

Annual Report

ISGlobal 2019

A bountiful harvest for 2019

**We were awarded Severo Ochoa accreditation,
which distinguishes us as one
of the top research institutions in Spain**

Full version of the Annual Report
available here

2019.isglobal.org

A bountiful harvest for 2019

Foreword

A bountiful harvest after a big effort

Culminating a four-year period of sustained growth and productivity, 2019 has been a record year in our performance as an institution. Over that period, the total number of papers published, many of them in first-quartile journals, has increased by 20%. The number of new projects obtaining funding has increased by almost 40%, and our total funding by more than 50%. According to the most recent SCIMAGO indicators, ISGlobal is in the top 10% of research centres worldwide and among the leading global health centres in Europe. Our translation and education activities showed similar positive trends, evidenced by our consistent ranking among the ten best

global health think tanks in the world (second in Europe) and the more than 700 students we trained this year.

In recognition of all of this hard work, ISGlobal was awarded Severo Ochoa accreditation, a distinction that brings with it additional funding to implement a strategic programme aimed at reinforcing excellence and innovation.

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Sowing for the future

ISGlobal's commitment to developing three new cross-cutting areas—in data science and artificial intelligence, digital health and impact assessment, and implementation science—has thus been rewarded.

Our future trajectory will be charted by the development of these three new areas and by a multidisciplinary approach aimed at intensifying collaboration between existing research programs.

As we close this foreword, the world has been hit by the COVID-19 pandemic. We would like to take this opportunity to thank all the teams who have worked against the clock with an extraordinary level of cohesion and cooperation to ensure a proactive, productive and visible response to the pandemic.

Last but not least, in December, the Board approved Josep M. Antó's request to step down as Scientific Director. He has been succeeded by Denise Nanche, co-director of the Viral and Bacterial Infections Programme, whose appointment brings new opportunities and contributes to the generational renewal and gender balance of the Institute's leadership.

We are very proud of our vibrant ISGlobal community and feel highly privileged for the continuing support of our Trustees and the acknowledgement of the many institutions that believe in our work. Our most sincere thanks to all.



Antoni Plasència
GENERAL DIRECTOR



Jospe M. Antó
SCIENTIFIC DIRECTOR

Highlights

11 Key Achievements 2019



Photo: Martin Jernberg / Unsplash.

Every Breath You Take

Most conclusions on the health effects of air pollution derive from studies performed in developed countries.

Over the past four years, the European-funded CHAI project has focused on measuring exposure to fine particles and its health effects in a peri-urban population in the south of India, a country affected by high levels of indoor and outdoor pollution. Although many results are still being analysed, 2019 saw CHAI's official completion along with the publication of two major studies on the effects of air pollution on cardiovascular health.



Curto A. *Epidemiology*. 2019 Jul;30(4):492-500.

Ranzani OT. *Int J Epidemiol*. 2020 Feb;49(1):69-79.

Photo: Ana Ferreira.



6 million people worldwide are estimated to be affected by **Chagas disease**

Taking Tests to the Field

One major obstacle in the fight against Chagas is that the real burden of the disease is largely unknown, since disease diagnosis involves serological tests that are not practical to perform in remote, rural and under-resourced areas.

A field study performed in Bolivia showed that the combined use of two RDTs was as effective as the standard serological test, with the advantage that they are easy to use, do not need cold storage, and require small quantities of blood. These tests can become a key tool for increasing access to the diagnosis and treatment of Chagas disease in highly endemic regions.

Lozano D. *Plos Negl Trop Dis*. 2019 Dec 19;13(12):e0007877.



Photo: Hu Chen / Unsplash.

A New All-in-One Approach

From the moment of conception, human beings are constantly exposed to a wide variety of environmental factors— chemical agents, pollutants, meteorological conditions and other exposures—that may have a negative or positive impact on their health.

In 2019, we published a series of pioneering studies that implement the exposome concept: a holistic approach to better understand the health effect of multiple environmental exposures during critical periods of life.

From the moment
of conception,
**human beings are
constantly exposed**
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on their health

Warembourg C. *J Am Coll Cardiol*. 2019 Sep 10;74(10):1317-1328.

Agier L. *Lancet Planet Health*. 2019 Feb;3(2):e81-e92.

Nieuwenhuijsen MJ. *Environ Health Perspect*. 2019 Apr;127(4):47007.

Montazeri P. *Int J Hyg Environ Health*. 2019 Jun;222(5):864-872.

Photo: Billy Huynh / Unsplash.

AIRLAB's aim is to shed light on the **effects of environmental determinants** on human health



Is the Answer in the Air?

In 2019 we launched AIRLAB, a core facility aimed at disentangling the role of air composition in human health through a unique integrative approach.

The laboratory analyses aerosols from urban and rural environments - not only their physical characteristics (from coarse to ultrafine particles), but also their chemical and microbial composition. The AIRLAB team then applies machine learning to shed light on the associations between data obtained from air sample analyses and epidemiological records for several diseases.



Photo: GAVI, The Vaccine Alliance.

Perfecting the Shot

The RTS,S (Mosquirix) malaria vaccine has the merit of being the first vaccine approved for large-scale pilot studies in Africa, but it protects only partially and for a limited amount of time.

In 2019, we published results that will help to understand why the vaccine protects some children, but not others. We showed that protection is not only a matter of antibody quantity, but also of quality, and that when a child has already been exposed to malaria, the protective effect of the vaccine is lower. We also identified antigens that could be included in more effective multivalent vaccines in the future.

Dobaño C. *Nat Commun.* 2019 May 15;10(2174).

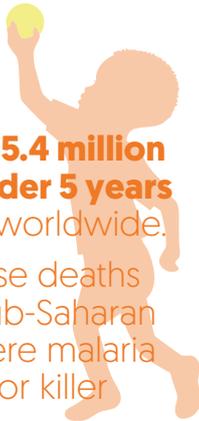
Dobaño C. *BMC Medicine.* 2019 Aug 14;17(1):157.



In 2019,
**malaria killed
more than 400,000**
people worldwide



Photo: ISGlobal.



Every year, **5.4 million children under 5 years of age die** worldwide.

1/2 of these deaths occur in sub-Saharan Africa, where malaria is a major killer

Better Chances for Survival?

Every year, 5.4 million children under five years of age die worldwide. Half of these deaths occur in sub-Saharan Africa, where malaria is a major killer.

The ICARIA project, launched in 2019, will test whether mass drug administration of the antibiotic azithromycin combined with preventive treatment for malaria, is effective in reducing child mortality. The trial will take place in Sierra Leone, a country with one of the highest child mortality rates in the world, and plans to recruit 19,000 infants.



Photo: Diana Ulloa / Fotovoz.

Heat and Work

Over the last few decades, an increasing number of cases of chronic kidney disease have emerged among agricultural workers, particularly in Central America. The disease is strongly associated with working and living in a hot environment, but the precise cause is unknown.

We found that the disease is also present in India and that the major risk factors were being of working age, living in a rural area, alcohol consumption and lower education level. The findings indicate that this disease may have a greater burden than previously recognised.



Chronic kidney disease, of unknown cause is considered an **epidemic in Central America** and is particularly devastating in Nicaragua and El Salvador

Photo: Markus Spiske / Unsplash.



“Our ultimate goal is to improve the **quality of life** of children treated with radiation”

Radiation Vibes

The use of radiation for disease diagnosis or treatment has greatly increased the survival of paediatric patients.

2019 saw the launch of HARMONIC, a European project to investigate potential health effects of medical radiation in children undergoing radiotherapy for cancer or X-ray-guided imaging for cardiac interventions. The five-year project should help to optimise treatment in these young patients and reduce the risk of toxicities later on in life.

<https://harmonicproject.eu>



Photo: ISGlobal.

Unmasking a Killer

Tuberculosis (TB) is the leading infectious cause of death globally, but the real burden of the disease remains elusive.

In one of the largest autopsy studies conducted to date in sub-Saharan Africa, we showed that 28% of patients had tuberculosis at the time of death, and this percentage was even higher (51%) among HIV-positive adults. Many of these TB infections were missed by clinicians. Knowing with certitude the causes of death can help prevent new deaths.

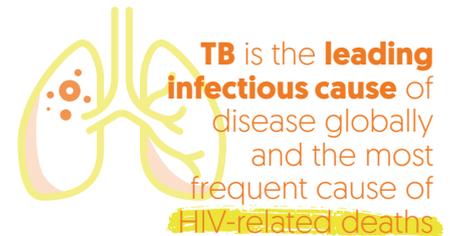




Photo: Glòria Solsona / ISGlobal.

Making a Difference



Impact /'impakt/:
a marked effect
or influence

Measuring the impact of what we do is a complex and uncertain endeavour. Two examples illustrate how we attach importance to evaluating the impact of our training and education activities.

In 2019, we conducted a triennial survey of our ex-alumni to find out where they are, what they are doing and whether what we taught them had an impact on their professional careers and their communities. We also held a workshop in Barcelona for researchers linked to TDR's Clinical Research and Development Fellowship, with the aim of helping them monitor and assess their training activities.



Health in All, for All

Over the last 12 months, our teams have carried out their knowledge translation mission following the SDG3+ and planetary health principles, which place health in the context of its socioeconomic and environmental determinants.

In 2019, we assumed the leadership of REDS, the Spanish Sustainable Development Network, as well as the co-leadership of the SDSN global network. This has led us to work in close collaboration with other academic and non-academic actors in a series of events such as Acelera 2030 and COP25, both held in Madrid, and the United Nations High-Level Forum in New York.



Global health is
an aspiration with multiple
dimensions and players

A Global Presence

> Countries where ISGlobal coordinates projects and networks

> Long-term strategic alliances

MOZAMBIQUE



BOLIVIA



MOROCCO



> Main international institutions with which ISGlobal published scientific articles in 2019

[Web of Science, 2019]

UNITED KINGDOM Imperial College London, London School of Hygiene & Tropical Medicine

FRANCE INSERM

SWEDEN Karolinska Institute

THE NETHERLANDS University of Amsterdam, Erasmus University Medical Centre, Utrecht University

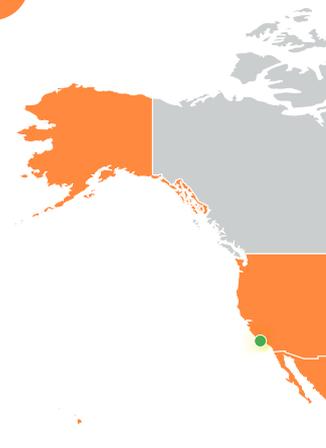
MOZAMBIQUE CISM

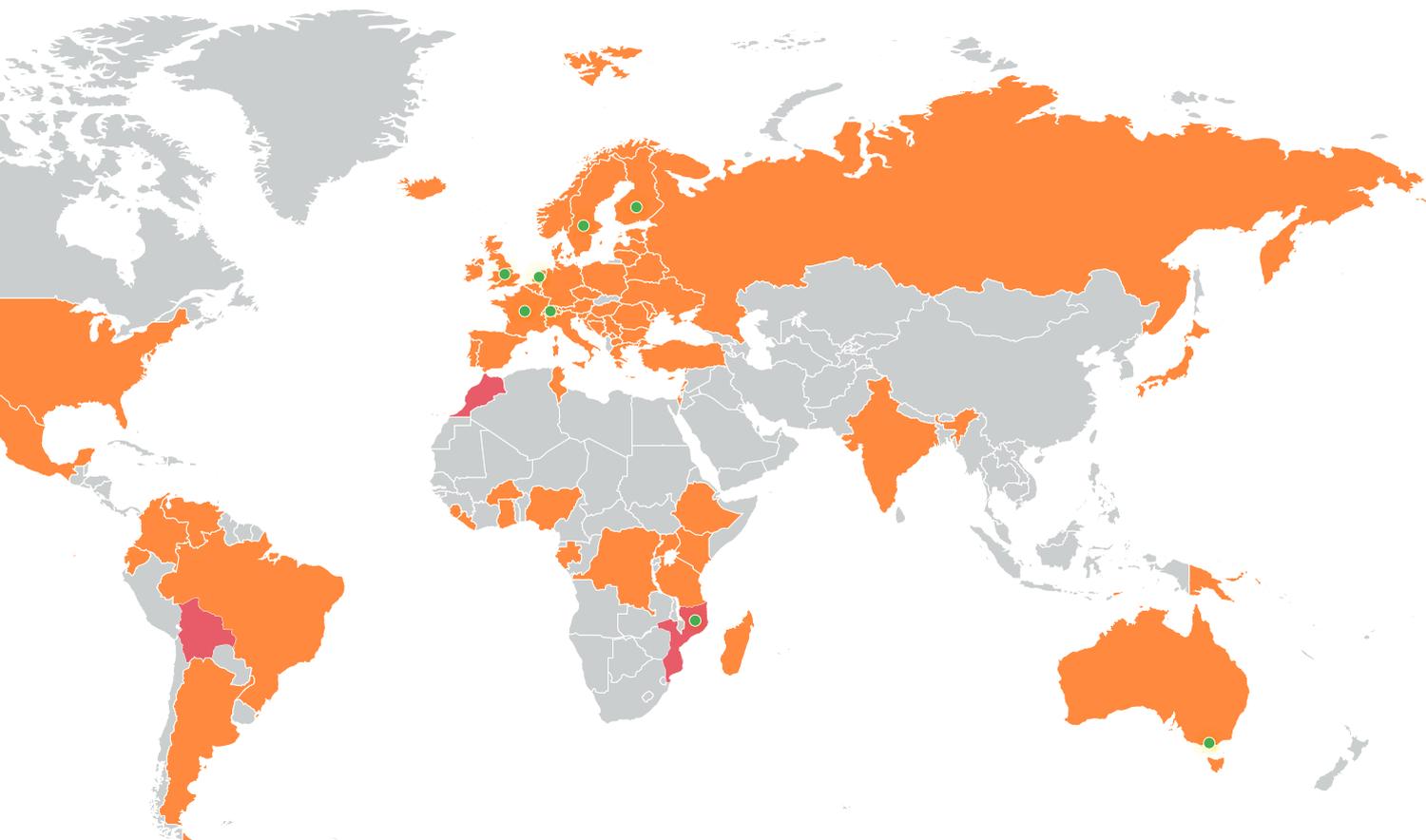
FINLAND University of Helsinki

UNITED STATES Harvard Medical School, University of Southern California

SWITZERLAND University of Basel

AUSTRALIA University of Melbourne





Facts & Figures

Total number of staff

439

Gender



68% WOMEN

32% MEN

Average age

38

YEARS

Nationalities

34

COUNTRIES



Total budget



Main funders 2019

European Commission (33%), Generalitat (Catalan Government) (11%), UNITAID (11%), “la Caixa” Foundation (10%), Bill & Melinda Gates Foundation (7%), US Federal Funds NIH/CDC (3%), Carlos III Health Institute (ISCIII) (3%), Spanish Ministry of Economy and Business (2%), Health Effects Institute (1%), Barcelona City Council (1%), AECID (1%), USAID (1%), “La Marató TV3” Foundation (1%), ANSES (1%), World Health Organisation (1%), EIT Health (1%) and Others (15%).

Total number of publications



Research

Ongoing research projects **173**

International projects **105**
33 AS COORDINATORS



Patent and software portfolio

13 [GRANTED & SUBMITTED]
[1 PATENT SUBMITTED IN 2019]



PhD theses defended **22**



Total students trained **706**



Ranked #8

global health think tank of the world

[UNIVERSITY OF PENNSYLVANIA
INDEX 2019]

**Policy
publications**

5



**Digital
reports**

2



Media impacts

6,486



**2% TV AND
RADIO**



**11% PRINT
MEDIA**



**87% ONLINE
MEDIA**



133

news items published
on ISGlobal's website



74

posts published on
the Health is Global blog

67

**Total number of
outreach activities**

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ISGlobal **Barcelona**
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**FUNDACIÓN
RAMÓN ARECES**