PERGAMON

European Journal of Cancer 38 (2002) S3–S13

European Journal of Cancer

www.ejconline.com

40 years of the EORTC: the evolution towards a unique network to develop new standards of cancer care

F. Meunier[a,*], A.T. van Oosterom[b]

[a]EORTC Central Office, Avenue E. Mounier 83 bte 11 B-1200 Brussels, Belgium
[b]U.Z. Gasthuisberg, Department of Oncology, Herestraat 49, B-3000 Leuven, Belgium

1. Background and history

1.1. What is the EORTC?

The European Organisation for Research and Treatment of Cancer (EORTC) is an international association under Belgian law. It was established as a cancer research organisation in 1962 by the eminent Belgian cancer expert Professor Henri Tagnon (formerly head of the Institut Bordet, the cancer centre of the Free University of Brussels, Belgium) and other leading European oncologists working in the main cancer research institutes and hospitals. It was initially called Groupe Européen de Chimiothérapie Anticancéreuse (GECA) and became the European Organisation for Research and Treatment of Cancer (EORTC) in 1968. The main reason to join forces at that time was the perceived need to conduct large-scale clinical studies which were beyond the capacity of individual centres and even national organisations.

The intention was to firmly establish a unique research organisation in Europe to promote and coordinate high-quality laboratory research and clinical trials and also to provide a central facility with scientific expertise and administrative support for this network of scientists and clinical investigators. Ahead of its time and ready for the united Europe, the EORTC promoted multidisciplinary cancer research and collaboration with leading biomedical research settings around the world.

Today, the EORTC is a research organisation linking a network of qualified preclinical scientists and oncologists from a core of more than 60 affiliated institutions or departments although about 300 hospitals participate in EORTC activities.

The criteria to be recognised as affiliated institutions (Table 1) include:

- (i) recruitment of 75 patients during a period of three years with a minimum of 15 patients per year
- (ii) participation in more than two EORTC Groups
- (iii) institutions participating in less than three EORTC Groups and fulfilling the other criteria are 'EORTC Affiliated Departments'.

The organisation encompasses all aspects of cancer research, from laboratory research and new drug development to large phase III clinical trials, including also quality of life, health economics, meta-analysis and outcome research.

The EORTC's unique network comprises more than 2500 scientists and clinicians, all collaborating on a voluntary basis in about 30 multidisciplinary Groups in 32 countries. These Groups organise laboratory research and clinical trials for almost all types of cancers such as breast, gynaecological, lung, gastrointestinal, genito-urinary, haematological cancers and others. In addition, research based on new and more effective treatments (including cytotoxic drugs, but also more innovative agents or other disciplines such as radiotherapy and chronotherapy) are also major areas of activities. Overall, there are more than 6500 new patients with cancer treated each year in EORTC protocols.

About 80% of these patients are treated within European Union countries. Some 100 protocols are permanently open to patient entry (Table 2).

The EORTC is funded by the EORTC Foundation, the Fondation Cancer, corporate sponsorship and private

* Corresponding author. Tel.: +32-2-774-1630; fax: +32-2-771-2004.

E-mail addresses: fme@eortc.be (F. Meunier), allan.vanoosterom@uz.kuleuven.ac.be (A.T. van Oosterom).

PII: S0959-8049(01)00456-7

donations, the National Belgian Lottery and, for specific research projects, the European Commission (DG Internal Market, DG Research and DG Information Society). Pharmaceutical companies also support studies aimed at the development of new drugs. In addition, the EORTC Data Center in Brussels has received continuous support from the US National Cancer Institute (NCI) since 1972.

Table 1
EORTC affiliated institutions—2001 (review 1998–2000)

	Institution	Number of groups	Accrual 2000	Accrual 1998–2000
1.	UZ Gasthuisberg, Leuven, Belgium	16	282	778
2.	UZ Rotterdam, The Netherlands	11	213	625
3.	University Medical Centre Nijmegen, Nijmegen, The Netherlands	16	158	550
4.	Academisch Medisch Centrum, Amsterdam, The Netherlands	8	150	429
5.	Hôpitaux Universitaires Bordet-Erasme, Brussels, Belgium	15	92	403
6.	Cliniques Universitaires St. Luc, Brussels, Belgium	8	102	366
7.	Leiden University Medical Center, The Netherlands	11	85	301
8.	Institut Gustave Roussy, Villejuif, France	9	100	293
9.	Antoni Van Leeuwenhoekhuis, Amsterdam, The Netherlands	10	87	283
10.	Dr. Bernard Verbeeten Instituut, Tilburg, The Netherlands	4	92	275
11.	Academisch Ziekenhuis Der Vrije Universiteit, Amsterdam, The Netherlands	11	69	249
12.	Center Georges-François Leclerc, Dijon, France	7	74	240
13.	Newcastle General Hospital, UK	5	31	118
14.	Royal Marsden Hospital, London/Sutton, UK	8	62	229
15.	Maria Sklodowska-Curie Cancer Center, Poland	8	32	229
16.	Universitair Medisch Centrum, Utrecht, The Netherlands	11	71	228
17.	Center Hospitalier Universitaire Vaudois, Lausanne, Switzerland	10	50	219
18	Hôpital Edouard Herriot, Lyon, France	4	22	204
19.	Bosch Medicentrum-Groot Ziekengasthuis 'S Hertogenbosch, The Netherlands	5	70	199
20.	St James's University Hospital, Leeds, UK	3	75	195
21.	Universitaetsklinikum (Charite), Humboldt, Universitaet, Berlin, Germany	4	96	186
22.	Algemeen Zienkenhuis Middelheim, Antwerpen, Belgium	12	47	164
23.	Center Hospitalier Régional, Besancon, France	8	42	147
24.	Academisch Ziekenhuis Maastricht, The Netherlands	9	52	142
25.	Center Alexis Vautrin, Vandoeuvre-lez-Nancy, France	5	55	137
26.	Western General Hospital, Edinburgh, UK	7	44	137
27.	Western Infirmary, Glasgow, UK	7	38	132
28.	Universitair Ziekenhuis Antwerpen, Edegem, Belgium	11	28	132
29.	Norwegian Radium Hospital, Oslo, Norway	6	42	130
30.	Center René Gauducheau, St. Herblain, France	5	53	125
31.	Institut Bergonie, Bordeaux, France	5	41	125
32.	Universitaetsklinik ULM-ULM, Germany	3	31	124
33.	Academisch Ziekenhuis Groningen, The Netherlands	6	44	120
34.	Center Léon Berard, Lyon, France	7	33	119
35.	Sahlgrenska Sjukhuset, Göteborg, Sweden	3	56	118
36.	Universitaetsspital, Zurich, Switzerland	4	35	118
37.	Onze Lieve Vrouw Gasthuis, Amsterdam, The Netherlands	7	34	116
38.	Klinikum Grosshadern Ludwig, Maximilians Univ., München, Germany	4	24	113
39.	Universitaetair Ziekenhuis, Gent, Belgium	5	38	111
40.	Kaiser Franz Josef Spital, Vienna, Austria	6	37	111
41.	Arnhem's Radiotherapeutisch Instituut, Arnhem, The Netherlands	3	39	110
42.	CHR de Grenoble, La Tronche, France	3	34	106
43.	Rambam Medical Center, Haifa, Israel	5	52	103
44.	Hôpital Necker-Institut Curie, Paris, France	4	29	103
45.	National Cancer Institute, Cairo, Egypt	4	46	97
46.	Robert-Roessle-Klinik, Humboldt Universitaet, Berlin, Germany	4	38	95
47.	St. Antonius Ziekenhuis, Nieuwegein, The Netherlands	3	27	89
48.	Hôtel-Dieu, Paris, France	3	24	88
49.	Centre Oscar Lambret, France	4	45	86
50.	Centre Antoine Lacassagne, Nice, France	7	23	84
51.	Centro di Riferimento Oncologico, Aviano, Italy	6	18	81
52.	Inselspital, Bern, Switzerland	6	22	77
53.	Western Park Hospital, Sheffield, UK	6	30	75
	Total number of patients		3214	10 214

1.2. The EORTC Foundation

In 1976, the EORTC Foundation was established by Royal Decree under the laws of the Kingdom of Belgium with the specific aim of obtaining funds for the support of the EORTC. Its Council represents all supporting countries, which include the European Union, Norway, Switzerland and Hong Kong. The Honorary President is Her Majesty the Queen of Sweden and the Chairman is Sir Christopher Mallaby. Sir Ronald Grierson, Past-Chairman of the Foundation, is now the Honorary Vice-President. Since the EORTC operates through existing national institutions and hospitals, its financial needs are modest in relation to what it is able to achieve. In 2000, the EORTC Foundation received EORTC core support from: the Associazione Italiana per la Ricerca sul Cancro, the Cancer Research Campaign (UK), the Danish Cancer Society, the Deutsche Krebshilfe E.V., the Hong Kong Cancer Fund, the Imperial Cancer Research Fund (UK), the Nederlandse Kankerbestrijding, the Ligue Nationale Contre le Cancer (France), the Liga Portuguesa Contra o Cancro, the Norwegian Cancer Society, the Schweizerische Krebsliga and the Swedish Cancer Society. In addition, the Parthenon Trust (UK) also allocates support for three EORTC Research Projects: 'Central Support for Histology Review and Tissue Banking in EORTC', 'Molecular Staging in Melanoma Patients' and 'Outcome Research and Collaboration in Cancer Clinical Research (Intergroups Office)'.

Table 2
Total number of new patients in EORTC clinical studies

	2000
European Union	
Austria	111
Belgium	760
Denmark	38
Finland	3
France	1166
Germany	569
Greece	27
Italy	413
The Netherlands	1484
Portugal	57
Spain	219
Sweden	71
United Kingdom	538
Total European Union	5456 (83.82%)
Other European countries	
Bulgaria	15
Bosnia	3
Croatia	42
Czech Republic	37
Estonia	1
F.R Yugoslavia	13
Hungary	26
Malta	10
Monaco	–
Norway	61
Poland	51
Romania	11
Russia	32
Slovakia	45
Slovenia	7
Switzerland	169
Turkey	75
Other countries	
Australia	34
Canada	188
Egypt	46
Israel	78
New Zealand	5
South Africa	14
Saudi Arabia	4
UA Emirates	–
USA	52
Argentina	6
Chile	28
Total	6509

1.3. The EORTC mission

The aims of the EORTC are to conduct, develop, coordinate and stimulate research in Europe on the experimental and clinical bases of treatment of cancer and related problems.

The ultimate goal of the EORTC is to improve the standard of cancer treatment in Europe, through the development of new drugs and other innovative approaches or modalities, and to test more effective therapeutic strategies, using agents which are already commercially available, or surgery and radiotherapy. Via laboratory and clinical research, the EORTC offers an integrated approach to drug development, as well as to therapeutic strategy programmes. Clinical research is accomplished mainly through the execution of large, prospective, randomised, multicentre, cancer clinical trials. In this way, the EORTC facilitates the passage of experimental discoveries into 'state-of-the-art' treatment and minimises the delay between discovery of new active agents and their therapeutic benefit for patients.

2. Structure, functioning and recent developments

2.1. The EORTC General Assembly

The General Assembly is the legislative body of the EORTC and meets once a year. It ratifies policies, proposals and other activities, and delegates specific tasks to the EORTC Board, which meets as often as it is necessary (usually twice a year).

The EORTC is organised into Groups of scientists and/or clinicians, each with a specific area of interest in

cancer research. These Groups conduct, on a voluntary basis, laboratory research and/or clinical trials on all types of cancers using a multidisciplinary approach. All Groups have a representative (the Group's Chairman) within the General Assembly.

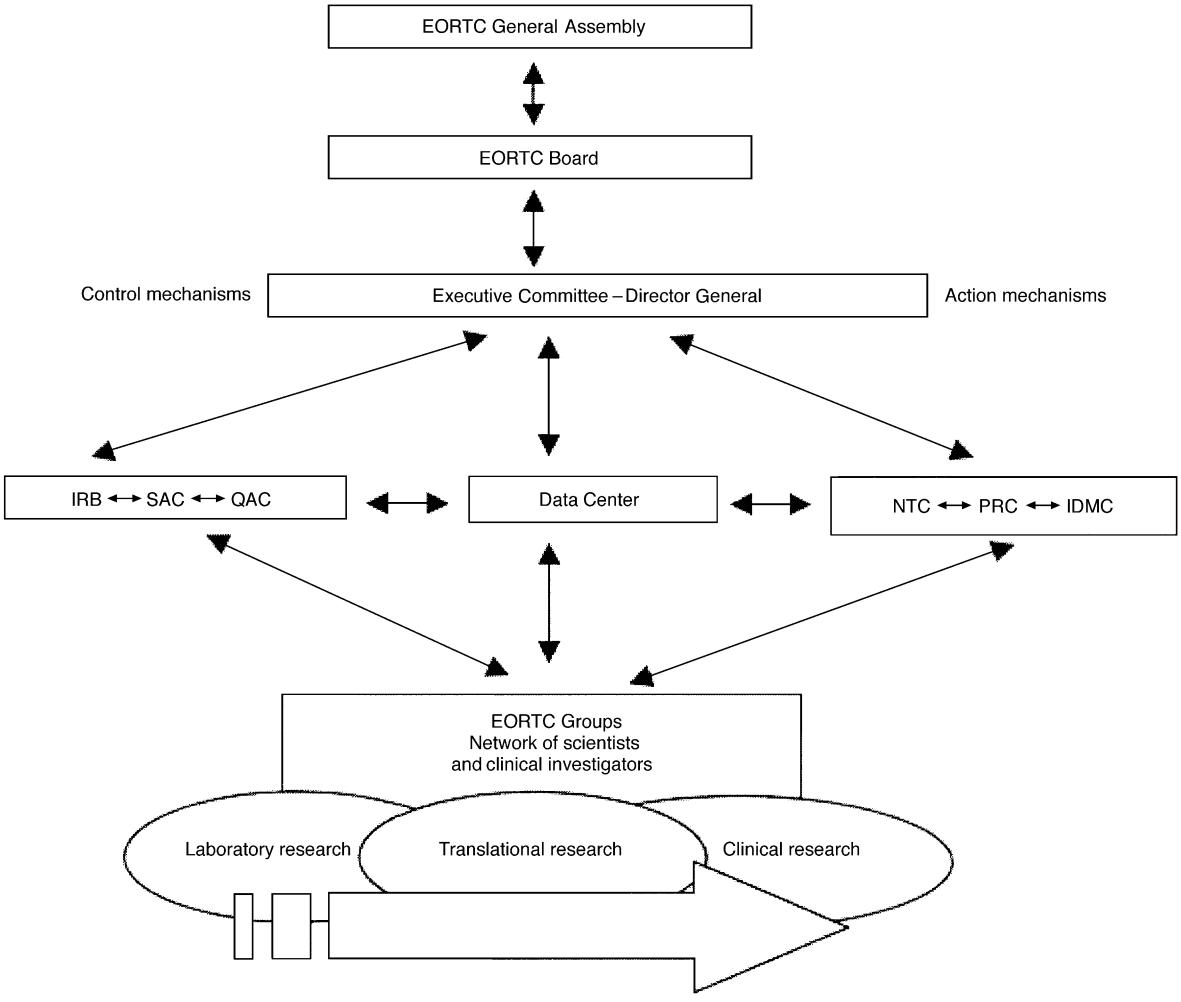
2.2. The EORTC Board and EORTC Executive Committee

The EORTC Board is the steering body, which advises the General Assembly on all matters relating to the EORTC. Furthermore, it initiates new activities and formulates proposals before they are submitted to the General Assembly. Every 3 years, the General Assembly elects a new board (21 voting members), which then elects the President and officers of the EORTC. The EORTC Board and General Assembly jointly establish the EORTC policies and strategies. The structure of the EORTC is described in Table 3.

The Executive Committee was created by Emmanuel van der Schueren in 1991. This was an initiative to help and support the President and to involve several Board members instead of leaving the daily decisions process and strategies to the President alone. It meets as often as needed (once every 2 months on average), and communicates by phone and e-mail almost every day. The Executive Committee reports to the Board.

The current Executive Committee consists of seven voting members of the Board (the President: Allan T. van Oosterom; the Past-President: Professor Jean-Claude Horiot; the Vice-President: Professor Jaap Verweij; the Secretary General: Professor Matti Aapro; the Treasurer: Professor John Double; the Chairman of Laboratory Research: Professor Herbie Newell; and the

Table 3
EORTC structure



IRB: Institutional Review Board; SAC: Scientific Audit Committee; QAC: Quality Assurance Committee; PRC: Protocol Review Committee; NTC: New Treatment Committee; IDMC: Independent Data Monitoring Committee.

Chairman of Clinical Research: Professor Alexander Eggermont; plus the Director General: Professor Françoise Meunier, who is *ex-officio* (non-voting) member of the Executive Committee.

The former EORTC Presidents are:

- Georges Mathé (Villejuif, France) 1962–1965
- Silvio Garattini (Milan, Italy) 1965–1968
- Dirk Willem Van Bekkum (Rijswijk, The Netherlands) 1969–1975
- Henri J. Tagnon (Brussels, Belgium) 1975–1978
- Laszlo George Lajtha (Manchester, United Kingdom) 1979–1981
- Carl Gottfried Schmidt (Essen, Germany) 1981–1984
- Umberto Veronesi (Milan, Italy) 1985–1988
- Louis Denis (Antwerp, Belgium) 1988–1991
- Emmanuel van der Schueren (Leuven, Belgium) 1991–1994
- J. Gordon McVie (London, United Kingdom) 1994–1997
- Jean-Claude Horiot (Dijon, France) 1997–2000

2.3. EORTC divisions

The Laboratory Research division comprises the following Groups:

- Pharmacology and Molecular Mechanisms
- Screening and Pharmacology
- Receptor and Biomarker
- Functional Imaging (formerly positron emission tomography (PET))
- Pathology

The Clinical Research Division comprises all other EORTC Groups and Task Forces (Table 4).

2.4. The EORTC Committees

Several EORTC Committees ensure the EORTC's independence, relevance of research efforts and scientific value, thereby safeguarding the quality of its work.

2.4.1. The EORTC New Treatment Committee (NTC)

The EORTC NTC (created in 1997) reviews all concepts for new drug development submitted by EORTC Groups. It ensures a coherent scientific strategy with regard to drug development and the translational research to be conducted by the various EORTC Groups. The NTC thereby serves as the scientific committee for the EORTC New Drug Development Programme. The NTC is composed of about 35 experts covering all treatment modalities involving investigational anticancer agents. There are subcommittees on cytotoxic/cytostatic agents, biological agents, hormones, gene therapy, radiotherapy and pathology.

All members are contacted by e-mail and a meeting is organised once a year in conjunction with the PRC.

2.4.2. The EORTC Protocol Review Committee (PRC)

The function of the EORTC PRC (created in 1974) is to review and approve new EORTC protocols submitted by the Groups with respect to their scientific value, methodology, feasibility and relevance within the EORTC framework. The PRC comprises about 16 members and external consultants chosen for their expertise in specific areas. All disciplines of oncology are represented in the review panel.

Protocol outlines are submitted to the NTC-PRC secretariat at the EORTC Data Center via the EORTC home page (http://www.eortc.be). The average review time for concepts for the NTC is 26 days and 39 days for the PRC. If necessary, concepts/protocols are reviewed at quarterly meetings of PRC. For more details on the NTC/PRC, please read the appropriate section.

2.4.3. The EORTC Scientific Audit Committee (SAC)

The EORTC SAC was created in 1982 (initially called the Breuer Committee) to give independent advice to the EORTC Board regarding the activities and the scientific output, as well as the overall priorities and

Table 4
EORTC Clinical Research Division and Laboratory Research Division

EORTC Clinical Research Groups
- Biological Therapeutics Development*
- Brain Tumour
- Breast Cancer
- Children's Leukaemia
- Chronotherapy
- Early Clinical Studies*
- Gastro-intestinal Tract Cancer
- Genito-Urinary Tract Cancer
- Gynaecological Cancer
- Head and Neck Cancer
- International Antimicrobial Therapy
- Invasive Fungal Infections
- Leukaemia
- Lung Cancer
- Lymphoma
- Melanoma
- Radiotherapy
- Soft Tissue and Bone Sarcoma
- Quality of Life
- Osteosarcoma
- Oncology Nurses/Data Management/Radiation Technician

EORTC Task Forces
- Cancer in Elderly
- Cutaneous Lymphoma
- Ophthalmic Oncology
- Pain & Symptoms Control

EORTC Laboratory Research Division Groups
- Functional Imaging
- Pathology
- Pharmacology and Molecular Mechanisms
- Receptor and Biomarker
- Screening and Pharmacology

* As of March 2002, both groups will merge to create the New Drug Development Group (NDDG).

strategies of each of the EORTC Groups. This also includes recommendations on a series of criteria such as conformity with EORTC structure and policies and interaction with other EORTC Groups.

2.4.4. The EORTC Quality Assurance Committee (QAC)

The aim of the EORTC QAC (created in 1987) is to improve quality by developing guidelines for quality assurance and ensuring that adequate quality control mechanisms are operational in all the EORTC Groups. These activities include site visits with co-opted experts as appropriate. Quality assurance within the EORTC Data Center is of profound importance and the EORTC QAC works in close co-operation with the Data Center Quality Assurance Unit. The QAC also collects detailed information on the Groups' performance, i.e. return of forms, contact with Study Coordinators and other activities, via the EORTC Data Center Quality Assurance Unit. For more details on the 'Quality Assurance', please read the appropriate section.

2.4.5. The EORTC Independent Data Monitoring Committee (IDMC)

A permanent Independent Data Monitoring Committee has been established in 2001 to review the status of clinical trials and to make recommendations to the Groups concerning the trial's continuation, modification and/or publication.

2.5. The EORTC headquarters

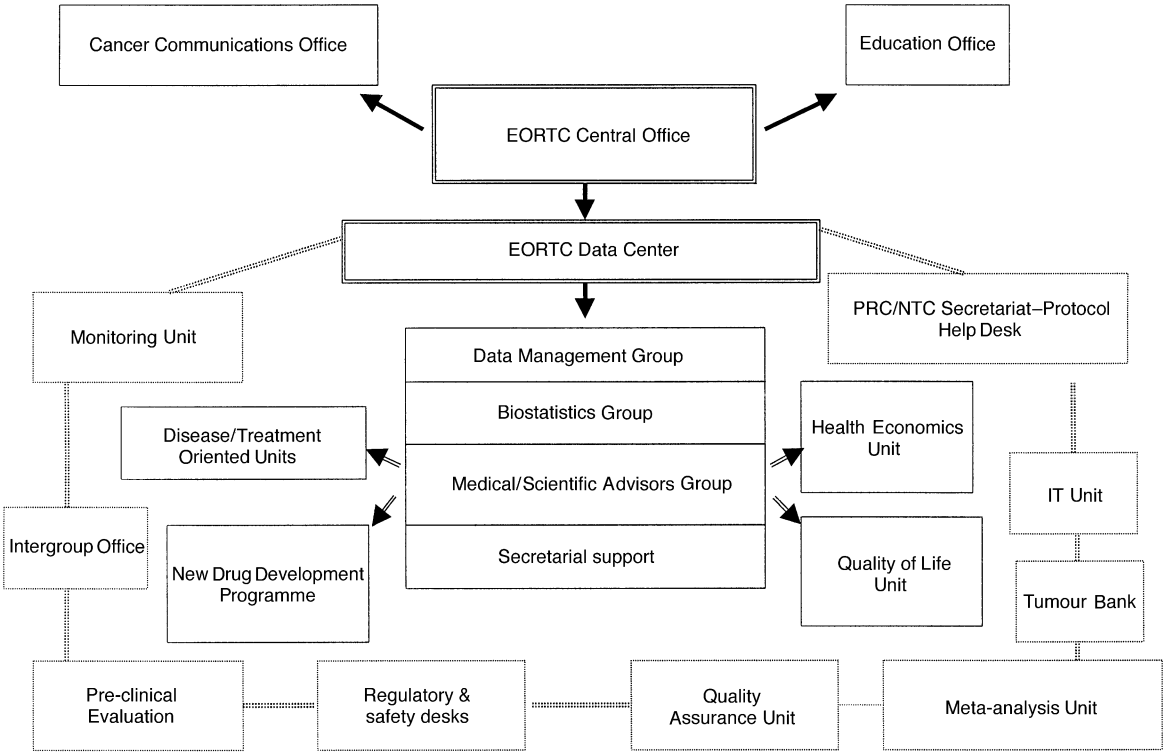
The EORTC Central Office, the Data Center, the Education Office and the Cancer Communications Office are situated in the premises of the EORTC headquarters in Brussels. The EORTC headquarters (Table 5) play a co-ordinating role in all of the EORTC activities and deal with the scientific, legal and administrative issues related to the EORTC's activities.

2.5.1. The EORTC Central Office

The Central Office was established to coordinate all the activities of the EORTC and to represent the EORTC at international organisations such as the United States National Cancer Institute (US NCI), the European Commission, the European Cancer Leagues, as well as the private sector. The EORTC's Director General post was created in 1995 following the tremendous expansion of the EORTC activities in order to co-ordinate and implement strategies and policies as defined by the EORTC Board.

The EORTC Central Office comprises the Education Office and the Cancer Communications Office.

Table 5
EORTC headquarters



2.5.2. The EORTC Education Office

Since 1995, the EORTC Central Office has hosted the EORTC Education Office, which provides support for the organisation of courses on the methodology of clinical trials, statistics, health economics, data management, quality of life and others, as well as for EORTC conferences.

2.5.3. The EORTC Communications Office

In 1997, a Cancer Communications Office was established in order to provide 'cutting edge' information on a regular basis to the various European Cancer Leagues, the scientific community, the patients and the public, e.g. updated information on major clinical trials activated, as well as the most recent results of research and their practical impact for patients with cancer.

2.5.4. The EORTC Data Center

The EORTC Data Center, established in Brussels in 1974, is a unique central facility in Europe that offers a comprehensive approach to cancer research and to the management of cancer clinical trials. It provides full logistic and scientific support for all EORTC studies and research projects from pre-clinical studies to phase I, phase II and large, prospective, randomised, multicentre, phase III clinical trials. The EORTC Data Center staff consists of more than 130 researchers (14 nationalities) including medical doctors, statisticians, data managers, quality of life specialists, health economists, healthcare professionals, computer specialists, as well as research fellows and administrative staff.

The structure of the Data Center is centralised around several *research units* involving representatives from the different staff members Groups: medical advisors, biostatisticians, data managers and other scientists as appropriate.

- *The disease/treatment-oriented units,* which manage the clinical data of the EORTC Groups (late phase II and phase III clinical studies).
- *The New Drug Development Programme (NDDP)* which specifically focuses its activities on the management of early clinical trials (phase I and early phase II) conducted by the New Drug Development Group (formerly the Early Clinical Studies Group and the Biological Therapeutics Development Group). The final objective of the NDDP is to reduce the time between new drug discovery and the registration of more effective therapeutic regimens.
- *The Health Economics Unit (HEU)* aims at performing (i.e. through clinical trials) economic evaluations of competing treatment options in common cancers in order to assess the relationship between treatment outcome and cost. In this way, healthcare decision-makers are provided with important information, furthering the objective of using the best available healthcare resources to obtain the largest possible health benefit. For more details on this subject, please read the appropriate section.
- *The EORTC Quality of Life (QoL) Unit* was created in 1993 with the main aim of encouraging the integration of QoL research into the clinical trials conducted by the EORTC Group. Working in close co-operation with the EORTC Groups and the EORTC Quality of Life Groups, its main objective is to stimulate, enhance and coordinate quality of life matters in cancer clinical trials, and to generate new hypotheses. For more details on this subject, please read the appropriate section.

To support the activities of these different research units, a number of other 'speciality units' have been created, to address specific problems related to the development and conduct of cancer clinical trials.

- *The Meta-Analysis Unit* provides the scientific support to identify, process and analyse the individual patient data from trials to be included in meta-analyses performed by the EORTC.
- *The Monitoring Unit*: Since 1993, the EORTC Data Center has been performing on-site monitoring of the institutions participating in EORTC clinical trials. Over the last few years, partnership with industry has grown substantially in parallel with the need to further enforce the implementation of Good Clinical Practice Guidelines (GCP) within the EORTC. In 1997, it was decided to create and develop a specialised unit for clinical monitors with the aim to provide better service to our Groups, while extending our expertise in drug development methodology. Standard Operating Procedures (SOPs) were developed together with a set of standard documents to perform and report on monitoring site visits. Clinical research associates are actively involved in the day-to-day monitoring of early and late clinical trials. More than 1000 site visits have been performed and for each of them a summary report is included in a specific database to monitor the overall quality of EORTC participating institutions. In 2000, 551 site visits were conducted by the EORTC Data Center staff.
- *The Quality Assurance Unit*: The EORTC has been a pioneer in the quality assurance of cancer clinical trials. Over the years, a major expansion of quality control activities has been undertaken to upgrade the quality of EORTC trials, as well as cancer care delivery.

This unit was created in 1994. Its main objectives are to coordinate the quality control activities undertaken within the Data Center with regard to the data management of EORTC studies and to support the activities of the EORTC Quality Assurance Committee. Other goals of the Quality Assurance Unit are to centralise all available information related to the quality assurance activities undertaken by the different EORTC Groups and to support them in developing consistent quality assurance programmes. This unit is also responsible for investigating potential cases of misconduct or fraud.

- Since 1997, the EORTC Data Center has been equipped with *a Regulatory Affairs and Safety Desk*. The Safety Desk is responsible for the management of Serious Adverse Events (SAEs) occurring in clinical trials. Procedures for reporting SAEs are based both on the GCP guidelines and current national regulations. The Regulatory Affairs Desk has the objective of fulfilling all legal requirements for the initiation and conduct of clinical trials following the regulations of the participating countries. SOPs ensure that regulations are strictly adhered to when conducting clinical trials. The Regulatory Affairs and Safety Desks act in close collaboration for expediting SAEs to competent authorities according to legal requirements.
- *The EORTC Data Center Protocol Help Desk* provides logistic support to the Study Co-ordinator for assembling the protocol according to standard procedures. The protocol for each EORTC study is written under the responsibility of the Study Co-ordinator. The Study Co-ordinator (sometimes called 'Study Chairman'), a member of an EORTC Group, is responsible for the development of the protocol, and for getting the approval of the EORTC Protocol Review Committee and/or the EORTC New Treatment Committee. He/she will write all medical sections of the protocol. The Data Center team assigned to the study includes the statistician, the medical advisor and the data manager, who will write all methodological and administrative sections of the protocol, review the final document and ensure that the protocol is adequately developed in the shortest possible time.

2.5.5. Information technology

The EORTC is one of Europe's leading players in the development of new technologies to facilitate and speed up cancer clinical research. Specific software has been developed following widely-accepted methodologies and validation procedures to provide:

- Automatic computer registration/randomisation of patients into EORTC studies, using the software application ORTA, which is available 24 hours a day, 7 days a week based on Internet technologies
- Reliable and effective management of clinical trial data with automatic cross-checks and consistency checks using the software application VISTA
- Locking system for overdue information
- Transfer and storage of images such as pathology and imaging
- Centralised database for investigators' CVs, normal laboratory values, etc.
- Export of databases in various file types to allow transfer of information to EORTC partners.

Emerging technologies are regularly revised and integrated into the development strategy of the Data Center IT system. The IT system within the EORTC Data Center has been designed to reduce to a minimum any type of human error in the management of clinical trial data. It is based on a client/server architecture.

'Eforms' is the latest application developed at the EORTC. It is a remote data entry system integrated into VISTA allowing investigators to send their data in electronic format.

2.5.6. The EORTC Data Center Institutional Review Board

Created in 1984, the Institutional Review Board (IRB) of the EORTC Data Center is responsible for safeguarding the rights and welfare of subjects participating in clinical trials supported by the Data Center. In particular, the IRB is responsible for protecting the privacy and confidentiality of the individuals' data. All institutions and investigators submitting data to the Data Center agree to abide by the decisions of the IRB regarding data collection, transfer, storage, release, retention and disposition, as these pertain to the patient's privacy and confidentiality. The IRB also reviews potential conflicts of interest reported to the Data Center.

2.5.7. Tumour Bank

The EORTC Virtual Tumour Bank's project has officially started in September 2000 and will be carried out over a period of three years. The aim of this project, conducted by the EORTC Pathology Study Group (PSG) and by the Disease Oriented Groups (DOG), is to standardise histological review methods for EORTC clinical trials and to promote translational research in clinical trials.

In an attempt to promote translational research, the EORTC participated in an European research programme called 'EuroPATH' which enhanced the development of computer tools to improve and to speed

up the input of pathologists in the clinical research setting.

Over the coming months, the EORTC Data Center will provide dedicated logistic support to both pathology and clinical Groups and will establish systems for tumour tissue banking. The monitoring will be executed by both the EORTC PSG Board and the EORTC Data Center management. In three years' time, the EORTC aims to develop and implement the procedures for histology review, to solve the legal and ethical issues, to establish the virtual and real tissue bank and to develop a system for monitoring histology review and tissue banking in the Groups.

The EORTC will set up both the central tissue bank and the virtual tumour bank. The central tissue bank will be based at the EORTC headquarters, whereas the virtual bank, containing frozen tissue, will remain at the clinical site. However, the information on tissue samples will be available in the central database.

2.5.8. Outcome research

Treatment outcome study concerns any study investigating variations in outcome for a specific disease. Randomised phase III studies are thus a particular case of treatment outcome studies in which variations in outcome are assessed according to the treatment given to the patient. However, variations in outcome between patients suffering from a given disease can also be due to other factors such as their baseline characteristics, the quality of treatment and access to supportive care.

In the context of the Parthenon Trust, a treatment outcome study is a study investigating the heterogeneity in outcome of patients according to factors other than treatments, e.g. the country or the institution in which the patient is treated, such studies are of course very useful for improving the quality of patient care and treatment.

Two EORTC trials have already been selected and will be re-analysed in the coming months (EORTC trial 10854: 'Phase III trial on perioperative adjuvant chemotherapy in breast cancer' and EORTC trial 10853: 'Phase III trial on breast conserving therapy for ductal carcinoma *in situ* (DCIS)). Other trials to be included in the treatment outcome project, both in breast cancer and also in other types of cancer, still need to be identified.

A further extension of the Parthenon Trust project would be to also look at the difference in outcome of patients and to look at the difference in treatment effect among centres. A further step in this project would be to investigate the possibility of performing treatment outcome research on data from several trials pooled together. This would allow treatment outcome research to also be performed in tumour types for which clinical trials are typically of a smaller size (i.e. poor prognosis tumours, rare diseases, etc.).

2.5.9. The EORTC fellowship programmes

The EORTC offers several fellowship programmes at the EORTC Data Center which are intended for medical doctors, bio-statisticians, health economists, computer analysts and other scientists in order to promote training in the methodology of high-quality cancer clinical trials and also to conduct specific research projects on EORTC clinical trials or on quality assurance and quality of life. Since 1991, more than 80 fellows have spent between one and three years on specific research projects.

2.5.10. The EORTC Translational Research Fund

EORTC has strongly considered grant schemes to promote translational research within EORTC Groups and Task Forces. Translational research is essential as the studies are integrated clinical laboratory investigations designed to improve the prevention, diagnosis and/or treatment of cancer.

Decisions were taken at a Board meeting in June 2000 to establish a method to fund the EORTC Groups research projects and to create a new grant system in the Spring of 2001. These research projects address questions that are specific to particular tumour types, drug classes and drug targets and mechanisms of action.

In March 2001, the EORTC Board approved five projects among many others proposed by some EORTC Groups. The following EORTC on-going translational research projects are:

- Assessment of molecular determinants of development and treatment efficacy in radiation-induced sarcoma (Soft Tissue and Bone Sarcoma Group)
- Assessment of the chromosomal lesions of oligodendroglial tumours induced in EORTC study 26951 with fluorescence *in situ* hybridisation using locus-specific probes (Brain Tumour Group)
- Hypoxia in tumours and its relevance to the outcome of chemotherapy (Screening and Pharmacology Group)
- Can biological markers be used to select head and neck carcinomas likely to respond to intensive chemo-radiation programmes? (Head and Neck Group)
- Tumour hypoxia, expression profiling and clinical prognosis: establishment of a tissue bank for functional genomic analysis in a randomised clinical trial setting (Radiotherapy Group)

Among these projects, four are funded by 'la Foundation Cancer' and one by the EORTC Foundation. They function as 'seed' money and will hopefully result in some larger research support from various sources.

3. The EORTC and International Collaboration

3.1. The US National Cancer Institute (US NCI)

The EORTC collaborates with the US NCI, the leading US agency for cancer research and treatment, on several projects. Transatlantic collaboration with most US co-operative Groups is ongoing.

Agreements signed in the early 1970s by the EORTC, the US NCI and the British Cancer Research Campaign (CRC) facilitate new drug development collaboration. As a result, common methods of compound acquisition, selection, screening, toxicity testing and clinical evaluation are well established between the US and Europe.

In 1972, the NCI established the NCI liaison office adjacent to the EORTC headquarters to coordinate cancer research in the US and Europe. This has accelerated the discovery and implementation of new effective cancer treatments, while avoiding redundancy, to the satisfaction of European scientists, as well as for the benefit of those patients with cancer who receive 'state-of-the-art' treatments.

During recent years, numerous innovative agents have been discovered as a result of the tremendous development in the understanding of the molecular basis of cancer. Further clinical progress in cancer treatment will be accomplished mainly through the conduct of translational research projects, efficient new drug development and the execution of large, prospective, randomised, multicentre cancer clinical trials. This requires a joint and global approach, and early and optimal exchange of information.

The NCI and the EORTC have a longstanding co-operation in different areas of cancer research. This was reflected by many types of activities, and exchange of scientists and information. Because of the common interest in development and clinical evaluation of new anticancer agents, a series of joint symposia dealing with all possible aspects of this topic were initiated. The first joint NCI/EORTC symposium was organised in Brussels in 1978; subsequent symposia in this series were held in 1979, 1981 and 1983 in Brussels.

Since 1986, the NCI/EORTC joint symposium is held in Amsterdam. After a long series of successful joint symposia, the American Association of Cancer Research joined and these meetings are now organised alternatively one year in Europe and one year in the United States.

In 2001, the AACR-NCI-EORTC International Conference on 'Molecular Targets and Cancer Therapeutics: Discovery, Biology, and Clinical Applications' was held from 2 October to 2 November, in Miami Beach (FL, USA).

In 2002, the EORTC-NCI-AACR meeting on 'Molecular Targets and Cancer Therapeutics' will be held at the 'Conference Centre Messe' in Frankfurt (Germany) from 19 to 22 November.

3.2. The EORTC and the US Food and Drug Administration (FDA)

In 1998, the SOPs of the EORTC were filed at the US FDA and assigned a Drug Master File Number (No. DMF 13059). This puts EORTC clinical trial data on an equal footing with data from the US NCI and its Co-operative Groups. As a result, the EORTC's research partners can use the Drug Master File Number as a reference when seeking US approval for treatments tested in Europe.

3.3. The EORTC and the US Office for Human Research Protection (OHRP) of the National Institute of Health (NIH)

In 1998, the EORTC was awarded the International Co-operative Project Assurance (ICPA) from the US OPRR. This enables the EORTC to jointly carry out international clinical trials with US Co-operative Groups as the ICPA can be cross-referenced in order to cover and protect patients involved in multiple research protocols.

3.4. The EORTC collaboration with other research organisations

The EORTC is also actively involved in intergroups studies with both national and international research groups throughout Europe and worldwide. As of September 2001, about 23 'large clinical trials' (defined as those involving more than 900 patients) were open to patient entry and conducted by EORTC Groups or with other international research groups. An intergroup office has also been created in 2000.

3.5. The EORTC and the European Medicines Evaluation Agency (EMEA)

The Director of the EORTC Data Center is also a member of an expert working group at the European Medicines Evaluation Agency (EMEA). These meetings held in the premises of the EMEA allow members of the working group to discuss and set up guidelines for the requirements of new anticancer drugs submitted for registration.

4. *European Journal of Cancer*

The *European Journal of Cancer* was created in 1965 by Prof. H. Tagnon who was appointed Editor-in-Chief from 1963 until 1990. The *EJC* is the official journal of

the EORTC, the European School of Oncology (ESO) the European Association for Cancer Research (EACR), the European Society of Mastology (EUSOMA) and the Federation of European Cancer Societies (FECS). It is sent to 18 countries in Europe and a total of 63 countries worldwide. EJC Online was recently launched and is located at the following website address: http://www.elsevier.com/locate/ejconline.

The *EJC* published 18 issues in 2000, including three Special Issues on 'Tumour Prevention and Genetics', 'Invasion and Metastasis', and 'Cervical Cancer Screening in the European Union'. A number of supplements were also produced, including the abstract books of the major European Cancer Conferences.

In 2000, there were approximately 840 manuscripts submitted and the acceptance rate was 38%. 64% of the latter were original papers, the journal continues to have a fast time to first decision (seven weeks) and the Editorial Board are committed to trying to continuously improve the total time taken in the process of review, acceptance and publication.

5. Future perspectives

The EORTC will continue to provide support for high-quality research involving not only the development of new drugs, but also therapeutics strategies (radiotherapy, surgery, chemotherapy) performed by multidisciplinary research groups. Its ultimate goal remains to raise the standard of cancer treatments, prolong survival and improve the quality of life of thousands of patients with cancer throughout Europe.

Clinical studies are important to guarantee administration of 'state-of-the-art' treatments to all cancer patients and not only to those patients treated in research-oriented institutions. National research organisations, universities and healthcare providers should benefit from an increase in human resorces and of financial support for such research tasks, that require the recruitment of high numbers of patients in a short time, in order for the research results to be clinically relevant and to minimise the delay between the discovery of innovative agents and their therapeutic benefit for the patients.