Medical Research Council of Canada

1997-98
Estimates

Part III

Expenditure Plan

The Estimates Documents

The Estimates of the Government of Canada are structured in three Parts. Beginning with an overview of total government spending in Part I, the documents become increasingly more specific. Part II outlines spending according to departments, agencies and programs and contains the proposed wording of the conditions governing spending which Parliament will be asked to approve. The Part III documents provide additional detail on each department and its programs primarily in terms of the results expected for the money spent.

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Medical Research Council of Canada

1997-98 Estimates

Part III

Expenditure Plan

Approved

Minister of Health

President,
Medical Research Council

Preface

This document is a report to Parliament to indicate how the resources voted by Parliament have or will be spent. As such, it is an accountability document that contains several levels of details to respond to the various needs of its audience.

The Part III for 1997-98 is based on a revised format intended of make a clear separation between planning and performance information, and to focus on the higher level, longer term plans and performance of departments.

This document is divided into four sections:

- The Minister's Executive Summary;
- Agency Plans;
- Agency Performance; and
- Supplementary Information

It should be noted that, in accordance with Operating Budget principles, human resource consumption reported in this document will be measured in terms of employee full-time equivalents (FTEs).

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Section I
Minister's Executive Summary

The Medical Research Council of Canada is the principal instrument in the federal health portfolio for the development of a Canadian capacity for health science research through extra-mural grants and scholarships. In fiscal year 1996-97, the federal government invested $242.3 million in the MRC program to deliver support for research projects, and for the training of the next generation of researchers, in academic health science centres across Canada. For 1997-98, the investment will be reduced to $237.5 million reflecting cuts necessitated by deficit reduction initiatives. Over the four year period, 1994 to 1998, the MRC budget has been reduced by 13%, and its purchasing power further weakened by inflation, with the result that the Council must now turn down applications for support of projects that would be considered excellent by any scientific standard. Budget reduction has also required lowering the dollar amount of grants to levels that place Canadian researchers at a disadvantage relative to those in other countries where the budgets of federal health science agencies have been increasing.

The extramural program is a highly efficient method of providing Canadians with the benefits of health science research. The federal investment in research grants is effectively doubled as academic health science centres (universities, tertiary care hospitals and affiliated research institutes) pay the salaries of principal investigators and cover the capital and operating costs of research facilities. The public investment is even further expanded as other providers of research funding support research programs which draw upon the national infrastructure of trained, experienced and equipped researchers in all areas of health science. For example, in 1995-96, the non-profit sector, including agencies such as the National Cancer Institute of Canada, invested over $230 million in research that depends upon the Canadian health science platform maintained by government through the MRC program. Similarly, the provinces and health industries expand the impact of the federal investment by funding research programs that depend upon the availability of a national research infrastructure. **It has been estimated that when both direct and indirect leverage of the MRC Grants and Scholarships program are taken into account, every million dollars of research funding delivered through the MRC can be multiplied by a factor of six.**

Research is the basis for an improved quality of life for Canadians. Improvements in health status are gradual, with advances proceeding one small step at a time, but a comparison of the healthiness of the Canadians in today's world with that of forty years ago would show how dramatic the change has been, not only in medical treatments and diagnoses, which have improved enormously, but also in awareness of health dangers, such as tobacco smoke, and recognition of the benefits of healthy diet and fitness. In addition to the long-term pay-off from research, there are benefits for Canadians in the near and medium term. First, health science research generates the knowledge-intensive employment that will help us stay competitive in the information age. It has been estimated that a million dollars of public investment in health research generates 62 full-time equivalent years of employment for Canadians as researchers, technicians, research assistants and workers in research-related business. Second, the investment in research training through the awards programs of MRC and other providers of research funds ensures the continuing renewal of Canadian research capacity. The medical undergraduates spending a summer in research, the graduate students working towards a doctoral degree in a health science discipline, the postdoctoral fellow preparing for a career as an independent researcher, these will be the independent researchers of the

future. Third, the very act of participating in the pursuit of new knowledge and understanding through research increases our national capacity to appreciate and use the new knowledge generated elsewhere. That is, our health science research allows Canada to absorb and capitalize upon discoveries achieved world-wide.

The Medical Research Council plans to continue pursuing the strategic directions that it elaborated in 1992-93. It is broadening the health science repertoire and strengthening research in areas other than its principal forte, biomedical research. Areas under development include health services research, population health, health determinants and life-styles all of which offer great potential for leading to improved efficiency and effectiveness of our health care system. The Council is actively pursuing research partnerships with organizations in the private sector, both industry and not-for-profit. It is also aiming for a performance-based, results-oriented approach to all activities in which it is involved. For example, in 1996 the MRC arranged for an overview of its performance by a panel of renowned scientist-administrators from the United States, England and Canada. The International Panel strongly endorsed MRC strategies and, recognizing the challenge that the MRC faces in moving the research agenda forward in an era of decreasing budget, recommended several specific adjustments to improve even further MRC's programming and communications.

Over the coming years MRC plans to focus on ensuring stability of the health science research base as the platform upon which effective functioning of the national system of innovation in health depends. A solid core of basic research in all areas of health will provide a sustained outflow of new ideas and discoveries, ensuring that the mechanisms set in place to capture their benefits will be productive. The MRC will continue to facilitate the commercialization of health science discoveries in Canada, thus returning to Canadians the jobs and wealth creation opportunities that arise from their investment in research. Intensive efforts will be put to the raising of capital for the Health Services Research Fund, a federal initiative which has the potential for significantly increasing information to maintain the effectiveness of our health care system while improving its efficiency. The Council will continue to improve its programming and administrative capability, to maintain its excellent peer review system and to provide national leadership on issues of safety and ethics in the health sciences.

Some of the research funded by MRC is presented in this document as a qualitative indicator of outputs from the program. Readers will find descriptions of research on Alzheimer's disease, schizophrenia, diabetes, leukaemia and stroke, just a few of the areas in which Canadian scientists are working to improve the health of Canadians. In terms of delivering results on its strategic plan, the MRC has been instrumental in:

- obtaining commitments from research partners, including some federal, for $386 million in health sciences funding over the period 1994 to 1999, including a single commitment of $200 million from the Pharmaceutical Manufacturers Association of Canada;

- establishing the Canadian Medical Discoveries Fund which has in two years raised $200 million in venture capital for companies willing to advance health-related research findings along the path to commercialization; and,

- creating a Health Services Research Fund.

The MRC has also:

- made its programming more accessible to researchers in non-biomedical areas;
- organized an international conference on the funding of health research;
- been involved in the creation and management of six Networks of Centres of Excellence from which 23 spin-off companies have arisen; and,
- participated in critical evaluations of the Networks of Centres of Excellence program (NCE), the Canadian Genome Analysis and Technology Program (CGAT), the Canadian Breast Cancer Research Initiative (CBCRI) and the Eco-Research Program.

Its performance has been summarized succinctly by the International Review Panel in its September 1996 report:

> *"The Medical Research Council of Canada is an outstanding agency under dynamic and imaginative leadership doing first rate, internationally significant work in increasingly challenging circumstances. It fully merits the loyalty and support of the research community and the confidence placed in it by the Government and people of Canada."*

Spending Authorities

Authorities for 1997-98 - Part II of the Estimates

Financial Requirements by Authority

Vote	(thousands of dollars)	**1997-98 Main Estimates**	1996-97 Main Estimates
	Medical Research Council		
20	Operating expenditures	**8,330**	6,318
25	Grants	**228 620**	235,468
(S)	Contributions to employee benefit plans	**616**	538
Total Agency		**237,566**	242,324

Votes --- Wording and Amounts

Vote	(dollars)	**1997-98 Main Estimates**
	Medical Research Council	
20	Operating expenditures	**8,330,000**
25	The grants listed in the Estimates	**228,620,000**

Section II
Agency Plan

A. Summary of Plans and Priorities

Over the planning period the MRC intends to continue pursuit of goals that were outlined in 1992-93 in its Strategic Plan and have been confirmed as still current by an International Review of the MRC conducted in 1996. Plans for increasing the scope and impact of the MRC Grants and Scholarships program include:

- continuing intensive pursuit of funding partnerships with organizations in other sectors;
- determined raising of contributions to the Health Services Research Fund and development of research strength in all areas that can contribute to improved effectiveness and efficiency of health care; and,
- facilitating the commercialization of discoveries resulting from Canadian health research.

To maximize the effectiveness of MRC programming, the Council plans to:

- continue fine-tuning its world-renowned system of peer review for the distribution of research resources;
- further develop ongoing measures of the performance of program mechanisms; and,
- renew its information technology system.

The results from the federal investment in health science research will include:

- the creation of new knowledge;
- increase in Canadian capacity to use knowledge generated elsewhere;
- knowledge-intensive jobs for Canadians;
- development of future research capacity;
- commercialization of research results in Canada; and,
- improved effectiveness and efficiency of Canadian health care.

B. Overview

1. Roles, Responsibilities and Mission

The Medical Research Council (MRC) is a departmental corporation established by Parliament in 1969 to support health science research. The Council's mandate is based on the authority and responsibility assigned to it under the Medical Research Act. The 1979 Consolidations Act states the functions of MRC as follows:

> *"To promote, assist and undertake basic, applied and clinical research in Canada in the health sciences and to advise the Minister in respect of such matters relating to such research as the Minister may refer to the Council for its consideration."*

All research activities funded by MRC are extramural. A large portion of health science research in Canada is carried out in universities and their affiliated hospitals and institutions. It follows therefore, that MRC funds research and research training primarily in the health science faculties of the country's sixteen medical schools, ten dental schools, nine pharmacy schools, and four veterinary schools. Over the past three years, MRC has broadened its activities to include the funding of the full spectrum of health research and not just research with a biomedical focus. As a result, its reach has extended into research on health services and population health.

MRC administers its research funding programs under two principal streams: Grants which support research projects and programs, and Awards which support research personnel. The identification and funding of the very best research proposals and research personnel, through a system of peer review developed over many years, represents the key component of MRC's business.

Over the past four years MRC has been using its Strategic Plan "Investing In Canada's Health" as the foundation for expanding the scope of its activities. The plan calls for MRC to become more than just a granting agency. It states that "MRC must become a coordinator, a consensus builder, a facilitator of change, a catalyst, an ethical advisor, a clearinghouse of research and information, and a powerful voice of Canadian health sciences research". Many of MRC's initiatives referred to in this document relate specifically to meeting this challenge.

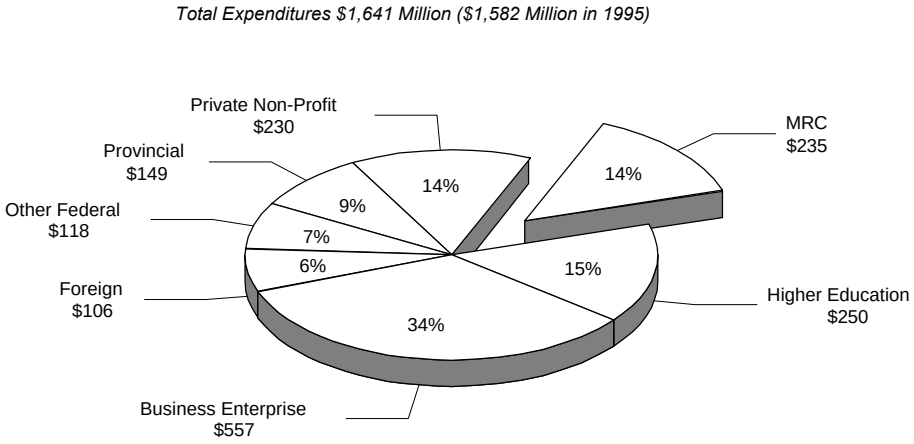
Council's mission at its highest level is to improve the health of Canadians through excellent research which meets the highest scientific and ethical standards.

2. The Environment for Health Science Research

The MRC is one of three granting Councils which, collectively, have responsibility for the support of research in most areas of endeavour, carried out primarily in Canadian universities. The other two are the Natural Sciences and Engineering Research Council, and the Social Sciences and Humanities Research Council.

MRC is Canada's largest single source of funds for the support of research in the health field. According to Statistics Canada, approximately 14% of health science and technology in 1996 was financed by MRC and 22% by the federal government overall.

Figure 1: Gross Expenditure in Research and Development in the Health Field in Canada in 1996*



* The data in Figure 1 are taken from Statistics Canada's estimation on national research and development expenditures in the health field in 1996. The categories shown in the figure represent funding sectors and not performing sectors. The "Higher Education" sector is based on a percentage of the total expenditures of post-secondary institutions estimated to be devoted to research and development in the health field.

The MRC supports health research in concert with a wide range of other funders. Partners include voluntary agencies such as the National Cancer Institute, provincial agencies such as the Fonds de recherche en santé du Québec and private sector companies in the health related industries. Universities, hospitals and research institutes also make a major contribution to research by providing salaries for researchers and facilities in which they conduct their work. The federal government however, through MRC research grants and personnel awards, provides the essential research base upon which others build.

Through Program Review, MRC's budget has been reduced 13% over four years, down to the level of the early 1980s. Budgets of MRC's counterparts in other countries including the United States, U.K., France, Germany and Australia have all risen over the same period, some by over 40%.

3. Organization and Program Composition

Activity Structure: The Medical Research Council Program is divided into two activities; Grants and Scholarships, and Administration. The Grants and Scholarships activity encompasses all of the grants and awards provided by the Council and accounts for about 97% of the Program's expenditures. Specific funding programs are grouped into a number of broad program categories:

- **Research Grants Programs** provide support for basic, applied and clinical research projects in the health sciences as proposed and carried out by investigators in Canadian university laboratories and the laboratories of their affiliated institutions and research institutes. **The Operating Grants Program** is the mainstay of this group supporting research projects directed towards a defined objective, conducted by an investigator working alone or in collaboration with others. The grants may be used to employ assistants or trainees, to purchase materials, supplies, equipment, and to buy and maintain laboratory animals.

  Multi-Disciplinary Research Programs provide support for teams of investigators with various types of expertise to undertake collaborative multidisciplinary research in the health sciences.

  Salary Support Programs provide salary support for independent investigators through a number of programs aimed at maintaining career progression for Canadian scientists.

- **Research Training Programs** offer programs for the support of highly qualified candidates seeking research training in the health sciences. Programs range from the support for undergraduates, to the awarding of post-doctoral fellowships.

- **Travel and Exchange Programs** support visiting scientists travelling abroad and foreign based scientists coming to Canada for the purpose of collaboration with colleagues. Scientific workshops and symposia are also supported.

  The Networks of Centres of Excellence (NCE) Program was announced by the government in 1988 as a major component of its strategy to link research and development with wealth creation. Its objective is to mobilize Canada's research talent in the academic, private and public sectors for the purpose of developing the economy and improving the quality of life of Canadians. The NCEs are not bricks and mortar. They are nation wide research programs, based in Canadian universities, which link the best researchers in the field in research targeted to national priorities. Six networks which focus on health are funded primarily through the MRC, with NSERC and SSHRC responsible for eight others.

  The Human Genome Program is a component of the international human genome project. Its objective is to analyze the structure of DNA from the human and other selected genomes. It also includes the development of related technologies and informatics, and the study of corresponding medical, ethical, legal and social issues.

  MRC has a number of Partnership Programs with organizations both in the private and public sector. Reference to these are made throughout the document. Examples are the Canadian Breast Cancer Research Initiative with the National Cancer Institute and Health

Canada, Centres of Excellence for research on juvenile diabetes with the Juvenile Diabetes Foundation, and the MRC/PMAC Health Program with the Pharmaceutical Manufacturers Association of Canada.

Organization Structure: The Council is comprised of a full-time President, who is also the chief executive officer, and 21 members representative of the scientific and lay community who serve without remuneration and are appointed by the Governor-in-Council. The Council's membership also includes three Associate Members who represent the other two federal granting agencies and Health Canada. An Executive Committee of Council carries out executive powers and functions as assigned by Council through its by-laws. The Council itself approves all grants and scholarships and its programs are administered by a secretariat of approximately 76 employees located in Ottawa.

Recommendations on grants and scholarships to be awarded are made to the Council following an extensive examination of applications through a process of peer review. This peer review process consists of 29 grant and 10 award committees with a total membership of over 400 working scientists drawn chiefly from universities and selected for their knowledge, expertise and experience. These scientists serve without remuneration with only their travel expenses being reimbursed by the Council. The Council also makes wide use of over 5,000 external referees from both Canada and other countries who also serve without remuneration.

There are four standing committees which provide advice and guidance to Council. The membership of the committees includes at least one Council member, with the rest drawn from the scientific community, government, the general public and industry. The mandates of the standing committees are as follows:

Science and Research: to examine national and international trends and issues affecting the development of health research in Canada; to manage the peer review process and make recommendations for improvement; to advise on the committee structure to ensure all applications are assessed by appropriate scientific experts; and, to select and approve the members for all peer review committees.

Business Development: to oversee the development of appropriate alliances and to assess the financial implications of alliances for the programs of Council.

Ethics: to develop policies for Council in the area of ethics and advise Council on their implementation; to survey the interface between research funded by the Council and the concerns of the broader public in areas of ethics; and, to promote a coordinated approach towards ethics among all agencies concerned with health research.

Planning and Evaluation: to develop a policy and planning framework which will provide the philosophical base for the operations of Council; to develop and oversee an evaluation program for the Council; to monitor external developments having an impact on MRC operations; to monitor the implementation of the Strategic Plan; and, to ensure adequate attention to women's health research issues in Council activities.

The secretariat, which has the general responsibility for the administration of the Program, is under the direction of the President and includes the following areas:

- The President's Office including the Executive Director and the Secretary to Council. The office is responsible for the overall management of the Secretariat and for policy, planning, human resources, evaluation, and health research.

- Innovation Teams; responsible for the establishment of teams to carry out special activities and projects of Council, and for issues relating to ethics.

- Business Development; responsible for seeking out new resources and opportunities primarily through creation and maintenance of appropriate partnerships.

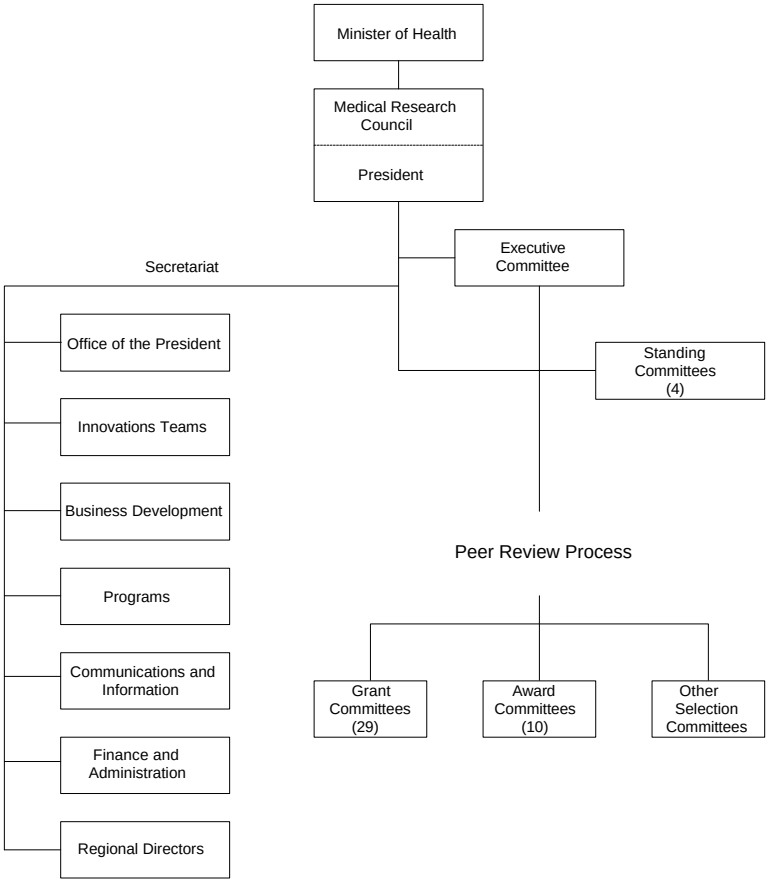
- Programs; responsible for the delivery of programs approved by the Council and the administration of the peer review process.

- Communications and Information; responsible for promoting the nature, scope and significance of health science research in Canada. Activities also include informatics.

- Finance and Administration; responsible for the provision of financial and administrative services.

- Regional Directors; to ensure an effective MRC presence in the regions where most MRC funds are spent, and to bring regional views to the MRC. These voluntary positions are not staffed by public servants. Individuals, usually established health scientists, are appointed by the President after appropriate consultation.

Figure 2: Organization Structure



4. Resource Plans

Figure 3: Agency Overview

(thousands of dollars)	Main Estimates* 1996-97	**Main Estimates 1997-98**	Planned 1998-99	Planned 1998-99
Total Main Estimates	**242,324**	**237,566**	**220,706**	**218,915**
Revenue credited to the Consolidated Revenue Fund	(500)	**(475)**	(450)	(450)
Estimated Cost of Services by other Departments	677	**602**	602	602
Net Cost of the Agency	242,501	**237,693**	220,858	219,067

* Does not reflect Supplementary Estimates

Figure 4: Net Cost of Program by Activity

(thousands of dollars) **1997-98 Main Estimates**

Activities	**Operating**	**Grants and Contributions**	**Gross Total**	**Gross Expenditures**	**Total Main Estimates**
Grants and Scholarships		228,620	228,620	228,620	228,620
Administration	8,946		8,946	8,946	8,946
	8,946	**228,620**	**237,566**	**237,566**	**237,566**

Other Revenues and Expenditures

Revenue credited to the Consolidated Fund	(475)
Estimated Cost of services by other Departments	602
Net Cost of the Program	**237,693**

C. Details By Activities

There are two activities upon which the Medical Research Council reports to Parliament, Grants and Scholarships and Administration.

Figure 5: Appropriated Planned Spending by Activity

(thousands of dollars)	Main Estimates* 1996-97	Main Estimates 1997-98	Planned 1998-99	Planned 1999-00
Grants and Scholarships				
Research Grants	147,273	150,142	146,178	146,178
Multi-Disciplinary Research	25,021	20,269	18,657	18,657
Salary Support	22,518	21,078	21,523	21,523
Research Training	21,613	19,701	20,749	20,749
Travel and Exchange	303	300	300	300
Other Activities	3,544	3,612	3,555	3,555
Networks of Centres of Excellence	14,703	13,518	1,800	-
Human Genome	493	-	-	-
Total Grants and Scholarships	**235,468**	**228,620**	**212,762**	**210,962**
Total Administration	**6,856**	**8,946**	**7,944**	**7,953**
Totals	**242,324**	**237,566**	**220,706**	**218,915**

* Does not reflect Supplementary Estimates

1. Grants and Scholarships

1.1 Objectives

The long-term, overarching objective of the MRC Grants and Scholarships business is *to improve the health of Canadians*. As a myriad of influences other than research affect the well-being of Canadians, planning and evaluation of this business line must focus on intermediate objectives. In Figure 6 the logical links between health science research and its long-term objectives are traced and nearer term objectives are illustrated. They are:

- *Creating new knowledge and Canadian capacity to use knowledge generated elsewhere.*

The new knowledge emerging from health research provides a continuing outflow of new ideas, insights and techniques. Much of it serves as a stimulus for further and deeper exploration, that over time yields discoveries that have the potential for generating healthier behaviours, more effective health delivery systems, better prevention of disease or more effective diagnostics and treatments. When backed by venture capital and technology development programs, selected discoveries become the feedstock for systems of commercial development that will return economic benefits to Canadians.

The search by Canadian health scientists for new knowledge also increases their capacity to recognize the value of information generated elsewhere. Canada produces about 4% of the new knowledge generated by health researchers around the world. Research gives Canadian health scientists an ability to understand, appreciate and, sometimes, to capitalize on the other 96% of new knowledge generated by researchers in other countries. A leading Canadian consulting company is of the opinion that increase in the capacity to use knowledge produced by others (absorptive capacity) is the major benefit derived from health science research.

Research also enhances the quality of education provided to the next generation of health professionals. When the professors of medicine, dentistry, nursing and pharmacy are also conducting research at the forefront of their field, they convey to their students a sense of the continuous evolution of knowledge and the need to remain critical of accepted dogma.

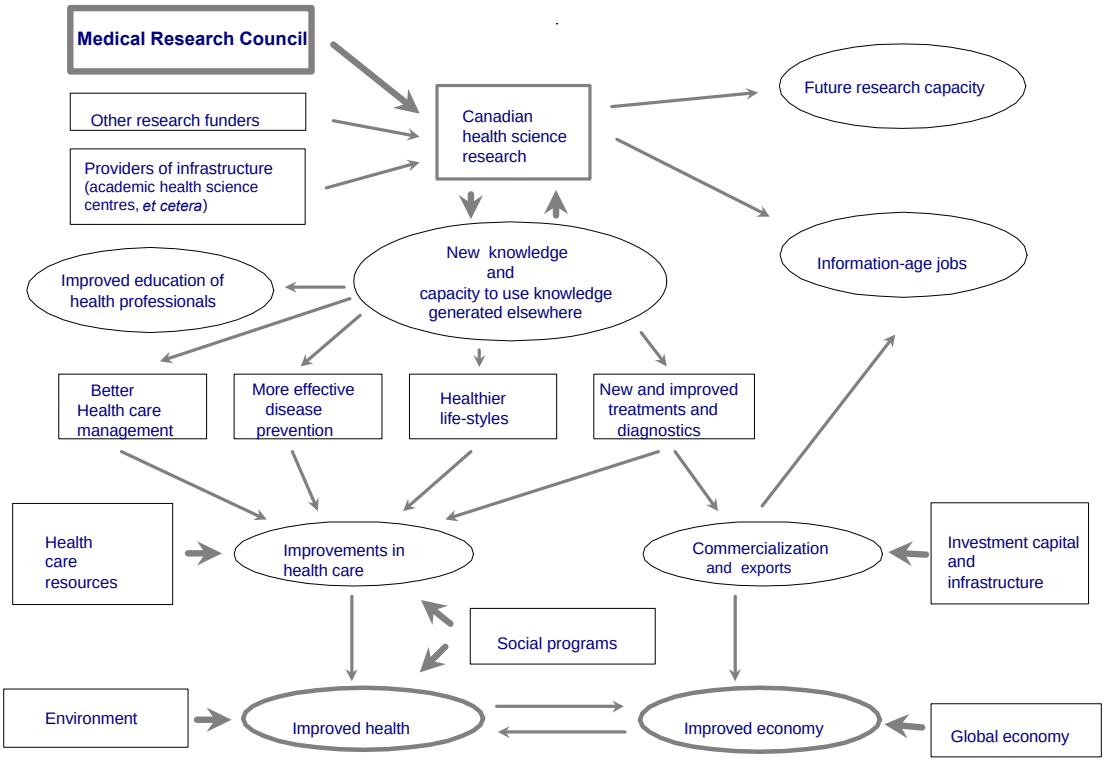
- *Developing future health science capacity*

A key near-term objective of the MRC Grants and Scholarships business is to ensure a future cadre of Canadian health scientists to maintain health and safety, promote disease prevention, develop new technologies and continue the cycle of innovation. Grants and Scholarships provide opportunities for young people to develop as scientists by working on exciting projects with Canada's finest health researchers. The future scientists for government laboratories, health centre research programs and industry product development are today being supported by MRC Grants and Scholarships.

- *Providing information-age jobs*

The Grants and Scholarships business generates employment for Canadians in the knowledge-intensive jobs that are demanded by the global economy. Work as research technicians, assistants, graduate students and postdoctoral fellows on health research projects directed by established scientists provides many thousands of Canadians with first-hand experience at uncovering knowledge. It has been estimated that every million dollars of investment in research provides around 60 person-years of employment.

Figure 6: Research as One Factor in the Realization of Social and Economic Benefits



Beyond the near-term objectives, lie medium-term objectives for which the attribution of results to MRC Grants and Scholarships becomes increasingly difficult because of the prevalence of other influencing factors. These objectives are nevertheless important to articulate as targets of MRC strategies.

- *Improving Canadian health care*

Research funded by MRC, for which Canada has gained world-wide recognition, has been most successful in improving health care through the discovery and adaptation of new health technologies, particularly new diagnostic techniques and better treatments. The MRC is adjusting its Grants and Scholarships business to foster more research on the delivery of health services, population health and prevention of disease, all areas that offer unique contributions to the improvement of health care.

- *Canadian commercialization of health science discoveries*

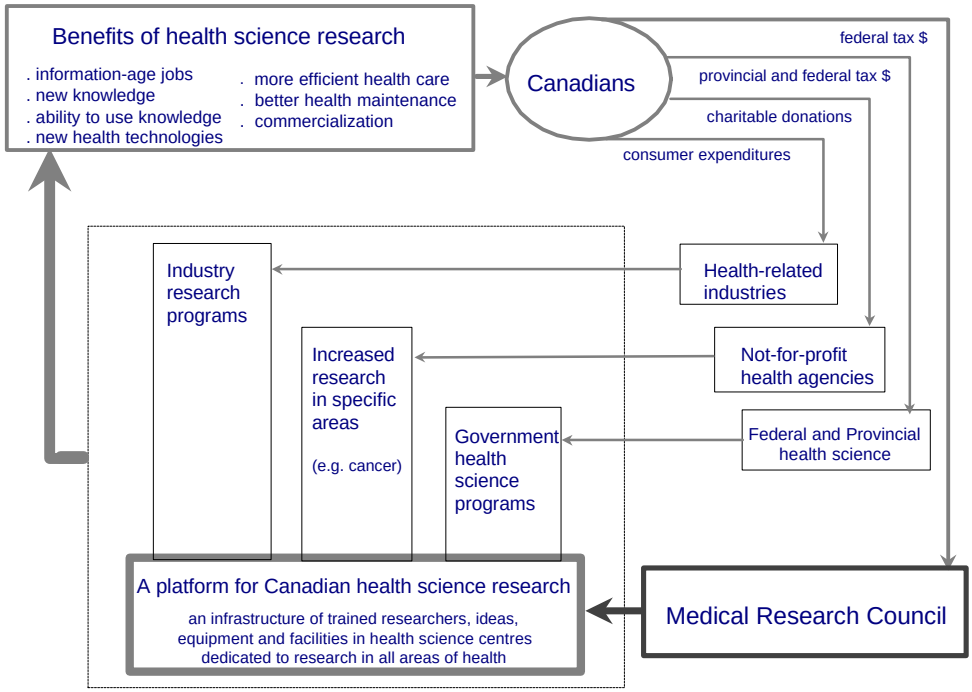
More than ten years ago the MRC began to use Grants and Scholarships to foster the linkages between academic researchers, whose discoveries had obvious economic potential, and firms with the capacity to refine, manufacture and market products. More recently the MRC has helped to address a rate-limiting step in the cycle of economic growth. It has been instrumental in the development of the Canadian Medical Discoveries Fund which provides venture capital for companies prepared to take on the development of research findings with high commercial potential.

1.2 Operating Context and Key Initiatives

The MRC is the largest single funder of health science research in Canada and the only one with a mandate to support excellent research across all disciplines and regions. Grants and Scholarships from MRC, along with an infrastructure of university-based researchers and research facilities, provides a platform upon which other funders can build research programs. Federal government laboratories, provincial government agencies, not-for-profit agencies (focused on research related to specific diseases) and industry research programs all depend on the flow of ideas and continuing replenishment of experienced researchers provided by the national platform. Figure 7 illustrates the concept of a national research platform that not only generates research benefits directly, but indirectly by providing an infrastructure of people, ideas and facilities upon which other funders (and performers) of research can draw. It has been estimated that each million dollars of research funding delivered to the research platform through MRC facilitates a research investment of $6.3 million from other sources.

The most significant feature of this operating context for the MRC is the 13% decline in MRC budget over a four year period. As the platform shrinks, its impacts diminish as does its capacity to support the research programs of other funders. For example, it is already becoming evident that industries in the health area are encountering serious shortages of Canadian-trained researchers. Apart from an ongoing fine-tuning of its Grants and Scholarships mechanisms in response to changes in the research environment, the key initiatives of the MRC have addressed, and will continue to address, the problem of diminished resources for the research base.

Figure 7: Through the MRC the federal government provides a platform for Canadian health science research



The key initiatives of the MRC are as follows:

- *Continuing intensive pursuit of funding partnerships with organizations in other sectors*

Data in the Report on an International Review of the MRC indicates that as of May 1996, the MRC had over the preceding two years obtained commitments of $386 million from other organizations (including some federal) as contributions to shared grants and scholarships programs. The MRC to that date had used 6.4% of its budget specifically for levering contributions from partners and has set as a target for 1998-99 the investment of 10% of its budget for leverage with, overall, three dollars of funding from partners for every dollar contributed by MRC.

- *Determined raising of contributions to the Health Services Research Fund*

MRC and Health Canada were strong proponents of the Fund which was recently started with an endowment from the Federal government of $50 million over a five year period. MRC will contribute $2 million per year and Health Canada $1 million per year for a total of $65 million. Assuming an 8% return on the endowment, the fund would yield about $15.6 million for health services research over the five year period and about $5.2 million per year thereafter. Given the magnitude of the shortfall between current funding for the Canadian research platform and the demand from exceptional Canadian scientists for support of first-rate research projects, the MRC has set as a target, the investment of a total of $500 million of research funding by the year 2002. This is a relatively small amount when set beside the $70-plus billion in Canadian health care expenditures but a significant improvement compared with current research funding levels.

- *A focus on the commercialization in Canada of health research discoveries*

Progress down the pathway from basic research discovery to marketable product requires additional research that becomes progressively applied at each stage of development. This further research, if conducted in Canada, increases the level of national research activity thus providing additional employment opportunities for Canadians and valuable experience for researchers of the various phases of health innovation. In concert with the Canadian Medical Discoveries Fund (CMDF) and others, the MRC intends to help link more promising health science discoveries with investors. As well as drawing further funding to the health sciences, an increase in the number of successful commercialization projects will eventually provide revenue for the MRC. The MRC has set as a target the facilitation of capital investment in the commercialization of research discoveries at a level of at least $300 million for the period 1995 to 1998.

1.3 Results Expectations

Expectations from the investment of public funds in MRC Grants and Scholarships flow logically from a review of objectives. The activity will generate new knowledge, much of which will provide a point of departure for further research, but some of which will lead to improvements in health care and opportunities for commercial development. New knowledge generation will also increase Canadian ability to understand, appreciate and use the results of research generated elsewhere. Grants and Scholarships will contribute to the development of the next generation of researchers to ensure a sustained Canadian capacity for research. Increased levels of investment will generate opportunities for employment in knowledge-intensive jobs.

In general, past reviews of the MRC (by, for example, the Nielsen Task Force in 1985, the National Advisory Board on Science and Technology in 1994) have been strongly positive and give assurance that the public is getting excellent value for its investment. In 1996, for the first time in its history, the Council was reviewed by a distinguished panel of external reviewers from the United States, England and Canada who concluded that:

> *"The Medical Research Council of Canada is an outstanding agency under dynamic and imaginative leadership doing first rate, internationally significant work in increasingly challenging circumstances. It fully merits the loyalty and support of the research community and the confidence placed in it by the Government and people of Canada."*

The expectations of the Grants and Scholarships program are, qualitatively, important discoveries or "break-through" and recognition by the rest of the world of the excellence of Canadian health science. Descriptions of recent advances are provided in the section on MRC performance.

Quantitative expression of expectations is more difficult since research is by definition an exploration of the unknown. It would not make sense, for example, to expect that a given percentage of research projects lead to significant economic benefits. In one year, 5% of projects might yield economic benefits totalling $300 million while in another, only 1% might yield benefits of $600 million. Studies of the return on investment in scientific research have placed ROI in the range of 20 to 40%. That is, as long as the selection of fundable projects is made with care and discrimination, as is certainly the case at the MRC, it can be expected that over the long-term, returns will be exceptional.

The table presented below shows quantitative indicators of the outcomes desired of Grants and Scholarships and thus the results that might be expected. For each measure the extent of attribution to MRC would be determined.

Figure 8: Quantifying Outcomes from MRC-funded Research

Timing	***Outcome***	***Indicators***
Near-term (1 to 2 years)	high quality research programs implemented	- approval rates (low approval rates generally indicates high selectivity) - number of projects
	direct employment of research technicians, students and others	- number and type of positions supported with MRC funds
	purchase of equipment and supplies, Canadian-made and other	- proportion of grant funds expended on equipment , etc.
	students receive training in research (undergraduate, graduate and postdoctoral)	- number of persons receiving research training in each category
	researchers gain further experience and develop new ideas	- number of researcher-years funded - number of researchers proposing additional research

Medium term (3 to 5 years)	papers published on completed projects	- number of scientific articles published - scientific impact of publishing journal s
	patents and licences resulting from research supported	- number of patents and licences
	Canadian capacity to recognize the value of research conducted elsewhere	- number of citations of work conducted elsewhere
Long-term (over 5 years)	new health technologies developed	- number of new treatments, diagnostics, health systems improvements etc.
	results of research are used as a basis for further studies	- citations to work funded by MRC
	spin-off companies created	- number of companies
	new health technologies commercialized in Canada	- number of commercialization projects - $ of capital investment in commercialization projects
	new health technologies used in health practices	- incidence of use
	jobs generated indirectly by the conduct of research and the impacts of research discovery	- economic estimates of indirect employment
	new health policies designed and implemented	- number and type of policy
Long-term	improvements in health status	- increased life expectancy - improved quality of life

2. Administration

2.1 Objectives

The MRC allotment for Administration, approximately 3% of the total MRC budget, has two objectives. It intended *to support the assessment and selection of recipients of grants and scholarship recipients*. Administration also has the objective of *developing and delivering program policies and mechanisms that maximize the effectiveness of the public investment.*

2.2 Operating Context and Key Initiatives

The Administration of MRC is provided by a staff of 76 based in Ottawa and complemented by a network of volunteer Regional Directors. The assessment process, peer review, is conducted by experts drawn from health science centres across Canada and occasionally from the United States or abroad. It is recognized as among the world's best systems for assessing scientific proposals. Program mechanisms, developed by staff in consultation with stakeholders in the research community, are subject to ongoing review as well as occasional in-depth evaluation.

The most significant ongoing initiative is a complete renewal of the information system that supports Administration of the MRC program.

2.3 Results Expectations

Successful administration of the MRC program (as distinct from success of the MRC program itself, discussed previously), should result in a peer review system that is recognized both nationally and internationally as effective and fair. One indicator of achievement of this expectation might be the percentage of MRC's clientele that is satisfied with the fairness and rigour of the peer review system.

In terms of the objective that the administration maximize the efficiency of the MRC programs, a reasonable expectation would be that the MRC have in place an information system capable of delivering up-to-date information on program performance. There should be in place a framework for evaluating program effectiveness and a mechanism for using evaluation findings to improve MRC programming. It is expected that by 1998 MRC's new information system should be operational and providing significantly better information for program decision-makers.

Section III
Agency Performance

A. Summary of Performance

MRC's Strategic Plan, "Investing In Canada's Health" has been the working document and foundation for Council's strategies, initiatives and overall business activities over the past four years. The plan called first for the expansion of funding from traditional biomedical research, to all health research areas including health services, population health, determinants of health, health economics, psychosocial and behavioral research, and health policy; secondly, it asked for greater excellence in MRC's activities; and, thirdly it called for greater attention to measuring its performance. It further directed that MRC should aggressively pursue partnerships and alliances with other players in the health research sector. MRC has made substantial progress in the implementation of its plan.

Expansion into health research was the most critical component of the strategic plan and represented significant change for the Council. MRC was successful in opening its programs to the complete spectrum of health science researchers, who are now able to compete with biomedical investigators for grant funding. The expansion into health research by MRC was a vital environmental factor leading to the establishment by the government in its February 1996 budget, of the Health Services Research Fund (HSRF), giving formal recognition to the critical need in Canada to invest in health research to support renewal of the nation's health care system. Finally the Networks of Centres of Excellence program approved a new Network in information based decision tools in health care, giving further impetus to the notion of health research as a national priority.

MRC has aggressively pursued partnership initiatives by earmarking 10% of its base budget for investment in research with partners in the health sector. Its most critical partnering initiative is with the Pharmaceutical Manufacturers Association of Canada (PMAC). Referred to as the MRC/PMAC Health Program, the five year arrangement calls for PMAC companies to invest $200 million over that period in university-based health science research that is peer-reviewed by MRC. Although the program started slowly, it has picked up substantial momentum, and it is estimated that by the end of fiscal 1996-97, the industry will have invested close to $100 million under the agreement.

The MRC initiated The Canadian Medical Discoveries Fund (CMDF), a labour sponsored venture capital fund which provides venture capital to enable firms to commercialize the results of early stage health research discoveries in Canada. The Fund has been hugely successful raising an unprecedented $200 Million in its first two years of operation.

The MRC absorbed program review reductions in 1995-96 and subsequent years by cutting all existing research projects by 5% across the board, and by reducing the level of approvals in all subsequent competitions. The program review reductions have increased the gap between research proposals deemed worthy of support through peer review, and research actually funded by the funds available.

The MRC commissioned a seven member international panel to conduct an independent review of the Medical Research Council. The panel was given the mandate to "review the effectiveness of the programs and policies of the MRC in fulfilling its general mission to promote, assist and undertake research in the health sciences in Canada, and in achieving the objectives of its Strategic plan adopted in 1992".

B. Overview

The objective of MRC is to improve the health of Canadians through the promotion and support of excellent basic, clinical and applied research in the health sciences.

The MRC contributes to the attainment of federal government priorities for a healthy, productive nation with the capacity to generate and enjoy wealth. Training scientific investigators and funding research through grants and awards helps create new knowledge which in turn leads to new health interventions and more cost effective health care. Research supported by MRC provides the hub of a national research enterprise that draws over a billion dollars from other sectors. MRC's role therefore is to stimulate the cycle of innovation by directly supporting high quality research and by leveraging research resources and talent from other sectors.

The planning section of this document outlines the basis by which MRC will be reporting on its performance over the next three years. The impact of its activities and the performance indicators to be used are specified in detail in that section. Below is a discussion of the progress made by MRC over the past three years in respect to the initiatives set out in its Strategic Plan. Most of these are referred to in previous Part III documents.

Figure 9: Appropriated Planned and Actual Spending

(thousands of dollars)	Actuals 1993-94	Actuals 1994-95	Main Estimates 1995-96	Actuals 1995-96
Activities				
Grants and Scholarships	251,288	257,634	242,182	243,187
Administration	7,133	7,534	7,852	8,062
Total	**258,241**	**265,168**	**250,034**	**251,249**

C. Details by Activities

1. Grants and Scholarships

Health Research

All MRC programs are now open to all health science researchers. Three new peer review committees were established, where non existed before, to review and rate research proposals in this area. MRC's reach in research funding has been extended to the total spectrum of health and health services research.

The establishment by the government of the Health Services Research Fund (HSRF) was a crucial milestone in MRC's expansion into health research, giving formal recognition to the critical need in Canada to invest in health research to support renewal of the nation's health care system. Created as an arms length organization, the endowment will be funded initially over a five year period by $50 million in new federal money, $10 million from the MRC base budget, and $5 million from Health Canada. Over the next five years other Canadian partners with vested interests in health services research are also expected to bring resources to the table. MRC, in collaboration with its partners, will provide the peer review of the eventual research proposals.

The Networks of Centres of Excellence program approved **a new Network in information based decision tools in health care.** Referred to as Healnet**,** approval of this centre of excellence formally recognizes health research as a national priority.

Partnerships

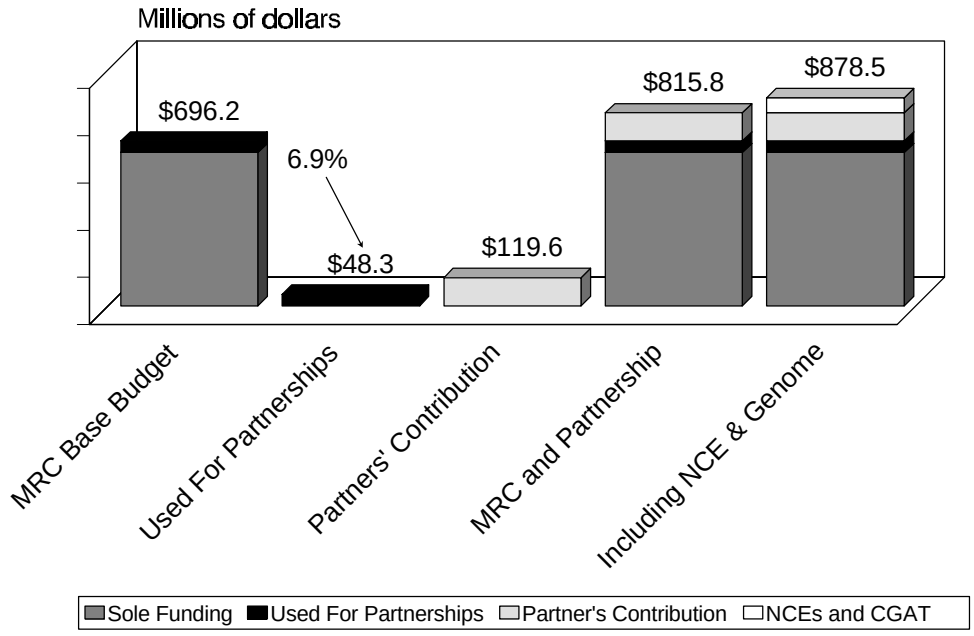
MRC earmarked a maximum 10% of its base budget in grants and awards to be applied towards forging partnership arrangements with other research funders. The partnership initiative resulted in a whole number of joint funding arrangements with institutions such the National Cancer Institute of Canada for research into breast cancer, AIDS, and the human genome; with Canadian disease societies such as the Canadian Lung Association, for research related to specific disease areas; and, with the industrial sector, particularly the pharmaceutical sector, for projects ranging from basic research and personnel training, to the funding of major clinical trials.

These partnership initiatives have served to make more efficient use of Canadian research resources and to ensure through the MRC peer review system, that the quality of research being conducted is of the highest standard possible.

The MRC/PMAC Health Program, which has been referred to in previous Part III Documents, is the most significant partnership arrangement administered by MRC. Through the agreement, PMAC companies have committed to invest $200 million over five years in university-based MRC peer-reviewed research at a ratio of 4 to 1 with MRC. As at December 1996, the industry had invested approximately $72 million through the program against MRC's $16 million. The investments financed over 220 research projects and personnel awards, all peer reviewed by MRC to ensure quality and excellence.

As of December 1996, MRC has invested approximately $48 million or 6.9% of its base budget in various partnership agreements, matched by over $120 million in additional funding from its partners. When the federal government investment in the Networks of Centres of Excellence is added to these amounts, 540 additional research projects were funded over and above those funded solely by MRC.

Figure 10: MRC and Partner Funding 1994-95 to 1996-97



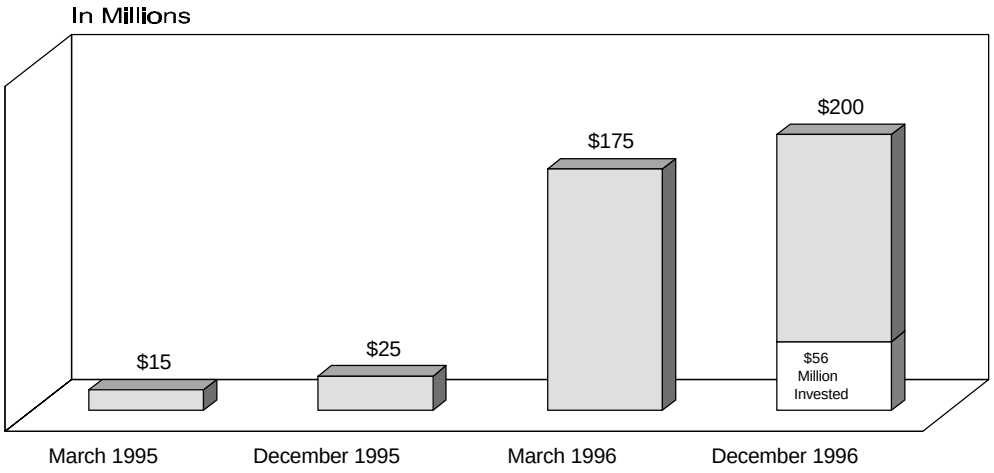
Commercialization of Canadian Discoveries

In last year's Part III document reference was made to the MRC initiated Canadian Medical Discoveries Fund, a labour sponsored venture capital fund which provides venture capital to firms wishing to commercialize the results of health research discoveries in Canada. It was reported last year that $14 million had been raised in its first year of operation. This has now grown spectacularly with $200 million raised as at the end of calendar 1996, thanks to over 50,000 individual Canadians who chose to invest their money in the Fund. The CMDF has in turn invested in 19 companies to date, for a total investment of $56 million; the value of co-investment in these ventures (investments by other partners) was over $140 million; new jobs created totals over 500.

The CMDF was created outside the boundaries of government with no public funds. MRC provided expertise, support and credibility to the creation of the fund but is not itself a part of the Fund. CMDF is a fully private sector, for-profit corporation and is responsible to its shareholders and its Board of Directors, not MRC, for its actions.

Although not partners in a legal sense, MRC and the CMDF share a common objective to fund excellent health research. The Fund allows Canadian researchers access to resources which help them bring their research into clinical and industrial settings. These activities promote the health of Canadians and the wealth of the country and thus add significant value to MRC's investments into basic research.

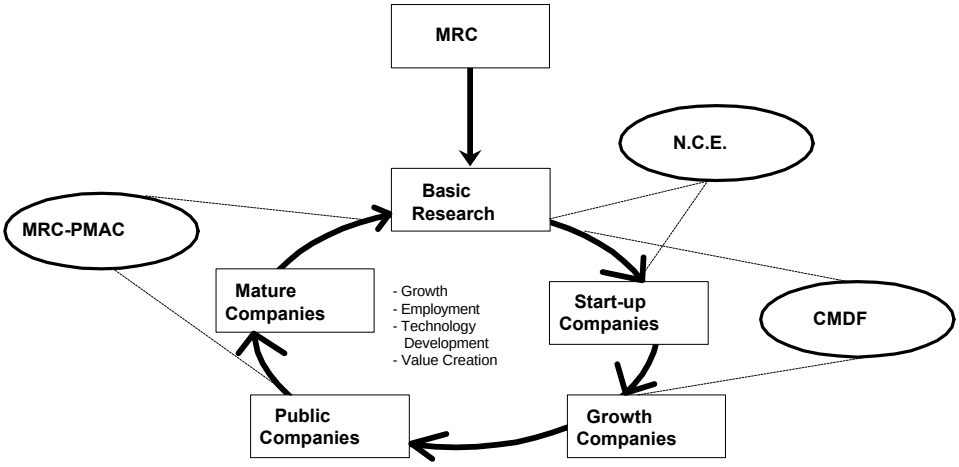
Figure 11: Funds Raised by CMDF



Canada has had a huge increase in biotechnology and health industries start-up company activity in the last two years. The 15 Networks of Centres of Excellence for example, have spun-off 29 companies. Of these new companies, 23 arose from the biomedical NCEs supported through MRC. The NCE start-ups have therefore become investment targets for venture capital companies. CMDF itself for example has six investments that are NCE originated.

MRC views commercialization of research as a virtuous cycle of growth as shown in Figure 12.

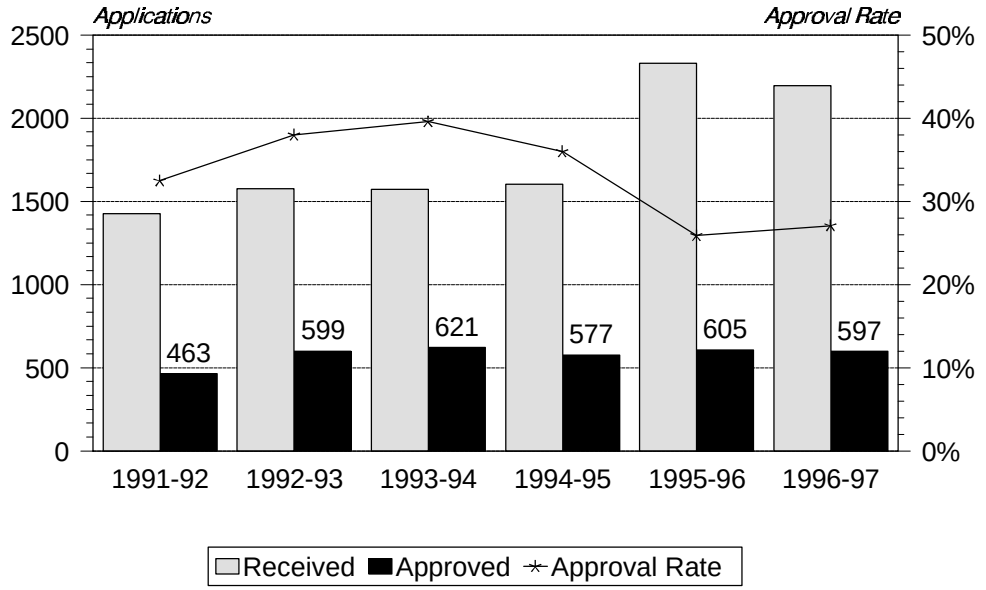
Figure 12: Virtuous Cycle of Growth



Program Review

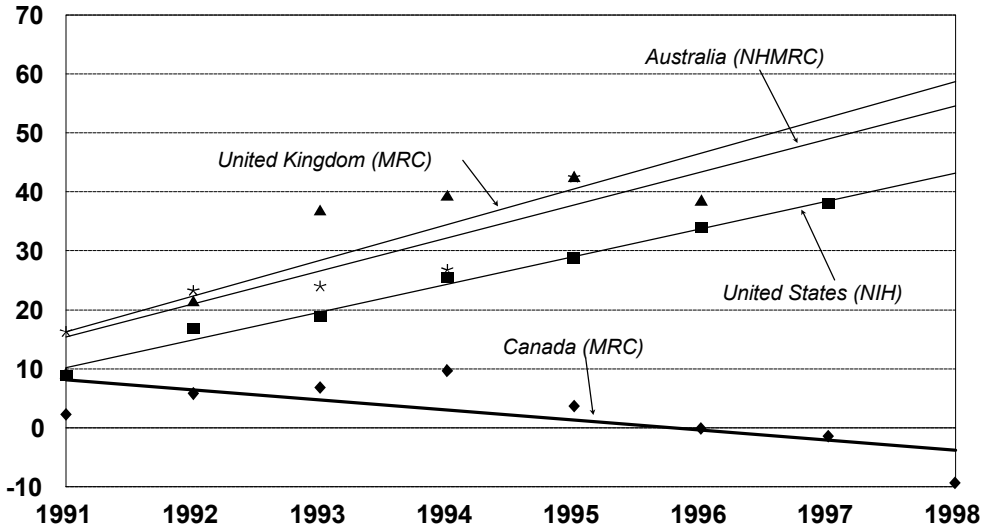
Program Review 1 resulted in a 10% reduction in MRC's budget over the years 1995-96 to 1997-98, and Program Review 2 added a further 3% reduction in 1998-99. In real terms these cuts reduce the MRC budget back to the level of the early 1980s. MRC absorbed these cuts by applying an initial 5% reduction to all active research projects over their full term; by reducing the rate of approval of all new research projects to be approved; and, by imposing deep cuts on the funding recommendations of the peer review committees. The funding gap between research projects being funded by MRC with its current budget, and the value of projects deemed meritorious science by the peer review committees, is approximately $82 million annually.

Figure 13: Operating Grant Applications Received and Approved



Over the next three years, the MRC will attempt to more effectively assess the impact of these cuts on basic research in Canada and the health research sector in general. Of immediate concern is the extent to which in the long term, Canada can remain competitive in this sector, in the face of increasing federal investments in health research being made by countries such as the United States, Australia, and the U.K.

Figure 14: Trends in Budget for Health Research, Cumulative Annual Change in Budget (%)



International Review of MRC

The MRC commissioned a seven member international panel of experts to conduct an independent review of the Medical Research Council. The panel was provided with a broad mandate to review the effectiveness of MRC programs and policies, and to provide an opinion on the Council's success in achieving the objectives of its Strategic Plan. The Panel's Report was received by Council in the fall of 1996 and can be reviewed on MRC's Internet site.

The international reviewers confirmed the appropriateness of MRC's strategic approaches and its achievements under conditions of seriously restrained funding. They recommended special, continuing attention to the research base which provide the feedstock of new ideas that will lead to improvement in health care and potential for commercialization. They suggested that the Council re-articulate its strategies for increasing investment in health science to ensure better understanding and appreciation by stakeholders. The name Health Sciences Research Council of Canada was suggested as better reflecting the Council's broad legislative mandate and recent expansion of its programs in non-biomedical areas of health research. Studies were proposed on the exodus of researchers to other countries and the human resource requirements of the health research sector. MRC was encouraged to work with other entities to develop extensive "industrial-scale" research programs in selected fields in Canada. Some specific suggestions for program mechanisms were also offered.

The MRC has begun considering the recommendations of the international reviewers and will address them further at a special meeting in March 1997.

Research Achievements and Investigations:

The following are some examples of health research achievements and investigations underway funded in whole or in part by the Medical Research Council.

- Scientists at the University of Toronto headed an international team which has identified genes linked to two forms of Alzheimer's Disease, including the gene responsible for the early and most severe form of the disease. They have identified and cloned the mutation on the gene that causes the early onset form. More than 300,000 Canadian suffer from Alzheimer's disease.

- A new genetic mechanism by which antibiotic resistant genes are spread among different species of bacteria commonly found in hospitals and the community has been discovered by a Laval University team of investigators. They have discovered that the mechanism involves a unit of DNA, called integron, and causes the accumulation of resistance genes against several classes of antibiotics in a single unit of expression known as an operon. DNA is the master hereditary chemical that controls the development and function of organisms and carries genetic information from one generation to the next.

- A University of Toronto researcher is heading a nation-wide search to try to find major genes that may be responsible for familial schizophrenia. These genes, when identified, could lead to a greater understanding of this serious disorder, development of better treatment and possible prevention strategies for the disease which affects more than 250,000 Canadians. The team is studying more than 300 family members, both well and ill, from families across the country. Participants give a blood sample which provides a sample of DNA, the inherited material that controls the development and functioning of every cell. Using DNA "markers" the researchers attempt to determine markers in an area of the human genome which are coinherited with schizophrenia. This strategy has been successful in finding genes for cystic fibrosis, breast cancer and familial Alzheimer's disease.

- A team of scientists from the University of Montreal is heading an investigation of a condition known as "category specific" visual agnosia, a disorder in which individuals can readily identify man-made objects but have an impaired ability to do the same with biological objects such as animals, insects, trees, flowers, fruits and vegetables. The results of their work could help improve not only the understanding of normal visual object recognition, but also provide a test for the early detection of Alzheimer's disease - before any of the usual symptoms occur.

- Two new Diabetes Research Networks have been established in Canada, one centred at the University of Western Ontario and the other at the University of Toronto. The primary objective of the first network is the identification of molecular mechanisms that cause insulitis and insulin dependent diabetes mellitus (IDDM) and the development of new approaches to prevent IDDM. Researchers in the second network are examining the mechanisms responsible for diabetes-induced progressive nephropathy and searching for new therapeutic interventions. The networks are jointly funded by MRC and the Juvenile Diabetes Foundation International.

- An international clinical trial to determine if a form of blood pressure medication alone, or in combination with natural Vitamin E reduces the incidence of strokes and heart attacks in high risk patients is ongoing at McMaster University. Launched in 1993 and involving close to

10,000 men and women, the project has now received renewed funding for a further three years. It is being funding by several pharmaceutical firms and a vitamin E association.

- A University of Ottawa team is heading a five-year trial testing combinations of drug therapies in the treatment of acute adult leukaemia. The new approach, being examined by the Canadian Leukaemia Study Group with 26 participating centres across the country, involves an innovative use of four drugs acting in different ways in leukaemia cells. The project in funded by MRC and two pharmaceutical companies. Unlike childhood leukaemia, which has a 70 to 80 percent cure rate, adult acute leukaemia has only about a 25 to 30 percent rate.

- Research aimed at developing a better understanding of how the widely-used transplant drug cyclosporin works to prevent organ rejection in some patients, but not in all, is underway at the University of Alberta. The project funded by MRC and a major pharmaceutical firm, will also investigate how various drugs work together in order to identify the safest and most effective combinations.

2. Administration

MRC's primary objective in this activity has been to modernize its information systems as a final phase in establishing administrative excellence at the Council. After a number of preliminary studies, a $2 million contract was let in 1996 to work on this project. It is expected to be completed in late 1997-98.

Over the past three years, in response to the directions of the Strategic Plan, the Council has made a number of changes to its administrative functions:

- The most significant change has been to move from one to two competitions annually for operating grants. This allowed Canadian scientific investigators two opportunities each year to compete for MRC research funds, rather than only once annually as was the case previously. This has been implemented using existing administrative resources and at great benefit to the scientific community.

- MRC also created a small Business Development Office within the Council, to seek out opportunities for partnerships and alliances, and to keep abreast of opportunities for MRC to promote health research and to direct resources to the effort. The creation of the CMDF is an example of the kind of contributions made by this office to MRC's goals and objectives.

Other key initiatives undertaken by MRC are:

- A Tri-Council Working Group on Research Involving Humans was struck to draft a new joint policy statement on research involving humans to replace the existing separate policies of the three federal granting councils. The resulting Code of Conduct on Research Involving Humans will be used by all investigators and research institutions receiving funds from any of the three federal Councils.

- In the fall of 1996 MRC convened an international conference entitled "Innovation in Funding Health Research in the New Millennium" to examine the changing nature of health research funding. The conference was attended by representatives of 15 other nations. The final report from the conference is expected to be published in early 1997.

Section IV
Supplementary Information

Figure 15: Resource Requirements by Branch

(thousands of dollars)	1997-98 Main Estimates		
	Activities		
	Grants and Scholarships	Administration	Total
Branches			
Office of the President	750	1,759	2,509
Innovation Teams Branch		409	409
Business Development Branch		251	251
Programs Branch	227,870	3,130	231,000
Communications and Information Branch		2,430	2,430
Finance and Administration Branch		924	924
Regional Directors		43	43
Total	**228,620**	**8,946**	**237,566**

Figure 16: Details of Personnel Requirements and Summary By Professional Category

	Actuals 1994-95	Actuals 1995-96	Estimates 1996-97	Estimates 1997-98	Planned 1998-99	Planned 1999-00
Order-in-Council Appointments	1	1	1	1	1	1
Executive Group	8	6	7	7	7	7
Scientific and Professional	4	6	5	5	5	5
Technical	1	0	0	0	0	0
Administrative and Foreign Service	36	44	43	45	43	43
Administrative Support	22	20	20	18	18	18
Total	**72**	**77**	**76**	**76**	**74**	**74**

Note: all FTE's are included in the Administration Activity

Figure 17: Administration Activity Resource Summary

(thousands of dollars)	**Estimates 1996-97**	**Estimates 1997-98**	**Planned 1998-99**	**Planned 1999-00**
Salaries and other personnel costs	3,709	**3,625**	3,511	3,519
Contributions to employee benefit plans	538	**616**	597	598
Other operating expenditures	2,609	**4,705**	3,836	3,836
	6,856	**8,946**	**7,944**	**7,953**
Human Resources (FTE)	76	**76**	74	74

Salaries, other personnel costs and contributions to employee benefit plans represent 47.4% of the total activity budget in 1997-98.

Figure 18: Transfer Payments By MRC Program

(thousands of dollars)	Actuals 1994-95	Actuals 1995-96	Estimates 1996-97	Estimates 1997-98	Planned 1998-99	Planned 1999-00
Research Grants						
Operating	137,330	134,823	131,730	132,533	128,073	128,073
Maintenance	2,868	2,803	2,659	2,095	2,259	2,259
Equipment	1,518	797	3,000	1,000	1,000	1,000
Health Services Research Fund	-	-	-	2,000	2,000	2,000
Special Projects	2,681	2,248	2,334	3,458	2,201	2,201
University-Industry Grants	6,421	5,253	7,550	9,056	10,645	10,645
	150,818	145,924	147,273	150,142	146,178	146,178
Multi-Disciplinary						
MRC Groups	13,844	15,010	17,020	15,988	14,624	14,624
Program Grants	14,849	11,548	6,277	2,967	1,518	1,518
Development Grants	2,385	1,366	1,723	1,314	2,515	2,515
	31,078	27,924	25,021	20,269	18,657	18,657
Salary Support						
MRC Groups	3,600	3,457	2,496	1,904	1,448	1,448
Development Grants	3,321	2,915	2,638	2,046	1,617	1,617
Career Investigators	1,956	1,321	725	694	523	523
Distinguished Scientists	-	104	488	788	1,050	1,050
Senior Scientists	-	225	508	800	1,050	1,050
MRC Scientists	3,203	3,642	3,880	4,016	3,825	3,825
Scholarships	8,846	8,830	8,667	7,474	8,208	8,208
Clinician Scientists 2	1,043	1,144	1,167	1,166	1,150	1,150
University-Industry Salary Support	747	932	1,950	2,190	2,652	2,652
	22,716	22,570	22,518	21,078	21,523	21,523
Research Training						
Clinician Scientists 1	1,477	1,411	1,468	1,500	1,857	1,857
Centennial Fellowships	735	656	558	788	760	760
Fellowships	12,840	11,450	11,221	9,121	9,034	9,034
Dental Fellowships	297	225	148	85	45	45
Studentships	5,914	5,324	6,066	6,092	6,144	6,144
Undergraduate Scholarships	819	756	752	452	452	452
University-Industry Training Awards	735	614	1,400	1,662	2,457	2,457
	22,817	20,436	21,613	19,701	20,749	20,749
Travel and Exchange						
Visiting Scientist and Professorships	207	95	150	150	150	150
Travel Grants, Symposia and Workshops	208	133	153	150	150	150
	415	228	303	300	300	300
Other Activities						
President`s Fund	609	333	505	750	750	750
Other Grants	2,660	2,692	3,039	2,862	2,805	2,805
	3,269	3,025	3,544	3,612	3,555	3,555
Total Core Budget	**231,113**	**220,107**	**220,272**	**215,102**	**210,962**	**210,962**
Networks of Centres of Excellence	23,051	17,837	14,703	13,518	1,800	-
Human Genome Program	3,470	5,243	493	-	-	-
Total Grants and Scholarships	**257,634**	**243,187**	**235,468**	**228,620**	**212,762**	**210,962**

Figure 19: Transfer Payments By University

(thousands of dollars)	Projected 1996-97	Actual 1995-96	Actual 1994-95
British Columbia	20,280	22,940	28,898
Simon Fraser	406	352	349
Victoria	660	858	771
Alberta	15,655	17,152	14,824
Calgary	11,526	11,049	11,678
Lethbridge	76	55	31
Regina	51	68	60
Saskatchewan	2,317	2,982	3,277
Manitoba	8,520	9,123	10,178
Carleton	131	106	138
Guelph	1,099	1,234	1,202
McMaster	12,151	11,432	10,893
Ottawa	8,326	8,331	8,076
Queen's	5,703	5,953	6,041
Ryerson	95	95	100
Toronto	44,786	44,486	46,015
Trent	67	67	70
Waterloo	213	223	273
Western Ontario	11,003	11,369	12,252
York	394	465	306
Concordia	438	392	433
Laval	9,482	10,471	10,237
McGill	35,274	38,729	43,229
Montreal	21,561	22,111	23,466
Quebec à Montréal	712	955	1,131
Quebec à Trois-Rivières	-	-	95
Sherbrooke	5,100	5,041	5,028
Dalhousie	4,968	5,105	5,641
Mount Saint Vincent	24	15	-
New Brunswick	97	72	22
Prince Edward Island	38	54	57
Memorial	1,529	1,535	1,614
	222,682	232,820	246,387
Other Grants - non-institutional	4,987	3,029	3,089
Outside Canada	6,094	7,338	8,158
	233,763	**243,187**	**257,634**

Figure 20: Transfer Payments by Province

(thousands of dollars)	Projected 1996-97	Actual 1995-96	Actual 1994-95
British Columbia	21,346	24,150	30,018
Alberta	27,257	28,255	26,533
Saskatchewan	2,368	3,050	3,337
Manitoba	8,520	9,123	10,178
Ontario	83,969	83,761	85,366
Quebec	72,566	77,700	83,619
Nova Scotia	4,992	5,120	5,641
New Brunswick	97	72	22
Prince Edward Island	38	54	57
Newfoundland	1,529	1,535	1,614
Other Grants - non-institutional	4,987	3,029	3,089
Outside Canada	6,094	7,338	8,158
	233,763	**243,187**	**257,634**

Figure 21: Number of Operating Grants Funded in 1996-97 by Research Area

(thousands of dollars)	No.	Amount	%
Bacteriology	45	3,103	2.1
Biochemistry	154	12,463	8.3
Blood	42	3,112	2.1
Cancer	88	5,047	3.4
Cardiovascular	190	14,129	9.5
Cell Biology	173	10,914	7.3
Dental Science	33	2,741	1.8
Drug Research	93	4,555	3.1
Endocrinology	89	7,808	5.2
Gastrointestinal and Liver	60	4,352	2.9
Genetics	100	7,818	5.2
Health Research	26	1,653	1.1
Hearing	9	460	0.3
Imaging and Nuclear Medicine	38	2,667	1.8
Immunology and Transplantation	103	7,480	5.0
Metabolism incl. Diabetes	65	4,639	3.1
Molecular Biology	159	10,910	7.3
Musculo-Skeletal	52	3,597	2.4
Nephrology	30	2,815	1.9
Neurosciences	333	22,780	15.3
Nursing	1	53	< 0
Nutrition	15	792	0.5
Reproduction incl. Pregnancy	50	5,226	3.5
Respiration	84	5,735	3.8
Virology	35	2,860	1.9
Vision	33	1,511	1.0
Not Classified	2	42	< 0
	2,102	149,262	100.0

The data displayed above represent 1996-97 forecast expenditures as at December, 1996. Included are operating grants, group grants and program grants which account for approximately 87% of the Council's regular Research Funding Programs. The assignment of dollar value to specific research areas must be interpreted with a degree of caution. For example, research in biochemistry, molecular biology, cell biology, and genetics may relate equally well to any of a number of other categories. Similarly, research in cancer or clinical trials may explore the determinants of health, health outcomes, or population health phenomena. Figures may not add exactly because of rounding.

Medical Research Council Publications

The following publications are available from MRC. Those marked **WEB** are available at the MRC web site: **http://wwwmrc.hwc.ca.** All publications are free of charge unless otherwise indicated.

COMMUNICATIONS AND INFORMATION

- Dealing with the Media
- Decisions **WEB**
- Distinguished Scientist Awards 1996 booklet
- Grants and Awards Guide (annual) **WEB**
- International Review of the Medical Research Council of Canada (1996) **WEB**
- Investing in Canada's Health - A Strategic Plan for the Medical Research Council of Canada
- Journey into Genetics - A voyage of discovery and hope (1996)
- List of MRC Grants & Awards (The last available edition in book form of this publication is: 1993-1994. For information on an electronic version of this publication, phone 613-941-6177).
- Medical Research Council - brochure **WEB**
- MRC Communiqué (quarterly) **WEB**
- Michael Smith Award for Excellence - brochure
- Reference List of Health Science Research in Canada (The last available edition in book form of this publication is: 1993-1994. For information on an electronic version of this publication, phone 613-941-6177).
- Report of the President (annual)
- Road to Discovery

INNOVATION TEAMS

- Code of Conduct for Research Involving Humans (Draft document - March 1996) This publication, once finalized, will replace 1987 Guidelines on Research Involving Human subjects **WEB (http:WWW.Ethics.UBC.CA)**
- Guidelines for Research on Somatic Cell Gene Therapy in Humans (1990)
- Guidelines for the Commercialization of Medical Research (Draft document) **WEB**
- Guidelines on Research Involving Human Subjects (1987)
- Health Canada 1996 Laboratory Biosafety Guidelines (available from the Office of Biosafety, Laboratory Centre for Disease Control Health Canada, Ottawa, Ontario, K1A 0L2, tel. (613) 957-1779)

- Integrity in Research and Scholarship - A Tri-Council Policy Statement (1994)

MRC/PMAC HEALTH PROGRAMS

- MRC/PMAC Health Program Annual Report
- MRC/PMAC Health Program and You - brochure

The following publications may be purchased from your local bookstore which handles Federal Government publications by mail from:

Canada Communication Group
Publishing
Ottawa, Ontario
K1A 0S9
Telephone orders: (819) 956-4802

Terminology Series (English-French, French-English vocabularies; joint project of MRC and of the Department of the Secretary of State of Canada).

- Enzyme Engineering (March 1989, 753 pages)
- Genetic Engineering (1990, 328 pages) ($25)
- Medical Signs and Symptoms (1990, 426 pages) ($27)
- Signs and Symptoms of the Musculoskeletal System Volume I: Clinical Findings (1990, 528 pages) ($29.95)
- Signs and Symptoms of the Musculoskeletal System Volume II: Medical Imaging Signs (1992, 271 pages) ($24.95)
- Cell Engineering Volume I: Cell Structure (1992), (315 pages) ($22.95)

Also with equivalents, but no definitions:

- Glossary of Health Services (1992, 133 pages) ($14.95)

Topical Index