

International Agency for Research on Cancer



BIENNIAL REPORT

10/11

INTERNATIONAL AGENCY FOR RESEARCH ON CANCER 2010–2011

BIENNIAL REPORT

2010–2011

INTERNATIONAL AGENCY FOR RESEARCH ON CANCER

LYON, FRANCE

2011

ISBN 978-92-832-0427-5
ISSN 0250-8613

TABLE OF CONTENTS

Introduction	1
Scientific Structure	4
IARC Day/Medals of Honour	5
Collaborative research: examples of multicentre studies	7
Interdisciplinary research: where laboratory and epidemiology combine and complement	11
Research and health services development: research leads to service delivery improvements	15
Education and Training – a historic perspective	21
Fellowship programme	23
Section of Cancer Information	27
Section of IARC Monographs	41
Section of Mechanisms of Carcinogenesis	49
Molecular Carcinogenesis group	51
Epigenetics group	59
Section of Molecular Pathology	65
Section of Infections	71
Infections and Cancer Biology group	73
Infections and Cancer Epidemiology group	79
Section of Environment and Radiation	89
Section of Nutrition and Metabolism	101
Nutritional Epidemiology group	103
Biomarkers group	111
Dietary Exposure Assessment group	117
Section of Genetics	121
Genetic Epidemiology group	123
Genetic Cancer Susceptibility group	131
Biostatistics group	135
Section of Early Detection and Prevention	139
Screening group	141
Quality Assurance group	151
Prevention and Implementation group	159
Office of the Director	163
Communications group	165
Education and Training group	169
Laboratory Services and Biobank group	175
The Gambia Hepatitis Intervention Study	179
Division of Administration and Finance	182
Committees	
Laboratory Steering Committee	184
Biobank Steering Committee	185
Ethics Committee	186
Occupational Health and Safety Committee	187
Governing and Scientific Councils	188
Staff Publications	195



INTRODUCTION



Dr Christopher Wild

IT IS MY GREAT PLEASURE TO INTRODUCE THE BIENNIAL REPORT 2010–2011 OF THE INTERNATIONAL AGENCY FOR RESEARCH ON CANCER (IARC). THIS REPORT IS BEING WRITTEN AS THE FINAL PREPARATIONS ARE MADE FOR A HIGH-LEVEL MEETING OF THE UNITED NATIONS GENERAL ASSEMBLY IN NEW YORK ON THE TOPIC OF NONCOMMUNICABLE DISEASES. THIS IS ONLY THE SECOND TIME THAT HEADS OF STATE HAVE ASSEMBLED AT THIS LEVEL AT THE UNITED NATIONS TO ADDRESS A HEALTH TOPIC, THE FIRST BEING IN RELATION TO HIV/AIDS IN 2001. AT THE TIME WHEN SUCH AN INFLUENTIAL MEETING CONSIDERS THE CONTROL OF NONCOMMUNICABLE DISEASES, IT IS IMPORTANT TO RECOGNIZE THE DIRECT RELEVANCE AND VALUE OF THE CANCER RESEARCH DESCRIBED IN THIS REPORT TO THAT GLOBAL CHALLENGE. BASED ON ITS EXPERTISE, INTERNATIONAL STATUS AND REPUTATION, IARC IS IN AN IDEAL POSITION TO PLAY A SIGNIFICANT ROLE IN THE RESPONSE ON SEVERAL DIFFERENT, COMPLEMENTARY LEVELS, PARTICULARLY IN LOW- AND MEDIUM-RESOURCE COUNTRIES WHERE THE GREATEST INCREASES IN CANCER BURDEN WILL OCCUR OVER THE NEXT 20 YEARS. NOTABLY:

- The Agency helps to set the cancer control agenda. IARC contributed to the 2011 First Global Ministerial Conference on Healthy Lifestyles and Noncommunicable Disease Control in Moscow in April 2011. Working closely with the World Health Organization (WHO), they also played a key role in a 2010 meeting in New York to prepare the first global status report on noncommunicable diseases (WHO, 2011). This Report sets out the challenge of the worldwide burden of noncommunicable diseases, associated risk factors and prevention strategies, and highlights several important cancer-specific issues.
- Through close collaborations with cancer registries worldwide, IARC provides vital data on global cancer burden, which is an essential element for development of national cancer control plans. Improving the coverage and quality of cancer statistics remains a priority, especially in Africa, Asia and Latin America.
- The Agency's research into the causes of cancer provides the evidence-base for cancer prevention. Information on risks associated with exposures such as infectious agents, radiation, environmental pollutants, diet, metabolic imbalance (including obesity), and genetics is a vital platform for prevention. Evaluating interventions and how they may be implemented in health care settings is also critical in translating research into public health action.
- IARC scientists have focused on cancer in developing countries since the creation of the organization in 1965. The result is a unique collaborative network based on relationships of trust, which provides a foundation for future work. With this opportunity, however,

comes a responsibility to contribute to the necessary collaboration, training and support to develop cancer research capabilities in these regions, in tandem with the research projects themselves.

There are many examples of each of these areas of activity in the current Biennial Report organized under the different Research Sections.

During the current biennium, the Agency has completed major new analyses of global cancer burden, for example through its GLOBOCAN project, which projects striking rises in cancer incidence and mortality worldwide over the coming 20 years. In addition, the Agency provides technical support and training to cancer registries, working closely with the International Association of Cancer Registries. Of interest, the Agency's quality criteria were recognized by the signing of a new South African regulation requiring that the national cancer registry conform to cancer registration norms and standards as determined by IARC. In addition to incidence and mortality, the Agency examined international differences in survival among cancer patients. The scientific publication entitled "Cancer survival in Africa, Asia, the Caribbean and Central America," represented a landmark study which illustrated the desperate inequalities in cancer survival that still persist depending on where people live. At the same time, the study brought hope by revealing the significant benefits of early detection and treatment even in resource-limited settings.

The IARC Monographs Programme continues to be used widely by regulatory agencies and it provided updated monographs on over 100 Group 1 human carcinogens during the biennium. This in-depth review, involving 130 scientists from 28 countries, established new associations between individual agents and cancer in specific organs.

The Agency worked worldwide to identify cancer risk factors and to evaluate prevention strategies, with many examples summarized in the Report. This research covered a wide range of different risk factors, some of specific interest in particular geographic regions where little work has been conducted to date.

Cancer epidemiology cannot afford to ignore the advances in knowledge of mechanisms of carcinogenesis, for example in genomics and epigenomics, which is transforming cancer research. Agency scientists are taking this new knowledge, and the associated technology, back into population studies in interdisciplinary studies to elucidate the risk factors leading to those molecular alterations evident in pre-cancerous and cancerous lesions. Also, when associations are made, for example between a polymorphism at a specific gene locus and cancer risk, Agency laboratory scientists are able to study the functional consequences of that polymorphism and the interplay with environmental risk factors. This shuttling back-and-forth between population and laboratory offers great potential in relation to cancer prevention.

The Biennial Report reveals quite clearly the complementarities between the Agency's research and associated projects which naturally find their home here, due to the credibility of IARC researchers to provide leadership in key areas. Current examples include the continued production of the 4th Series of the WHO Classification of Tumours Series (WHO Blue Books) and the release in 2011 of the new EU Guidelines on Colorectal Cancer Screening and Diagnosis.

The volume and diversity of research and related activities in this Report represents an impressive body of work of the highest quality. At the same time, it is characterized by certain features which are inherent to the approach to cancer research taken by the Agency. These include the focus on international collaboration; interdisciplinary research; and research training and capacity building, both through the research projects themselves as well as more formal delivery of courses and awarding of fellowships. These underlying principles are what drives the Agency in its choices and, for this reason, examples from across the organization are provided in more detail in several brief articles at the beginning of this Report.

The Agency's activities are founded on a combination of a clear vision and excellent staff. Over the last two years,

the scientific research programme has been redefined and presented in the Medium-Term Strategy 2010–2014. The same period has seen the recruitment of a significant number of outstanding senior scientists to provide leadership to this programme, as well as a wealth of younger, mid-career researchers who bring fresh ideas and enthusiasm. This blend is one of the most encouraging trends of the past biennium. The presence of an increasing number of eminent Senior Visiting Scientists, who have chosen to spend time at IARC, is a further sign of a stimulating scientific environment with an open, collaborative atmosphere. This environment is one where Masters and PhD students and post-doctoral scientists from around the world can not only do research, but also absorb a way of doing research: with courtesy, honesty and generosity in collaborations.

Cancer research is changing. Not only at a micro level in terms of understanding molecular mechanisms, but also at a macro level with respect to where research is being conducted. The global cancer research community is growing. The Agency has direct evidence of this through the creation of its own IARC alumni list this year, which includes invitations to over 500 past IARC Post-doctoral Fellows to remain in contact with us. Many of those past Fellows work in parts of the world where cancer research is increasingly a priority, for example in Latin America, parts of Asia, the Middle East and Africa. It is in these regions that national cancer institutes and other research centres are being established with local and regional priorities, but with a desire for international cooperation.

The above development offers the Agency exciting research opportunities through its collaborative approach. At the same time we need to reflect this changing world in the governance of the organization and to encourage these regions to set the international cancer research agenda through becoming Participating States of IARC and thus members of the Governing Council. In this regard it was an enormous pleasure to welcome Turkey as the 22nd Participating States of IARC in May 2011.

Finally, by way of introduction to the Biennial Report 2010–2011, I would like to acknowledge how privileged I feel to lead this Agency. The output is prodigious by any standard, especially given the resources available. More importantly, the quality and impact of the work is remarkable. However, overriding even these points in forming my own impression is the dedication and commitment of the IARC staff to the goals of this Agency. It is a community of people from 50 countries that looks to its international responsibilities with pride and determination. It is with this approach to our work that the last outstanding biennium was delivered and which will stand the organization in good stead for the one to come.

PUBLICATIONS

WHO (2011). Global status report on noncommunicable diseases 2010. Geneva: WHO.

International Agency for Research on Cancer World Health Organization

1 December 2011

IARC Scientific Council

Chairperson
Dr L. Frazer

Vice-Chairperson
Dr H. Weidye

Group
Contraceptives
(CCM)
Dr N. Gaudin

Group
Education
and Training
(ETM)
Dr E. Saksena
(India)

Section of
Cancer
Information
(CIIM)
Dr D. Forman
Deputy: Dr F. Bray

Section of
IARC
Monographs
(IMM)
Dr K. Straif
Deputy: Dr R. Boffa

Section of
Mechanisms of
Carcinogenesis
(MCM)
Dr P. Hainaut

Section of
Molecular
Pathology
(MPM)
Dr H. Ohgaki

Section of
Infectious
(IM)
Dr S. Henslecht
(USA)

Section of
Environment
and Radiation
(ERM)
Dr J. Schuz
Deputy: Dr A. Kawanishi

Section of
Nutrition and
Metabolism
(NEM)
Dr L. Rossouw

Section of
Genetics
(GM)
Dr P. Brennan

Section of
Early Detection
and Prevention
(EDP)
Dr R. Sankaranarayanan

Section of
Administration
and Finance
(AMF)
Mr D. Allen

IARC Governing Council

Chairperson
Dr P. Puzos (Finland)

Vice-Chairperson
Dr M. Palmer (UK)

Director-General, WHO
Dr H. Dainoff

Director, IARC
(DIR)
Dr C.P. Wild

Group
The Seattle
Hepatitis Inter-
vention Study
(SHIS)
Dr R. Hitt

Group
Laboratory
Services and
Biomark
(LSB)
Dr H. Kuroki

Group
Epigenetics
(EG)
Dr Z. Herceg

Group
Infectious
and Cancer
Biology
(ICB)
Dr H. Tomiyama

Group
Biomarkers
(BMA)
Dr A. Schmitt

Group
Disorders
(DST)
Dr G. Barnes

Group
Prevention and
Implementation
(PII)
Dr R. Herrero

Support services
Administrative
Services Office
(ASO)
Ms E. Frazer

Group
Molecular
Carcinogenesis
(MOC)
Dr P. Hainaut

Group
Infectious
and Cancer
Epidemiology
(ICE)
Dr S. Franceschi

Group
Dietary
Exposure
Assessment
(DEA)
Dr M. Sandler

Group
Genetic Cancer
Susceptibility
(GCS)
Dr J. McCloy

Group
Quality
Assurance
(QA)
Dr L. von Karsa

Support services
Budget and
Finance Office
(BFO)
(to be appointed)

Group
Nutritional
Epidemiology
(NEP)
Dr L. Sordani

Group
Genetic
Epidemiology
(GEP)
Dr P. Brennan

Group
Screening
(SCN)
Dr R. Sankaranarayanan

Support services
Human
Resources
Office
(HRO)
Mr D. Phipps

Support services
IARC Grants
Office
(IGO)
Dr O. Kishi

Support services
Information
Technology
Services
(ITS)
Mr P. Carrasco

(/img)



IARC MEDALS OF HONOUR

ROGER SOHIER LECTURE

- 1993 Gérard Orth (Institut Pasteur, Paris) – Papilloma virus and human cancer
 1994 Guy Blaudin de Thé (Institut Pasteur, Paris) – Epidémiologie moléculaire des rétrovirus oncogènes
 1995 Richard Peto (Oxford University, UK) – Avoidance of premature death
 1996 Dirk Bootsma (Erasmus University, Rotterdam, Netherlands) – DNA repair: maintaining nature's perfection
 1997 Luca Cavalli-Sforza (Stanford University, CA, USA) – Gènes, peuples, langues, cultures
 1998 Charles Weissmann (University of Zurich, Switzerland) – Biology and transmission of prion diseases
 1999 Jan Pontén (Uppsala University, Sweden) – Sunlight and skin cancer: New insights
 2000 Richard Klausner (National Cancer Institute, Bethesda, USA) – The war on cancer: Where we are and where research is taking us
 2001 Oliver Brüstle (Institut für Neuropathologie, University of Bonn, Germany) – Embryonic stem cells: Basic concepts and therapeutic applications
 2002 Jeffrey Koplan (Centers for Disease Control, Atlanta, USA) – Bioterrorism and public health preparedness
 2003 Paul Kleihues (Director, IARC) – Poverty, affluence and the global burden of cancer
 2004 Umberto Veronesi (European Institute of Oncology, Milan, Italy) – Breast cancer management and care: Current results and future perspectives
 2005 David Lane (University of Dundee, UK) – p53 and human cancer: The next 25 years
 2006 Georg Klein (Karolinska Institute, Sweden) – Viral contributions to tumorigenesis
 2007 Mariano Barbacid (Centro Nacional de Investigaciones Oncológicas, Spain) – Ras genes, Ras oncogenes and cancer
 2008 Jan Hoeijmakers (Rotterdam, The Netherlands) – Genome maintenance and the link with cancer and ageing
 2009 Harald zur Hausen (German Cancer Research Centre, Heidelberg) – The search for infectious agents in human cancers
 2010 Gerald N. Wogan (Massachusetts Institute of Technology, Cambridge, USA) – Aflatoxins and human liver cancer

- 2011 Robert A. Smith (American Cancer Society, USA) – The challenge and potential of early detection to reduce the global burden of cancer

RICHARD DOLL LECTURE

- 2004 Richard Doll (London, UK) – Fifty years follow-up of British doctors
 2005 Brian MacMahon (Needham, MA, USA) – Epidemiology and the causes of breast cancer
 2006 Joseph Fraumeni Jr (National Institutes of Health, USA) – Genes and the Environment in Cancer Causation: An Epidemiologic Perspective
 2007 Dimitrios Trichopoulos (Harvard School of Public Health, USA) – Breast cancer: Epidemiology and etiology
 2008 Sir Richard Peto (Oxford, United Kingdom) – Halving premature death
 2009 Nubia Muñoz (National Cancer Institute of Colombia) – From aetiology to prevention: The case of cervical cancer
 2010 Julian Peto (London School of Hygiene and Tropical Medicine and the Institute of Cancer Research, UK) – Future cancer mortality due to past and continuing worldwide asbestos use
 2011 You-Lin Qiao (Chinese Academy of Medical Sciences & Peking Union Medical College, China) – Implementation of cancer screening and prevention in China – evidence and reality

IARC LECTURE

- 2005 Tadao Kakizoe (National Cancer Centre, Tokyo, Japan) – Bladder cancer: A model of human cancer determined by environmental factors and genetics
 2006 Ketayun Dinshaw (Tata Memorial Hospital, India) – Cancer Treatment and Control
 2007 LaSalle D. Leffall on behalf of Ambassador Nancy G. Brinker (Komen Foundation, USA)
 2008 Maurice Tubiana (Paris, France) – La prévention des cancers, de l'analyse scientifique des données à la prise en compte des facteurs psychosociologiques