

International Agency for Research on Cancer



World Health
Organization



*Putting an end to cancer
before it can begin*

Welcome to the International Agency for Research on Cancer

During the 21st century, cancer will become the leading cause of premature death worldwide. The predictions are alarming: the number of new cancer cases per year is expected to increase by 60% by 2040, placing the health and welfare of the world's people and economies in a precarious situation. Many countries will simply not be able to manage the burden of cancer.

Cancer prevention is needed now more than ever. At the International Agency for Research on Cancer (IARC), we are uniquely positioned to face this challenge. Our researchers and support staff work together with collaborators around the globe to uncover the facts about who develops cancer, what causes cancer, and how to prevent it. Our dual role as a research institute and an agency of the World Health Organization (WHO) means that our scientific findings can serve as a basis for informed decision-making by governments worldwide.

Much important work has been done. Our research has been directly translated into policies for cancer control. Reducing tobacco use and implementing vaccination against cancer-associated viruses, such as human papillomavirus (HPV), are just two examples. But there is much more we can do.

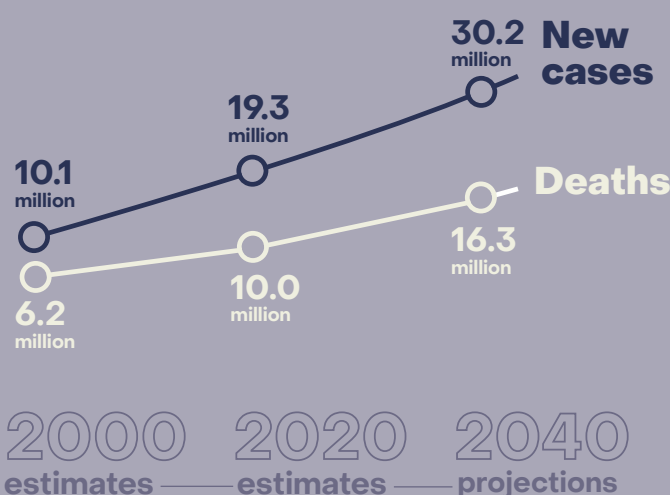
From our new home in IARC's state-of-the-art headquarters building in the heart of the Biodistrict in Lyon, France, we are committed to opening our doors to the world, strengthening cooperation, and making our research findings transparent and available to all who need them, thus ensuring that our work has the greatest impact.

My hope is that IARC will be the meeting-place for the world's most ambitious and innovative thinkers and practitioners in cancer prevention, so that we can advance quickly and effectively in our shared goals. I invite you to explore IARC and join our community. Together, we will make unprecedented progress in putting an end to cancer before it can begin.

Elisabete Weiderpass, MD, PhD
IARC Director



A global threat to health and development



According to IARC Global Cancer Observatory estimates, in 2020 there were 19.3 million new cancer cases and 10 million deaths from cancer worldwide. This is equivalent to a cancer diagnosis every 2 seconds and a cancer death every 3 seconds.

By 2040 these numbers are expected to increase by 60%, to a predicted 30.2 million new cases and 16.3 million deaths per year.

The largest proportional increases will occur in low- and middle-income countries. In these countries, which already face health-care and socioeconomic challenges, the size of the increase in the cancer burden will pose a real threat to communities.



Cancer is expensive

The total annual cost of cancer to the global economy is estimated to be at least US\$ 1.2 trillion, and this figure is increasing.

The cost of cancer will challenge even the best-prepared health systems, and it will deeply affect development in countries around the globe. We must reverse this trend, and we can:

- IARC research shows that **30–50% of cancer cases can be prevented.**

IARC is the cancer agency of WHO and belongs to the broader United Nations (UN) family.

Our researchers generate independent scientific evidence and set standards that answer urgent questions about cancer prevention raised by the global cancer control community. Being part of WHO means that our research findings can be effectively translated into timely policies for cancer control worldwide.



- IARC's strategy of cancer research for cancer prevention contributes directly to achieving the **UN Sustainable Development Goals.**

The IARC approach

We focus on answering **4 key questions for cancer prevention:**

IARC researchers approach these questions through **4 interdisciplinary and interconnected pillars of action:**

Who develops cancer, where, and when?

01

Data for Action

Why do people develop cancer?

02

Understanding the Causes

How can we prevent cancer effectively?

03

From Understanding to Prevention

How can we mobilize and share our knowledge?

04

Knowledge Mobilization

Data for Action:

Who develops cancer, where, and when?

When it comes to finding solutions for diseases such as cancer, data are key.

Data help us to see the scope of the problem, highlight where we should look, indicate how to develop interventions for prevention, and show us whether we have been successful. At IARC, we are experts on cancer data; for almost 60 years, IARC has collected and analysed comprehensive, robust data.



IARC bears primary responsibility for collecting and curating the world's cancer data. This is an immense public service, which IARC is uniquely positioned to carry out for the world's benefit, and without which evidence-informed global cancer control would simply not be possible.



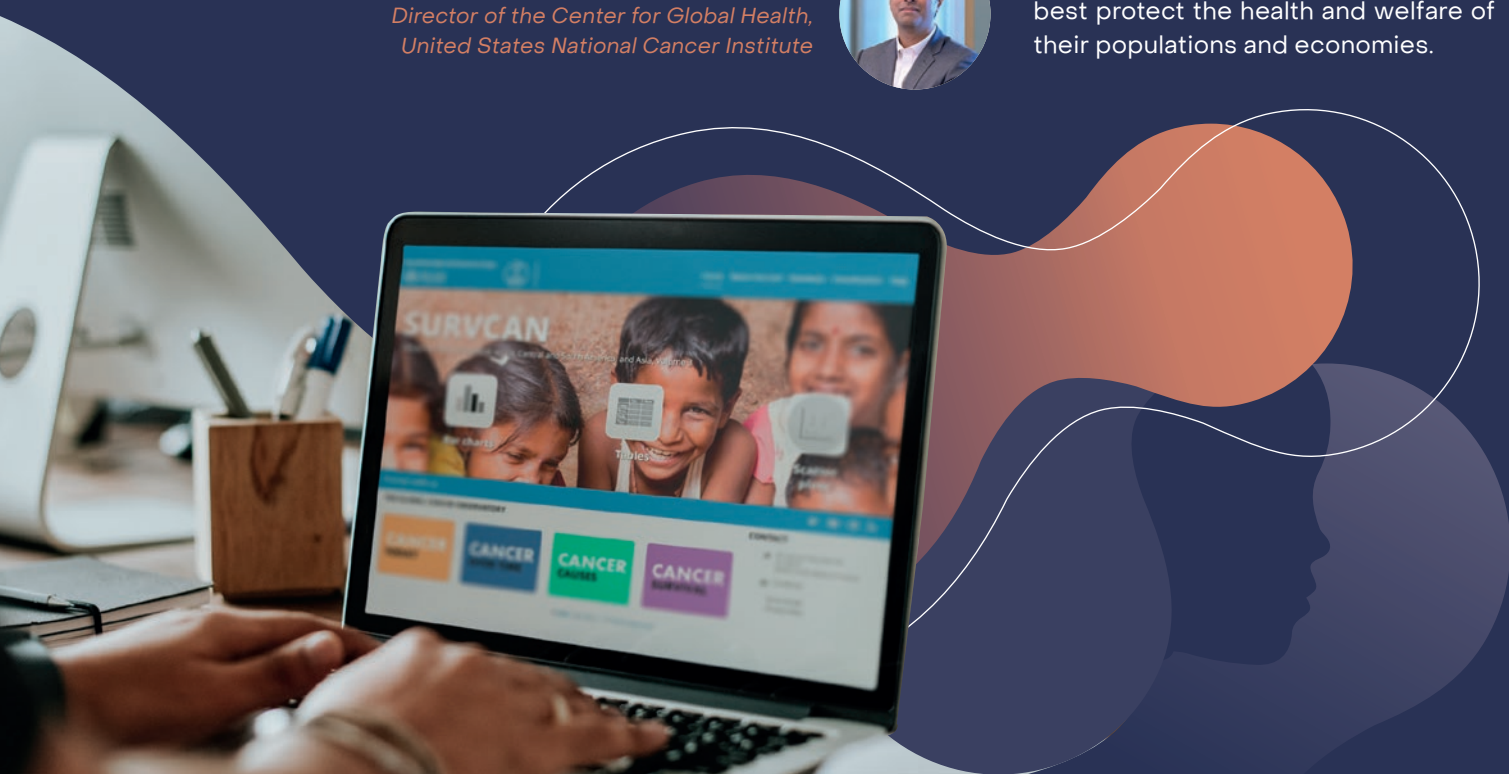
– Satish Gopal, MD, MPH,
*Director of the Center for Global Health,
United States National Cancer Institute*



Through IARC's flagship publications and programmes – including the compilation of high-quality worldwide data in the **Cancer Incidence in Five Continents** series and the IARC-led **Global Initiative for Cancer Registry Development**, which supports transitioning countries to build their capacity to collect and synthesize local cancer data – we use our extensive networks to ensure that key statistics on cancer are available from populations around the world. These data enable us to shine a light on where cancer occurs (who develops cancer, of which types, and in which regions of the world), to uncover valuable clues about where to look for possible causes, and ultimately to propose preventive measures.

Through IARC's global cancer (**GLOBOCAN**) estimates in 185 countries, we can study the magnitude and patterns of cancer worldwide. We can also make future projections. We know that the number of new cancer cases is likely to increase by 60% by 2040 and that the largest increases will occur in low- and middle-income countries, leading to widening cancer inequalities and unbearable burdens for some countries.

IARC's goal is to be part of the solution by providing reliable, trustworthy evidence to governments, who can use it to make informed decisions on policies that best protect the health and welfare of their populations and economies.



Understanding the Causes:

Why do people develop cancer?

The causes of about 40% of cancer cases have been identified.

This is remarkable progress, but many more causes remain to be discovered. Understanding why certain people will develop a particular type of cancer during their lifetime is essential for cancer prevention.

To identify novel causes of cancer, IARC scientists work in close collaboration with multidisciplinary teams from around the world, tackling the challenge from every possible angle. We use state-of-the-art approaches – such as investigating lifestyle exposures and leveraging the latest -omics technologies, including next-generation sequencing – and unique resources like the IARC Biobank to unravel the biomolecular pathways and mechanisms underlying the development of different cancer types.



SPOTLIGHT: The PROMINENT Project

IARC researchers are leading a multidisciplinary international team to pinpoint how lifestyle and environmental risk factors – both known and new – cause cancer. By using cutting-edge high-throughput genomic, proteomic, and functional methods, PROMINENT aims to understand the precise mechanisms by which these factors stimulate normal cells to turn into cancer cells. Ultimately these findings will help determine strategies for cancer prevention, especially for those most at risk.

PROMINENT is funded by the Cancer Grand Challenges initiative of the United States National Cancer Institute and Cancer Research UK.

03 From Understanding to Prevention:

How can we prevent cancer effectively?

Successful cancer prevention depends on designing measures that are accessible and effective.

IARC's work in this area focuses on evaluating different types of interventions – such as behaviour change, screening, and vaccination – to determine what works and how prevention measures can be implemented in different settings.

We work in close collaboration with partners in the field to ensure that the proposed solutions will meet the needs and expectations of their populations.

- Are the right services being provided?
- Are there barriers to access?

A thorough understanding of the effectiveness of prevention measures provides crucial information for governments to allocate their resources in the best way to serve their populations.

 **SPOTLIGHT:**
A timeline
of IARC research
on cervical cancer

1989

Epidemiological research establishes HPV infection as the primary cause of cervical cancer

1995

IARC Monographs programme classifies HPV as carcinogenic to humans

2020

WHO launches Global Cervical Cancer Elimination Initiative, based on IARC scientific evidence

2021

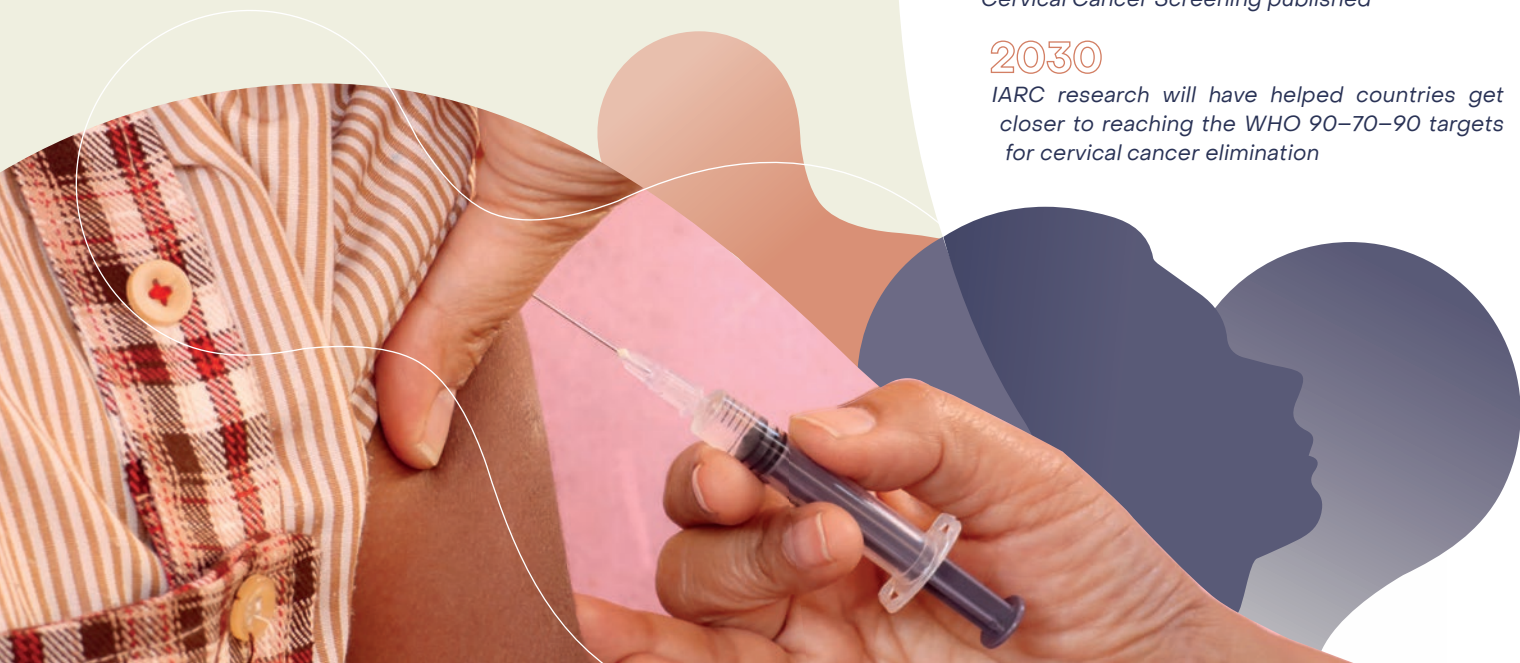
IARC-led study demonstrates the effectiveness of a single dose of HPV vaccine – a game-changer for prevention

2022

IARC Handbooks of Cancer Prevention volume on Cervical Cancer Screening published

2030

IARC research will have helped countries get closer to reaching the WHO 90–70–90 targets for cervical cancer elimination



04

Knowledge Mobilization:

How can we share our knowledge?



Cancer data and knowledge of cancer causes and prevention are only meaningful when they are shared.

Since 1965, IARC has been the world’s authoritative source of information for the international cancer control community.

We communicate our findings through our flagship publications, which are the result of independent, systematic, and impartial reviews by renowned experts from around the world. These highly accessible digital publications are the go-to reference for cancer experts, national authorities, and policy-makers who need to make informed decisions on actions for cancer control and care.

WHO Classification of Tumours

The **WHO Classification of Tumours** – the taxonomy of cancer – describes the characteristics of each cancer type, including diagnostic criteria, pathological features, and associated molecular alterations. It provides the definitive international standards for diagnosis and cancer research.

IARC Handbooks

The **IARC Handbooks of Cancer Prevention** identify interventions and strategies that can prevent cancer or reduce cancer-related mortality. To do so, interdisciplinary working groups of expert scientists review the published studies and evaluate the weight of the evidence for primary and secondary prevention measures.

IARC Monographs

The **IARC Monographs** identify environmental factors that are carcinogenic hazards to humans. These include chemicals, complex mixtures, occupational exposures, physical agents, biological agents, and lifestyle factors. National health agencies can use this information as scientific support for their actions to prevent exposure to potential carcinogens.

04

Knowledge Mobilization:

How can we strengthen global capacity in cancer research?

The success of any prevention strategy depends on the ability to implement it.

IARC's collaborators in the field need to understand the scientific evidence, interpret it with respect to their specific settings, and design and implement interventions that work for them. Insufficient research infrastructure and lack of qualified human resources remain problems in many countries, particularly those with limited resources.

IARC is firmly committed to training the next generation of cancer prevention researchers and preparing them for the challenges of the future. We work together with our network of partners around the world to identify target audiences for training or mentoring activities, and then co-design capacity-building programmes tailored to their needs.

Training at IARC is hands-on. Our students, early-career scientists, and visiting scientists are immersed in cutting-edge research projects, which expose them to field studies as well as laboratory work. We offer workshops, courses, and summer schools, both online and at our headquarters, and we lead capacity-building networks in cancer surveillance, biobanking, and early detection.

“

My experience at IARC brought me the necessary expertise to conduct cancer genomics studies and also allowed me to move to the next level of my career.

”

– Dr Felipe Vaca Paniagua,
*National Autonomous University of Mexico,
former IARC Postdoctoral Fellow*

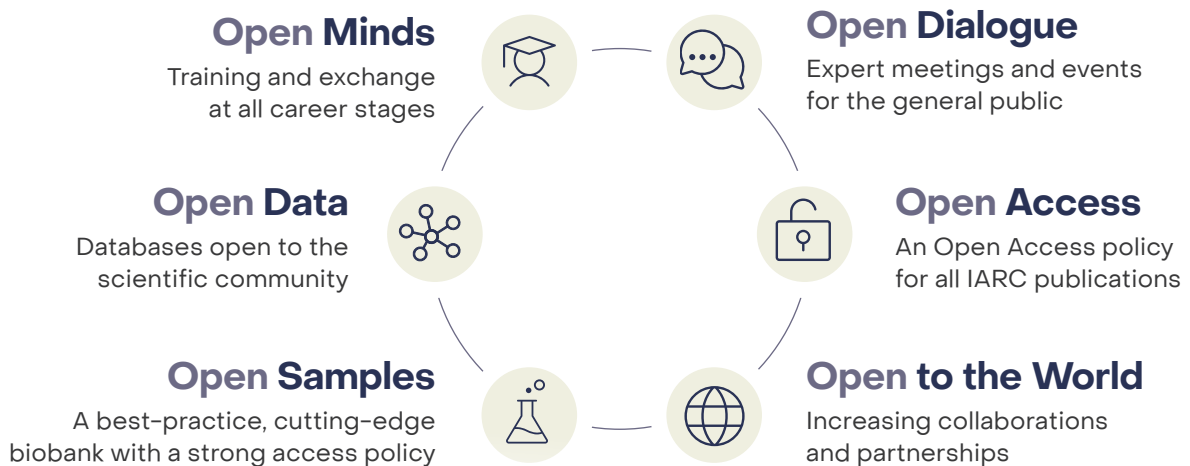


Open Science

for the greatest impact

IARC research has no value if it stays in the laboratory.

As a UN organization, what matters most to us is the impact we can have on public health. Thus, we are strongly committed to an Open Science approach.



A model of international cooperation

International cooperation is at the core of everything IARC does, and the Participating States who support us play a vital role in this.

Members of the IARC Governing Council and Scientific Council serve as a bridge to their countries' governments, policy-makers, and cancer research communities.

Their input and support help us advance in our mission and ensure that our research is translated into direct impacts for their populations and for the world.

IARC's 27 Participating States are Australia, Austria, Belgium, Brazil, Canada, China, Denmark, Finland, France, Germany, Hungary, India, Iran (Islamic Republic of), Ireland, Italy, Japan, Morocco, Norway, the Netherlands, Qatar, the Republic of Korea, the Russian Federation, Spain, Sweden, Switzerland, the United Kingdom, and the United States of America.





> 350 personnel
work at IARC*



56 countries
are represented at IARC*



195 early-career and visiting scientists
were hosted at IARC*



> 150 countries
have IARC collaborators**



406 peer-reviewed articles
were published by IARC scientists*



94% of articles
involved international collaboration*

*Data for 2022 **Data for 2018–2022



A global research community

IARC has brought together a world-class team of researchers, students, early-career and visiting scientists, and support staff.

We contribute our expertise, scientific curiosity, and passion and apply them to solving one of the most pressing issues facing society today: how to prevent cancer.

From IARC's headquarters in Lyon, France, we work together with colleagues in research laboratories, hospitals, and organizations around the world, combining our skills and experience to form an interconnected community of specialists who are committed to understanding who develops cancer, where, when, and why, and how we can prevent it. This unique landscape of global collaboration provides a valuable opportunity to learn from one another and to design innovative methodologies and approaches that are grounded in the reality of national cancer contexts.

Since IARC was established in 1965, it has hosted, trained, and prepared thousands of specialists working on the many facets of cancer prevention. They have gone on to take up important roles in countries around the world, applying their unique skill sets and vision to work toward creating a world where fewer people develop cancer.



Creating a world where fewer people develop cancer

➤ Join the IARC community:

- Sign up to receive our newsletter
- Engage with us on social media
- Check out our employment opportunities
- Explore training opportunities with us
- Make a donation



www.iarc.who.int



**International Agency
for Research on Cancer**

25 avenue Tony Garnier
CS 90627
69366 Lyon CEDEX 07
FRANCE



Photo credits: © Adobe Stock/Rido (cover), rawpixel (bottom image on page 4), Shisu_ka (bottom image on page 5), artimedvedev (top image on page 7), Sensvecto (bottom illustration on page 11), Photographee.eu (back cover). All other images, © IARC.

International Agency for Research on Cancer



**World Health
Organization**