



# International Agency for Research on Cancer mission and objectives

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Inflammation and Cancer

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# IARC - an international effort to combat cancer

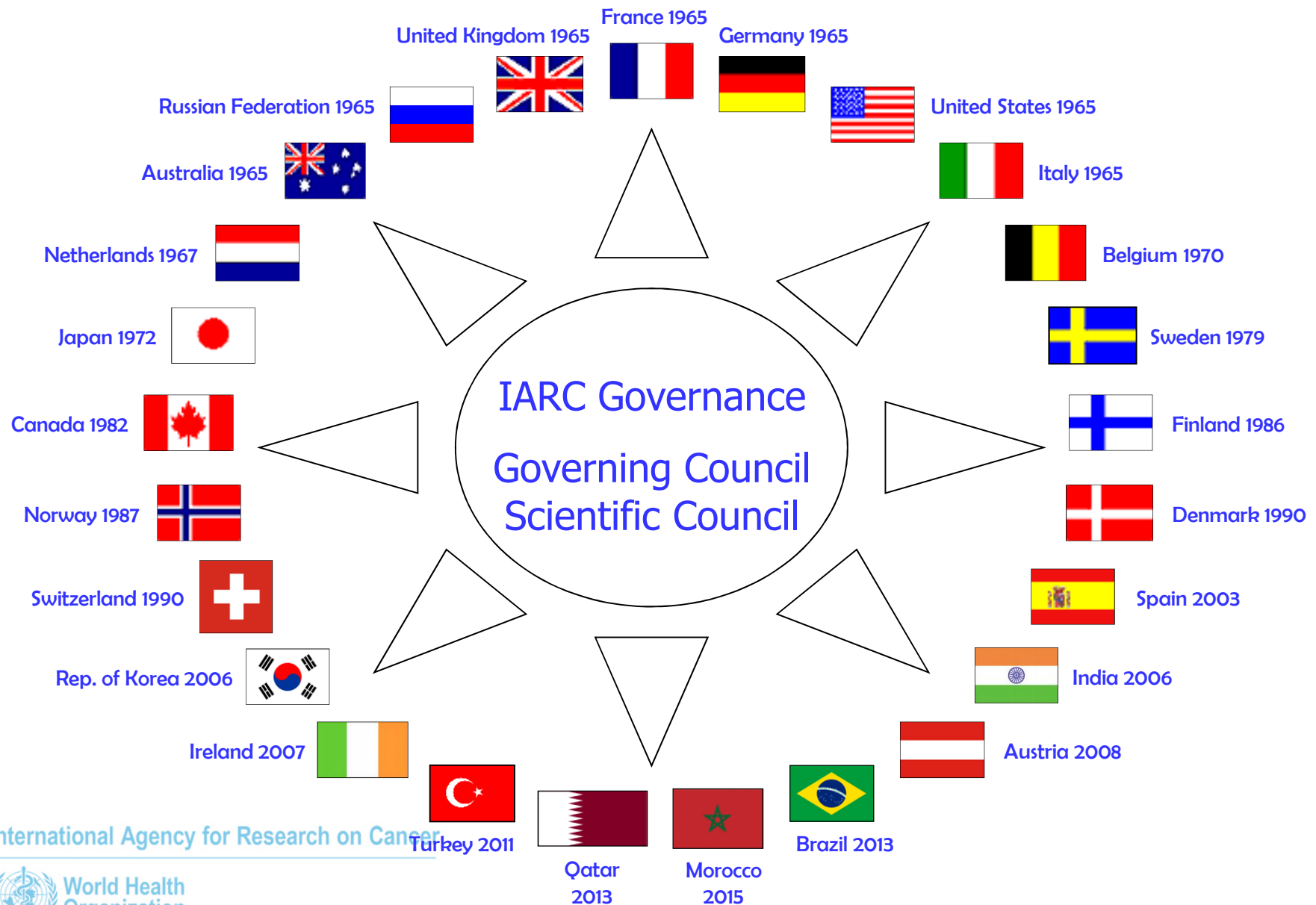


IARC is *the specialized cancer Agency of WHO*, established in May 1965 following an initiative by French leading scientists supported by General de Gaulle, who proposed the idea that *advanced nations could unite to curb a growing global health threat: cancer.*

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# IARC's 25 Participating States

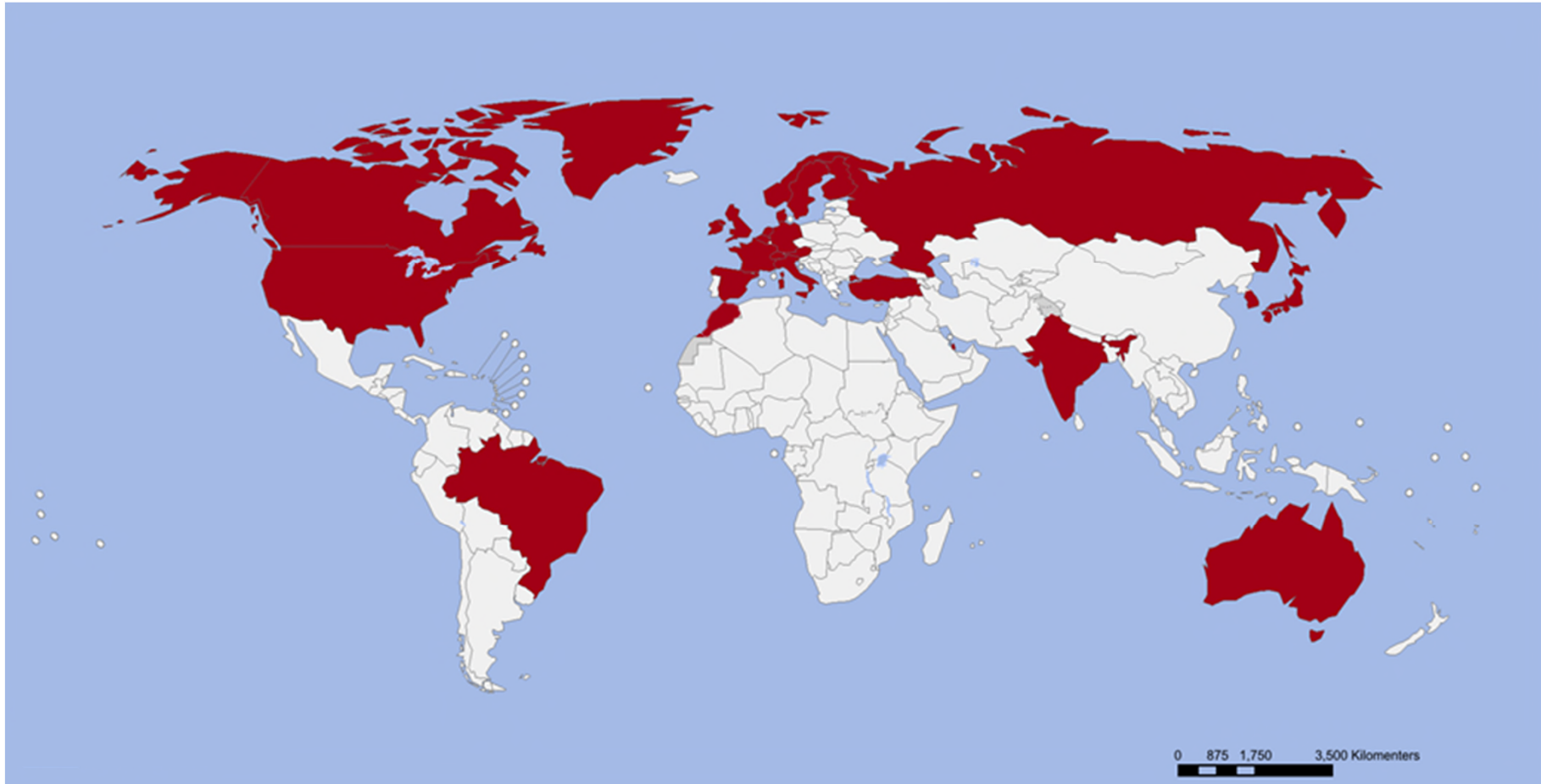


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World Health Organization

# IARC's – Participating States



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The boundaries shown and the designations used on this map do not imply the expression of any opinion whatsoever on the part of IARC concerning the legal status of any country, territory, city or area of its authorities, or concerning the delimitation of its frontiers or boundaries. Dotted and dashed lines on maps represent approximate border lines for which there may not yet be full agreement.

# IARC: cancer research for cancer prevention

To provide the scientific evidence-base for prevention



“A catalyst to progress”

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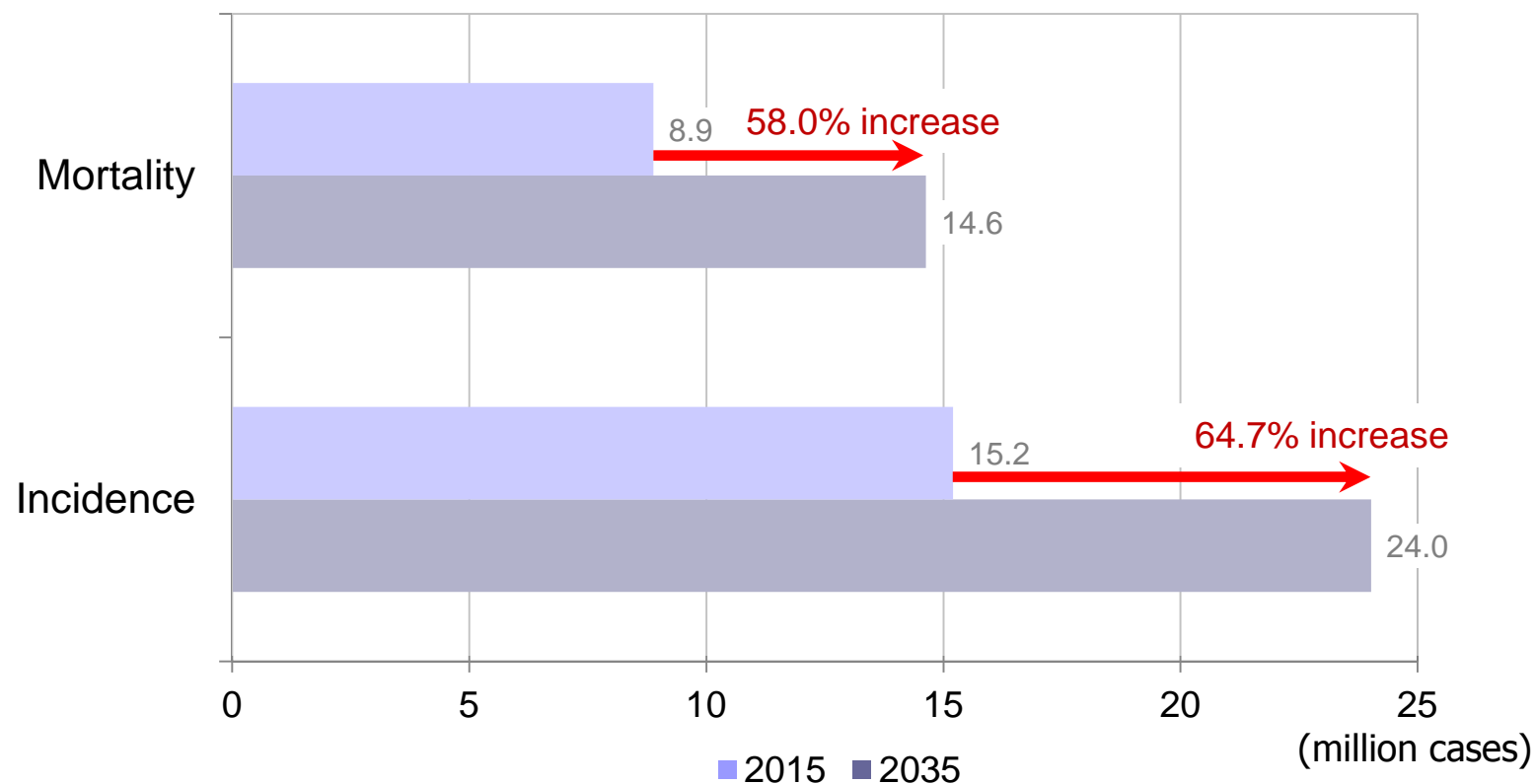


# IARC: two strands intertwined

- **Generate data** from interdisciplinary research
- **Evaluate data** through the conduct of independent expert review
  - Global Cancer Statistics
  - IARC Monographs
  - Handbooks of Cancer Prevention
  - WHO Classification of Tumours
  - IARC Working Group Reports

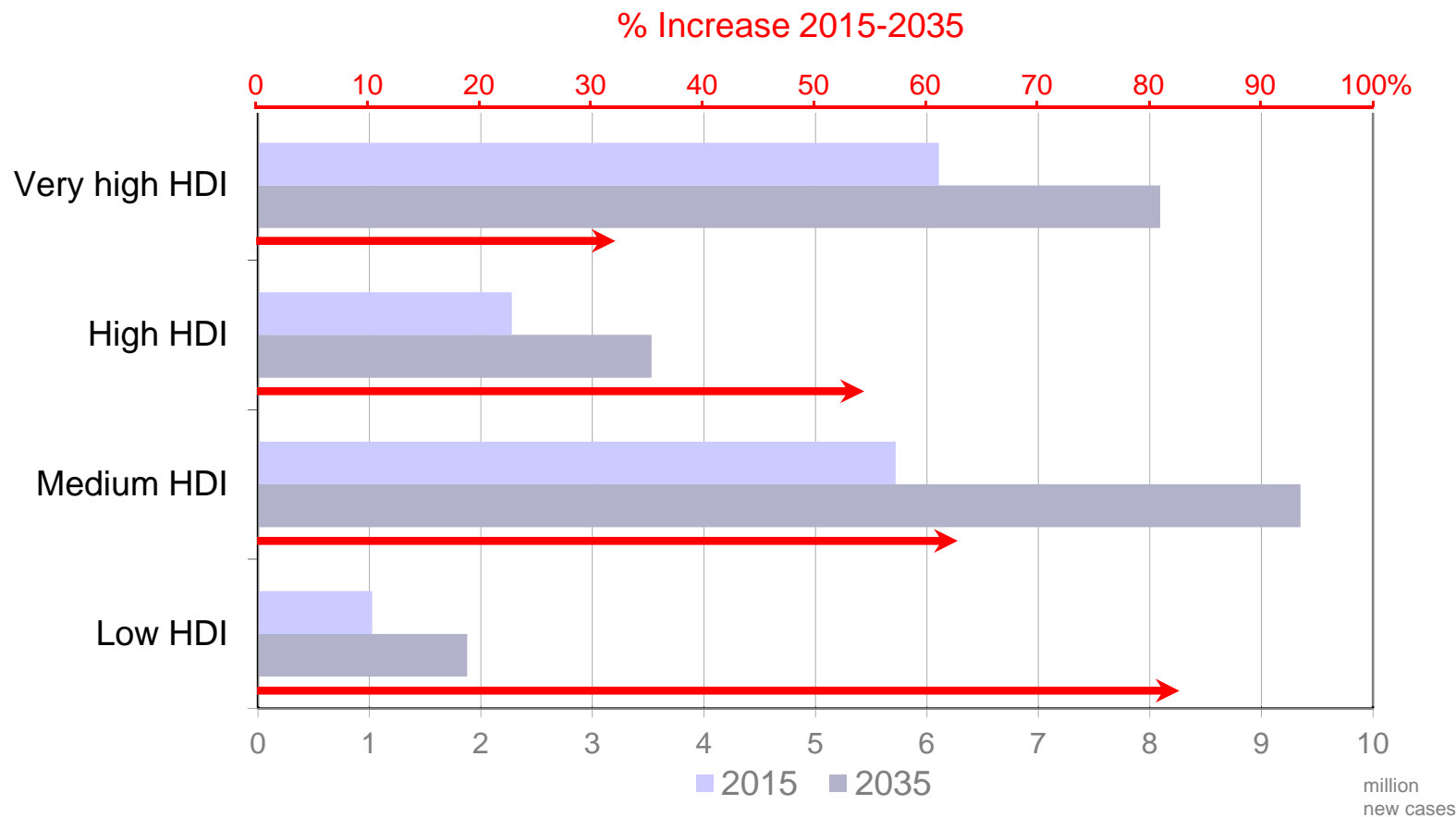


# Projected global burden of cancer – (2015-2035)



*Assuming no change in underlying incidence*

# Inequity in the global cancer burden: the next two decades



*Assuming no change in underlying incidence*

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Adapted from:  
Bray F et al. Global cancer transitions according to the Human Development Index (2008-2030): a population based study. *Lancet Oncol* 2012; 13:790-801



# IARC – an Agency in the right place at the right time

- Growing problem: 15.2 million new cases per year in 2015 predicted to rise to 24 million by 2035
- Greatest increases in low- and middle-income countries
- Research on cancer prevention is essential, but neglected – *no country can treat its way out of the cancer problem*
- Collaboration is increasingly required – *international studies to answer national questions*
- Independence of judgement is increasingly valued

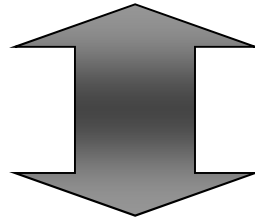
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# Key features of IARC activities

- Research *-plus*
- Collaboration
- Interdisciplinary
- Worldwide
- Capacity building

# IARC – working through partnerships

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**Cancer Research Community**

*National Institutes/Organisations*

**Regional Networks**

*e.g. RINC, APOCP*

**World Health Organisation**

*- prevention and control; policy; advocacy*

**International Organisations**

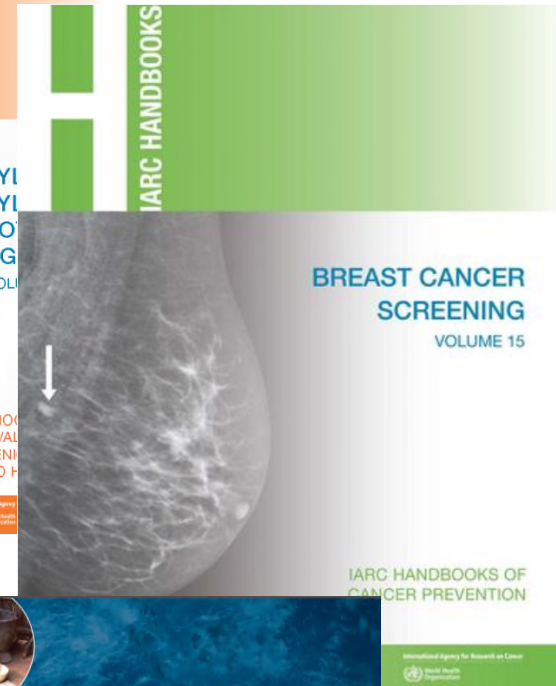
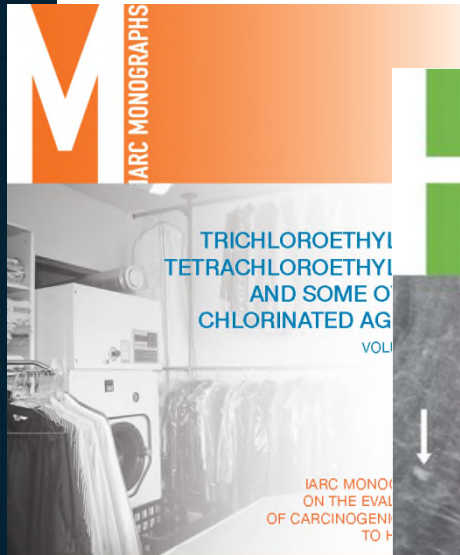
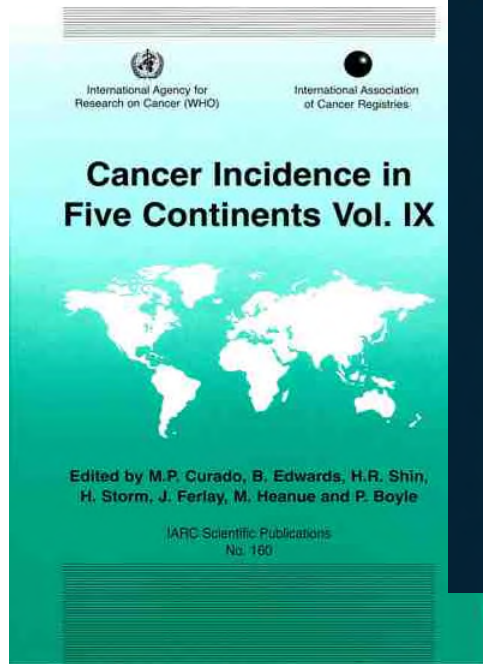
- UICC – training; advocacy*
- IAEA-PACT – cancer control*

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# Increase Capacity for Research

- **Training linked to research** (including major focus on biobanking)
- **Fellowships**
  - IARC post-doctoral fellowships; bilateral partnerships
  - Senior Visiting Scientists
- **Training courses**
  - IARC Summer School in Cancer Epidemiology
  - Other courses in Lyon and regionally
  - E-Learning



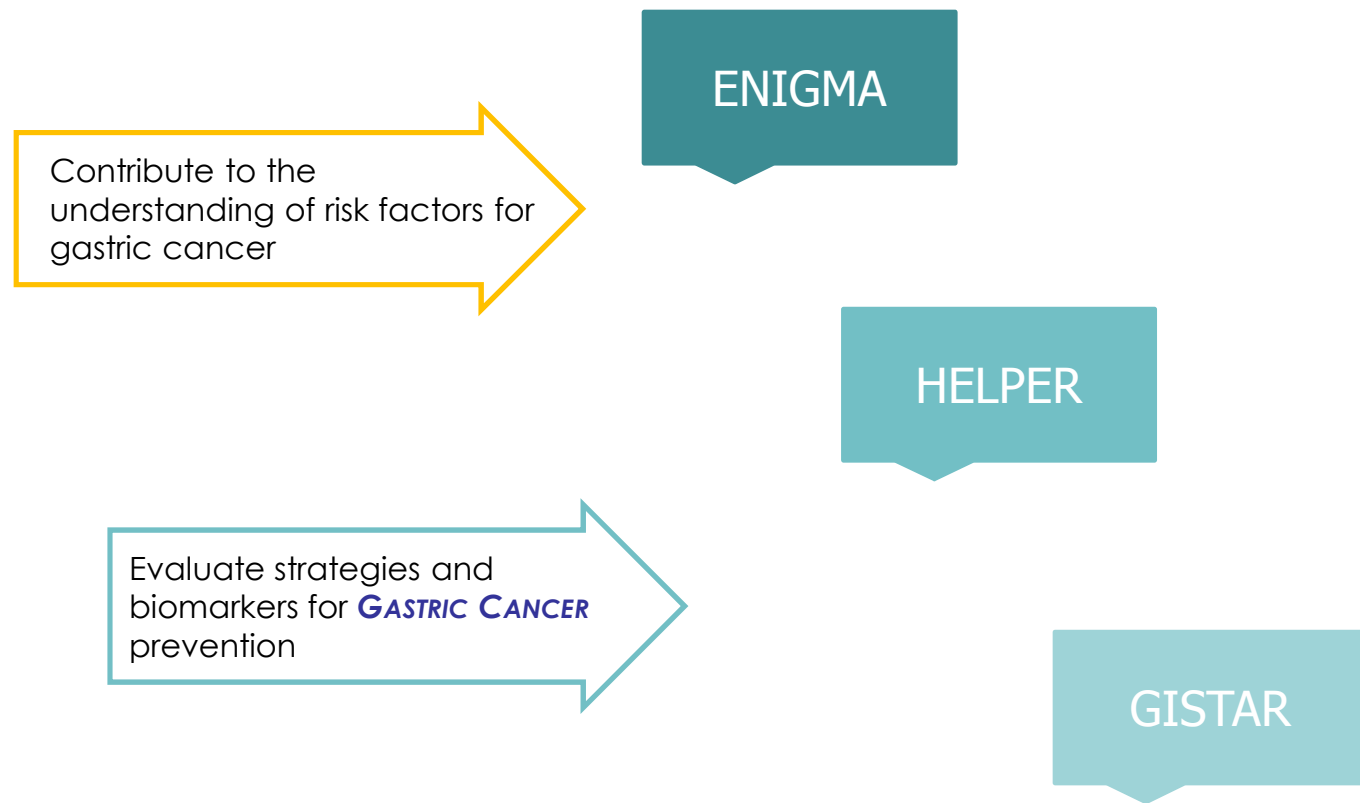


# IARC – an influential publications programme

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# PRI Group: Gastric Cancer Research Programme





# Highest & Lowest Gastric Cancer Incidence, Men 2003-07 from Cancer Registries in CI5X

Registry	ASR
Republic of Korea, Daejeon	75.4
Japan, Hiroshima	72.5
India, Mizoram	50.6
Chile, Biobio	41.2
USA, Los Angeles, Korean	39.4
Belarus	33.3
China, Jiashan	32.5
Russia, St Petersburg	29.0
Costa Rica	26.5
Colombia, Cali	26.0

Registry	ASR
Libya, Benghazi	4.9
USA Florida, White	4.9
Saudi Arabia, Riyadh, Saudi	4.4
USA, Utah	4.0
Malaysia, Penang, Malay	3.5
India, New Delhi	3.2
Kuwait	3.0
Egypt, Gharbiah	2.9
Thailand, Khon Kaen	2.5
Malawi, Blantyre	2.0

# The ENIGMA Study

International Prevalence Surveys of *Helicobacter pylori*  
in High and Low Risk Areas for Gastric Cancer

## OBJECTIVES

### ENIGMA I

- Estimation of worldwide *H. pylori* prevalence by age using standard methods
- Explanation of regional differences (bacterial, host, environmental)
- Prediction of future gastric cancer
- Assessment of antibiotic resistance to plan interventions
- Acceptability and feasibility of treatment

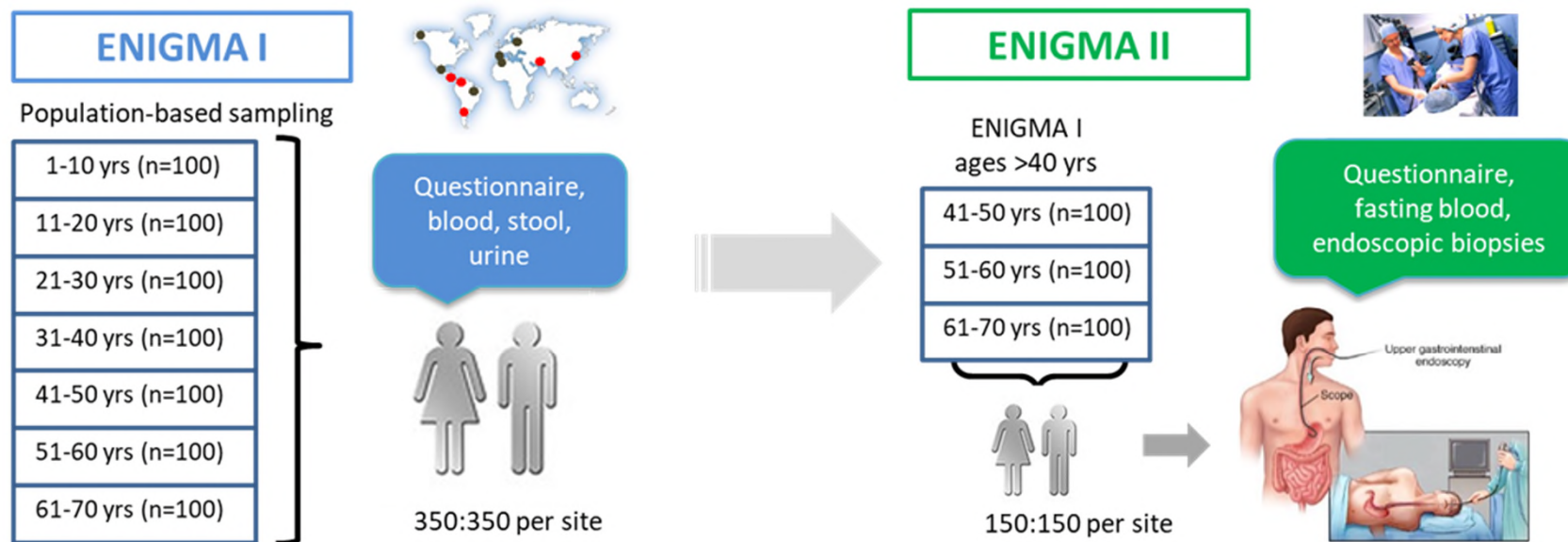
### ENIGMA II

- Epidemiology of gastric premalignant conditions in high and low GC risk areas
- Role of bacterial, environmental and host factors in the occurrence of premalignant conditions
- Expansion of ecological comparisons of ENIGMA I between high and low risk areas including markers from endoscopic biopsies

# The ENIGMA Study

**ENIGMA I:** prevalence surveys of *H. pylori* infection

**ENIGMA II:** prevalence studies of gastric histological changes



To investigate the worldwide epidemiology of *H. pylori* infection and gastric cancer using standardised methods in high and low risk areas

To investigate the epidemiology of gastric premalignant conditions in high and low risk areas

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# ENIGMA Iran Ardabil site visit August, 2017



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# THE HELPER TRIAL

## AIM

- Define the role of *H. pylori* eradication in gastric cancer prevention within the Korean National Cancer Screening Programme (NCSP)

## METHODS

- 11,000 subjects 40-65y to be screened for HP by biopsy or breath test
- HP positives randomised to eradication treatment or placebo
- Endoscopies with biopsies if observed lesions
- Follow-up with NCSP biennial endoscopy for 10y
- Collection of data on side-effects of treatment and other health conditions

## ENDPOINTS

- No. gastric cancers in HP positives treated and untreated after 10y follow-up
- Description of side-effects and other health conditions over time associated to HP eradication
- Study natural history of gastric disease on HP negative cohort

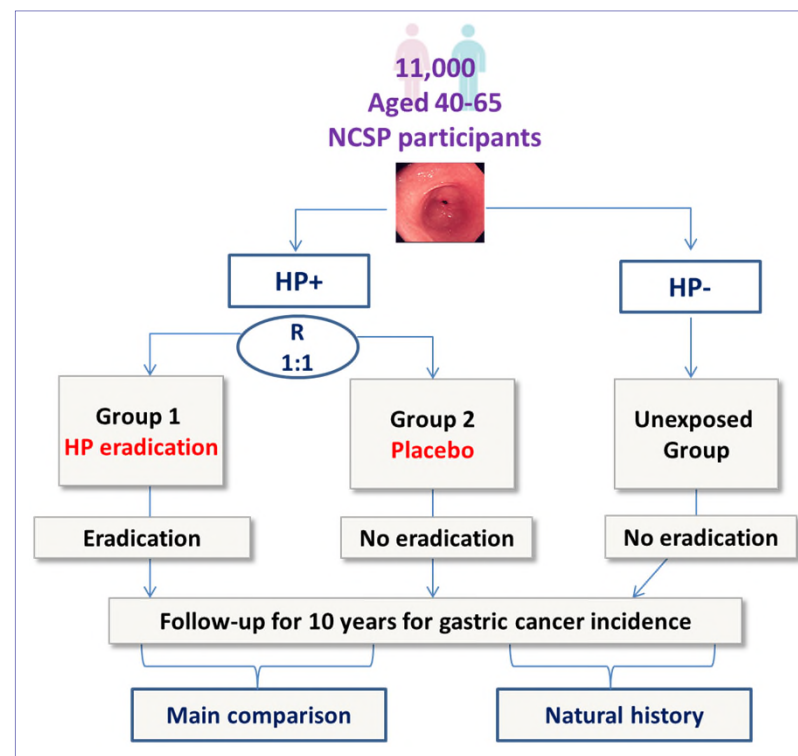


Fig. HELPER study design

# THE HELPER TRIAL

## PROGRESS SO FAR

- 6,017 participants enrolled from 12 study centres (55% of total target)
- 45% *H. pylori* prevalence
- 87% treatment adherence  $\geq 7d$
- 90% estimated eradication rate confirmed by UBT
- 68% participation rate for follow-up endoscopies

Treatment regimen consists of metronidazole 500 mg (3 times a day), tetracycline 500 mg (4 times a day) and, bismuth 300 mg (4 times a day), and a proton pump inhibitor (Lansoprazole 30mg, twice a day) or placebo for 10 days



Fig. HELPER study centres



# THE GISTAR STUDY



## OBJECTIVE

- Determine if *H. pylori* screening/eradication and endoscopic follow-up of those with serological evidence of atrophic gastritis reduces mortality from gastric cancer among 40-64y subjects in a high-risk population

## METHODS

- 30,000 subjects 40-64y to be recruited and randomised to:
  - 1) intervention arm: HP and pepsinogen testing with treatment of HP positives and upper endoscopy in those with low pepsinogen levels, and endoscopic follow-up of those with lesions
  - 2) control arm: regular care

## ENDPOINT

- Mortality from gastric cancer after 15 follow-up

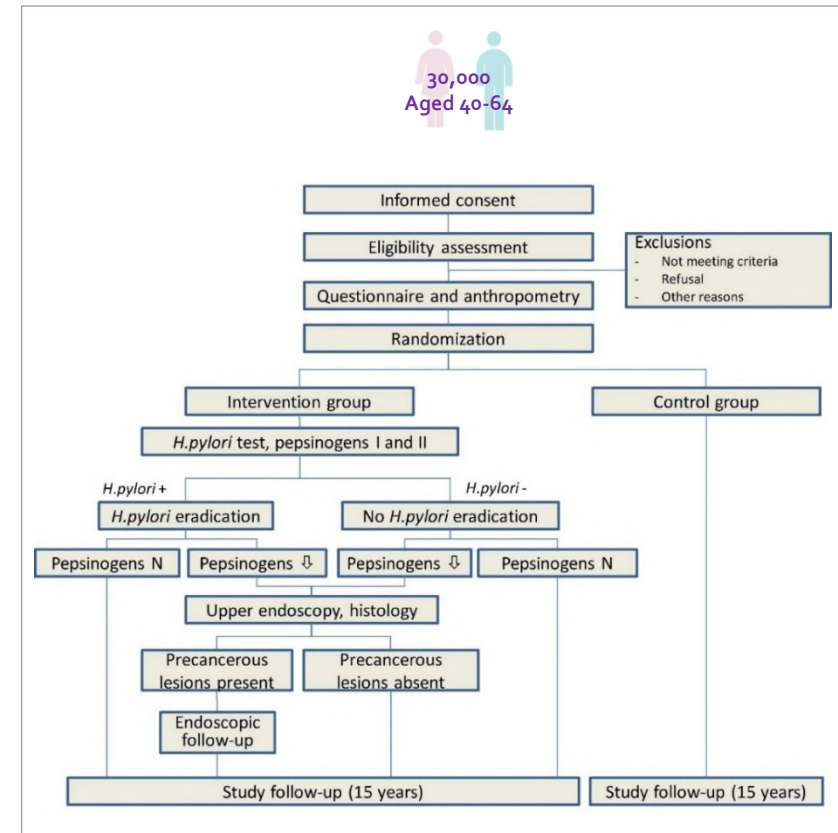


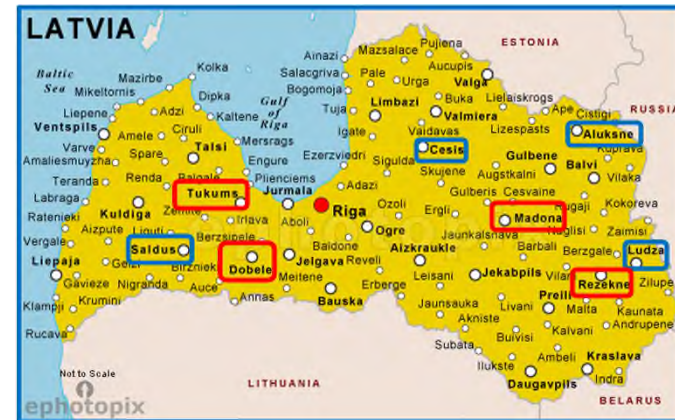
Fig. GISTAR study design

# THE GSTAR STUDY

## PROGRESS SO FAR

### PILOT

- completed in **four study centres**
- 3455 subjects: 1613 men 1842 women
- 68% *H. pylori* seroprevalence
- 87% estimated eradication success tested by UBT
- 1034 endoscopies with histologic assessment



### MAIN STUDY

- Continued in **four study centres**
- >6000 subjects already recruited
- To be expanded to other countries

Treatment regimen consists of clarithromycin 500 mg (2 times a day), amoxicillin 1000 mg (2 times a day) and a proton pump inhibitor (Esomeprazole 40mg, twice a day) for 10 days



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# Unanswered Questions

- ✓ Our multicentric studies provide a platform to investigate these questions
- ✓ Extensive collection of epidemiological data and specimens

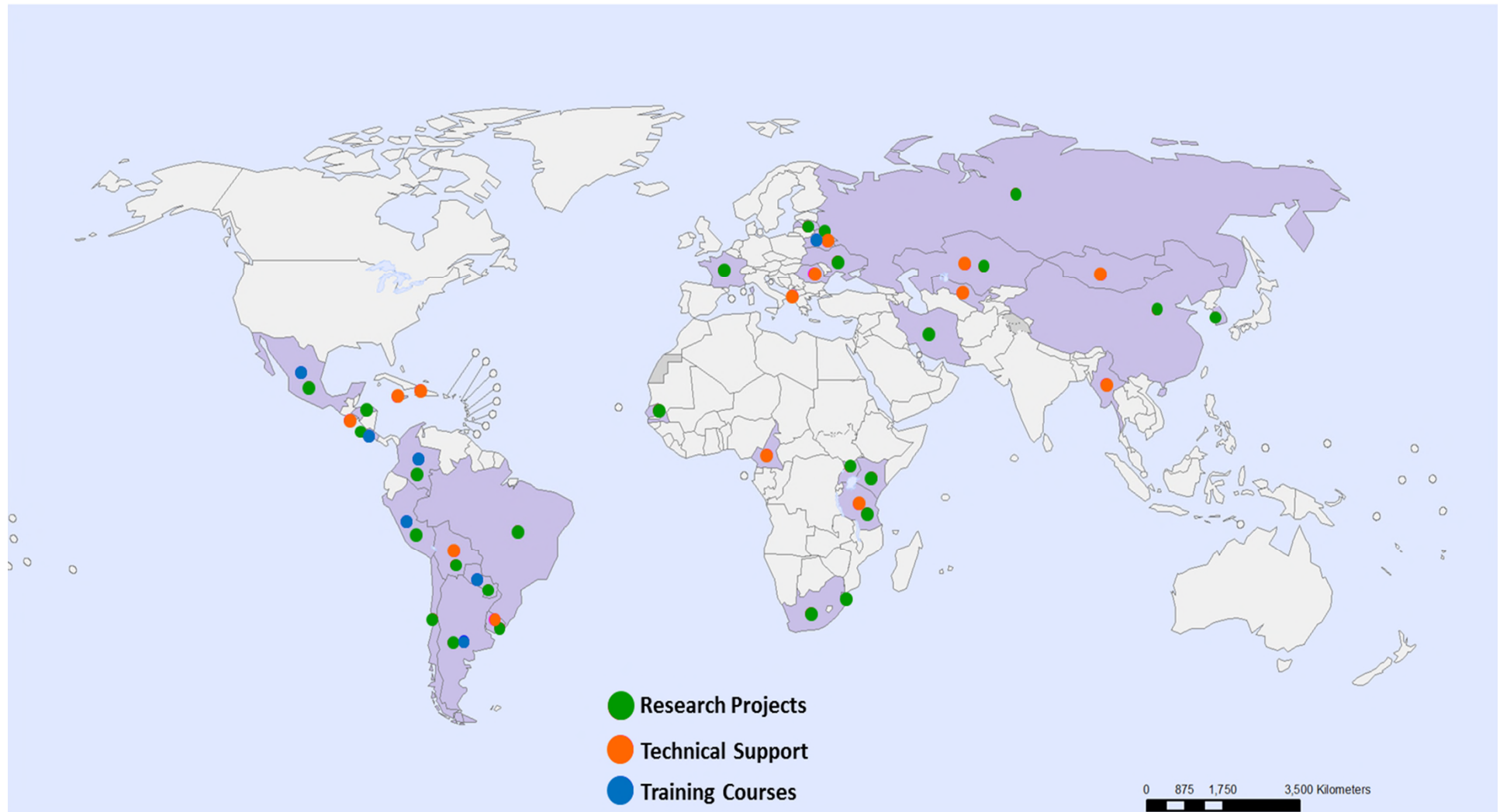
ENIGMA

HELPER

GISTAR

1. Factors other than *H. pylori* associated to gastric precancer and cancer
2. Health Impact of scaling-up *H. pylori* eradication
3. Potential use of volatile markers in screening
4. Role of microbiota interaction with *H. pylori* in carcinogenesis

# Geographic regions where PRI works

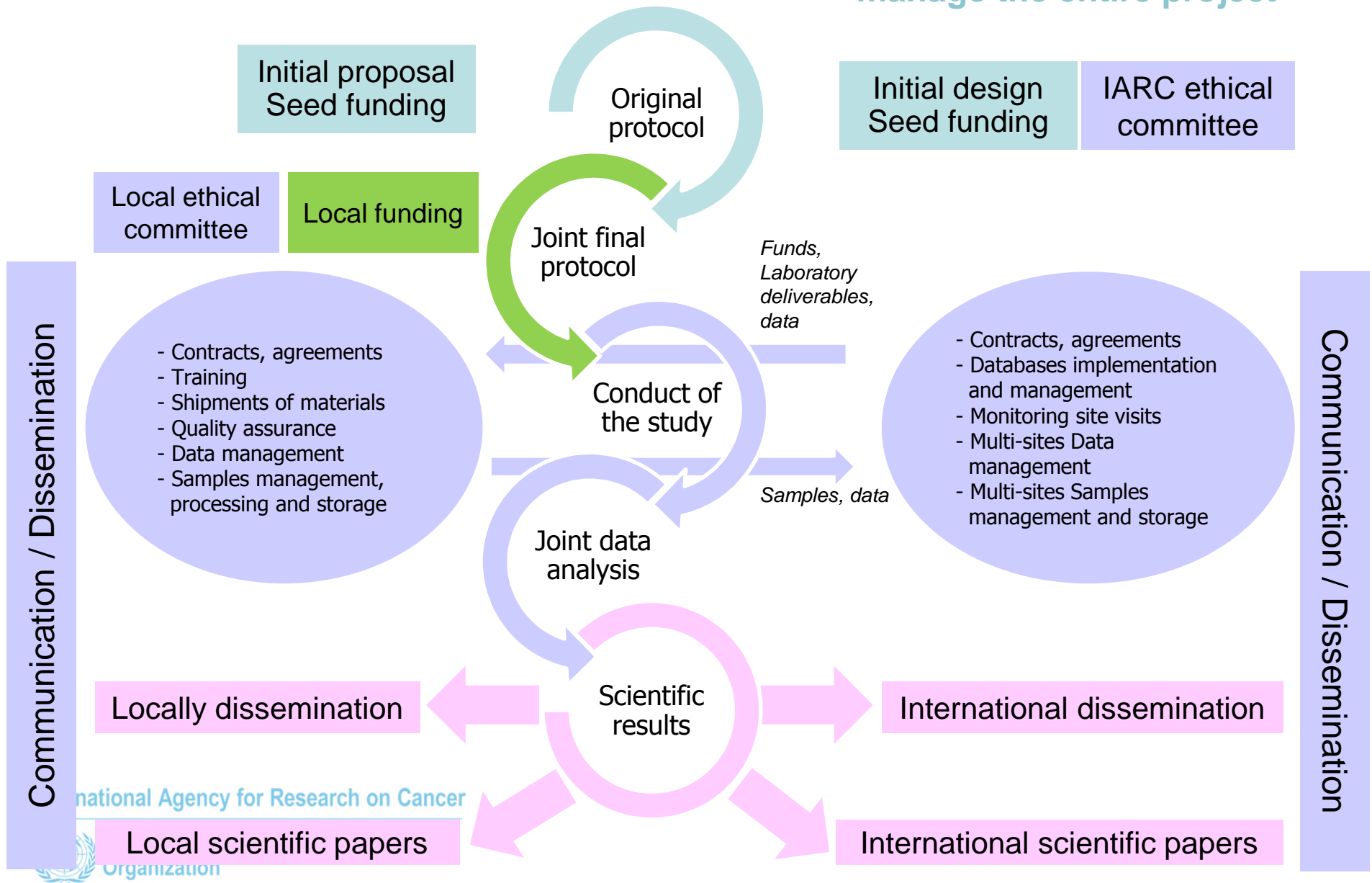


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**NATIONAL PARTNERS**  
Local activities

**IARC**  
Activities to Monitor and manage the entire project



- Contracts, agreements
- Training
- Shipments of materials
- Quality assurance
- Data management
- Samples management, processing and storage

- Contracts, agreements
- Databases implementation and management
- Monitoring site visits
- Multi-sites Data management
- Multi-sites Samples management and storage



# IARC – an international experience

- Around 320 people
- 50 countries
- post-graduate students, post-doctoral scientists, senior visiting scientists
- **and a worldwide network of collaborators**



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