations (i.e. FAO)
- High concentration of graduates in technical-scientific subjects and qualified researchers





# THE REGIONAL KNOWLEDGE SYSTEM

LAZIO IS A TERRITORY RICH IN HUMAN CAPITAL AND IT IS AMONG THE FIRST ITALIAN REGIONS FOR NUMBER OF RESEARCHERS, UNIVERSITIES AND PUBLIC AND PRIVATE RESEARCH INSTITUTIONS.
LAZIO IS ALSO ONE OF THE MOST SIGNIFICANT RESEARCH CENTRE IN EUROPE



Professors and Researchers in the Universities



9 (



Universities

- 6 Public
- 7 Private
- 6 Distance Learning Universities

44,587



Graduates

- 20.422 Female
- 15.969 Male

82,000 Scholarships

25,905 College freshmen





### ACADEMIC HUMAN CAPITAL

GRADUATES (2019) AND STUDENTS (2019/2020) IN LIFE SCIENCES-RELATED DISCIPLINES

UNIVERSITY COURSES		GRADUATES	STUDENTS
	PHARMACY AND INDUSTRIAL PHARMACY	364	4,060
DA	BIOTECH AND BIOTECH TRADES	410	2,103
A	BIOLOGY	931	4,522
	BIOMEDICAL ENGINEERING	183	655
<b>P</b>	MEDICINE AND DENTISTRY	1,503	11,312
	HEALTHCARE ASSISTANCE	3,532	13,856
	NUTRITION AND HEALTH SCIENCE	389	2,220
	CHEMISTRY AND CHEMISTRY TRADES	511	2,662



7,823

GRADUATES IN LIFE SCIENCES - RELATED DISCIPLINES

41,390

STUDENTS IN LIFE SCIENCES - RELATED DISCIPLINES

Source: MIUR (Ministry of Education University and Research)





## SECTOR OF EXCELLENCE LIFE SCIENCES

#### LAZIO PHARMACEUTICAL INDUSTRY IS AT THE TOP IN ITALY AND EUROPE FOR PRODUCTION EFFICIENCY

Lazio is the **2nd Italian hub** and one of the most important in Europe for the life sciences industry, with RELEVANT international players and highly innovative local SMEs LINKED with the NATIONAL public research network.



**LAZIO HEALTH TECHNOLOGICAL CLUSTER (DTB)** was established in 2008 and is one of the founding members of the Italian National Technological Cluster of Life Sciences **ALISEI**.

#### **MAIN SPECIALIZATIONS**

- Pharmaceutical innovative drugs
- New vaccines (one of the most effective anti-Ebola vaccines is from Lazio) and biomedical production
- Pre-clinical development of inhibitors for the treatment of solid cancers
- E-Health
- Medical devices.













## SECTOR OF EXCELLENCE A FOCUS ON BIOTECH

LAZIO IS THE SECOND REGION IN TERMS OF NUMBER OF BIOTECH COMPANIES AND TURNOVER IN ITALY. OVER THE LAST FIVE YEARS, LAZIO HAS RECORDED AN INCREASE IN ITS SHARE FROM 17% TO 21% IN TERMS OF INVESTMENTS IN BIOTECH

Over the last years, **BIOTECHNOLOGY** has expanded to include new and diverse sciences, such as GENOMICS, RECOMBINANT GENE techniques, applied IMMUNOLOGY, and development of PHARMACEUTICAL therapies and DIAGNOSTIC TESTS. It includes also the commitment to health to create **vaccines**, **such as that against Covid-19**.

**63** 

BIOTECH COMPANIES
(ABOUT 10% OF THE
NATIONAL TOTAL)

CONTRIBUTE
BIOTECH
TURNOVER



2.7 BN €

**BIOTECH TURNOVER** 

#### THE BIOTECHNOLOGY INDUSTRY IN ITALY:

- a growing and research-intensive sector
- the growth trend continues for all the main indicators
- biotech is characterized as one of the main national science-based sectors
- biotechnologies are an innovative lever for the bioeconomy and sustainable economic development



BIOTECH EMPLOYEES



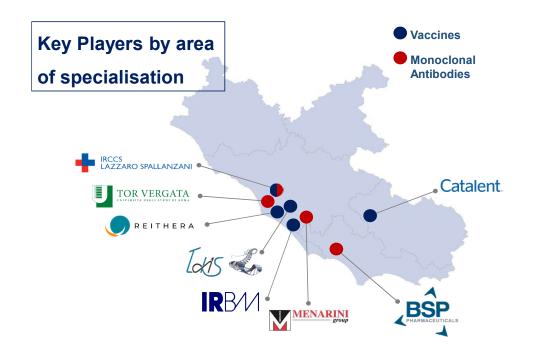
BIOTECH RESEARCHERS





#### AT THE FOREFRONT OF THE COVID-19 RESPONSE

IN THE LAZIO REGION, WE FIND AN EXTREMELY HIGH CONCENTRATION OF NATIONAL AND INTERNATIONAL PLAYERS THAT HAVE IMPLEMENTED A SET OF INITIATIVES TO LEAD THE COVID-19 RESPONSE:





The INMI Spallanzani Hospital is an international excellence in terms of clinical research. In February 2020, it was among the first research institutes to isolate the DNA sequence of the coronavirus. Nowadays, the Spallanzani Institute is one of the leading international centres in the COVID-19 response — currently supporting the development of the Italian COVID-19 vaccines and monoclonal antibodies





### **COVID-19 VACCINES IN LAZIO**



Biopharmaceutical company based in Castel Romano (Rome).

Reithera is developing and testing a COVID-19 vaccine (GRAd-COV2). In January 2021, the company signed the Development Contract with Invitalia to support an industrial and research investment of € 81 mln.

In March 2021 Reithera started the **Phase 2 of the clinical trials** along with the INMI Spallanzani Hospital (Rome).

### IRB/// Catalent.

**IRBM of Pomezia (Rome)** contributed to the development of the **AstraZeneca and University of Oxford COVID-19 vaccine** as a research partner.

Catalent, the leading global provider of advanced delivery technologies, development, and manufacturing solutions for drugs, biologics, cell and gene therapies, consumer health products, is taking care of the bottling of the AstaZeneca's as well as Johnson & Johnson's COVID-19 vaccines in its production site in Anagni.

The Anangni Catalent plant currently produces 1.5 mln dosis of AstraZeneca vaccine per day



**Takis Biotech** is a **biotechnology company** based in **Rome**, with over 10 years of experience in drug discovery.

In partnership with Rottapharm Biotech, Takis is developing the second Italian COVID-19 vaccine (Covid-eVax).

In March 2021, the company started the Phase 1 of the clinical trials.





## COVID-19 MONOCLONAL ANTIBODIES IN LAZIO



Founded in 2006, **BSP Pharmaceuticals** is based in **Latina**, **60 km from Rome**.

Since the end of 2020, BSP
Pharmaceuticals has been producing
monoclonal antobodies created by the
US-company Eli Lilly's and approved
AIFA – the Italian Drug Agency.

In 2021, it is expected that the pharma company will also **supply the Italian market with Lilly's antibodies**.



**Tor Vergata Universities Laboratories** have been studying **monoclonal antibodies** for months, biological products capable of preventing the virus from entering host cells and preventing their replication.

The Lazio Region has chosen to focus on the **new technique** developed in Tor Vergata, which uses **synthetic antibodies**, **potentially able to adapt to virus mutations**.

In October 2020, Lazio Region and Tor Vergata Universities have signed a MoU to support with 2 million euros "research and experimentation for the development of a drug capable of treating Covid-19 patients in as short as possible". Project partners are INMI Spallanzani Hospital (Rome) and Toronto (Canada).



Partnering with **Tuscany Life Sciences Foundation** on the **MabCo19 project**, which aims at developing producing monoclonal antibodies against the COVID-19.

Menarini's biotech plant in Pomezia (Rome) started the production of the new drug, which consists of a mixture of monoclonal antibodies that neutralise the SARS-CoV-2 spike protein.



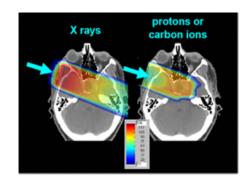


### **BEST PRACTICE**

## TOP IMPLART – ONCOLOGYCAL THERAPY WITH PROTONS

PARTICLE ACCELERATORS AND MEDICAL APPLICATIONS LABORATORY





The accelerator group of the ENEA Frascati Research Centre is part of the FSN-TECFIS-APAM Laboratory, which develops particle accelerators for medical, industrial and research applications.

The aim of TOP-IMPLART PROJECT, developed by the ENEA FRASCATI RESEARCH CENTER (about 20 km from Rome), ISS - Italian National Institute of Health and IFO - Regina Elena National Cancer Institute of Rome, is to develop a PROTON THERAPY CENTER based on a sequence of linear accelerators and designed with three treatment rooms: one with a 150 MeV beam for superficial tumors and two with a 230 MeV beam for deep tumors.

The energy of 150 MeV (corresponding to a penetration in tissue of about 15 cm) is a milestone in design being useful for the proton therapy treatment of almost 50% of tumors based on their position and depth (including ocular melanoma, head-neck tumors, pediatric tumors, and more superficial tumors).

The program was funded by the Lazio Region. The activities have started in 2013 and the deadline of the agreement is currently February 2022.

http://www.frascati.enea.it/accelerators/Sito/index.htm





## Castel Romano Technology Park TECNOPOLO SpA



BUSINESS ENVIRONMENT

THE CASTEL ROMANO TECHNOLOGY PARK IS ONE THE MAIN ITALIAN CENTERS FOR APPLIED RESEARCH AND A FIRST-CLASS LOCATION FOR BUSINESS, IT IS CONNECTED TO THE MOST QUALIFIED NATIONAL AND INTERNATIONAL PARTNERS FOCUSED ON HEALTH AND LIFE SCIENCES. IT IS PART OF TECNOPOLO S.P.A., A PUBLIC COMPANY CREATED IN 1995 WITH THE AIM TO PROMOTE AND IMPROVE THE LOCATION AND DEVELOPMENT OF HIGH-TECH AND INNOVATIVE INITIATIVES

- PRESENCE OK KEY PLAYERS OF THE LIFE SCIENCES INDUSTRY
- INNOVATIVE INFRASTRUCTURES AND SERVICES
- STRONG LINKS WITH UNIVERSITIES AND RESEARCH
- MAIN AREAS OF EXPERTISE: ADVANCED MANUFACTURING, LIFE SCIENCES, NEW MATERIALS, GREEN ECONOMY





### COMPANIES AND RESEARCH CENTER

- NOUSCOM S.R.L.
- ALLEVAMENTI PLAISANT S.R.L.
- REITHERA S.R.L.
- TAKIS S.R.L.
- TESTING POINT 5 S.R.L
- I.S.P.R.A. ISTITUTO SUPERIORE PER LA PROTEZIONE E LA RICERCA AMBIENTALE





## C.H.I.CO – Cluster of Health Innovation and Community

www.clusterchico.eu

C.H.I.CO IS THE FIRST **HEALTH CLUSTER** CREATED IN THE LAZIO REGION. IT IS MADE UP OF 150 PRIVATE AND PUBLIC ENTITIES (COMPANIES, UNIVERSITIES, RESEARCH CENTRES AND HOSPITALS) WITH THE AIM TO DEVELOP **INNOVATIVE PROJECTS IN THE FILED OF HEALTH AND WELLNESS**.

#### **MAIN ACTIVITIES**

- It supports the development of projects and partnerships thanks to its dynamic ecosystem
- It contributes to direct national strategies on the subject of Life Sciences
- It promotes synergy between INDUSTRY and RESEARCH
- It develops partnerships in the field of technology transfer and industrial cooperation
- It promotes the technological innovation of the production system, promoting the creation of start-ups and spin-offs
- **CHICO SINERGY**: matchmaking and networking tool for the esclusive use of members to promote and enhance innovative projects <a href="http://www.clusterchico-synergy.eu/">http://www.clusterchico-synergy.eu/</a>
- **LIFESEEDER**: first equity crowdfunding platform dedicated to all those who wish to invest in Life Sciences <a href="http://www.lifeseeder.com">http://www.lifeseeder.com</a>



REVENUES FROM THE NETWORK



1,500

PEOPLE INVOLVED



PARTNERS











### PARTNER C.H.I.CO





UNIVERSITÀ TITCOTO A IATRIS







## BUSINESS ENVIRONMENT BIG INTERNATIONAL PLAYERS

































## **BUSINESS ENVIRONMENT**

**R&D Network** 



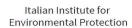








































## LAZIO BUSINESS OPPORTUNITIES BIO DIGITAL 2021

TAKIS COVID- eVax: a vaccine against COVID-19 based on DNA Electroporation

REITHERA GRAd-COV2 vaccine against Covid-19 Pandemic





## TAKIS: COVID- eVax

#### A vaccine against COVID-19 based on DNA Electroporation

#### **DESCRIPTION**

COVID-eVax is a vaccine against COVID-19 based on a DNA plasmid encoding a portion of the Spike protein (called RBD), present on SARS-CoV-2 surface and key for viral infectivity. COVID-eVax is a "precision medicine vaccine" approach designed to induce a strong immune response while minimizing potential undesired effects.

#### Field of activity and technology

Biotechnology/genetic Vaccines

#### **Development stage**

Phase 1-2 Clinical trial

#### **Capital raised**

NA - In partnership with Rottapharm Biotech

Proposer

Takis srl, Red Biotech

Area of activity

Genetic Vaccines, Epidemic Preparedness







#### TAKIS BUSINESS PROPOSAL

**COVID-eVax** was **validated in pre-clinical settings** with support of the National Institute for Infectious Diseases (INMI) Spallanzani in Italy and Ulm University in Germany, confirming that the animals' sera were able to block the infectivity of the virus in vitro on cells and protect animals from SARS-CoV2 infection. **The vaccine can protect from viral variants as well.** 

The first-patient-in for the Phase I part of the protocol was vaccinated on March 1st 2021. Data enabling the start of the Phase II part of the study are foreseen for August 2021. Phase III enabling data are foreseen to be available by the fall of 2021.

#### Next milestones are:

- Late stage clinical trial (Phase III) (3Q21)
- Large-scale GMP manufacturing (1Q22)
- Scale-up plant/manufacturing for EGT gun disposable and new electric pulse generator (4Q21)
- EMA (or other) authorization and commercial approval (1Q22)

Requested investment

150 M€

**Target investor** 

Corporate Venture Capital or Big Pharma







### ReiThera: GRAd-COV2 Vaccine

#### against Covid 19 Pandemic

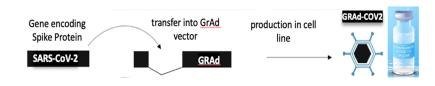
**DESCRIPTION:** ReiThera is a biotech company dedicated to the development, GMP manufacturing and clinical translation of genetic vaccines and medicinal products for advanced therapies. The company has a long-standing expertise in the development of scalable processes for viral vector manufacturing, supported by a cGMP facility inclusive of filling suite and quality control laboratories.

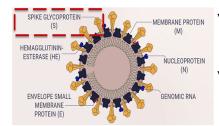
ReiThera has recently developed a candidate vaccine against SARS-CoV-2 (GRAd-COV2) based on a novel and proprietary replication-defective simian (gorilla) adenoviral vector called GRAd encoding the full-length coronavirus spike protein. The vaccine was tested into a phase I clinical trial involving 90 Healthy Volunteers including Adult and Elderly. In the study the vaccine has demonstrated to be safe and well tolerated in all the dosage tested.

In this context, REI has strongly invested in its CDMO organization by expanding the existing GMP area and by acquiring state-of-the-art technologies including stirred-tank bioreactors supporting a working volume at the scale of 200L, 1000L and 2000L. Based on the productivity of the GRAd-COV2 vector and the scale of the manufacturing process (3000L), a monthly production of various million doses of vaccine will be possible.

ReiThera's vaccine is currently under investigation in a phase II, double blinded, placebo controlled clinical trial. In the trial, the Healthy Volunteers will be treated with a single or double dose of the vaccine. Interim analysis is planned in mid-May

Phase III trial is planned to start in mid June in order to the vaccine ready for CMA submission in Autumn 2021





- ✓ The vaccine antigen is the prefusion stabilized full length Spike protein\* (K986P, V987P)
- Upon infection of cells with GRAd-COV2 the Spike protein is correctly displayed on the cell membrane



mAbαS stainin

\*Pallesen J et al. PNAS 2017

**Proposer** 

ReiThera - Claudio Panzarella, Head of Business Development

Area of activity

Vaccine against Covid 19 virus



#### REITHERA BUSINESS PROPOSAL

ReiThera's vaccine is in the late registration and the current results support a safe and efficacious profile.

RelThera is looking for a strategic support for completing the product registration and then the for market consolidation.

#### Considering that:

- The global market is only minimally covered by the vaccines approved.
- Despite ReiThera's vaccine is still in phase II, any investment is derisked since the registration (CMA) will be at short term (Autumn 2021)
- Competitor with similar vaccines have been already registered successfully
- Follow On vaccines based in the same technology platform are already under development (ie. Covid 19 variants)
- Easy manufacturing Technology Transfer and expansion based on disposable technology only

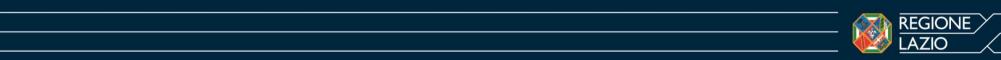
RelThera's vaccine represents a valid opportunity for investment with a fast payback



Requested investment 50-100M€

**Target investor** 

A potential partner with an operational infrastructure in place would be welcome





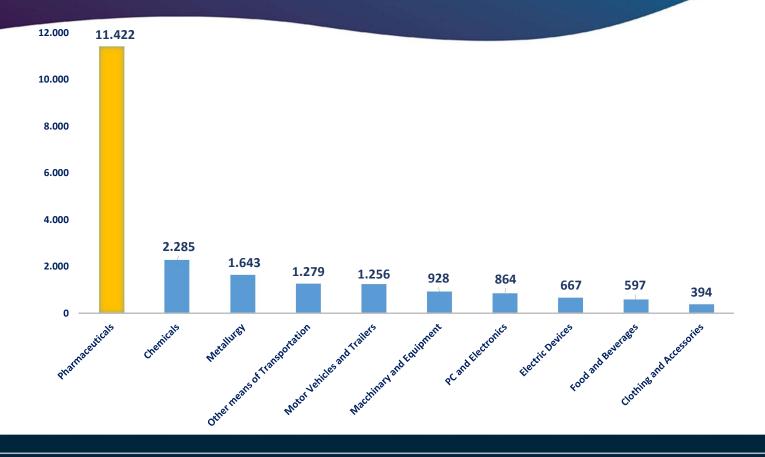
## LAZIO EXPORT DATA





### TOP 10 EXPORT GOODS OF LAZIO REGION

2020 - MLN €

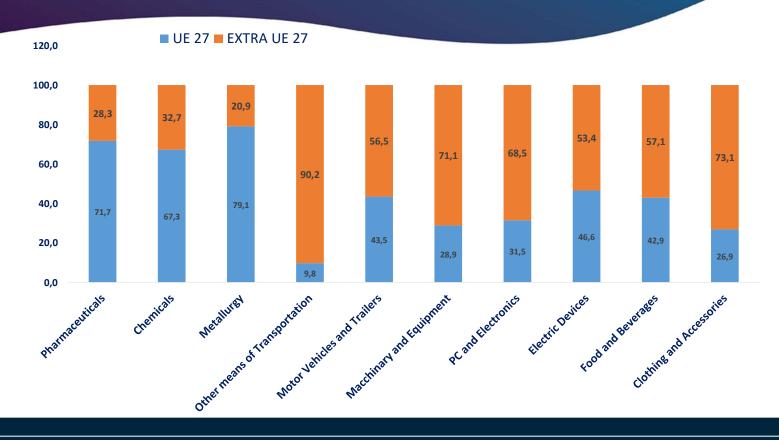






## **GOODS DESTINATION**

### **UE/EXTRA UE – LAZIO REGION % - 2020**





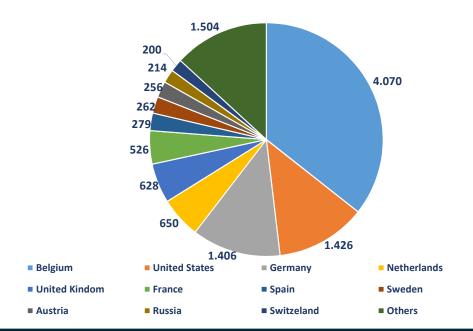


## LAZIO REGION MAIN EXPORT PARTNERS FOR DRUGS &

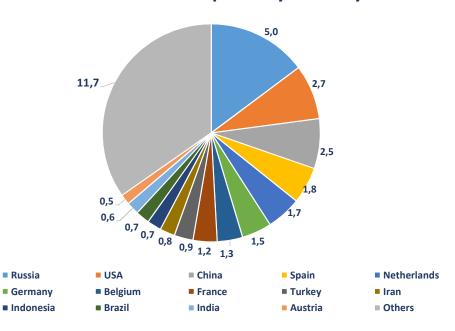
#### MEDICAL DEVICES

2020 - MLN €

#### **Pharmaceutical Exports by Country**



#### **Medical Device Exports by Country**







#### Contact us

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COMMUNITY OF INNOVATORS in



Life Sciences: https://www.linkedin.com/groups/8846745/

Updated to April 2021





**FS1** Federica Sanò; 27/04/2021