
Fondazione
Ri.MED

Fondazione Ri.MED

Scientific research in the Mediterranean

The story of the Ri.MED Foundation starts in April 2005, when the Italian Government signs a memorandum of understanding with the University of Pittsburgh and the University of Pittsburgh Medical Center (UPMC) to establish in Sicily a center of excellence for biotechnology research and biomedical projects of high technological content.

Research, new technologies, and the transfer and dissemination of innovation were the focus of the Italian Government's development policies, consistently with the Europe's Lisbon Strategy, as priorities to reestablish Italy's, and particularly Sicily's, competitiveness.

At the time, UPMC had already established a solid reputation in the field of research and spin-offs of new medical enterprises, also acknowledged by the Italian Government with which a previous collaboration had generated IRCCS ISMETT in Palermo, one of the first organ transplant and high-specialty therapy centers in Europe.

Due to its geographical location, high-level universities, and technology districts, Sicily seemed to be the ideal location to maximize the impact in the Mediterranean area of a biomedical and biotechnology center of excellence.

The corresponding goals of these three subjects caused the Italian Government to decide to invest in research to improve health care in Sicily and in particular in the creation of a biomedical research and biotechnology center of excellence.

In 2006, with a decree of the Presidency of the Italian Council of Ministers, Ri.MED Foundation was established as an international partnership between the Italian Government, the Region of Sicily, the Italian National Research Council (CNR), the University of Pittsburgh, and UPMC.

Founding partners

Presidenza del Consiglio dei Ministri

The Italian Government made a considerable investment for the creation of Ri.MED Foundation's Biomedical Research and Biotechnology Center (BRBC): an investment in research, innovation, development in biotechnology, aimed at improving the quality of life of citizens and fostering an economic growth.

www.governo.it

Regione Siciliana

The Region of Sicily provided the land in Carini, where the Ri.MED Foundation's BRBC will be built. Located only a few miles from Palermo Airport and well connected to the motorway and railway network, the BRBC will provide huge benefits to the local community in terms of economy, employment and allied activities, and also as a center that will attract the best scientists thus reversing the "brain drain" phenomenon.

www.regione.sicilia.it

Consiglio Nazionale delle Ricerche

The most important Italian public research institution, CNR, is accountable for carrying out, promoting, spreading, transferring, and improving scientific and technological research in the main areas of know-how development and its applications for scientific, technological, economic, and social progress.

www.cnr.it

University of Pittsburgh

The University of Pittsburgh is leader in biomedical research and promoting public health and among the top 10 institutions for NIH funds. The University of Pittsburgh supports Ri.MED research in the U.S. and Europe, encouraging joint research programs and working to attract private investors that will allow marketing scientific research products as a tool for social and economic development.

www.pitt.edu

UPMC LIFE CHANGING MEDICINE

Operating over twenty academic, community, and specialty hospitals and spanning three continents, UPMC is an integrated health system. UPMC operates in the fields of patient care, biomedical research and telemedicine, develops new technological solutions, and provides support to areas directly and indirectly related to its medical and research institutional scopes.
The U.S. partners will provide the scientific management of the Foundation and the general management of the activities of the soon-to-be Biomedical Research and Biotechnology Center.

www.upmc.com

Institutional roles

Prof. Camillo Ricordi
President and Member of the Board of Directors

Stacy Joy Goodman Professor of Surgery. Distinguished Professor of Medicine. Professor of Biomedical Engineering, and Microbiology and Immunology. Director, Diabetes Research Institute and Cell Transplant Program, University of Miami.

"Ri.MED is a unique initiative designed to promote the training of young Italian researchers, including them in international transdisciplinary research projects of the highest quality and scientific rigor, and to timely transfer outcomes to the clinical practice."

Prof. Bruno Gridelli
Vice President and Member of the Board of Directors.

CEO, IRCCS ISMETT
Professor of Surgery, University of Pittsburgh. Executive Vice President, UPMC International

"The goal of the Foundation is to create a workplace technologically-advanced and based on merit allowing researchers to express all of their potential. The outcomes of their research will be a powerful driving force for economic and social development."

Prof. Arthur Samuel Levine
Scientific Director

Senior Vice Chancellor for the Health Sciences
Dean, University of Pittsburgh School of Medicine

"With Ri.MED, we want to make a substantial contribution to biomedical research globally. The goal is not only to do world-class science but also to do the kind of science that will lead to the emergence of a biotechnology industry in Southern Italy."

Dr. Alessandro Padova
Director General

"The creation of the BRBC is a unique opportunity for Sicily and Italy. We are excited, proud and determined to face the challenge of leading Ri.MED Foundation towards this goal. An innovative Center focusing on understanding the mechanisms of diseases that still have no cure, developing new diagnostic methods, and discovering innovative customized treatments that will improve the patients' quality of life."

Prof. Alberto Albertini
Member, Board of Directors

Director, Institute of Biomedical Technologies, CNR

"Ri.MED was born as an international research center based on the exchange of experiences between young researchers on the model of the most prestigious American universities. I believe Sicilian students and researchers have an extraordinary possibility to access this advanced biotechnology center and share the most innovative experiences of their American colleagues."

Prof. Jeremy Mark Berg
Member, Board of Directors

Associate Senior Vice Chancellor for Science Strategy and Planning
Professor of Computational and Systems Biology, University of Pittsburgh School of Medicine

"The opportunities for the development of new knowledge that can be translated into improvements in human health with associated economic benefits are tremendous with outstanding young scientists provided with appropriate facilities."

Avv. Giuseppe Massimo Dell'Aira
Member, Board of Directors

Italian District State Attorney

"The Region of Sicily's active contribution to the Ri.MED Foundation is not merely an endorsement of common purposes, but a strong and tangible commitment to promote research as an economical and cultural driving force across Southern Italy. The partners' high level of specialization and the expected outcomes are a pledge to fill the current gap between different perspectives that for too long have limited many generations in this territory."

Mission

Spreading the role of biotechnology in the progress of humanity

Right from its very inception, Ri.MED Foundation has had a special focus on issues related to scientific dissemination, sharing research outcomes, organizing meetings, conferences, keynote lectures, and workshops attracting vast audiences of researchers from all parts of the world.

As of today our young researchers have published more than 150 scientific papers in international journals with impact factor in the scope of the research lines that constitute the heart of the Foundation: Structural Biology, Computational Biology, Drug Discovery, Vaccine Development, Development of Biomedical Devices, Tissue Engineering-Regenerative Medicine, Molecular Imaging, and Neurosciences.

Every year Ri.MED organizes a major scientific symposium focusing on one of its areas of research, in addition to periodical training events organized in the scope of networking activities with high-level international partners such as European IPR Helpdesk, Fit for Health 2.0, EATRIS, CNR, and many others.

The scientific dissemination activity is becoming more relevant and important within the increasingly extended network of scientific collaborations and agreements that Ri.MED is developing with field organizations and institutions: agreements are already in place to develop technological innovation, promote research activity, and sharing laboratories and resources with organizations across the globe.

Mission

Training staff with specific skills in the field of biotechnology

Since 2007, the Ri.MED Foundation sponsors a postdoctoral biomedical research fellowship that includes a period of training at the University of Pittsburgh, at the end of which the best fellows continue their activity at the University of Pittsburgh or in European centers of excellence within their respective areas of research. Alongside their scientific activity, fellows also have access to leadership and scientific management courses that allow for a comprehensive career development pathway.

The Foundation has activated several training programs also within the framework of initiatives involving European and ministerial calls. Thanks to the co-financing of projects such as the Institute for Preclinical Experimentation and Molecular Imaging (ISPeMI) and Public Private Laboratory (LLP), both 2007-2013 Research & Competitiveness PON (National Operating Programs) projects, in recent years we were able to train dozens of transdisciplinary highly-qualified positions: biologists, surgeons, research managers, experts in molecular medicine, translational biomedical research and chemical sciences, laboratory technicians, etc.

Training programs offered by Ri.MED contribute to the enrichment of the overall potential offer of Sicily in the biomedical and health care technology sector, while at the same time beginning to outline the vocation of a community that wants to become a global pole of reference in biomedical research and biotechnology.

Mission

Establishing and managing the Biomedical Research and Biotechnology Center

Ri.MED is currently involved in the realization in Carini, near Palermo, of the Biomedical Research and Biotechnology Center (BRBC) that will become a center of reference for researchers worldwide, placing Sicily in the forefront of biotechnology and biomedical research.

In 2011, the Ri.MED Foundation organized the international design competition for the BRBC preliminary project. The challenge was to provide the best possible integration between architectural form and high-technology requirements of the research laboratories.

Fourteen projects were submitted. The competition was awarded to the temporary association of companies including Hellmuth, Obata & Kassabaum Inc. (leading firm), Buro Happold Ltd., Progetto CMR S.r.l., De Cola Associati, EUPRO S.r.l. and Dott. Geol. Giovanni Randazzo.

After the various steps of the "definitivo" and "esecutivo" projects, the surveys conducted by the appointed agencies, the approvals from the [Sicilian] Regional Committee and Superior Council of Public Works, and the awarding of the contract, the BRBC is expected to be fully operational in 2020, employing some 600 people while about just as many jobs will be created in the allied industries the Center will help develop.

Preliminary design

SUSTAINABLE STRATEGIES

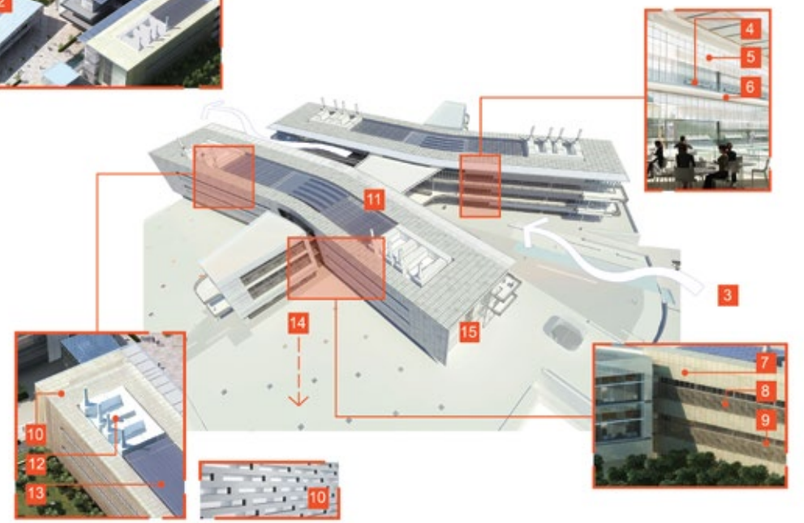
PASSIVE STRATEGIES

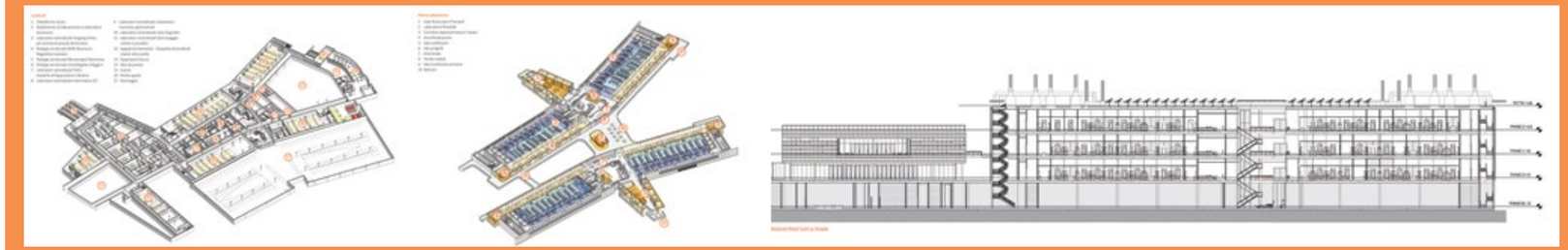
1 The shape of the buildings allows for excellent natural light
2 The facades along the main street are for the most part in the shadow
3 Buildings are oriented to take advantage of the prevailing breezes
4 Active facade - opening windows in office area reduce loads on the systems
5 Glass windows with high brise-soleil performance
6 Balconies create shaded areas protecting from the sun during the afternoon
7 Perforated panel covering protects from the sun in the morning
8 Brise-soleil provides additional shadow without impeding the view of the landscape
9 The covering's horizontal projection increases lighting and at the same time reduces the glare
10 Perforated panel covering reduces solar irradiation on roof
11 Rainwater collection

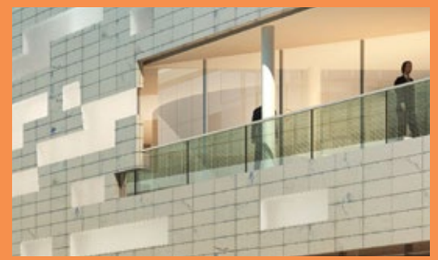
ACTIVE STRATEGIES

12 High-performance mechanical systems
- heat recovery
- condensate recovery

13 Solar and photovoltaic panels installed on the roof
14 Open geothermal ring
15 Sewage treatment







Biomedical Research and Biotechnology Center

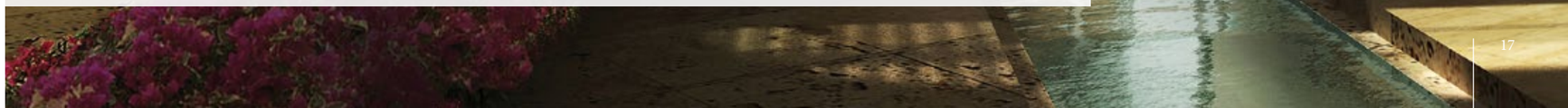
A scientific district in the heart of the Mediterranean

A 25,000-square meter building, the Biomedical Research and Biotechnology Center (BRBC) will host a structural biology laboratory, biomedical engineering research labs, neuroscience and molecular imaging laboratories, facilities for *in vivo* preclinical studies, vaccine development laboratories, and core laboratories with the latest generation equipment for development of new regenerative medicine devices and techniques that could make organ transplants obsolete one day.

The BRBC will also host an incubator that will assemble and support small companies, spin-offs, and start-up businesses to overcome the information unbalance between research and market potential, with a strong positive impact on the entire Sicilian economy.

The BRBC will be a public-private partnership management model, interacting with universities and research institutions and pharmaceutical and biotechnology companies, developing strategic alliances, and attracting funds and investments for scientific research.

The BRBC will allow Sicily to take a leading position in the development of drugs, vaccines, and new generation medical devices, and will support Italy's role in the international scientific community, also thanks to the collaboration with UPMC and the University of Pittsburgh's School of Medicine, attracting the best researchers in Palermo and retaining in Italy our best physicians and scientists.



Biomedical Research and Biotechnology Center

Innovation in Research

Biotechnology and biomedical research skills and technology platforms will be developed in the BRBC laboratories, focusing on the discovery and development of new drugs, diagnostics, vaccines, and biomedical devices in areas such as neuroscience, oncology, and cardiovascular diseases.
The goal of the BRBC is to become a center of excellence for tissue engineering and regenerative medicine, a particularly interesting field in which several of our researchers are currently specializing.

STRUCTURAL BIOLOGY

Understanding the three-dimensional architecture of macromolecules is essential to study the molecular bases of pathologies and design and analyze the drugs' activity. Using x-ray crystallography and other state-of-the-art technologies, and with the support of bioinformatics, BRBC researchers will perform advanced-level structural studies on molecules still not characterized in 3D.

COMPUTATIONAL BIOLOGY

Computational usage of the available information on molecules and their structure allows to create predictive models that provide guidance on the causes of diseases suggesting potential pharmacological targets. The primal advantage of computational biology is that it reduces costs, experimental time, and the efforts required to confirm the accuracy of the hypothetical models.

DRUG DISCOVERY

Useful information can be obtained from structural and computational biology, bioinformatics, genomics, and proteomics, to create drugs with a structure designed to modify the behavior of specific molecules responsible for some diseases, and to predict and assess the efficacy of the drug. Biotechnologies have led the way to "customized" drugs for personalized treatment of patients with specific genetic characteristics.

VACCINE DEVELOPMENT

New generation vaccines are made with recombinant proteins obtained inserting in appropriate carriers specific antigenic genes of the pathogenic agent. Recombinant vaccines are safe and relatively easy to develop and preserve. The program will involve scientists from various training backgrounds engaged in research on infectious diseases, particularly of an epidemic nature.

DEVELOPMENT OF BIOMEDICAL DEVICES

Devices able to administer drugs in cells, remove toxins, restore the body's mechanical functions, and detect or correct hormone levels, will be developed at the BRBC. The biomedical devices will be introduced in the human body using new methods of nanotechnology to identify and therapeutically manipulate the target physiopathologies.

TISSUE ENGINEERING AND REGENERATIVE MEDICINE

This area of research promises to stimulate the regeneration of selected cell populations and restore the structures and functions of damaged, degenerated, or malformed organs and tissues. The program will exploit recent advances in the fields of isolation and culture of various cell histotypes, identification of stem cells, and development of new biomaterials and scaffolds with different structural and biological characteristics.

MOLECULAR IMAGING

Non-invasive imaging techniques allow to understand the molecular damage underlying the onset of diseases, the molecular evolution of diseases, and the potential therapeutic modalities for each individual patient. The program will utilize static and functional MRI to monitor immune system cell infiltration in the graft to identify initial signs of rejection and improve patient management.

NEUROSCIENCE

BRBC researchers will study the mechanisms of cerebral development, degeneration modalities, and structural-functional relations of the brain, leading the development of treatments of neurodegenerative and psychiatric disorders.

Scientific activity

Ri.MED Fellowship Training Program
University of Pittsburgh - USA

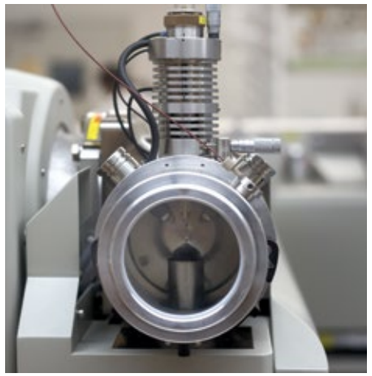
While the BRBC is pending completion our researchers are carrying out their research in various locations between the United States and Europe, mainly in Pittsburgh and Palermo.

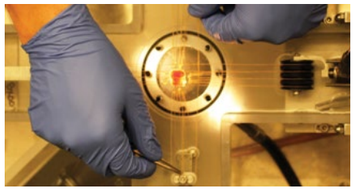
With the Ri.MED Fellowship Training Program the Foundation intends to enhance the training of **independent researchers on basic research topics** falling within the lines of research that will be represent the BRBC's areas of activity.

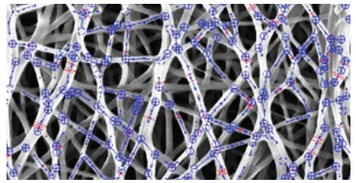
These range from computational biology to neuroscience, from tissue engineering to the development of vaccines and antitumor drugs.

Some Ri.MED fellows have selected to continue their projects in other European centers specialized in their area of research, thus promoting the creation of a solid of international research network.

The partnership with UPMC contributes to the training of these researchers who will serve as *principal investigators* at the soon-to-be BRBC: an opportunity to reverse the "brain drain" in Italy and particularly in Sicily.







Ri.MED Regenerative Medicine and Biomedical Technologies Unit
IRCCS ISMETT - Palermo, Italy

The Foundation has selected valid resources to conduct **preclinical research, translational research, and cell therapy production** (GMP Facility) programs at Ri.MED's Regenerative Medicine and Biomedical Technologies Unit located in the premises of IRCCS ISMETT in Palermo.

With the coexistence of ISMETT's premises and Ri.MED's staff and with the collaboration agreement in force between the two institutions, the goal of the Foundation is to facilitate the exchange of know-how and ideas between physicians and researchers.

Alongside a number of projects strongly oriented towards clinical application, inside the Palermo laboratories innovative therapies based on cellular products, such as pancreatic islet transplantation and adoptive immunotherapy, are the subject of clinical translation.

Our Researchers

Ri.MED is experiencing a time of great vitality in consideration of the growing number of scientific collaborations and especially in view of the upcoming opening of the BRBC.

“From a scientific point of view, the research opportunities offered by the BRBC are very interesting, but the social implications of Ri.MED were also extremely important to me. Bringing in a highly-educated workforce in an economically-depressed region like Sicily can really make a difference. Also, given the size of the project the Center will help foster the entire Italian biotech industry.

Antonio D’Amore
Cardiovascular tissue engineering

“The Ri.MED fellowship and the possibility of becoming a part of this large research center in Sicily was a unique opportunity and a rewarding experience on a personal and professional level. The goal of my research is to develop a vaccine against cancer that can be widely applied in the future.

Sandra Cascio
Cancer and inflammation


Giandomenico Amico
Flow cytometry, sorting and imaging


Ester Badami
Adoptive immunotherapy


Claudia Coronello
MicroRNA target prediction algorithms


Paola Corti
Blood and cardiac regeneration


Bruno Douradinha
Vaccine development


Marco Fazzari
Drug discovery


Riccardo Gottardi
Regenerative medicine and microsystems


Gioacchin Iannolo
Stemness and differentiation


Salvatore Pasqua
Quality control, GMP


Salvatore Pasta
Cardiovascular biomechanics


Sandra Cascio
Cancer and inflammation


Cinzia Maria Chinnici
Cell cultures and tissue repair


Chiara Cianciolo Cosentino
Drug discovery


Pierangelo Cifelli
Epileptology, neurodegenerative disorders


Chiara Cipollina
New anti-inflammatory drugs


Antonio D’Amore
Cardiovascular tissue engineering


Danilo D’Apolito
Advanced therapies, quality control, GMP


Chiara Di Bartolo
Advanced therapies, quality assurance, GMP


Mariangela Di Bella
Adoptive immunotherapy, GMP


Roberto Di Maio
Biology of neurodegeneration


Maria Giovanna Francipane
Tumor biology and tissue regeneration


Giovanna Frazziano
Scientific officer


Massimiliano Gaetani
Functional secretomics and proteomics


Daniele Galvagno
Biobanking


Marta Garcia-Contreras
Exosomes, stem cells, diabetes


Monica Miele
Adoptive immunotherapy, GMP


Chiara Milanese
Parkinson disease, neurodegenerative disorders


Elisabetta Oliva
Clinical engineering


Valeria Pagano
Animal welfare in pre-clinic research


Mariangela Pampalone
Primary cells extraction


Filippo Pullara
Structural and computational neuroscience


Francesca Timoneri
Adoptive immunotherapy, GMP

... and more to follow

Research funding

Grants

Between 2014 and 2020, the EU will provide grants to almost 80 billion for research, mainly through the Horizon 2020 program: success in obtaining financing for research represents a key activity for the Foundation.

For this reason a Grants Division was created to constantly search and select appropriate EU, ministerial and regional calls to activate co-financed research programs, also in collaboration with other institutions.

The most recently approved projects, hence financed with PON and ERDF Sicily projects, allowed to acquire sophisticated equipment, train highly-specialized staff, and conduct research of great importance for the human health. For example, it was possible to conduct research on cytoprotective molecules with dual applicability in Alzheimer's dementia and treatment of diabetes with pancreatic islets transplants, studies on innovative therapeutic approaches focused on biometals with applications in oncology and regenerative medicine, and develop systems for biobank management.

In particular, **the ISPeMI project** co-funded in the scope of the 2007-2013 Research & Competitiveness PON allows for the creation of a multicenter and interdisciplinary Institute for Preclinical Experimentation and Molecular Imaging to perform in an integrated manner the entire preclinical experimentation process. ISPeMI is able to meet the scientific and regulatory validation requirements establishing a network of complementary centers with services provided with quality systems compliant with the current regulations: this makes ISPeMI a unique institution able to develop products and methods covering virtually all industries and technologies in the health sector.

Fundraising

DONATIONS

Biomedical and biotechnology research is undoubtedly an issue of common interest with repercussions on public health and expectations of well-being and recovery.

With your contribution you can support scientific research at Ri.MED Foundation donating your 5x1000 tax share, sponsoring a fellowship, or with free endowments or gifts focused on dedicated research programs for direct participation to the progress of health applied science.

SPONSORSHIP

Ri.MED Foundation is engaged in building relationships and partnership supporting scientific research, involving agencies, institutions, and companies that share its mission.

To enhance the companies' investment in the support of the Foundation's tasks, we have designed various sponsorship programs that will enable a positive return of image on the investments, strengthening the bond with the community, and associating the image of the company to health care, an important area of collective interest.

EDITORIAL PROJECT AND CONTENT
Ri.MED Foundation Communication Department

GRAPHIC PROJECT AND LAYOUT
Nadia Consiglio

PHOTOGRAPHS
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