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W.G. Kim,  
F.Motamedi,  
R. Rahamimoff,  
H.J. Singh,  
J.A. Young

# FAOPS

## NEWSLETTERS

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### A MESSAGE FROM THE PRESIDENT

I rejoice at the initiation of FAOPS and deeply appreciate the efforts of our colleagues who successfully organized it. Given the opportunity to address colleagues of FAOPS in the first issue of the FAOPS Newsletter, I would like to consider several profound implications of FAOPS.

It is a common situation around the world that basic sciences such as physiology have not been sufficiently promoted unless the society is wealthy enough to yield some extra funding. However, the situation seems to be reversing now, because people are beginning to realize that basic sciences not only follow but also guide the development of a society. Without a firm foundation in the basic sciences, it is impossible to develop modern industries and to cope with environmental problems which rapid industrialization will inevitably cause. Thus, it is timely to promote basic sciences in the Asian and Oceanic regions as an indispensable element of the development of society.

Fortunately, physiology has been well recognized in many countries in the Asian and Oceanic regions where there is a large population of physiologists. This is indicative of the tremendous potential inherent to the Asian and Oceanic regions. On the other hand, in recent years, physiology has progressed rapidly owing to innovation of a number of new techniques. Rapid growth of the so-called technological gap may have hazardous effects on laboratories if they fail to catch up to the current state of technological innovation. In this sense, we

seem to be at a critical point as to whether physiology in the Asian and Oceanic regions will advance toward sound progress or decline.

An encouraging factor in FAOPS is the participation of numerous young colleagues. They show enthusiastic interest in physiology, and frontier of physiological research. It is indeed impressive to witness intense research work being conducted in laboratories, coping with rather unsatisfactory facilities. Even though what we in FAOPS can do is limited, we must make efforts not to disappoint these young colleagues.

While the secretariat of FAOPS has been established by Dr. Chumpol Pholpramool in Bangkok, FAOPS is currently setting up two commissions. One is for promoting education of physiology, and the other is for facilitating research activities in the region. In order to support these commissions, a fund-raising committee has been formulated and is chaired by Dr. Chai in Taipei. In 1992 the FAOPS Council will meet in Shanghai to follow-up these initial activities and to develop future plans. We in the Council would very much like to strengthen our activities in preparation for the third Congress of FAOPS to be held in Shanghai in 1994.

I wish FAOPS great success in the future.

Dr. Masao Ito, Director-General of Frontier Research Program. RIKEN.

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# NEWS FROM COUNCIL

## MINUTE OF THE FAOPS EXECUTIVE COMMITTEE MEETING FRIDAY NOVEMBER 1, 1991 SIAM CITY HOTEL, BANGKOK

### FAOPS OBJECTIVES :

- To encourage the advancement of the physiological sciences,
- To facilitate the exchange and dissemination of knowledge in the field of physiological sciences and related fields.
- To foster and encourage research in the field of physiological sciences in Asia and Oceania,
- To promote the Congress of the Federation of the Asian and Oceanian Physiological Societies (FAOPS Congress),
- To promote such other measures as will contribute to the development of physiological science in Asia and Oceania.

### Agenda 1:

#### Report from the Secretary

#### 1.1 Memberships

1.1.1 The societies that have confirmed their intentions to join FAOPS include :

- The Chinese Physiological Society Located in Taipei, China
- The Korean Physiological Society

1.1.2 Invitations to join FAOPS have been extended to the physiological societies in the following countries

- Myanmar (Burma, see 1.1.3)
- Bangladesh (no response)
- Hong Kong (in the stage of forming a society, interested in joining FAOPS after its establishment has been achieved)
- Indonesia (no response)
- Phillipines (still waiting for a final decision)
- United Arab Emirates (no response)

1.1.3 The Societies that apply for memberships are :

<u>Society</u>	<u>Type of membership</u>
Physiology and Biochemistry Subsection of Myanmar Medical Association	Associate
The Physiological Society of Veitnam	Associate

#### 1.2 Funding

So far FAOPS received the membership dues (US\$3,000) and donation (US\$10,000) for the initial set up of the Secretariat from the Physiological Society of Japan. The funding is presently kept by Prof. Toshinori Hongo, the Treasurer of the Physiological Society of Japan.

A transfer of the money (US\$2,000) to the Secretary of FAOPS has been made since June 1991 for setting up the office. The major expenses include purchasing of a printer (an Apple Image Writer) for a micro-computer, stationeries and office supplies, and compensations for typists. The major expenses incurred from the Executive Committee meeting in Bangkok are also covered by this source of money.

#### 1.3 Publications

According to the previous Council meeting, the secretary was assigned to be responsible for preparing a Directory and Newsletters. A request for a directory from each national society and a call for a contribution to Newsletters have been made, but only few replies are received. It is hoped that the first issue of the Newsletter may be launched by the end of this year. The frequency of this publication is uncertain at present. The final preparation of the FAOPS Directory will take some time.

#### 1.4 FAOPS LOGO

Three choices of Logo were proposed for approval by the Council. One of these was selected as an official emblem of FAOPS.

### Agenda 2:

#### Report from the Treasurer

C.Y. Chai will find out the best measure to open an account for FAOPS so as to obtain maximum interest and to have a tax exemption. C. Pholpramool will make an initial request for the payment of membership dues to member societies. The due is effective since 1990. Payments should be directed to the treasurer.

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## PHYSIOLOGY UP-DATE

### BACKGROUND:

The aim of the Physiology Department has been to develop a novel teaching approach to teaching undergraduate students in Physiology that will provide effective integration of lecture material, practical exercises and simulations, using computer-managed learning and a multimedia approach.

The overall concept goes well beyond the replacement of obsolete apparatus for gathering experimental data, or the normal computer-assisted learning exercises that have been initiated in other institutions.

The project to replace our equipment had its genesis some 10 years ago with the purchase of our first Apple II+ personal computer (PC) and the realisation that Physiological monitoring and measurement was not only affordable on such PC, but that it would be cheaper than conventional chart recorders and oscilloscopes.

We have always seen the computer as providing more than data gathering, and our aim has always been to obtain a workstation that provided four overall functions:

1. an Intelligent INSTRUMENT (incorporating chart recorder and oscilloscope functions) to enhance the design of experiments and to measure a wide range of physiological parameters from isolated tissue, animal and man;

Dr. Robert E. Kemm is a senior lecturer at the Department of Physiology, the University of Melbourne, Australia.

# Computer-Based Laboratory Teaching in Physiology : an Integrated Approach. Department of Physiology, The University of Melbourne:

Robert E. Kemm

2. an ANALYSER of the data gathered to improve the interpretation of results;

3. a SIMULATOR of experiments too difficult to mount in an undergraduate laboratory;

4. a means for COMPUTER MANAGED LEARNING to relate and test the students' knowledge of lecture and laboratory material, and with recent advances, to introduce information in a novel manner using MULTI-MEDIA presentations.

The Department intends to extend the use of their modern facility beyond normal undergraduate teaching periods to effect a wider community outreach, with particular emphasis on extension activities, workshops and diploma courses after hours for training technical and research staff from other institutions and industry.

### UNDERGRADUATE CLASSES:

The Physiology Department teaches:

300 2nd Year Science and Dental Students all year,  
230 1st Year Medical Students for half year,  
230 2nd year Medical Students all year  
40 [80 in 1993] 1st Year Physiotherapy Students for half year,  
40 [80 in 1994] Physiotherapy Students all year,  
40 3rd Year Science Students majoring in Physiology,  
and most of these students have an intensive laboratory course.

### THE EQUIPMENT:

The Physiology Department now has 64 Computer Based Laboratory Workstations comprising 5MByte Mac IIci's (25MHz) with 40MByte hard disks and 14" RGB colour monitors in three networks connected to 4 Mac IIcx (40 MHz) file servers using Ethernet connections (A separate PAL video network is available which use the additional video inputs on the monitors to distribute video from a central source; camera, video recorder, laser disk). Sixteen of these machines, each with an ink-jet printer, are used principally by the Pharmacology Department for their separate teaching programme.

Each of these Mac IIci computers has either a 4-channel or 8-channel MacLab data acquisition system attached. The basic Mac IIci computers are equipped with a range of special purpose couplers, all fully computer controlled, and these include isolated bio-amplifiers for both human and animal use, and additional special couplers for respiratory measurements and monitoring the output of the human heart.

Apart from the MacLab software used for data acquisition, a limited range of other software has been

*(continued on next page)*

purchased. These include : (a) MS Excel to allow students to share data in large group studies where the data are in spreadsheet form, (b) Timbuktu to allow the data being acquired by one machine to be shared with others as in demonstrations, (c) virus-protection software, (d) authoring software to prepare interactive practical notes, (e) imaging software for use in multi-media presentations, and (f) simulation software to allow students to examine the behaviour of experiments too difficult to undertake in undergraduate classes.

Other hardware includes two 1.3GByte DAT tape drives to allow backup of system software and the storage of student data for recall, CD Rom drive for access to software and multi-media resources, and 8 Laser Writer NT's for hardcopy of student results.

Physiology's teaching is done in with students in pairs using 32 4-channel machines for most 2nd year experiments; larger groups use the remaining 16 8-channel machines which are also used for 3rd year teaching.

## HISTORY OF THE INSTALLATION :

The department of Physiology has a history of involvement of the use of mini-computers in research and had one of the first modern mini-computers in Australia, the 4KByte 12-bit word Digital Equipment Corp.'s (DEC) PDP-8 in 1966. Over subsequent years, the department has used a variety of more advanced DEC minicomputers.

In early 1981, medical student, Nick Redgrape, who was doing electronic construction work in his vacations for Dr. Robert Kemm, wrote an important essay for Dr. Kemm as part of an Advanced Study unit in his medical course. This essay covered in part the role of the newer "Personal Computers" (PC) in research and teaching and led to Dr. Kemm realising

that the Apple II PC was more than a toy and was an alternative terminal for his PDP-11 used in research.

In 1982, Dr. Kemm purchased plug-in circuit boards and software for the Apple II to allow it to operate as a high performance inexpensive digital oscilloscope. The successful use of this apparatus in research led to consideration of its use as a replacement for the obsolete and aging teaching equipment in the undergraduate teaching laboratories. This old equipment consisted of conventional 7.5 cm oscilloscopes and single channel chart recorders purchased in 1969, but of older design. This equipment limited the design of physiological experiments that could be carried out and was greatly inferior to equipment in other Universities in Australia.

In 1983, with encouragement from the Chairman of the Physiology Department, Dr. Sandy Skinner, Dr. Kemm started the first of many grant applications to develop a computer-based data acquisition system for undergraduate Medical and Science Physiology Teaching. Although the first application to The Clive and Vera Ramaciotti Foundation was unsuccessful, the Medical faculty saw the worthwhile nature of the project and funded a Pilot Study for four systems to be used in the Medical course.

In 1984, the Department of Physiology appointed a Tutor, Ms Lea Delbridge, whose duties included preparation of a trial experiment and testing it with a sub-group of a normal undergraduate class (Delbridge & Kemm, 1985). The trials tested the use of the Apple II computers with Oscilloscope functions and introduced computer-based learning to integrate the theoretical and practical aspects of Physiology teaching. The results of these trials showed that the Apple II computer was too limiting in its use because of inadequate memory and limitations of software, as also demonstrated by the US manufacturer ceasing production of the oscilloscope cards for the Apple II.

In 1985, Kemm described the requirements of a future "Laboratory Machine" which could satisfy the needs of undergraduate Physiology teaching and sought interest from industry in bringing such a machine to fruition. It was decided at an early stage that it was inappropriate for the Physiology Department to manufacture all the amplifiers and couplers which would be needed to connect the "Laboratory Machine" to man and animal, as we were seeking the development of devices that would be widely distributed by commercial organisations. (Independent of this project, a small group in Otago New Zealand were commencing the MacLab development).

With the enthusiastic involvement of the new Chairman of Physiology, Prof. Trefor Morgan, approaches were made to Industry to support the development and IBM Australia were generous in providing computers. We also contracted a software house to demonstrate the feasibility of simulating a chart recorder on an inexpensive PC. These developments were demonstrated to the Medical Faculty to whom we had foreshadowed in 1985 a future large grant application for the complete replacement of obsolete equipment in Physiology; we also invited the Pharmacology Department, who use our laboratories, to be a party to such an application.

Draft Specifications were drawn up and a small group of companies were asked to express interest and give estimates of costs. From this base, in 1986 we were able to draw up more detailed specifications which could be met from a competitive tender and which could form the basis of a realistic grant application to the Medical Faculty and Central University Funds. We also interviewed the major computer companies, IBM and Apple, to gauge their interest in the project.

Following this considered and careful approach to the project, in 1988,

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# MEETING CALENDAR

## February, 1992

27-28 : The 55th Meeting of the Australian Physiological and Pharmacological Society jointly with the Australian and New Zealand Society of Neplanology. University of Melbourne, Australia

### For further details :

Dr. P. Williams  
Department of Physiology  
Univ. of Melbourne  
Parkville, VIC 3052  
Tel : 03-3445845  
Fax : 03-344-5818

## March, 1992

1-5 : 1st International Dead Sea Conference on "The interaction between Western and Eastern Medicines". The Dead Sea, Israel.

Deadline for abstracts :  
Dec. 31, 1991

### For further details :

The Secretariat  
Dead Sea Conference  
P.O. Box 50006, Tel Aviv,  
Israel  
Tel : 972-3654571  
Fax : 972-3655674

## April, 1992

24-29 : The XIth International Conference on Calcium Regulating Hormones. Florence, Italy

Deadline for abstracts :  
Oct. 10, 1991

### For further details :

ICCRH Meeting  
Secretariat  
O.I.C.  
Via G. Modena, 19  
50121 Florence, Italy  
Tel : 39-55-5000631  
Fax : 39-55-570227

## May, 1992

5-10 : 7th European Workshop on Molecular and Cellular Endocrinology of the testis. Castle Elman (Bavarian Alps), F.R.G.

### Deadline for miniposters :

Jan. 4, 1992

### For further details :

Prof. Dr. E. Neischlag Inst.  
for Reproductive Medicine  
of the University  
Steinfurter Str. 107, 4400  
Munster, F.R.G.  
Tel : 49-251-836097  
Fax : 49-251-836093

28-30 : The 2nd Asian conference of Clinical Pathology & the 9th Korean-Japanese Joint Conference of Clinical Pathology. Cheju, Korea.

### Deadline for abstract :

Feb. 28, 1992.

### For further details :

2nd ACCP & 9th K-JCCP  
secretariat c/o Department  
of Clinical Pathology  
Kyungpook National  
University Hospital  
Somdock-dong 2-52,  
Jung-ku, Taegu 700-412,  
Korea  
Tel : 82-53-420-5293  
Fax : 82-53-426-3367

## August, 1992

23-27 : 12th International Congress on Animal Reproduction The Hague, The Netherlands

### Deadline for abstracts :

Nov. 1, 1991

### For further details :

Steph J. Deleman  
Dept. of Herd Health &  
Reproduction  
Fac. of Veterinary  
Medicine, Univ. of  
Utrecht, c/o Holland  
Organizing Centre, Lange  
Vooshout 16  
2514 EE The Hague,  
The Netherlands  
Tel : 31-70-3657550  
Fax : 31-70-3614846

30-Sept 5 : Ninth International Congress of Endocrinology Nice Acropolis, France

### Deadline for abstracts :

Dec. 31, 1991

### For further details :

N.I.C.E. 92  
c/o SOCFI  
14, rue Mandar  
75002 Paris, France  
Tel : 33-1-42338994  
Fax : 33-1-40260444

## Sept, 1992

21-28 : The First International Congress of African Association of Physiological Sciences and Society of Neuroscientists of Africa, Nairobi, Kenya

### Deadline for abstracts :

Mar. 31, 1992

### For further details :

Prof. J.M.Z. Kaman  
The Scientific Secretary  
AAPS/SONA Congress  
Secretariat,  
c/o. Secretary KPS  
Dept. of Medical  
Physiology, Univ. of  
Nairobi, P.O. Box 30197  
Nairobi, Kenya

## Nov, 1992

9-12 : First Asian & Oceanic Congress of Andrology Nanjing, China

### Deadline for abstracts :

May 1, 1992

### For further details :

Secretariat of 1st Asian &  
Oceanic Congress of  
Andrology  
c/o JSTEC,  
39 East Beijing Rd.  
Nanjing 210008, China  
Tel : 086-25-635407  
Fax : 086-25-714369

16-21 : 6th Congress of the Federation of Asian and Oceanian Biochemists. Shanghai, China

For further details :  
Prof. Lin Qu-Shui  
Shanghai Institute of Bio-chemistry  
320 Yue-Yang Road  
Shanghai 200031, China  
Tel : 86-21-4374430  
Fax : 86-21-4338357

22-26: First Asian Pacific Congress of Allergy and Immunology, Central Plaza, Bangkok, Thailand

For further details :  
First Asian Pacific Congress of Allergy and Immunology  
Dept. of Microbiology  
Fac. of Medicine Siriraj Hospital

Mahidol Univ., Bangkok  
10700, Thailand  
Tel : 662-4113111  
Fax : 662-4181636

23-28 : 6th Animal Science Congress  
Bangkok, Thailand

For further details :  
The Congress Secretariat  
The Sixth AAAP Animal Science Congress  
P.O.Box. 1014, Kasetsart P.O., Bangkok 10903, Thailand  
Tel : 662-5798525  
Fax : 662-5798781

29-Dec. 4 : The XIIIth International Congress for Tropical Medicine and Malaria.  
Pattaya, Thailand

Deadline for abstracts :  
Mar. 31, 1992

For further details :  
Prof. Thanongsak Bunnag  
Congress Secretariat Office, The XIIIth International Congress for Tropical Medicine & Malaria  
c/o Fac. of Tropical Medicine, Mahidol Univ.  
420/6 Rajvithi Rd., Bangkok 10400, Thailand  
Tel : 662-2483189  
Fax : 662-2463755

*(Minute of Executive Meeting)*

**Agenda 3 :**  
**Further development of commissions**

The first Council meeting in New Delhi recommended that, in the early stage of FAOPS activities, the commissions on physiology education, research and fund raising should be formulated. After extensive discussion the committee agreed upon the following guidelines for the formulation of the commissions and their activities :

**3.1 Commission on Physiology Education (CPE)**

**Membership :**

(a) R. Rahamimoff is the chairman of the commission, other members will be S.K. Manchanda and X.L. Yang. Other members of this commission may be enlarged to allow more expertise to the Commission.

(b) The Commission will promote training programmes in physiological sciences by ;

i) facilitating participation in various congresses,

ii) promoting local meetings/workshops and training courses for acquiring skills and knowledge in physiological sciences,

iii) promoting new learning resources and encouraging their regional exchanges.

Formulation of the Commission and initial plan of action should be worked out for consideration in the council meeting in Shanghai.

**3.2 Commission on Promotion of Research in Asian-Oceanic Region (CPRAOR)**

**Membership :**

J.A. Young (Australia) will be the chairman, other members are J.L. Hubbard, H.J. Singh and M.T. Lin. The membership may be enlarged to extend the scope and expertise.

The Commission will promote research by ;

(i) identifying host laboratories and sources of post- and pre-doctoral fellowships and scholarships available locally and overseas,

(ii) encouraging joint research programmes of interdisciplinary and international nature,

(iii) preparing the state of art reports on physiological research of particular relevance to difference countries of the region.

Formulation of the commission and the initial plan of action should be worked out for consideration in the council meeting to be held in Shanghai.

**3.3 Commission on Fund-Raising (CFR)**

**Membership :**

C.Y. Chai will be the chairman, other members are J. I. Hubbard, F. Motamedi and J.A. Young. The membership may be enlarged to extend the scope of functioning.

The Committee will explore the possibilities for raising funds from governmental and non-governmental sources to increase the financial resources of FAOPS. The function will also involve encouraging the industrial and commercial houses, the philanthropic foundations and endowments to become sustaining and

*(continued on next page)*

*(Minute of Executive Meeting)*

supporting members of FAOPS. The Committee will report at the time of the council meeting in Shanghai.

The Executive Committee felt the need of other types of FAOPS membership, i.e.

- (a) Supporting Members (annual),
- (b) Sustaining Members (Longer periods)

The membership fee will be US\$1,000 and US\$5,000 and above, respectively.

The fund raising committee should make recommendation for such membership to the council pending approval of the General Assembly at the time of the 3<sup>rd</sup> Congress.

**Agenda 4: Other matters**

**4.1 Second FAOPS Council Meeting**

After a report from X.L. Yang it was decided that the meeting of the Second FAOPS Council meeting will be held on 4 and 5 October 1992 in Shanghai.

**4.2 The Third Congress of FAOPS in Shanghai (1994)**

X.L. Yang will constitute a local Organizing Committee and an International Organizing Committee. FAOPS will make available seed money for the 3rd Congress up to a sum not exceeding US\$3,000, which will be used essentially for printing the first announcement. The draft of which should be ready by April 1992.

**4.3 The Fourth Congress of FAOPS in 1998**

C. Pholpramool will find out the next host country for the 4th Congress in 1998 pending approval of the General Assembly at the time of the 3rd Congress in 1994.

*(Computer-based Lab Teaching)*

we were successful in obtaining funds of towards \$1M for the project. Final-detailed specifications were drawn up and expressions of interest were invited for the supply of all or part of the computers, software, electronic devices and transducers. The sixty four companies from Australia and overseas that replied were reduced to a few who were asked to demonstrate their ability to meet the specifications. After a series of exhaustive practical demonstrations to the staff of the departments on Macintosh II and IBM compatible 80386 based equipment, no company was found adequate but the most promising was invited to produce their final working prototype 'Laboratory Machine' within three months. Unfortunately, this company found defence contracts more interesting and failed to produce a prototype. New expressions of interest were invited and we short-listed 3 companies that produced equipment with specifications very close to our requirements, but which all had some deficiencies to remedy. Detailed negotiations were undertaken and a contract was awarded in 1990 for AD Instruments (ADI) to provide MacLabs, and for Apple to supply the computers, provided ADI upgraded their software and hardware to meet our specifications.

The evaluation and negotiation team consisted of: Prof. Morgan, Dr. Kemm and Dr. Peter Harris from Physiology; Prof. David Story from Pharmacology; and Assoc. Prof. Peter Thorne from Computer Science as an expert representing the major tender board.

This protracted procedure for evaluation and purchase took almost 2 years and, apart from ensuring a satisfactory solution could be found; the major benefit of the delay was that more and significantly better equipment was finally purchased.

**CURRENT STATUS :**

Since the contract was awarded

and delivery almost completed, there have been many activities required before the apparatus could be incorporated fully into normal laboratory classes. These include:

1. design and construction of security enclosures for the equipment which is available for use in public areas of the department;
2. staff training by ADI and Apple;
3. installation of video and Ethernet network;
4. collaboration with ADI in the development of special couplers required in the specifications;
5. running some trial class experiments as a first step in preparing the laboratory experiments for computerisation;
6. exploring the best way to integrate teaching programmes with the proposed multi-media and simulation aspects.

**FUTURE DEVELOPMENTS:**

Having purchased the hardware, the optimum use of this computer based equipment has only just begun. We can use relatively easily the computer based equipment for monitoring physiological characteristics in man and animal, but the commitment by staff to a major re-examination of the objectives and means of integrating theory and practical experiments is great, given the current need to maintain research work and its funding in a difficult climate at present.

We would like to have dedicated staff to show the way with the development for templates for experimental design involving data acquisition, analysis, multi-media illustrations and simulations. We would like these templates to be refined by the Australian University Departments which specialise in the various sub-disciplines of Physiology so that the templates can act as a basis for individual departments, but be modified for their particular objectives.

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(Computer-based Lab Teaching)

We would also like to see greater use being made of our facility in the teaching of computerised methods of data acquisition and also the use simulation procedures to improve the design of experiments and analysis of such gathered data. We are investigating the possibilities of offering extension courses for graduates and service courses for other tertiary institutions.

Our greatest problem is to find funds to allow these future developments to proceed, since their requirements reach beyond the scope of normal departmental funding.

## A CALL FOR CONTRIBUTIONS FOR FAOPS NEWSLETTERS

This newsletter is published biannually by the FAOPS Secretariat. Its purpose is to serve as a venue for communications and exchanging viewpoints between members of FAOPS concerning their teaching, research and social activities. At present, there are 4 columns namely : news from council, news from members, physiology up-date, and meeting calendar. Please send us news from your societies and/or articles on current advancement of physiological sciences either from the first-hand information or from other sources. Suggestions on new columns are also welcome.

Send your news or articles to :

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FAOPS Secretariat  
Department of Physiology  
Faculty of Science, Mahidol University  
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