

Dental Research News

Research Development Office, (902) 424-1675

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Explosion of Dalhousie Research.

For the past four years the Dental Research News has been informing the Dalhousie University community that we have witnessed an explosion of research activity within the Faculty of Dentistry. We have witnessed an explosion in both the quality and quantity of our research. However, some of our research data literally did explode enroute to the AADS meeting in New Orleans in March. A Faculty member accidentally left a package containing a poster destined to be presented at the meeting at the New Orleans airport. On arrival at the hotel it was discovered that the poster was missing. A frantic call to the airport to enquire if the package had been located, was met with a reply that a mysterious abandoned package had been blown up by the security conscious police

officials only ten minutes previously. Airport security is clearly a very serious and important matter, all who travel with posters containing research data to present at meetings should beware.



RDO The 4th Anniversary

On April the 1st it will be four years since the RDO was established. Clearly our research has started the 5th year of the RDO with a bang. On this anniversary of the RDO we can look back with pleasure and some pride on our research accomplishments in terms of quality and quantity of scholarship during the past twelve months. The international reputation of Dalhousie in the field of dental research and scholarship now stands very very high indeed.

Research Award for

Mary McNally

Mary McNally 3rd Year DDS student was the recipient of the 1991 Warner-Lambert Award for her demonstrated aptitude in research. Mary has an MSc in Pathology and has been active in research at Dalhousie since 1986. Mary has been conducting research in the area of nutrition. Specifically her recent work has involved an investigation of the level of sulphur in milk of breast fed infants. Mary said that she is very keen to develop an understanding of the vast opportunities which are available for a career in dental research.

The recommendation by the Research Development Committee allowed Mary to attend the 27th Annual Dental Students Conference on Research. The meeting this year was held at the Forsyth Dental Center in Boston from March 10th-12th. The basic objective of the conference was to expose outstanding dental students to dental educators, scientists and administrators and make them aware of the wide scope of careers available in dental research.

The Council on Dental Research of the ADA sponsors the annual orientation programme on dental research for one dental student from each dental school in the United States, Canada

and Puerto Rico. The training and recruitment of manpower is of paramount importance to the expansion and improvement of dental research. One very important source of future dental scientists is the dental student population of today. The involvement of students in research at Dalhousie is one way of making a contribution to the future of dental science in Canada. Mary's research experience at Dalhousie may pave the way for a dental science career. Mary will be reporting on her experience at the conference in the Dalhousie Dental Students Journal.

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Always More to Learn

"We live in this world only that we may go onward without ceasing, a peculiar help in this direction being that one enlightens the other by communicating his ideas; in the sciences and fine arts there is always more to learn"

Wolfgang Amadeus Mozart.

Plain English

"The time has come for those in academic science to begin their responsibilities in this arena as communicators and educators to increase public understanding of science. Since scientists tend to speak in code and alchemic symbolism, the first step is to learn to speak plain English when we explain what we do." Stanford A. Miller.

Hectic Period

The past few weeks have been rather hectic with the final preparations for the Site Visit for our MRC Biomaterials Programme Grant. The research team have worked very hard during the first term of the grant. This was especially true during the hectic period which involved writing abstracts and papers and the final putting together of the renewal grant application. The final phase of the hectic period was the site visit itself on March 15th. The various investigators and coinvestigators met with the site visit team and gave an excellent account of themselves. All of the hard work and preparation put in by the team for the site visit was considered to be well worth the effort. Significant progress has been made in the development of techniques for ceramics glass and polymer synthesis. The refinement of rheological, ultrasonic and fracture toughness methods has made significant progress. Several major achievements have been accomplished during the first phase of the MRC Programme Grant. New and improved biocompatibility evaluation methods for tissue irritation and cytotoxicity testing have been developed. The group have also produced the first 8-component feldspathic glass by

a wet-chemistry sol-gel method which has application as a dental porcelain. Some very important research has also established the efficiency of plasticizers relative to specific methacrylate polymers. Significant data has been obtained for the long-term leachability of plasticizers from soft polymer-gel biomaterials. The group have established the mechanism limiting K^+ in the network of feldspathic glass systems. One of the other exciting developments concerns a unique ceramic filler for composite materials produced by wet chemistry. A further interesting development involves a room temperature photopolymerizing technique for the production of soft polymers. Work has progressed rapidly with synthesis of ion-leachable ceramable glasses using wet chemistry. These glasses react with poly (acrylic acid) to form cements. Data has shown the influence of polymer-gel/drug interaction on the drug diffusion profiles. The progress of work in the Programme has moved along well and projected milestones have been achieved. The success of the Programme is clearly due to the excellent team effort and cooperation from all of the staff and faculty involved. All we can do now is wait until next June for good news from Ottawa.

Wright Decision.

After six years Bruce Wright is to step down as chair of our Faculty Human Ethics Committee (a sub-committee of our Research Development Committee). Bruce has done an excellent job in this role for the Faculty of Dentistry. Bruce Wright as a clinician with dual dental and medical qualifications as well as being a Clinical Pathologist was an excellent choice as Chairman of our first permanent Human Ethics Research Committee. The Faculty of Dentistry would like to publicly pay tribute to Bruce and thank him for the excellent work that he has performed as Chair of this important Committee.

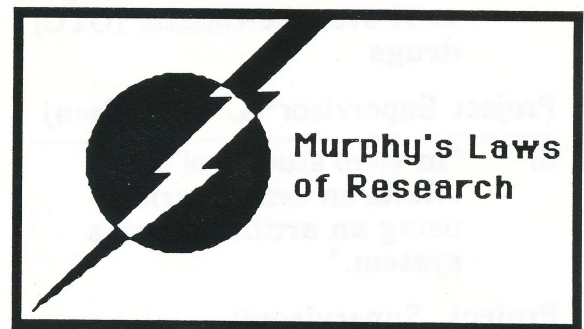
Bruce represented Dalhousie in 1989 at a National workshop in Ottawa jointly put on by MRC and the National Council on Ethics of Research. The workshop was attended by representatives from 16 Universities which have medical, dental or pharmacy schools. The rich experience which Bruce has gained during his tenure as Chairman of the committee will be handed down to his successor. The RDO are very pleased to announce that Dr. David Precious has agreed to take over from Bruce on April the first as Chairman. David as a very experienced clinical researcher will be an excellent replacement for Bruce

to serve in this important role in our Faculty.

Stepping Stones for the Future

In reflecting upon the success of our Biomaterials Research programme which links together a large group of multi discipline researchers the comments of Dr. H. William Gilmore the Dean at Indiana University seem to be particularly pertinent.

"Special networks in research and leadership are key elements in education today, and dentistry must be a full partner at the university level. The stepping stones for the future of dental health care are being laid by special research teams located at a few universities around the country."



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- 20) Have you noticed that the number of unsolved clinical problems increases in proportion to the number of scientific publications in your chosen field of study.

Summer Research Projects Approved

An ad hoc Committee of the Research Development Committee has selected the following 14 research projects as being suitable for summer student research for 1991. A further six projects were approved as being suitable for MRC Farquharson Scholarships.

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1) "The Effect of Orthognathic Surgery on Jaw Function."

Project Supervisors:
***D. S. Precious** and
R. H. Gooday

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2) "Drug-Induced Methemoglobinemia:
I. Prilocaine-induced methemoglobinemia in dental surgery
Detection by pulse oximetry
II. Acute toxic methemoglobinemia associated with commonly used over-the-counter [OTC] drugs

Project Supervisor ***A. Bhardwaj**

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3) "In vitro studies of laser effects on dental caries using an artificial caries system."

Project Supervisors:
***T. Boran**, K. L. Zakariasen and
R. M. MacDonald

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4) "Effectiveness of Polishing Procedures on Different Metals for Maximizing Tarnish Resistance."

Project Supervisors:
***M. G. Doyle**, E. J. Sutow and
A. S. Rizkalla

- 5) "Comparison of Canals Prepared by Various Apical Preparation Techniques in Conjunction with Sonic Instrumentation."

Project Supervisor:

***K. L. Zakariasen**

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6) "Comparative Study of Type III Gold vs Copper—Aluminum Alloy (NPG) Under Clinical Conditions."

Project Supervisors:

***K. L. Zakariasen**,
M. G. Doyle, E. J. Sutow
and A. S. Rizkalla.

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7) "An evaluation of the Margin Adaptation of Indirect Composite Acrylic Resin Inlays Made with Flexible Die Materials."

Project Supervisors:

***J. D. Gerrow**, R. Price
and M. G. Doyle

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8) "Comparison of the bond strength of composite resin to laser etched enamel vs acid etched enamel."

Project Supervisors:

***R. M. MacDonald**, W. Lobb
and K. L. Zakariasen

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9) "A study of the effectiveness of controlled angulation, extra-oral roentgenography in patient evaluation for implants."

Project Supervisors:

***D. V. Chaytor** and F. W. Lovely.

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10) "A force to fracture comparison of various post and core systems in a multi-rooted tooth model

Project Supervisors:

***S. M. Brayton**, E. J. Sutow and
W. MacInnis.

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11) "What is the caries status of teeth restored in a dental school clinic?"

- a) Analysis of base line data and one year follow-up.
- b) Data entry for a survey of dental caries and dental fluorosis in Kentville (fluoridated) and Truro (non-fluoridated), NS.

Project Supervisors:

***A. Ismail** and **W.A. MacInnis.**

12) "Real-time biofeedback for management of bruxism."

Project Supervisors:

***J. A. Johnson**, **A. Ismail** and **H. Al-Hasson.**

- 13) a. Testing of dimensional stability of visible light cure (VLC) system against the injection and trial-pack techniques.
b. Testing a new resin-metal primer.
c. Testing a new acrylic resin material - Superacryl Plus
d. Water sorption and desiccation: a comparison of four acrylic resins.

Project Supervisors:

***O. Sykora** and **E. J. Sutow.**

14) Intraoral Plaque pH Telemetry

Project Supervisors:

***K. L. Zakariassen**, **J. D. Gerrow** and **M. G. Doyle**

New Knowledge

"The primary role of universities along with teaching is the generation of new knowledge, and it matters not whether the knowledge appears to be useful."

John B. Macdonald.

**MRC Farquharson
Scholarship Awards for
1991**

It was quite a relief to hear the good news from Ottawa that the Farquharson Summer Research Scholarships were to go ahead to be funded for the summer of 1991. Some fear had been felt that since the MRC Discretionary funding had been cut out for 1991/92, the scholarship programme might also be in some danger. A total of four Dalhousie Dental students have been awarded MRC FARQUHARSON Summer Research Scholarships for 1991. The following four students are the recipients for 1991:
Marco Chiarot, 2nd year.
Greg Mitton, 1st year.
James Potvin, 1st year.
and **Neil Power** 2nd year.

The following projects have been approved for MRC Farquharson Summer Research.

1) **Project:** "Changes in aesthetic status of orthodontic patients before and after treatment: A historical cohort study."

Supervising Faculty:
W. K. Lobb; A. Ismail.

2) **Project:** "Orthodontic Arch wires: Corrosion Behaviour."

Supervising Faculty:
W. Lobb, E. J. Sutow, D. W. Jones

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3) Project: "Characterization of Glass Ionomer Cement Systems

Supervising Faculty:
D. W. Jones, A. S. Rizkalla
and E. J. Sutow.

4) Project: "The Physical and Chemical Relationship of the Metal-Metal Oxide-Porcelain Interface and the Magnitude of Porcelain Retention

Supervising Faculty:
E. J. Sutow, D. W. Jones, and
A. S. Rizkalla

5) Project: "The Relative *In Vitro* Cytotoxicity of a Range of Sebacate and Other Potential Plasticizers."

Supervising Faculty:
W. C. Foong and R. E. Howell

6) Project: "Determination Static Flow for a Range of Plasticized Methacrylate Copolymers."

Supervising Faculty:
J. A. Johnson, D. W. Jones
and E. J. Sutow

The purpose of the MRC Farquharson Summer Undergraduate Research Scholarships is to provide a sound research educational experience for the students and encourage our undergraduates as future clinicians to consider careers in medical or dental research. Priority is given in selecting students with a proven

academic ability as well as a perceived aptitude for research. The future applied scientists who will make up the profession of dentistry must seek out new knowledge in order to better serve mankind and contribute further to the body of our general knowledge.

**Biomaterial in the News
Keeping Abreast of the
Implant Controversy**

In March 1991 a New York City jury awarded \$4.45 million (US) to a woman who developed breast cancer after briefly having a silicone breast implant in 1983. The Canadian government have indicated that they are not going to take the controversial device off the market. According to Health Minister Perrin Beatty the governments own research does not indicate that the silicone implant constitutes a health threat.



SMILE

Research Definition

"We plan to conduct a follow-up study" means, we didn't plan the study correctly in the first place.

Bitter Blow for Medical and Dental Researchers

The News from MRC for many dental and medical researchers across Canada was very grim this last month. The news was that just under 18% were successful in the competition for MRC operating grant funds. In an attempt to encourage new researchers the % success rate for renewal applications was down to a mere 12.5%. Normally the total success rate is close to 30% for applications for operating grants. The low success rate was attributed to the very high number of applications for this years competition. The need to pump additional funding into the MRC budget has been recognized by an all party committee of the House of Commons, however, the Federal Government have yet to make a recommendation on this important issue. According to the Nova Scotia Royal Commission on Health Care, if economic trends continue, health care spending in Nova Scotia could reach \$3 billion by 2001, eating 35.5% of the provincial budget. Given these facts it makes sense for Dalhousie to specify that Health Sciences is an area of special emphasis. The development of our Graduate Programme in Biomaterials also looks to be a sensible and undeniable proposition. The enthusiasm

developed in our MRC programme Grant in Biomaterials clearly indicates that it has a bright future in an era with an aging population and a mounting health care bill.

Russian to Get Results

If you are finding it difficult to fund your research project you might like to think of taking a leaf out of the book of Dr. Shestoo. The ex-USSR Boston University Scientist Yuri Shestoo is using Russian scientists as consultants to provide expert services worth \$60 an hour in the USA. The Soviet University faculty salaries are apparently so low that USSR experts are happy to do the work for \$3 an hour.

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Medical Research

"On medical research depends the prolongation of the prime of life for all of us, and as a result, increased gross national product."

The National Health Education Committee, Inc., 1969.

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Purpose of Research

"Any attempt at guiding scientific research towards a purpose other than its own is to deflect it from the advancement of science."

Michael Polanyi

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Milking the System

As we contemplate the 82% rejection rate for MRC operating grants we might spare a thought for fellow researchers across the border who have less interesting subjects for their research programmes. The United States Environmental Protection Agency has funded studies at Washington State University and the National Centre for Atmospheric Research in Boulder Colorado. The funding has been provided to Dr.'s Lamb, Johnson and Westberg to allow them to fit hundreds of cattle with plastic and cloth packs to measure methane output. Bacteria in the digestive systems of the ruminants may produce as much as 15% of the annual output of methane gas into the atmosphere. CO₂ has received a lot of publicity in relation to the so-called greenhouse effect. What can we learn from these details? The answer is that those who live in a greenhouse should not throw stones. Before researchers create a stink in Ottawa they should recognize that in order to obtain funding they may have to undertake undesirable research even if it does involve wearing a gas mask. Researchers may have to specialize in research areas

which are directed to a perceived need by society.

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Chicken or the Egg

In our research it is often important to contemplate and make the decision as to the sequence in which we should tackle certain segments of our project. For example did you know that canned food was introduced in the year 1820. The fact that it was not an immediate success may be due to the fact that the can opener did not appear until 1860.

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SMILE

Research Definitions

"A statistically oriented projection of the findings..." means:-

A wild guess.

"A highly scientific area of exploratory study..." means:-

A totally useless topic suggested by my Thesis Committee.

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"RESEARCH NEWS ITEMS"

Do you have any research news which you would like to share 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.

