

WORLD HEALTH ORGANIZATION



INTERNATIONAL AGENCY
FOR RESEARCH ON CANCER



DEUTSCHES
KREBSFORSCHUNGSZENTRUM

DIRECTORY OF ON-GOING RESEARCH IN CANCER EPIDEMIOLOGY 1986

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LYON 1986



DIRECTORY
OF ON-GOING RESEARCH
IN CANCER EPIDEMIOLOGY

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IARC

DKFZ

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PREFACE

The 1986 Directory is the 11th in the series of annual directories of On-going Research in Cancer Epidemiology. From 1975 to 1986 the number of projects has more than doubled and a total of 2010 epidemiologists and other research workers have contributed information on their work throughout the years. The Clearing-House has thus achieved its aims of acting as a central registry from which epidemiologists and others can obtain information on current work, and facilitating contacts between research workers. The usefulness of the Directory is supported by the results of an evaluation survey carried out recently, which are presented in the introduction to this edition.

The Clearing-House Directory provides a global overview of the volume and direction of epidemiological cancer research today. While the sum total of work reported remains fairly constant, an expansion of epidemiological effort is noted in many countries, notably in China. Further, many studies are becoming technically more sophisticated.

The possible role of modifiers of carcinogenesis is receiving growing attention, for example, studies in several countries of factors considered to be protective, such as certain vitamins. Epidemiological studies planned and carried out jointly with research laboratories or making use of laboratory methods, as, for example, the possibility of identifying individuals exposed to hazardous chemicals by analysis of fluids and excreta also deserve expansion. This issue sees the appearance for the first time of projects on molecular epidemiology. In the last years a new area of interest has emerged, namely "intervention" studies, in which the design features of the clinical trial are used to assess preventive measures.

In collaboration with the International Commission for Protection against Environmental Mutagens and Carcinogens (ICPEMC), projects in the field of mutation epidemiology have been included since 1985. This issue contains about 50 such projects.

Collections of biological materials may be valuable for epidemiological research and the inclusion in the Directory of a listing of such banks and their holdings strengthen, it is hoped, the usefulness of the Clearing-House.

Despite the wide recognition of the value of epidemiology the sums of money devoted to the area of cancer research are with few exceptions trivial as the analysis of such expenditure, included in the Directory 1985, indicated all too clearly. Though it has not been possible to update the information contained in these tables, it was decided to repeat them this year in view of their great interest.

The issue of confidentiality is of increasing concern. Measures taken to protect the privacy of the individual have resulted in legislation and data protection regulations which make cancer registration and epidemiological research difficult, or almost impossible in some countries. At a time when the cancer registry is increasingly recognized as a multipurpose tool for the control of cancer, implementation of well conducted cancer registries should be possible wherever necessary.



Dr L. Tomatis

Director
International Agency for
Research on Cancer (IARC)



Prof H. zur Hausen

Scientific Director
Deutsches Krebsforschungs-
zentrum (DKFZ)

INTRODUCTION

The concept of a clearing-house for on-going research arose in several centres at much the same time. The International Agency for Research on Cancer (IARC), Lyon, France, decided to create a Clearing-House for Cancer Epidemiology of the type so successfully established for Smoking and Health. Realizing that such a venture would require the collaboration of a group experienced in handling literature abstracts on a computerised basis, the Agency approached the German Cancer Research Center (Deutsches Krebsforschungszentrum - DKFZ), Heidelberg, Federal Republic of Germany, which had acquired considerable expertise in this area.

The Clearing-House for On-going Research in Cancer Epidemiology was established in 1974, partially supported by a contract with the International Cancer Research Data Bank (ICRDB) of the National Cancer Institute of the USA. The ICRDB promotes wide dissemination of research information. To ensure maximum availability projects provided to the Clearing-House are forwarded to the ICRDB where they are entered into an online database called CANCERPROJ, which contains approximately 20,000 active projects. CANCERPROJ is available through the MEDLARS System of the National Library of Medicine of the USA.

Mailing List

Addresses of potential collaborators are extracted from listings provided by the Excerpta Medica Foundation and the ASCA Service of the Institute for Scientific Information (ISI). Extensive use is also made of the CANCERLIT and MEDLINE/TOXLINE systems, other ICRDB Program resources, of the annual reports of research institutes and councils, lists of participants of meetings and members of associations.

Coding of Addresses

Addresses extracted from the sources mentioned above are coded and entered into the computer in Lyon. A lot of work is involved in completing addresses, using the resources of the IARC Library. A tape is transferred to Heidelberg where the new addresses are added to the current address file.

Response from Contributors

An invitation to contribute to the Clearing-House is sent to scientists in English, French, German, Italian, Russian or Spanish, accompanied by a questionnaire and a sample completed questionnaire to indicate the general nature of the information required.

For the 1986 Directory 2,450 persons received invitations to contribute. Some 334 completely new projects were reported; 78 of the investigators contacted were kind enough to inform us that they are not at present or no longer working in the field of cancer epidemiology, and their names have been removed from the mailing list. A further 52 persons had no project to report. The 1986 Directory thus contains 1352 projects reported from 71 countries. The data reported on are being collected in 89 countries.

Readers may be interested to know that the Directory seems to be tending to a "steady-state" in that the number of new projects has decreased in the last years and more or less equals the number of deleted projects. Possible reasons for this are: (a) more or less total coverage of the epidemiological community willing to collaborate, (b) greater complexity of many of the epidemiological studies now being initiated, often resulting in an extension of the study period, or (c) fewer studies being initiated because of lack of funding in much of the world (see section: Funds Allocated to Cancer Epidemiology). The table below shows the number of projects included in each Directory, the number and percentage of completely new studies, the number of countries in which the study is carried out and the number of countries in which the data are being collected.

Year	Projects	New Projects (%)	Participating Countries	Data Origin (Countries)
1976	622	622 (100.0)	55	65
1977	908	467 (51.4)	61	69
1978	1025	341 (33.3)	63	70
1979	1092	295 (27.0)	66	74
1980	1261	353 (28.0)	69	78
1981	1313	299 (22.8)	70	80
1982	1247	275 (22.1)	64	74
1983	1302	256 (19.7)	67	80
1984	1213	200 (16.5)	61	80
1985	1229	261 (21.2)	66	88
1986	1352	334 (24.7)	71	89

The number of projects reported from many countries has increased throughout the years, while the rank order has remained almost the same. USA and UK are still by far the largest contributors.

DISTRIBUTION OF PROJECTS TO PARTICIPATING COUNTRIES

COUNTRIES	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986
USA	239	324	370	374	438	463	421	422	377	348	364
United Kingdom	85	139	143	142	158	160	129	136	120	115	134
Japan	12	37	45	61	67	73	72	73	78	82	80
Italy	15	19	18	24	36	44	47	58	57	67	77
Canada	33	45	42	58	72	61	62	71	59	59	67
France	24	27	34	34	45	50	56	59	48	50	62
Sweden	11	16	21	29	30	33	43	39	36	49	47
Australia	16	27	32	31	32	31	41	44	42	42	47
People's Rep. of China	0	0	0	0	1	4	9	17	21	31	40
Federal Rep. of Germany	21	28	31	29	30	28	28	31	32	37	37
Denmark	7	12	13	14	17	23	26	29	31	30	35
India	21	21	26	24	31	34	29	33	26	27	31
Netherlands	5	8	7	15	19	15	16	15	24	24	29
Israel	14	18	22	20	21	23	19	20	17	17	27
Finland	5	8	16	17	13	14	12	13	16	16	21

The contribution from other countries was less than twenty projects in each year.

TOTAL OF PROJECTS	622	906	1025	1092	1261	1313	1247	1302	1213	1229	1352
NUMBER OF COUNTRIES	55	61	63	66	69	70	64	67	61	66	71

Occasionally, the same study was reported by two or more persons who designated themselves as principal investigator, or study co-ordinator. It has generally been possible by correspondence to resolve this problem, but for those discovered on the eve of printing an arbitrary decision has been made - we would like to apologize if our choice was incorrect.

The editors would like to stress that investigators can, of course, report studies at any time, whether they have been contacted by the Clearing-House or not.

Selection of Material for the Clearing-House

In the beginning the editors interpreted epidemiology fairly broadly. Thus, studies have been included which describe the characteristics of patients with specific cancers, but for whom there is no control group. These investigations were included in the Directory because such information may be useful for hypothesis formulation. With increasing pressure on Directory space, in recent years the editors have been compelled to modify this policy and descriptive case studies from Northern America and Western Europe have been excluded. Such studies from Eastern Europe and the developing countries will still be accepted.

Should there be doubts as to the meaning of an abstract or need for additional information, the contributor is contacted. For this Directory some 90 such letters were sent. More than half the queries related to the size of the study, the control group used or the methods employed. We would like to thank respondents who have taken the trouble to supply further information. The editors would like to make it quite clear that contributors are responsible for the accuracy of their submissions. The editors do not act as referees.

It will be noted that the amount of information given for each project is variable. Some scientists provide a rather detailed account of their studies, others a bare outline. The type and scope of the information the editors would like to receive is clearly outlined in a completed specimen form, sent to all potential contributors. A project is not entered by title only.

Readers may find a certain discrepancy between the information contained in an abstract and the related key-words. This is due to the information provided by the investigator elsewhere on the questionnaire. The editors closely follow these indications and hence a cancer site, occupation, chemical, etc., though not mentioned in the text, may appear among the key-words.

References

When provided by the investigator, most important or most recent references in relation to studies in the Directory are included in the study abstract. The references give title of journal, volume, pages and year of publication in this order. The name of the first author is only given if other than the principal investigator.

Keeping the Clearing-House Current

As the utility of the Clearing-House depends on keeping the data base free from published work, the 899 contributors to the 1985 Directory were contacted and asked to update and revise their contribution. 465 reminders were sent. The total response rate was about 80%, covering 95% of the projects.

When 1985 was given as termination date, contributors were specifically asked to state whether the work would be extended into 1986. Several investigators indicated that their work was now published and should no longer appear in the Directory, but unfortunately many others did not reply. In that event, the project was removed. Projects for which no information or update had been received for three years despite reminders were also removed. When the editors became aware that work with a later termination date had indeed been published, this too was removed. All projects giving 1986 as termination date or having abstracts which seemed to report completed work were checked in CANCERLINE to ensure that the study had not been published.

Mutation Epidemiology

After discussion with the International Commission for the Protection Against Environmental Mutagens and Carcinogens (ICPEMC), which had expressed a desire to create a clearing-house for mutation epidemiology of the same style as the cancer epidemiology clearing-house, it was decided to include projects in the field of mutation epidemiology on a trial basis for two years. These projects are edited and key-worded by Professor W.J. Schull, Director of the Center of Demographic and Population Genetics at the Graduate School of Biomedical Sciences, University of Texas, Houston, USA, on behalf of the ICPEMC. In this context, the expression "mutation epidemiology" is meant to include all research aimed at the estimation of spontaneous as well as environmentally induced rates of somatic, germinal and heritable mutation in man and the assessment of their impact. It further embraces the design and implementation of surveillance strategies in man to achieve these ends. Emphasis has been placed on human research and not upon test systems per se nor the demonstration of mutagenicity in organisms other than man.

Projects already in the Directory indexed "Familial, Genetic" were scrutinized and those considered to enter clearly under our definition of mutation epidemiology were key-worded accordingly.

In this context, it was noted that many of the projects indexed "Familial, Genetic" rather pertain to "Family History" and this new key-word was introduced.

Projects relating to mutational epidemiology are identified by a black dot.

Biological Materials Banks

A new feature since 1985 is the section on biological materials banks. Such banks can provide valuable

historical records for individuals and population groups and several investigators have expressed an interest in joint laboratory and epidemiological investigations based on material in their possession.

Production of the Directory

To facilitate identification of a project each incoming relevant study is assigned a unique identification number (ID) which is attached to the study for as long as it appears in the Clearing-House. This identification number appears after the running serial number in the Directory. While the same study is likely to have a different serial number from one year to the next, the ID number, by definition, remains the same.

After editing, abstracts are key-worded for tumour localisation, the epidemiological methods employed and descriptors of general content. For economy of space and indexing the editors try to keep the number of key-words to a minimum, but the list of key-words is continually modified to fit the topics of interest. Recent additions include, for example, "Acquired Immunodeficiency Syndrome" and "Intervention". Each new key-word needs to be inserted not only for new projects but for all those relevant already in the database. Sometimes this can be done automatically, but frequently it is necessary to scan a large number of abstracts.

A large proportion of the new abstracts and many of the updated have to be retyped after editing. Since 1982 such abstracts have been typed into the computer in Lyon and transferred on tape to Heidelberg. (Fig. 1)

Errors noted on checking are corrected on a terminal using the XEDIT data manipulation language. The XEDIT programme permits alterations, additions, deletions of lines or texts on the terminal, alterations of the same nature being carried out by one command for the entire data base or part of the data base as desired. With the aid of INDA (Interpretative Datenbank- Sprache - the data base system available in the DKFZ), a change in input, search and output of text is possible. In order to apply this system, however, the data must be structured, i.e. each data record must be unequivocally characterised by field marks. Every project reported was hence written as one record for which maximum length of 4,000 characters was envisaged. Each record was divided into 24 fields, data of the same nature being placed in fields of the same name, making automatic index generation possible.

The INDA printout was made ready for printing by computer photocomposition using the WATERLOO-SCRIPT language. The desired lay-out is achieved by inserted commands. New lines, indents, new pages and the numbering of the pages are automatically controlled.

Unfortunately, XEDIT, INDA and the WATERLOO-SCRIPT are not mutually compatible so that special programmes are required for transition from one system to the other. These conversions as well as the programmes for setting up the index lists had, therefore, to be programmed in addition. This was done with the aid of PL/1.

After final review in Heidelberg and Lyon the material is ready for the preparation of the Annual Directory. At the same time the information is added to the data base of the ICRDB Program. The Directory is printed by photocomposition techniques directly from the output tape.

Indexes and Lists

To facilitate access to the projects in the Directory, the following alphabetical indexes and lists have been prepared:

- Name of investigator;
- Term (key-word), by cancer site;
- Cancer site, by term (key-word);
- Type of study, by cancer site;
- Specific chemical exposure, by cancer site;
- Specific occupation, by cancer site;
- Country where data are being collected, by cancer site.

Exposures to Chemicals

A separate index is given to facilitate identification of studies dealing with exposures to individual chemicals. The epidemiological investigations relating to persons known or suspected to have been exposed to certain chemicals, which are also currently being tested for carcinogenicity in animals, are listed in an Appendix to the Information Bulletin on the Survey of Chemicals Being Tested for Carcinoge-

nicity, published by the IARC. Workers in experimental carcinogenesis can thus be aware of epidemiological information being gathered in populations exposed to these chemicals. Those interested in receiving further information about this Information Bulletin should contact Ms M.J. Ghess of the Division of Environmental Carcinogenesis, IARC.

List of Occupations

The Directory contains a List of Occupations, where specific occupations and occupational groups under study are listed. This, we hope, facilitates access to information for readers interested in occupational cancer. Studies of workers exposed to a particular chemical (e.g. chloromethyl ethyl ether, lead, toluene, vinyl chloride, etc.) are still to be traced through the Chemical Index (see above), as a specific occupation may not be mentioned. There is inevitably a degree of overlap between the List of Occupations and the Index of Chemicals.

List of Abbreviations

This list includes the most common abbreviations used in the project abstracts. The meaning of other abbreviations is given in full in the abstract in which they appear.

Completeness of Coverage

The editors are well aware that there are gaps and omissions in the Directory and try to spread their net as widely as possible. However, they cannot compel investigators to report their work to the Clearing-House. It would be of great assistance to the editors if the Directory users, who are aware of epidemiological studies which are not included in the Directory, could inform the Clearing-House of these.

Searches of the Data Base

Investigators can ask to have the Clearing-House data base examined at any time for special searches in the cancer epidemiology field. Requests for such searches, which are free of charge, should be sent to IARC, Lyon.

Quoting the Directory

While the editors endeavour to have abstracts as clear and informative as possible they are in no sense referees. It is well known that interim figures and conclusions may change over time and on final analysis. The Clearing-House Directories should thus not be quoted as a reference in scientific papers.

Acknowledgements

Clearing-House and ICRDB Program material were translated into French, Italian, Spanish and Russian by our colleagues Mr Y. Pollet, Drs. L. Simonato, X. Bosch and A. Loktionov and into German by Ms L. Blumenthal.

Needless to say, this Directory would not have been possible without the reports of on-going work sent by all our contributors. We would like to take this opportunity to apologize to those scientists who have recently reported their work, but whose reports arrived too late for inclusion in this edition of the Directory, and to those whom we still have to contact.

Last but not least, we would appreciate comments and suggestions concerning this publication so that future editions may be improved.

Lyon and Heidelberg, June 1986

C.S. Muir
G. Wagner

EVALUATION SURVEY FOR THE DIRECTORY OF ON-GOING RESEARCH IN CANCER EPIDEMIOLOGY

The editors of the Clearing-House Directory wished to know whether the Directory was providing the type of information epidemiologists find useful in the pursuit of their studies. Such evaluations are difficult to undertake in that respondents who do not find a publication useful tend not to reply and hence there is likely to be a preponderance of favourable comments. Nonetheless, a questionnaire was sent to the contributors to the five Directories from 1980-1984. Of the 1480 investigators mailed, 868 replied, a rate of 58%, which is remarkably high.

The questionnaire is reproduced below (Figs. 2 and 3) and gives the response rates for each question. It is of interest to note that over 50% of respondents had contacted other investigators, and that 48% had themselves been contacted by others, thus meeting one of the aims of the Clearing-House - to promote contacts between research workers. It is also interesting to note that 47% had obtained ideas for their own studies, and 10% had abandoned a study they were planning.

Of particular interest to the editors were the responses to the question "How do you think the Directory could be made more useful?" 119 respondents made suggestions (many of which of course were the same), for example: publish references to completed work, indicate statistical procedures used, increase coverage, include a list of hospital-based cancer registries, include comments by the editors on the value of the studies, include studies on biological parameters, make the Directory available as an ad-hoc data base, etc. 96 investigators commented on the various indexes, the main reason for not finding an index useful being that they did not use it. The Index of Type of Study and the Index of Countries were considered redundant, while the inclusion of telephone and telex numbers was considered helpful.

Nine countries had a response rate of over 50%, taking into consideration only those countries in which 30 or more investigators had been contacted: Italy - 74% , Sweden - 73%, Japan - 70%, Australia - 69%, Canada - 68%, Denmark - 66%, UK - 59%, France - 53% and USA - 51%.

DIRECTORY OF ON-GOING RESEARCH IN CANCER EPIDEMIOLOGY

Total mailed: 1490
Total response: 868
(58%)

1. Do you use the Directory? (819) ☐ Yes % 94.4 ☐ No % 5.6 (49)

If yes, how often?

- frequently (1-2 times/week)
- occasionally (1-2 times/month)
- rarely (1-2 times/year)

☐ 4.5
☐ 50.1
☐ 42.9 — 1.5

2. Do you find the Directory useful?

If yes, (Several replies are possible)

- to learn about studies being undertaken
- to learn about other investigators
- to contact other investigators
- in planning studies
- to obtain addresses
- other _____

☐ ☐

☐ 89.0
☐ 55.8
☐ 44.7
☐ 36.6
☐ 41.3
☐ 5.6

If no, please indicate why?

15 respondents made comments

3. Following use of the Directory have you ever
(Several replies are possible)

- contacted other investigators
- obtained ideas for your own study
- abandoned a study you were planning

☐ 51.2 ☐ 48.8
☐ 47.4 ☐ 52.6
☐ 10.1 ☐ 89.9

4. Have you ever been contacted by an Investigator
who indicated he had come to know about your work
through the Directory?

☐ 47.6 ☐ 52.4

5. How do you think the Directory could be made
more useful?

119 respondents made suggestions

6. Do you like the present layout, i. e. alphabetically
by country, town and Investigator?

If no, how would you like to have the projects listed

56 respondents made suggestions

☐ 91.7 ☐ 4.2*

*4.1 % did not reply to this question

Fig. 2 Evaluation questionnaire - Page 1

7. Do you find the following indexes and lists useful
(Several replies are possible)

- list of investigators
- index of terms
- index of sites
- index of chemicals
- index of type of study
- index of occupations
- index of countries
- lists of population-based cancer registries

Yes	%	No	%
<input type="checkbox"/>	87.2	<input type="checkbox"/>	12.8
<input type="checkbox"/>	72.4	<input type="checkbox"/>	27.6
<input type="checkbox"/>	84.0	<input type="checkbox"/>	16.0
<input type="checkbox"/>	66.1	<input type="checkbox"/>	33.9
<input type="checkbox"/>	74.2	<input type="checkbox"/>	25.8
<input type="checkbox"/>	67.4	<input type="checkbox"/>	32.6
<input type="checkbox"/>	66.5	<input type="checkbox"/>	33.5
<input type="checkbox"/>	72.9	<input type="checkbox"/>	27.1

If there is an index you do not find useful, please specify why.

96 respondents made comments

Would you like to have additional indexes?
If yes, please specify.

☐ 4.8 ☐ 58.9[●]

8. Do you find it useful to have the telephone
and telex numbers of the investigators?

☐ 62.9 ☐ 31.1^{●●}

9. If you know of investigators in this field of
cancer epidemiology, who are not listed in our
Directory, please give name and address:

Name and address of person completing the form
(if other than on address label below):

● 36.3 % did not reply to this question

●● 6.0 % did not reply to this question

Please return to:

Clearing-House for On-Going Research in
Cancer Epidemiology
International Agency for Research on Cancer
150, cours Albert Thomas
69372 Lyon Cedex 08, France

FUNDS ALLOCATED TO CANCER EPIDEMIOLOGY

At a time when the Clearing-House is celebrating its 10th anniversary, and bearing in mind that virtually all the important causes of human cancer were discovered by epidemiological means, it was felt opportune to try to assess the place of epidemiology in cancer research today by estimating the amount of funds allocated to cancer epidemiology in relation to other forms of research into malignant disease.

Governments, research organizations, cancer registries and others were asked to provide such information. It soon became clear that the question had been posed in too broad terms but attempts to obtain greater precision tended to founder in that it was often difficult to assess costs for various types of investigation, to allot staff time to one or another activity, to disentangle costs of the laboratory components from other aspects of epidemiological studies, and possibly most difficult of all, to assess the contribution derived from data collected for other purposes. Thus, to quote but one example, how should the costs of a cohort study based on a cancer registry or a national vital statistics system be allocated? Some respondents included staff and administrative costs in their figures, others did not. Frequently details were not given.

It will be noted that cancer registries have been listed separately. Most registries gave their total annual budget only, being unable to separate data collection costs from those for analytical epidemiological research (or considering that all registry activities are *de facto* epidemiology).

We would like to thank those who frequently went to great efforts to try and provide the information requested, information which is of necessity now somewhat out of date. Nonetheless, it is our belief that, although the sums involved may have changed, it is not likely that a significant alteration has taken place since 1982 in the proportions spent on Cancer Epidemiology in the countries represented in the table.

The information given in the table which follows is thus in no way comparable. Yet, despite its imperfections, it is quite clear that the global investment in Cancer Epidemiology is trivial, not to mention derisory. The figures speak for themselves.

E. Démaret
C.S. Muir

FUNDS ALLOCATED TO EPIDEMIOLOGICAL RESEARCH IN SELECTED COUNTRIES AROUND 1982

(Sums expressed in US\$ at the 1983 exchange rate)

	Total Cancer Research Budget (million \$)	Cancer Epidemiology Budget * (million \$)	Proportion (%)
AMERICA			
Canada			
National Cancer Institute of Canada		1.6 ^a	
– Epidemiology Unit		1.0 ^b	6
– Awards/grants	16.0		
Department of National Health & Welfare		1.1 ^c	
Ontario Cancer Treatment and Research Foundation			
– Div. of Epidemiology & Biostatistics (total budget)		0.4	
Other sources		1.2 ^d	
USA			
National Cancer Institute	943.0	51.7 ^e	5
– Research grants	418.1	14.0	3
American Cancer Society, grants	49.0	5.0 ^f	10
National Institute of Environmental Health & Safety		0.8 ^g	
Center for Disease Control			
– National Institute of Occupational Safety & Health	5.0	3.0	60
– Center for Health, Promotion & Education	1.8 ^h	1.1 ^h	61
– Center for Environmental Health	0.7	0.4	57
Environmental Protection Agency/HERL	5.4 ⁱ	1.1 ⁱ	20
Panama			
Gorgas Memorial Laboratory		0.3 ^j	
ASIA			
India			
Indian Council of Medical Research			
– Research projects	0.04	0.008	20
– Fellowships	0.03	0.007	23
Gujarat Cancer & Research Institute	0.2 ^k	0.07 ^k	35

* Figures are not strictly comparable (see text)

	Total Cancer Research Budget (million \$)	Cancer Epidemiology Budget * (million \$)	Proportion (%)
Japan			
Aichi Cancer Centre, Div. of Epidemiology		0.7 ^l	
National Cancer Centre Research Institute	6.0	0.3 ^m	5
Pakistan			
Pakistan Medical Research Council (1973-1980)		0.05	
EUROPE			
Belgium			
	5.3	0.8	15
Denmark			
	6.6	0.7	11
Finland			
Academy of Finland, Medical Research Council			1 ⁿ
Total grants in Finland	0.8	0.02 ^o	3
France			
Institut National de la Santé et de la Recherche Médical	11.3	1.2	10
Centre National de la Recherche Scientifique	2.7	0.07	3
Germany, Federal Republic of			
Federal Government	58.3 ^p	1.2 ^q	2
German Research Association	35.4		
German Cancer Foundation	9.5		
Miscellaneous support		0.6 ^r	
Italy			
Italian Association for Cancer Research	6.5	0.2 ^s	3
National Cancer Institute, Genova	5.0	0.8 ^t	16
Istituto di Anatomia e Istologia Patologica, Torino		0.1	
Netherlands			
Queen Wilhelmina Cancer Foundation	10.5 ^u	0.2	2

* Figures are not strictly comparable (see text)