

# Dental Research News

Research Development Office, (902) 424-1675

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### **International Research Award for Dalhousie Dental Student.**

Last year the International Association for Dental research introduced the David B. Scott Student Research Fellowship. It is with much pleasure that the Research News reports that one of our Dalhousie University third year Dental undergraduate students **Kerim M. Ozcan** is the recipient of this very prestigious International award. Each member country of the IADR takes it in turn to select a student for this award, 1990 is Canada's turn. We will not have another chance to compete in this competition until the year 2007 in 17 years time. Kerim's name will go down in history as the first Canadian to receive this award, and it is going to be many years before we have a second Canadian winner. The award is quite generous being worth \$2,500 US. Kerim will be presented with this award at

the opening ceremony of the IADR meeting in Cincinnati in March 1990. Only 1st, 2nd and 3rd year dental students in Canadian Universities were eligible for the competition. The Prestigious International David Scott Award will provide the incentive for Kerim to choose dental research as his future career. The 'International Award' is a just reward for Kerim's hard work and brings credit to the Faculty of Dentistry and to Dalhousie University. Kerim has a Bachelor of Science Honours Degree in Biology, and has worked for two summers as a Research Assistant in the Biomaterials Science laboratory. Kerim is conducting an Elective Research Programme with Dr's. D.W. Jones and W.C. Foong, this project involves an investigation of the incorporation of various pharmacological agents into soft polymer gel systems to provide slow drug release.



### David B. Scott Award

This year Kerim Ozcan presented a paper based on some of the biomaterials polymer research conducted during his elective programme at the 67th IADR meeting in Dublin in July 1989. A further paper has also been submitted to the IADR meeting to be held in Cincinnati, for March 1990, if accepted Kerim will once again be presenting a paper at the top international scientific dental meeting.

The report last year from the Committee on Undergraduate Education at Dalhousie suggests that we should emphasize the importance that Dalhousie attaches to teaching as well as to research, and we should promote the integration of the two. The committee's report also emphasizes that students should have the opportunity to learn of the research role of their faculty, especially through direct involvement in that research. The Faculty of Dentistry can feel justly proud of the excellent involvement of our dental students in faculty research. The David Scott award given to Kerim Ozcan can be seen as a reward and tribute to all of our excellent Dalhousie Dental students who have participated in our research during the past several years. Our dental student population of today is a very important

source of future dental scientists. The involvement of students in our research within the faculty is one way of making a contribution to the future of dental science in Canada. Kerim Ozcan's research experience at Dalhousie may pave the way for a dental science career. It is encouraging to know that by involving our dental students in our summer research projects we stand a chance of improving the future for clinical scientists.

A study has found a positive correlation between exposure to research during professional degree studies and the development of a career in which research is a major activity, (Can Med. Ass. J. Dec. 1st 88). We hope that the David B. Scott Student Research Fellowship award will help Kerim Ozcan to decide that he has a future as an applied scientist. As such he will join that segment of the profession of dentistry who must seek out new knowledge in order to better serve mankind and contribute to the body of scientific dental knowledge. The national and international reputation of Dalhousie in the field of dental research and scholarship stands very high indeed. The Scott Award represents a fantastic success for Kerim Ozcan and indeed for all of our student researchers.



### Centres of Excellence

The federal government have finally put us out of our misery and announced the result of the \$240 million funded programme for the Centres of Excellence. Unfortunately our National Biomaterials Programme was not one of the 14 programmes selected out of the 238 letters of intent and the 158 final submissions. Congratulations are due to Dalhousie's success with the 'OPEN' network dealing with the fisheries and to Dr. Jurgen Kreuzer of Dalhousie's Physics Department who will head up one of the nodes of the Centre of Excellence in Molecular and Interfacial Dynamics. In addition Dalhousie have investigators in the Neural Regeneration and Functional Recovery centre at McGill University. The success of Dr. Kreuzer's group is particularly important to our research in biomaterials since he is a collaborator in our biomaterials group. Thus the development of the Molecular Interfacial Dynamics project will have particular value and add significant strength to our research in biomaterials as well as providing considerable support for our proposed Graduate Programme in Biomaterials Science. The interfacial contact of biomaterials and tissues is a very important aspect which

involves both the functional and biocompatibility success of biomaterials and implants.

The other successful Centres of Excellence programme 'OPEN' can also be indirectly beneficial to our biomaterials programme. Leo Vining of the Biology Department at Dalhousie University who was one of the Principal Investigators on our Biomaterials Centres of Excellence proposal, has, together with colleague Dr. J. M. Wright and others received a Strategic Grant from the Natural Science and Engineering Research Council to investigate potential bioadhesives derived from marine organisms. The development of bioadhesives and wound dressings is one of the research areas in our biomaterials research programme. 'The 'OPEN' fisheries project is involved with research involving scallops and as such will benefit Dr. Vinnings work on bioadhesives from marine organisms. This will in turn be beneficial to our own work involving bioadhesive cement systems. These developments are good news indeed for our biomaterials graduate programme proposal. The new Centres of Excellence Programmes at Dalhousie lend support to our research which involves the manipulation of

(cont. on page 4.)







## Old Teeth

Archaeologists at the Museum of London are working on one of the biggest finds of skeletons from the medieval period. The discovery of a cemetery from the time of the Black Death on the old Royal Mint site near the Tower of London in 1987 has excited archaeologists, who say the find is more important than the collection of sailors' skeletons found on the Mary Rose, Henry VIII's flagship that sank in the Solent in 1545. The cemetery gives the finest example of a cross-section of medieval British life, with rich poor, young and old buried together within 18 months of the plague reaching London in September 1348. The findings reveal that medieval man was not short, fat and hairy, with warts on his face and a leering grin which tends to be the false picture of our forefathers, passed down through imperfect history books and impressionistic paintings. The typical medieval Briton was similar in stature to many of today's workers in City of London offices near the spot where hundreds of people were buried in mass graves during the bubonic plague in 1349. Of dental interest is the finding that these individuals had a fuller mouth, a legacy of coarser foods which required prolonged chewing which would stimulate jaw bone

growth. The teeth were found to be largely free from decay. The archeologists have found that our ancestors lived longer than is commonly believed for the period and had fewer cases of arthritis than expected by bone specialists. These medieval people also suffered fewer cases of bone fractures which might result from falls or from violence. The diet of bread, meat, fish, cheese and ale, may have contributed to the fewer signs of tooth decay. Duncan Hawkins, one of three archaeologists who supervised the £1m dig, said: "It will provide a unique picture of medieval man." The skeletons are to be subjected to DNA tests to take genetic fingerprints from the bone which can indicate sex and race. Oxygen isotope analysis will measure the carbons laid in the bones by various foods to determine diets. Osteologists at the Museum of London, are cataloguing the skeletons and taking measurements to assess whether the victims had broad faces, high foreheads, back problems, or iron deficiencies. They claim that the work could demythologise the Middle Ages in which we think of men being 4ft nothing and dying at 35. This may well be inaccurate. Dr. Waldron, a London consultant physician, said half the skeletons he had  
(cont. page 6).



## Old Teeth

(cont. from page 5).

seen showed signs of arthritis, but it affected people less than he had expected. One extraordinary finding was the man stabbed in the back with a huge downward blow which embedded the knife-end in two vertabrae, narrowly missing the spinal cord. Amazingly, he survived only to die in the plague a few years later. The last of the 700 skeletons to be excavated was found together with 100 silver coins, but other wealthy victims of the plague were no so lucky. Many were stripped of everything except their shrouds. Gravediggers of the period, could become very rich. In contrast bone surgeons, restorative dentists and periodontists it would seem would be out of work. The larger jaw would also exclude the need for orthodontics. In medieval Britain the need for biomaterials was yet to emerge.

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### Professional

"The crucial distinction between a profession and a non-professional occupation is that the skills characterizing a profession are derived from and supported by a body of knowledge which has been validated via the scientific method". (E. Greenwood - "Attributes of a Profession" Social Work 2:45-55, 1957).

## Dates for Your Calendar

### Grant Deadlines

MRC - University - Industry Operating and Equipment Grants competition deadline, 1st March 1990.

Deadlines for regular MRC Operating Grants:

New-September 1st, 1990

Renewal-November 1st, 1990

Equipment-September 15th and November 1st 1990

MRC - History of Health Sciences deadline October 1st 1990.

NHRDP: Deadlines for submission of new projects December 1st 1990.

Applications must be submitted on NHRDP-1 catalogue number NHW 606 (08-84). If approved funding will be effective on or after the following July.

### Meetings

IADR, General Session and AADR Annual Session, March 7th-11th 1990, Cincinnati, Ohio.

IADR, General Session and AADR Annual Session, April 17th-21st 1991, Acapulco, Mexico

IADR, General Session 1992, Glasgow, UK.

AAADR, Annual Session, March 11th-15th 1992, Boston, Mass.

IADR, General Session and AADR Annual Session, March 10th-14th 1993, Chicago, Ill.



### Clinical Trials

Enormous interest was generated by the first Lunch Time Research Seminar of the Year held on the 4th of October. The topic was the Design of Clinical Trials. A total of 15 individuals turned up for the discussion. The aim was to build upon the experience gained at the Research Workshop held in conjunction with the ACFD Biennial Conference last June, in London Ontario. It was agreed by the group present to hold a series of meetings to continue the review and discussion and exchange of ideas on the topic. The objective being to try to come up with one or two formats for clinical trials, which could serve as examples. It was felt that by working through the process and discussing the various details in depth a better understanding would be achieved. The informal small group discussion was found to be an ideal forum for this type of topic. A list of references were circulated and it was agreed that these would serve in the first instance as a starting point for review and discussion. A total of four such meetings have now been held on this topic, these have proved to be very valuable and stimulating on this very important clinical topic.

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### Serious Problem

As university academics and scientists we face a very serious problem in today's modern world with vast amounts of new information being generated so rapidly. John Ziman has put it very well when he points out that "The most serious problem, from the point of view of the practising scientist, is to keep up with the literature of his subjects, and to be made aware of newly published work that is relevant to his own research." The problem is also particularly difficult for our clinical colleagues who have additional clinical responsibilities. However, the fact remains we must all aim to keep up with the literature in our chosen field.

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### Responsibility

"It is the responsibility of all health professionals to evaluate continually their methods of treatment and to base clinical judgements on a body of knowledge that has been validated through experimentation".

L. Makrides & J. Richman

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### Really!

"All knowledge is really only probable knowledge."

P.W. Bridgman

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### Implant Patents

Next year it has been projected that some 42,000 Americans will have endosseous fixtures implanted, this is an increase of 425% since 1985. Not surprisingly a number of patents have been taken out dealing with implants during the past few years. The German Krupp Company have taken out a patent for coating prostheses made from titanium and titanium alloys (US Patent # 4,855,101, July 1st, 1988). Patents for oral implants were also taken out by Zimmer Inc. (US Patent #4,854,873, October 13th 1987), and by a Peyton S. Neuwirth of Stratford Ill. (US Patent #4,854,874 December 1987). Steven Detsch of California has also taken out a patent for a prosthodontic implant attachment system and method (US Patent # 4,854,872 September 24th 1987). Currently, there are at least 20 implant systems on the market. In addition to Nobelpharma USA, the other major company involved is the Core-Vent Corp. of Encino, Calif. Together, Core-Vent and Nobelpharma share roughly equally between 60 percent and 70 percent of the implant market in the United States. The cost of implanting one tooth or a small group of teeth is about \$1500 per tooth; an entire upper or lower set of teeth can range from \$5,000 to \$8,000. With this lucrative

market at stake, it was not surprising that Nobelpharma and Core-Vent engaged in a legal battle. In January 1989 they settled a suit - in which Nobelpharma charged Core-Vent with patent infringement and unfair marketing practices - out of court. Under the terms of their agreement, Nobelpharma granted Core-Vent licensing rights on certain of its patents related to dental implants.

Despite the tight hold these two companies have on the implant market, there will be opportunities for companies with new marketing strategies to succeed in this arena. Improvements in current surgical techniques and instrumentation represent opportunities for new companies entering the market. 'Our proposed new Graduate Programme in 'Biomaterials Science' would have a significant role to play in this important area of health science. Following publicity in the press the public are becoming increasingly concerned about the use of questionable materials and devices in the body. There is clearly a need to have scientists trained in the subject area of biomaterials in order to monitor and evaluate new materials coming out onto the market.



### Cooperation

"Scientific research is becoming more and more a cooperative enterprise. Great inventions and discoveries rest upon fragments of the information that issue from a thousand laboratories. We know Edison invented the phonograph, but who is the inventor of television? This cooperative trend is augmented by the fact that tools of modern research are often enormously expensive. The individual inventor, pattering in his basement, can scarce afford an electron microscope or cyclotron. To gain access to these tools he must join the staff of a great university or the research department of a giant corporation".

Martin Gardner

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### Clinical Research

"The main purpose of experimental clinical research is to enable researchers to make comparisons between different methods of treatment and to establish cause/effect relationships between two or more variables. As such, the concept of control is a basic pre-requisite to experimentation because it provides the necessary baseline for comparisons".

L. Makrides & J. Richman

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## GREETINGS OF THE SEASON AND BEST WISHES FOR A HAPPY NEW YEAR TO ALL OF OUR READERS.



### A Delicate Matter

"It may be said that science has added to the health and longevity of the race; that the progress in surgery, in physiology, in pathology, in therapeutics, has greatly mitigated human suffering and prolonged life. This is unquestionably true; but in this service science is but paying back with one hand what it robbed us of with the other. With its appliances, its machinery, its luxuries, its immunities, and its interference with the law of natural selection, it has made the race more delicate and tender, and if it did not arm them better against disease also, we should all soon perish."

John Burroughs

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### Research

"Research can be defined as the scientific method of finding answers to questions; it establishes the facts which transform theories into principles".

L. Makrides & J. Richman.