Dalhousie University, Faculty of Dentistry

Dental Research News

APRIL 1992

Research Development Office, (902) 494-1675

VOLUME VI, NUMBER 4.

200 Abstracts, 1992

MRC Strategic Plan, pages 3-8

12 Honoured at Reception

Twelve individuals were honoured at a special reception to celebrate the record $1.57 million federal and University/industry research funding received by the Faculty of Dentistry during the past twelve months. The amount of funding represents 52% of all the federal funding received during the past 32 years. Many of the research projects are being conducted in collaboration with colleagues in other departments faculties and institutions. Represented at the reception held on the 14th February were the Faculty of Medicine, Faculty of Science, Faculty of Health Professions and St. FX University. A highlight of the well attended reception was the awarding of certificates to 12 individuals in recognition of their contributions to the development of research in the Faculty of Dentistry.

The twelve individuals honoured were:

Andrea Rockwell,
Darren Hilchey,
Elfrieda Schneider,
Gordon Hall,
Jean Hames,
John Dwyer,
Katherine Robertson,
Lynne Gallant,
Mary Wile,
Maxine Langman,
Piroska Hidi,
Ruth MacLean.

Incredible Record

Amazingly almost 52% ($1.57 million) of the total 32 year research funds obtained by the Faculty of Dentistry from federal agencies have been realized in the past 12 months (30th April 1991 to 31st March 1992). The federal research funds for the past 12 month period have averaged an incredible $131,455.5 per month or $32,863.88 per week.

Fantastic! **We were wrong, our 200th Dalhousie Abstract will be in Glasgow.**

200 not out, a Double Century for Dalhousie.

All 20 of our Abstracts submitted for the IADR meeting in July have been accepted. This gives us a record total of 37 abstracts presented in 1992 at the AADR and IADR meetings. It also means that we will be able to celebrate the 200th abstract being presented by our Faculty at the 1992 IADR meeting. With the Glasgow meeting our total (since the very first Dalhousie abstract was presented 24 years ago in 1968) will reach 202. As yet we do not know who will be the lucky person to have the honour of presenting this important landmark paper for our Faculty. The IADR meeting in Glasgow will be a very large meeting, a record number of papers for a meeting held in the UK. A total of 2,112 papers have been accepted for presentation at the meeting, the rejection rate was 7%. The Dalhousie rate was as might be expected 100% acceptance. The combined total papers for the Boston AADR and IADR meeting are a staggering 3,833. The Boston meeting saw another Dalhousie first with Derek Jones taking over as President of the Canadian Association for Dental Research (CADR), the first Dalhousie Faculty member to hold this position. The growing strength of our research base at Dalhousie is clearly reflected in the high profile of our research at international meetings.

Poor Success Rate

Many individuals will go on at length to exalt the wonders of nature with examples of the incredible complexity of the chemistry and biology involved. Materials scientists find it very difficult to develop materials which have comparable properties to natural materials and tissues, such as wood or even teeth and bones. However, perhaps it is the sheer volume and long-term aspect of the experiments which allows nature to come up with her successes. The words of David Raup writing in the New Scientist point out the magnitude of nature's experimental plan, which suggests an almost shotgun approach. "Countless species of plants and animals have existed in the history of life on Earth. Estimates of the total progeny of evolution range from 5 to 50 billion species. Yet, only an estimated 5 to 50 million species are alive today-a rather poor survival record. With at the most, only one in every thousand species surviving, what happened to the others?

"RESEARCH NEWS ITEMS"

Do you have any research news which you would like to share with your colleagues? If so, please forward such items to the Research Development Office. It would help if submissions were produced on a (Macintosh) disc in Microsoft Word,
or simply call 1675.

MRC Strategic Plan

A group of nine faculty (comprising Ken Zakariasen, Jack Gerrow, Derek Jones, Choong Foong, Saheer Gharbia, Robin Howell, Haroun Shah, Amin Rizkalla and Elliott Sutow) met and discussed the response of the Dental Faculty to the call for input relative to the MRC strategic plan.

The following details on pages 3 to 8 represent the main issues which emerged from the discussions. These points have been forwarded to MRC and were also presented to the Dalhousie University MRC group meeting and Workshop held on the 27th and 30th March.

MRC'S Mission

In carrying out its mission we believe that MRC can obtain better value for its money by devoting a higher proportion of funding to interdisciplinary group research. However, in suggesting this approach we do not wish to imply the formation of institutes or very large research groups.

The faculties of dentistry in Canada have very limited opportunity to obtain research funds from agencies other than MRC. In Nova Scotia, unlike most other provinces, no provincial seed funding is available to support dental biomedical research. Over 90% of research funding obtained by the Faculty of Dentistry at Dalhousie has been supplied by the MRC during the past 23 years. During the past 16 years the amount of MRC research funding obtained by researchers in the ten faculties of dentistry across Canada has averaged only about 2% of the total MRC operating research funds. We need to ensure that biomedical research in faculties of dentistry do not suffer by inequitable comparison to and competition with other more glamourous research sectors.

The young students of today are the pool from which we will be drawing on for our future biomedical scientists. The Faculty of Dentistry at Dalhousie is particularly concerned about the current method of allocating funding for Farquharson Scholarships. MRC needs to vigorously overhaul the present system used to allocate Farquharson Scholarship funds to university faculties. It is not clear what criteria are being used by MRC to determine the level of funding for this program at the various faculties. A more equitable system of distribution of these funds should be introduced based upon research performance of the faculties involved. This will provide a better and richer research environment and experience for the students receiving this form of financial support. Although the number of undergraduate students and research activity in our Dental Faculty has increased in the past 16 years, the level of support for MRC Summer Students has remained constant. In contrast colleagues at other Dental Faculties have received increases.

(cont. on page 4)

Industrial Support:

We recognize that opportunities exist in some subject areas for partnerships with the private and public sectors. These should be exploited to the full, however, we must never surrender our academic rights, integrity and freedoms to the private sector.

With limited federal funding available to the research community this difficult and delicate route is one which we will have to continue to acknowledge in the future. However we believe that MRC should clearly understand that not all sectors of dental biomedical research can readily interact with the private sector. It should also be recognized that certain basic biomedical and dental research will not take place in the private sector and will only flourish within the intellectual confines of the university setting.

We believe that information should be provided to the industrial sector indicating to them the range of opportunities for collaboration with the biomedical research community in universities. However, industry also clearly needs to be informed about the academic rights and freedom which must be preserved in the university sector.

We do not believe that MRC should become involved with technology transfer. This is best left to the universities and the private sector. However, small annual grants could be made available to those universities operating Technology Transfer Offices.

Biomedical Research.

University administrations do have a major problem in dealing and coping with the increased cost of undertaking research. However, we do not believe that overhead costs should be introduced by MRC without a substantial increase in new funding becoming available. The level of funding at present is considered by many to be inadequate.

We believe that a greater emphasis should be placed upon clinical research. The significant lack of epidemiological data in the dental and medical field suggests that MRC should facilitate and encourage this area, this could perhaps be undertaken in collaboration with NHRDP.

Maintaining and developing excellence and long term stability for our university based research programmes in Canada is most critical and imperative at the present time. Awards of 5 year term grants should replace 3 year terms, this would be most appropriate and of considerable benefit at this time. Researchers would spend 40% less time writing grants if this was implemented. We strongly believe that scientists should spend more time doing research and less time writing and reviewing grant applications. This

(cont. page 5 ☞)

MRC'S Mission (cont)

policy would save money, help to focus priorities, increase stability as well as promoting excellence and international quality research.

We believe that MRC should allow good science to develop from existing expertise rather than trying to force the direction.

We believe that some form of international information exchange and collaborative research would be of considerable advantage and benefit to Canada which has a relatively small scientific community.

Peer Review

We strongly believe that the MRC Dental Sciences Committee should be retained in order to permit a better understanding of the nature, scope and relevance of dental research. We believe that MRC committees should aim to utilize teleconference calls to allow expert referees to interact with the review committees. We subscribe to the idea that at least thirty percent of reviewers for dental based biomedical research projects should have a dental background.

The peer review process as operated by MRC is indeed a significant burden to the scientific community. One answer to the problem may be to provide funding for longer periods of time (5 rather than 3 years) which would reduce the expense, frequency and volume of work of the review process. It has been our experience in the Dental Faculty at Dalhousie that large group grants are indeed very rigorously judged compared to individual grants. Site visits and teleconference calls combined with international quality experts in the field can and do provide a very fair and equitable review. The extra cost involved in using expensive overseas experts and teleconference calls can be minimized by funding such programmes for extended periods of up to 5 years.

In the reviewing of operating grants we conjecture that it may be worth MRC trying to obtain responses from the applicant to any negative reviewers comments or criticisms prior to any final decision being made by the committee. However, it is recognized that the time scale of the review process may not permit this to occur. The adoption of such a system would be closer to the situation of a site visit for a programme grant for example. We recognize that an appeal process could be difficult to implement and very time consuming and expensive to operate.

We do not accept the idea that the budgets of research grants should be capped. The reviewers of all grants have the obligation of evaluating the quality of the science and at the same time justifying the appropriateness of the budget request being made to support the research proposal.

(cont. page 6 ☞)

MRC (cont. from p. 5)

Canadian Institutes of Health?

We do not believe that MRC in Canada should develop specialized institutes. The details of performance and operation of institutes in the USA and the UK are not supportive of such a policy. We believe that institutes would be financially detrimental to small, but successful groups of researchers conducting excellent research in Canadian Universities. We do not believe that Canada should pursue mega science projects which can have a very damaging and negative financial impact upon the biomedical university scientific community.

Relatively small changes in research funding can significantly disrupt established and successful research teams which may have taken decades to build up. Once such teams are broken up they can never be put back together again. Once top quality researchers have left for greener pastures they very rarely return.

Early Career Development.

A major problem facing all faculties of dentistry and medicine is the development and encouragement of young biomedical and dental scientists. This is compounded by the limited funding available to universities in the hiring of new faculty. Young faculty often end up being heavily involved with teaching and committee work. One answer to address the problems and difficulties faced by young investigators entering the field would be to introduce a small grant system. However, it may be better to recommend that most of these young scientists collaborate wherever possible with established investigators in the field in order to develop a good track record. As stated previously we believe that a more equitable system of distributing the Farquharson scholarships funding should be introduced. This will provide a better learning environment for the research experience of the students who represent the future generation of biomedical researchers.

Partnerships & Cooperation.

We recognizes that interdisciplinary research can produce major advances. We also realize that working as a team is not easy, it requires a considerable amount of understanding by the members involved. Although disciplinary training tends to establish a bias in favour of the methodological embodiment of that discipline, making cross-disciplinary work fundamentally difficult, we believe that the advantages far out weigh the disadvantages. Individuals on research teams whose backgrounds and formal training are in different areas, can contribute important new perspectives and insights. We recognize that breakthroughs in research often occur at the peripheries of disciplines rather than at their center, and this

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MRC (cont. from p. 6)

occurs most often where these frontiers overlap with the boundaries of other disciplines. Some members of our Dental Faculty together with colleagues in other faculties, departments and institutions have opted for the group research concept rather than pursuing the role of individual research. We note that the MRC budget has increased four fold in the 15 years from 1976 to 1991. During this period the number of collaborative research programmes funded by MRC has increased. However, the % of the MRC budget allocated for such programmes has remained relatively constant at about the same level of 15%. We agree with past president of MRC Dr. Pierre Bois, "Programme Grants have been shown to be an excellent tool for the promotion of multidisciplinary or interdisciplinary approaches and they have provided an excellent milieu for the training of graduate students." We believe that consideration should be given by the MRC to expanding the amount of funding allocated for collaborative interdisciplinary research programmes of this type.

MRC can be more efficient and make the research dollars go further by cooperation with other agencies. MRC and NSERC should work much more closely together especially in areas such as bioengineering and advanced biomaterials. MRC should provide opportunities for joint collaborative ventures with NSERC, NHRDP and NIH. Currently MRC does nominate a small number of applicants to the Institutes of Health International Research Fellowships offered by the NIH. The suggestion of increased linkages with NIH or NSERC, is one which could be very valuable. The potential for linkages to NIH and NSERC offers further opportunities for innovative collaborative laboratory research initiatives in both microbiology as well as biomaterials. Such joint collaborative studies with colleagues in the US could also be very viable allowing us to conduct joint epidemiological studies with MRC, NHRDP and NIH funding.

The Credibility & Visibility of MRC Funded Research

The general public need to be better informed about the role played by researchers in faculties of dentistry. Dental research impacts on a very high proportion of the public. The perception that Dental Faculties only carry out research into dental disease such as caries is far from the truth. Dental research covers a vast range of subject matter involving the biological, chemical, physical and engineering fields. Integrated dental/medical epidemiology and clinical research are areas of particular importance. The generation of knowledge and application of the results of dental biomedical research have implications for a broad spectrum of biomedical and health care

(cont. page 8 ☞)

MRC (cont. from p. 7)

needs which is far wider ranging than the small confines of the oral cavity.

Often the glamorous areas of biomedical research involving life threatening disease get publicity, while the biomedical research areas covered in many dental faculties receive little attention. The relationship and interaction of MRC to the government and the public is very important. Researchers need to give as much publicity as possible to the MRC funding they receive and to the results of their research endeavours. This publicity will not only aid others in understanding the many diverse research programmes, but will also aid in educating the general public and lend support to the MRC in maintaining and expanding the research support for certain sectors of dental biomedical research. Those engaged in biomedical research recognize the need to publish in good quality journals. However, at the same time it should not be forgotten that researchers have an obligation to inform the public through the media. MRC should aid in providing greater publicity and at the same time encourage and help researchers to engage in the delicate and often difficult publicizing of their research endeavours.

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Promoting Science

The British Association for Promoting Science and Technology are providing 'Media Fellowships' which are intended to create greater understanding and awareness of the media within the scientific community. The Fellows work for 4-8 weeks with the scientific departments of a national newspaper, magazine or broadcasting organization. They are able to participate in the process by which events and ideas become news, to improve their communication skills by learning to describe complex issues in a manner understandable to the public, and to understand at first hand the conditions and constraints under which the media work.

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Gene Patenting

American researchers at NIH Dr. Craig Venter and colleagues have applied for patents on 2,375 newly isolated stretches of the DNA. The big question being posed is have this group made an invention or are they merely making discoveries of existing phenomenon?

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Stimulus and Challenge

"Advancement in basic research can best be carried out in the university environment where keen young minds continually offer stimulus and challenge to the more senior members of academia." Donald Betts

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Believe in What You Do

As academics we operate in what appears to some to be a competitive environment. We have to compete with others for external research grants. We have to compete with the standards demanded by editors of journals to which we may submit our gems of eloquent scientific writings. We have to suffer the pain which follows the rejection or the manner in which the reviewers murder and butcher our work. We have to perform in front of the bright intelligent questioning students and feel we have to convince them of the extensive knowledge and wisdom we possess and our very high level of intelligence. We have to compete with the unreasonably high standards of those irrational and unreasonable individuals who occupy lofty positions on the tenure and promotions committee. Somebody once said "you should try to be somebody you respect." This means believing in what you do and working hard. This means setting your own realistic and justifiable standards for research and scholarly activities, and not comparing yourself with others. Learn to be competitive with yourself. Remember it is not a question of your research or scholarly work being better than the work of somebody else. Your own self respect and integrity demand and require that you should aim to be better at research and teaching than you thought you could be. If you have had an abstract turned down for a meeting or a grant rejected, aim to turn these disappointments into strengths. Use these disappointments to motivate yourself. We should all remember that those academic achievements worth recalling are stained with the injuries and scars of many disappointments. We should all try to enjoy the process of living and not just the rewards which may come on only very rare occasions. As is so often said, if it wasn't for the winters we would not enjoy the summers half as much. As academics we should savour the small successes, realizing that our teaching and research are a journey in self discovery and personal fulfillment. In building a sound academic career we should realize that Rome was not built in a day. Develop your long term plan for your scholarly activity with a strong theme and work diligently towards it. Remember that life is not that bad and neither are you. Plan your new research career tomorrow and live. Who knows you may even get to like your self, just give it a try. For further inspiration look for the footprints in the sands of time in the May edition of the Dental Research News.

Change the only thing that is constant

"Change without improvement is not progress. Progress entails change, but change is not progress, it is altering the object, situation or condition."

Adolph Block