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THE BIOELECTROMAGNETICS SOCIETY'S 30TH ANNUAL MEETING

Thirty years ago, researchers doing electromagnetic effect studies had to attend small sessions in various large meetings, which included IEEE Microwave Theory and Technology Society (MTT), IEEE Antennas and Propagation (AP) Society, International Microwave Power Institute (IMPI) and International Union of Radio Sciences (URSI). Due to cost and time limitations, attendance at all these meetings each year was quite impossible for most investigators. This was one reason a group of bioelectromagnetics scientists decided to form a society so researchers could attend one annual meeting specializing in bioelectromagnetics. Their effort led to the formation of the Bioelectromagnetics Society 30 years ago.

As stated in the Society website, *"The mission of BEMS is to be the international resource for excellence in scientific research, knowledge and understanding of the interaction of electromagnetic fields with biological systems. The Society's annual conference is the major meeting in bioelectromagnetics and offers participants numerous sessions, workshops and tutorials with platform and poster reports covering current scientific topics. Attendees also meet with other professionals in the field, in both formal and informal settings, to extend their network of scientific contacts."*

My personal experience with the Society started in 1978. I participated in the committee to organize a joint 1979 meeting of URSI, IEEE Antennas and Propagation Society, and the Bioelectromagnetics Symposium at the University of Washington in Seattle, which was the first BEMS meeting. In that meeting, 164 papers were presented without parallel sessions (the only one in 30 years). Since the meeting was held at the University of Washington campus, Dr. Bill Guy and I organized a laboratory tour for those scientists from around the world who wanted to see our research facility. At that time, we were conducting a lifetime study sponsored by the U.S. Air Force involving the exposure of 200 rats to pulsed microwaves (BEMS 13:469, 1992). During that meeting, I met many scientists and a number of them became very good friends and colleagues. As a matter of fact, one of them, Dr. Quirino Balzano, later asked me to take care of the laboratory that he started at Motorola, so he could retire.

I have been blessed to attend all 29 annual meetings of the Bioelectromagnetics Society, even during the 13 years I was working at the City of Hope National Medical Center and had another major meeting to attend. I am all set to attend the 30th meeting to be held in San Diego, California on June 8-12. Fast rewinding my last 30 years, I can testify that BEMS meetings offer the best opportunity to learn the newest research results, to network with other scientists, and to form research collaborations. My attendance at these meetings certainly benefited my research career, and I would like to encourage the readers of the Newsletter to attend the 30th annual meeting in San Diego.

Hope to see you all in San Diego this June,
C-K. Chou

BEMS 30TH ANNUAL MEETING

Make your reservations now!

- Download the Registration form for the meeting at www.bioelectromagnetics.org
- Make hotel reservations at http://www.towncountry.com/ (phone 1-619-291-7131, fax 1-619-294-4681, email res@towncountry.com)

See BEMS San Diego, continued on page 2

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BEMS SAN DIEGO, *continued from page 1*

Welcome to San Diego, California's second largest city, where blue skies and a gentle Mediterranean climate keep watch on 70 miles of beaches. Bordered by Mexico, the Pacific Ocean, the Anza-Borrego Desert and the Laguna Mountains, San Diego county's 4,200 square miles offer immense options for exploring. And this year's Technical Program of events offers even more options for interactions with colleagues from around the world.

Program highlights include:

- Six plenary sessions covering clinical applications of electromagnetic fields, epidemiological study results, exposure standards, societal issues, and mechanisms of interaction (see related articles in this newsletter and in the Jan/Feb 2008 newsletter describing plans for some of these plenary sessions).
- A symposium, chaired by Elizabeth Rapasky, on thermal medicine (see related article in this issue of the newsletter introducing the Society for Thermal Medicine).
- Twelve platform presentation sessions covering a wide range of topics
- Over 150 poster presentations
- Student presentations and awards
- Associated meetings (URSI Commission K, Editorial Board, and BEMS Annual Business meeting)
- Social event (TBA – Tuesday evening)

See you there!

Special note for anyone wishing to visit nearby Mexico while in the San Diego area

CURRENTLY FOR US Citizens:
The Western Hemisphere Travel Initiative (WHTI) is a result of the Intelligence Reform and Terrorism Prevention Act of 2004 (IRTPA), requiring all travelers to present a passport or other document that denotes identity and citizenship when entering the U.S. The goal of the initiative is to strengthen U.S. border security while facilitating entry for U.S. citizens and legitimate foreign visitors by providing standardized documentation that enables the Department of Homeland Security to quickly and reliably identify a traveler. At present, U.S. citizens need to present either (a) a passport, passport card (available in spring 2008), or WHTI-compliant document; or (b) a government-issued photo ID, such as a driver's license, along with proof of citizenship, such as a birth certificate when re-entering the U.S. from Mexico.

Later:
On June 1, 2009, the U.S. government will implement the full requirements of the land and sea phase of WHTI. The proposed rules require most U.S. citizens entering the United States at sea or land ports of entry to have a passport, passport card, or WHTI-compliant document.

Non-US Citizens:
A passport, I-94 card or resident alien card is required. Additional paperwork might apply for visitors. **Please advise your local immigration office/embassy to ensure multiple entries into the US is allowed.** A tour or bus company is unable to wait for tour participants detained or delay out of the normal wait times.

BEMS ELECTION NOW OPEN

Voting members check your email inbox or regular mail for a ballot to the ongoing BEMS election. **The election opened on April 28, 2008 at 12:01 am and closes on May 28, 2008 at 11:59 pm (U.S. Eastern time).**

Candidates for office are:

NOMINEES FOR VICE PRESIDENT/PRESIDENT-ELECT
Michael J. McLean, MD, PhD
Michael R. Murphy, PhD

NOMINEES FOR BOARD, BIOLOGICAL & MEDICAL SCIENCES
David Black, Gabor Mezei, Christine Pullar, and Ann Rajnicek

NOMINEES FOR BOARD, ENGINEERING & PHYSICAL SCIENCES
Michael Cho and Art Thansandote

NOMINEES FOR BOARD, AT LARGE
T. R. Gowrishankar and Andrei G. Pakhomov

The results will be reported Wednesday, June 11, 2008 at the BEMS Annual Business meeting in San Diego CA.

PRELIMINARY DETAILS OF ANNUAL MEETING SPECIAL SESSIONS

The upcoming 30th Annual Meeting will have four sessions that have been designed to review topics of longstanding interest to the Society:

- Joachim Schüz has organized a roundtable to review and discuss the Interphone Study results related to cell phones and brain tumors (see article in the January/February 2008 newsletter). Does longer exposure increase the risk?

- Bob Cleveland has arranged a review of RF and ELF exposure standards. Are current standards enough? How else can risk be assessed?

- Darius Leszczynski has organized a symposium to review the mechanisms of interaction between magnetic fields and biological tissues. Does new evidence explain the transduction step?

- Carl Blackman and Martin Blank have organized a session on Bioelectromagnetics in society. Can we learn more about risk assessment from other disciplines?

Meeting organizers hope that the interactive format of these sessions will stimulate important cross-disciplinary discussions amongst members.

The meeting will also have special sessions focusing on medical applications of magnetic fields. These fall roughly into three categories:

1. The Bench-to-Bedside Plenary sessions will address clinical disorders in which electromagnetic field-generating devices may supplement conventional therapy.
2. Arthur Pilla has gathered a group of experts in EMF therapeutics. This session will inform us about progress and clinical potential of pulsed EMF.
3. Guests from the Thermal Medicine Society tell us about research in their Society in a special symposium. We welcome the Thermal Medicine Society (see articles in this issue of the newsletter).

The Bench-to-Bedside Plenary sessions are planned to focus on four different topics: biofilms, neuroprotection, fibromyalgia, and bone healing using fields. To give readers a preliminary look at what is planned, organizer Michael McLean provides us with these details:

BIOFILMS:

Biofilm-related problems cost US industry billions of dollars annually and cause major medical problems through infecting host tissues, harboring bacteria that contaminate drinking water, and causing rejection of medical implants. Speakers on this topic include:

Robin Patel, MD

- Professor of Medicine and Microbiology, Mayo Clinic, Rochester Minnesota., - Departments of Infectious Disease and Mayo Clinic Transplant Center

- Research interests include: Biofilm-mediated infections, Vancomycin-resistant enterococci and other vancomycin-resistant Gram positive organisms, including molecular epidemiology, therapy, clinical epidemiology and pathogenesis of such infections, Paenibacillus popilliae Mechanism of vancomycin-resistance in this vancomycin-resistant biopesticide, Novel approaches to prosthetic joint infection diagnosis, Novel antimicrobial agents for therapy of bacterial infections including in vitro studies and in vivo studies (rabbit endocarditis, mouse pneumonia, and rat osteomyelitis models), and human trials.

Bruce McLeod, PhD

-Professor, Electrical and Computer Engineering and Center for Biofilm Engineering, Montana State University, Bozeman, Montana. Past President of BEMS.

-Research interests include: Enhanced bacterial biofilm control using electromagnetic fields in combination with antibiotics. Electromagnetic fields in biological materials.

NEUROPROTECTION:

Loss of nerve cells is a major cause of disability resulting from stroke, trauma and epilepsy, to name just a few disorders of the brain. A vast effort to understand how neurons die and minimize neuronal loss has evolved into the field of neuroprotection. Aggressive research programs are testing a variety of potential therapeutic modalities. Speakers on this topic include:

William Pulsinelli, MD, PhD

-Semmes-Murphey Professor & Chairman, Department of Neurology and Professor, Department of Anatomy and Neurobiology, University of Tennessee College of Medicine, Memphis, Tennessee.

-Research interests include: Human and animal research to define how disturbances of blood flow and metabolism cause dysfunction and damage to brain cells. We seek to identify the molecular basis for ischemic (loss of blood flow) injury to brain and for the phenomenon of "selective vulnerability", i.e. the unique sensitivity of specific brain neurons to a lack of oxygen and glucose. More recent research interests focus on the genetic

SPECIAL SESSIONS, *continued from page 3*

and environmental factors that predispose to increasing the frequency and severity of stroke.

Raphael Lee, MD, ScD, DSc (Hon)

-Professor of Surgery, Medicine (Dermatology), Organismal Biology and Anatomy (Biomechanics) and Molecular Medicine, University of Chicago Medical Center, Chicago, Illinois Director of Electrical Trauma Program

- Research interests: Protecting cells with antioxidant surfactants. Neuroprotection with Polaxamer-188, other surfactants and antioxidants.

FIBROMYALGIA:

Fibromyalgia affects about 2% of the US population. It is associated with considerable morbidity. The pathophysiology is poorly understood. Many physicians question the existence of the syndrome and often refuse to treat patients with fibromyalgia or are unaware of FDA approved agents for its treatment. As a result, many patients are inadequately treated. Speakers on this topic include:

Kiokazu Yoshida, MD, PhD

-Chair and Professor, Department of Physical Medicine and Rehabilitation, Hirakata Hospital, Kansai Medical University, Osaka, Japan.

-Clinical interests: fibromyalgia, pain

Alex Thomas, PhD

-CIHR Industry Chair in Bioelectromagnetics, Lawson Health Research Institute, London, Ontario, Canada. Co-founder with Dr. Frank Prato of Fralex Therapeutics in 1998.

-Research interests: development of neuromodulation technology, a therapy to alleviate chronic pain. The cell phone-sized technology, complete with altered headphones, works by disrupting pain signals in the brain.

BONE HEALING WITH PULSED ELECTROMAGNETIC FIELDS (PEMF)

This FDA approved approach to the treatment of poorly healing bone fractures has been available for clinical use for two decades. Of 6 million extremity fractures that occur annually in the US, 5-10% (roughly 300,000-600,000) are complicated by nonunion or delayed union. This session will update BEMS on progress with PEMF therapy, address factors that have limited dissemination of the technique and propose potential new applications. Speakers on this topic include:

Fred R. T. Nelson, MD

-Senior Attending Staff: Orthopaedic Surgery, Henry Ford, Hospital, Detroit, Michigan and Adjunct Associate Professor, Uniformed Services University of the Health Sciences.

-Research interests: use of physical forces in bone healing.

Arthur Pilla, PhD

-Professor of Biomedical Engineering, Columbia University, New York, New York.

-Research interests: therapeutic uses of pulsed electromagnetic fields; EMF therapeutics.

NOTE TO CONTRIBUTORS

The Bioelectromagnetics Society newsletter is published and distributed to all members of the Society. Institutions and libraries may subscribe to the newsletter at an annual cost of $85USD.

The newsletter serves as a forum for ideas and discussion of issues related to bioelectromagnetics research. Contributions may include news items, meeting reports, short notes on reseach, book reviews, and relevant items of historical or other interest. All submissions must be signed. While it is understood that contributions by individual authors reflect the views of the contributor, the editors may require that contributing writers submit a statement of affiliation and/or disclosure of possible conflict of interest at the time an article is submitted for consideration. Advertisements included in the newsletter are not to be considered endorsed by the Society.

To submit items for the newsletter, please send electronic files to **bemsnewsletter@gmail.com** or bemsoffice@aol.com or (by surface mail) to:

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FAX: (301) 694-4948, or see the BEMS Web site:
www.bioelectromagnetics.org

NEWS FROM EBEA

The European Bioelectromagnetics Association (EBEA) reports that election results from February 2008 created the following new Council:

President
Dr. Carmela MARINO (Italy)

Vice-president
Prof. Ferdinando BERSANI (Italy)

Treasurer
Dr. Alejandro UBEDA (Spain)

Secretary
Dr. Isabelle LAGROYE (France)

Biological/Medical Science
Dr. Jukka JUUTILAINEN (Finland);
Dr. Maria Rosaria SCARFI (Italy);
Dr. Marion CRASSON (Belgium)

Engineering/Physical Sciences
Dr. Micaela LIBERTI (Italy);
Dr. Kjell HANSSON MILD (Sweden);
Dr. Gyorgy THUROCZY (Hungary)

At Large
Dr. Gunhild OFTEDAL (Norway);
Dr Eric VAN RONGEN (The NetherLand)

Outgoing EBEA president Rene deSeze remarked:

I have the pleasure to congratulate those candidates who have been elected. After a short while of some months, EBEA life can restart and I wish you a fruitful mandate to further develop the scientific fields covered by EBEA members. The 7th framework and the new COST BM-07-04 are nice opportunities to contribute to a collaborative research on these topics.

The election of Ferdinando Bersani as Vice-President will help synchronise EBEA and the Alessandro Chiabrera School.

I also want to thank the candidates who kindly agreed to serve EBEA but who have not been elected, and I hope they will have other opportunities in the future to express again their goodwill for an always improving management of our Association. I hope the agreement to hire a technical help will decrease the administrative load on our Council members and help more scientific inputs for our members. At least an updated website if not rebuilt, and if possible some news that I and we have not been able to edit or maintain in those past years.

Best wishes to EBEA and its new Council!

Sincerely and friendly yours,
René de Seze, EBEA Past-President

Looking to the future, incoming EBEA president Carmela Marino announced that the next EBEA Council meeting will be held in Brussels in May 2008. At that meeting, the council will be informed about the BioEM 2009 meeting to be held in Davos, Switzerland in 2009. Gugliemo d'Inzeo, is the EBEA representative as co-chairing the Technical Program Committee with Dariusz Leszczynski as the BEMS representative. Niels Kuster is chair of the Local Organizing Committee and he will present the status of the Scientific program and the joint meeting.

Then the Council will promote the activies around Europe: EBEA will keep strong scientific links with WHO and ICNIRP and European bodies.

- The EMF-NET concerted action, within the 6th European Framework Program (FP), is almost closed. This action originated from the opportunities that the Bioelectromagnetic Scientific community had during the 5th FP 1998-2002, Quality of life and management of living resources, where the CEMFEC, GUARD, RAMP 2001, INTERPHONE and REFLEX programs were funded.
- Now the FP7 of the EU has started and new calls for proposals in the environment and health area are coming: research on EMF should be one of the forthcoming topics.
- The Cost action where most of EBEA and BEMS members were involved in the past, start again with the new COST Action BM0704; Alastair McKinlay and Gerd Friedrich are in charge as President and Scientific Secretariat.

Finally, the activities of the Erice school are going on: the 4th course on "Electromagnetic Fields and Epidemiology" was held recently. Directors of this Course were Susanna Lagorio, Rome, Italy and Joachim Schüz, Copenhagen, Denmark.

Carmela Marino
EBEA President

Isabel Lagroye
EBEA Secretary

GREETINGS AND A FREE OFFER (FROM "A VOICE FROM THE PAST")

Zory Glaser (a Charter Member of BEMS) has a significant historical collection of the world literature on the bio-responses (effects?) to EM energy. Collected during the late-60s thru the mid-80s, the material (some dating from the early 1930s) served as the basis for his RF/Microwave Bioeffects Bibliography (and the 10 annual supplements, published by the Navy, NIOSH and BRH/FDA). The collection has been in storage, and Glaser desires to donate it to others who can make use of it. He can be contacted at (301) 524 - 5143, or Z.Glaser@Juno.com

ENERGY-BASED TREATMENT CONFERENCE ANNOUNCED

The SPIE (an international society advancing an interdisciplinary approach to the science and application of light) plans to hold a conference on Energy-Based Treatment of Tissue and Assessment from 24-29 January 2009 at the San Jose Convention Center in San Jose, CA USA.

In its 8th year, this thermal therapy symposium contained within the large international SPIE engineering conference generally offers sessions of high quality which cover widespread diagnostic and therapeutic uses of RF, MW and Ultrasound energy, including applications and tissue effects of thermal therapies, image guided therapy, electromagnetic and thermal modeling, and physiologic responses

Low level energy systems facilitate healing or ablate tissue with non-thermal techniques. All anatomical sites are open for discussion. The conference will bring together engineers, physicists, and other scientists such as device designers and modelers, as well as clinicians, including surgeons, radiologists and pathologists who are practitioners of the art and science in delivery and evaluation of energy-based treatment. Companies with Medical Devices or Imaging modalities currently on the market or in development are also welcome to present modeling, performance and clinical effects, including new sites and applications. Robotics assistance and Image Guided devices and techniques will be covered.

The conference sessions will include:

Therapeutic energy delivery:
- microwaves
- lasers
- radiofrequency (RF)
- cryotherapy
- conductive sources
- therapeutic ultrasound
- energy delivery + adjuvant therapy or conductive solutions.

Low-level energy delivery (non-thermal) for healing, ablation, and tissue/cellular modification:
- electroporation, mechanical ultrasound
- electrotherapy, bone and soft-tissue healing
- blood brain barrier disruption
- drug delivery control
- clot busting/stroke treatment

Modeling and heat transfer in tissue:
- 2D, 3D, and 4D models of tissue effects.

Tissue effects
- coagulation necrosis
- tissue ablation/removal
- tissue shrinkage and reshaping
- hemostasis.

Assessment of damage or tissue changes during or following treatment:
- optical
- acoustic
- electromagnetic
- elastography
- MR, CT, PET.

Assessment of temperature during treatment:
- CT, MR, ultrasound, microwave.

Clinical applications:
- applications of devices on the market
- new technologies, applications, or sites
- surgical, radiological and clinical applications
- animal and clinical studies
- pathological assessment
- automated histomorphometry
- nanotechnologies.

Guidance of therapy:
- diagnostic ultrasound
- MR, CT
- navigation systems
- robotic assistance.

Abstracts for this meeting may be submitted online (http://spie.org/BiOS) on or before July 14, 2008.

This conference is expected to be an invaluable forum to present and publish current research quickly, and interact with thermal scientists outside our society. It should be an excellent precursor to the expanded coverage of thermal topics in the April 2009 Society for Thermal Medicine meeting in Tucson.

FINDING THE ELUSIVE NEEDLE OF INFORMATION

The 2008 March "Physics Today" has an intriguing article on magnetoreception in animals Noting that biological systems often make ingenious use of their physical environment, magnetoreception appears to be no exception. Three interaction mechanisms (detection of induced EMFs as in fish, magnetite, and free radicals as in chryptochrome) are proposed that, in principle, could get useful information from the weak geomagnetic field. However, as the authors point out, determining how animals orient themselves using Earth's magnetic field can be even more difficult than finding a needle in a haystack. It is like finding a needle in a stack of needles.

Sönke Johnsen and Kenneth J. Lohmann
March 2008, page 29

Link to on-line version is
http://ptonline.aip.org/journals/doc/PHTOAD-ft/vol_61/iss_3/29_1.shtml

RETIREMENT AND RF BIOLOGICAL EFFECTS

This May is a milestone month for me. I reach 70 and have been retired for two years without adverse consequences. The great thing about retirement is that I have much more time for skiing, diving, golfing and fishing. The downside is that retirement came with a reduction in income and this makes it difficult to afford my expensive activities. However, I derive extra income from consulting and for this I can thank the few scientists and activists that continue to drive the issue of low-level non-thermal RF adverse biological health effects (LLNT effects). This issue has become a political topic that in the long run could be detrimental to our Society. I would like to discuss this topic from the perspective of my retirement.

The state of the science is that (1) an analysis of physical interactions provides no testable hypothesis for LLNT effects or, in other words, provides no direction to experimentalists in conducting research. Now that's a very good scientific and politically correct way of saying that analysis by good theoretical physicists suggests that nothing is going to happen but the deposition of additional energy that, if sufficient, can elevate tissue temperature. But physicists don't know everything so we turn to the biologists and find (2) that an analysis of the biological database reveals no consistently reproducible (independent) LLNT effect after about 50 or 60 years of research.

These facts are devastating. What can be said for all these years of research and funding approaching a half billion dollars? In defense of the past effort, bioeffects research along with dosimetric studies by BEMS members have formed the fundamental basis for current safety standards and this represents a real positive contribution.

The survival and growth of BEMS, however, depend on significant positive contributions to the understanding of biological processes and the possible use of electromagnetic energy in affecting those processes. We also must attract young scientists with studies leading to repeatable findings of lasting importance. I attended a review of a national program (in an unnamed country) on LLNT effects several years ago. The senior researchers were stating that this was a good program to train young scientists. I rose out of my chair and strongly objected. I mentioned the history of this area and stated the odds were that results from the program would either show no effect or result in a non-reproducible effect. Such results would not be something on which a young scientist could build a lasting career. I suggested instead that the senior scientists do the proposed studies and provide the students with something that had long-term research potential, for example, in another area of bioelectomagnetics.

I believe the physics of interaction, that is not that complicated, should be a guide to current and future BEMS research. The body functions on electrical interactions (electrostatic or low frequency fields). If you wish to affect those functions, then apply an exogenous field that is on the order of the endogenous field. This has nothing to do with fancy modulation schemes or magical processes but may require some unique delivery system. We have made little progress with understanding how applied fields may affect the bone healing process and how to optimize this process. We know that endogenous fields play a role in both bone and soft tissue healing. It has been observed, particularly with skin wounds, that enhancing the endogenous field speeds the process and opposing the field inhibits the healing process. So what is the role that these endogenous fields play in bone and wound healing? What are their magnitude and direction? When is it useful to intervene with exogenous fields and how is this best done? These are important and interesting questions addressing potentially beneficial applications based on the body's endogenous fields.

There are a number of other areas of research that are of interest to me. The work of electroporation and supra-electroporation has promise. Modeling of the interaction of high peak pulses with cells already shows how they interact with the cell and nuclear membrane and lend themselves to the possibility of affecting cell function. A second example of interest is the likelihood of observing vibrational or other modes in the THz frequency range that have biological significance using THz spectroscopy. This could provide additional understanding of biomolecular processes.

I don't intend to present an exhaustive list of areas of current or possible bioelectromagnetics research that have a firm basis in current scientific thought nor do I intend to discourage any reasonable degree of speculative research. However, the scientific society, BEMS, must find a balance that leads to long-term growth and stability and the members of the society must learn "when to hold them or when to fold them." And to the activists, I say keep up the "good work" that continues to keep this issue in the media and politically active. I like the extra dollars that allow me to spend more time enjoying my hobbies.

[1] A. R. Sheppard, M. L. Swicord and Q. Balzano, "Quantitative Evaluations of Mechanisms of Radiofrequency Interactions with Biological Molecules and processes," Health Physics, Accepted for publication

[2] M. Swicord and Q. Balzano, "Has Electromagnetic Energy in the Band 0.1-100 GHz Useful Medical Applications? A Review of Mechanisms and Biological Database Offers Dim Prospects,". Special Issue of the IEEE Trans. Plasma Science, Accepted for publication

Mays Swicord, Ph.D.

SOCIETY FOR THERMAL MEDICINE

Paul Stauffer
Duke University
Past President, STM

The Society for Thermal Medicine (STM) originated as the North American Hyperthermia Group (NAHG) in 1981 and initially, the predominant interest of its founding members was to investigate and optimize the radiosensitizing properties of hyperthermia in oncologic practice. The group incorporated as the North American Hyperthermia Society (NAHS) in 1986 and reincorporated with an expanded mission as the Society for Thermal Medicine in 2005.

The society strives to facilitate interaction and communication between theoretical, experimental, and clinical practitioners in the disciplines of biology, physics, engineering, and clinical sciences, leading to improved understanding of thermal interactions with tissue and expanded clinical applications of thermal therapy. A common goal is the desire to promote basic and translational research that will contribute to improved clinical application of thermal medicine, while diffusing this knowledge across the diverse disciplines involved.

Following three international meetings on hyperthermia in 1975, 1977 and 1980, STM has met annually thereafter. Once every four years, STM meets together with its two sister societies (European Society of Hyperthermic Oncology and Asian Society for Hyperthermia Oncology) as the International Congress of Hyperthermic Oncology (ICHO) which rotates locations between Europe, Asia and US. The three societies cooperatively founded the "*International Journal of Hyperthermia*" and adopted it as their official journal in 1986.

Since expanding its scope from studies of moderate temperature Hyperthermia to wider applications of Thermal Medicine, STM encourages investigation of all aspects of thermal interactions with tissue and refinement of devices and techniques for thermal therapy with heat and cold. While the Society maintains a pivotal interest in thermal therapy applications for cancer, the membership is expanding to encompass scientists interested in thermal effects on immunology, physiology and cell biology, and in the treatment of non-oncological diseases and medical conditions.

STM is preparing now for its 2009 meeting with the theme *Expanding the Frontiers of Thermal Biology, Medicine and Physics.* The meeting will be held in Tucson Arizona on April 3-9, 2009, a most pleasant time of the year in this beautiful desert location. This event should offer substantial opportunities for scientists of widely ranging disciplines to interact and take advantage of state of the art knowledge on thermal effects on tissue.

NATIONAL RESEARCH PROGRAMME NRP 57

In view of the scientific uncertainties regarding non-ionising radiation and the public concern in Switzerland and abroad, the National Research Programme NRP 57 is dedicated to state-of-the-art research to identify potential, adverse non-thermal effects of ELF and RF exposures on human health and to facilitate the risk assessment of current and future technologies. In its framework, 11 research projects covering four research areas address various aspects ranging from interaction mechanisms at the cellular level to risk perception in the general population. The projects are also in the focus of a series of scientific workshops.

The first of four scientific NRP 57 workshops were held on January 11, 2008 in Zurich, Switzerland. The workshop topic, "Dosimetry meets epidemiology", met with great interest by professionals in the field. The list of participants, the speakers' presentations and a summary of the final panel session can be downloaded at the NRP 57 Web site: http://www.nfp57.ch/e_index.cfm The second scientific workshop "Towards a mechanism-based framework in EMF research", held May 5-6, 2008 at the Hotel Zürichberg in Zurich, Switzerland, aimed at exploring the difficulties as regards the newest results in the areas of ELF and RF electromagnetic fields and their effect on DNA damage and repair, stress response (with emphasis on MAPK, ERK and Hsp27) as well as the role of temperature in these processes (thermal vs. non-thermal effects, temperature change sensing elements and down-stream signalling, role of temperature in induction of stress response).

Despite an increasing interest in this research field and extensive investigation of the relation of EMF and effects at the cellular level, the numerous findings remain isolated, controversial and problematic due to the lack of a sophisticated mechanism-based framework. As a consequence, the problems and shortcomings in the approaches used until now and the lack of a coherent strategy have so far also prevented a meaningful assessment of the significance of the data and their potential effects on human health. Conference organizer, Dr. Christian Mottas (Phone: ++41 31 308 22 22, e-mail: cmottas@snf.ch) expected designated experts from abroad and researchers from the programme to actively discuss these scientific issues, providing a unique opportunity for a fruitful exchange of views to advance the field. Conference highlights include:

Monday, May 5
Welcoming address, Alexander Borbély, President SC NRP 57

Session 1 DNA damage and repair in EMF exposed cells
Chairs: Dariusz Leszczynki and Christian Hess

Radiation-induced damage to DNA: assessment of oxidatively generated lesions. *Jean Cadet, Laboratoire Lésions des Acides Nucléiques, Département de Recherche Fondamentale sur la Matière Condensée, Commissariat à l'Énergie Atomique (CEA), Grenoble, France*

See NRP 57, continued on page 9

NRP 57, *continued from page 8*

Mechanisms of radiation-induced genotoxicity and DNA repair, implications for EMF and low dose ionizing radiation. *Tomas Lindahl, Mutagenesis Laboratory, Clare Hall Laboratories, London Research Institute, Cancer Research, UK*

Cytogenetics in EMF research: What can be expected, what has been achieved? *Günter Obe, Prof. em., University Duisburg-Essen, Germany*

Genotoxicity of EMFs: Exploring DNA directed effects and experimental discrepancies. *Primo Schär, Institute of Biochemistry and Genetics, Department of Clinical and Biological Research, University of Basel, Switzerland*

Presentations followed by a panel discussion on shortcomings in mechanism-based EMF research and ways forward chaired by Alexander Borbély

Tuesday, May 6

Session 2 Cellular stress response to EMF

Chairs: Pierre Goloubinoff and Primo Schär

Small stress proteins as regulators of intracellular redox state and programmed cell death. *André-Patrick Arrigo, Head of Stress, Chaperons and Cell Death Laboratory, Claude Bernard University, Lyon, France*

Mechanism of short-term ERK activation by electromagnetic fields at mobile phone frequencies. *Rony Seger, Department of Biological Regulation, The Weizmann Institute of Science, Rehovot, Israel*

Activation of p38MAPK/Hsp27 stress pathway by RF-EMF and its possible consequences. *Dariusz Leszczynski, Radiation Biology Unit, Radiation and Nuclear Safety Authority (STUK), Helsinki, Finland and Guangbiao Professor, Zhejiang University, Hangzhou, China*

Challenges from the perspective of stress-response in EMF studies. *Meike Mevissen, Division of Veterinary Pharmacology and Toxicology, Vetsuisse Faculty Bern, University of Bern, Switzerland*

Session 3 Research models in EMF research

Chairs: Meike Mevissen and Dariusz Leszczynski

Weak microwave radiation does not substantially alter gene expression patterns in the nematode Caenorhabditis elegans
David de Pomerai, Institute of Genetics, University of Nottingham, UK

The plant heat-shock response is controlled by specific calcium channels in the plasma membrane. *Younousse Saidi, Biology Department, University of York, UK*

Temperature and EMF effects on nematodes modelling protein misfolding diseases. *Pierre Goloubinoff, Department of Plant Molecular Biology, University of Lausanne, Switzerland*

Presentations followed by a panel discussion on the significance of observed effects for human health chair: Alexander Borbély

IN CASE YOU MISSED IT...

1. Previously, it has only been possible to measure electric fields across cell membranes, not within the main bulk of cells. Now, using novel voltage-sensitive nanoparticles, researchers report finding electric fields inside cells as strong as those produced in lightning bolts. It's not clear what causes these strong fields or what they might mean, but researchers hope to learn about disease states such as cancer by studying these electric fields.

Bourzac, Katherine. "Lightning Bolts within Cells", Technology Review, Monday, December 10, 2007
http://www.technologyreview.com/Biotech/19841/page2/

2. The widespread use of mobile phones has been accompanied by controversy over possible adverse health effects of the electromagnetic field (EMF) radiation emitted by them. Recent work showing that the radiation emitted by ordinary mobile phones can cause subtle biological effects in tissues, such as alteration in the protein expression of certain genes active in the exposed tissues and increased phosphorylation is covered in India's national magazine, Frontline.

http://www.flonnet.com/stories/20080509250909900.htm

3. Do funding sources bias the published research? Two articles examine some aspects of this ongoing debate.

"Conflict" Chills Research
http://www.acsh.org/healthissues/newsID.1690/healthissue_detail.asp

The Real Scare-Mongers
http://www.acsh.org/healthissues/newsID.1693/healthissue_detail.asp

4. The primary journal of IEEE (Spectrum) recently published articles that looked at whether the safety of TASERs depends upon whether heart or skeletal muscles are triggered, based in part on articles published in other biomedical journals:

Wu, Jiun-Yan et al., Taser Dart-to-Heart Distance That Causes Ventricular Fibrillation in Pigs., IEEE Transactions on Biomedical Engineering, March 2007, Volume: 54, Issue: 3, pp 503-508.

Stracbucker, R. et al., Cardiac safety of high voltage TASER X26 waveform.; Engineering in Medicine and Biology Society, 2003. Proceedings of the 25th Annual International Conference of the IEEE, 17-21 Sept. 2003, Volume: 4, pp 3261- 3262.

http://www.spectrum.ieee.org/dec07/5731

http://blogs.spectrum.ieee.org/tech_talk/2008/01/taser_use_leads_to_another_fat.html

CALENDAR

Asia-Pacific EMC Week and Technical Exhibition
Date: May 19-23, 2008
Location: Singapore
Notes: The 1st Asia-Pacific Symposium on Electromagnetic Compatibility and the 19th International Zurich Symposium and Technical Exhibition on EMC will be held jointly in Singapore from Monday, May 19 to Friday, May 23, 2008. The symposium will cover the entire scope of electromagnetic compatibility. Prospective authors are invited to submit original papers on their latest research results. We also solicit industrial forum contributions as well as proposals for special sessions, topical meetings, workshops and tutorials.
www.emc-zurich.org www.apemc2008.org

The Bioelectromagnetics Society 30th Annual Meeting
Date: June 8–12, 2008
Location: Town & Country Resort, San Diego, CA, USA
Note: BEMS' block of sleeping rooms is contracted at the prevailing US Government per diem rate which is currently $131+ tax single plus $20 per additional guest in room.
Contact: bemsoffice@aol.com, www.bioelectromagnetics.org

Gordon Research Conference in Biochemistry
Date: July 20-25, 2008
Location: University of New England, Biddeford, ME
Details: see September/October BEMS newsletter, page 2
http://www.grc.org/application.aspx?id=7888

XXIXth URSI General Assembly
Date: August 9-16, 2008
Location: Hyatt Regency Chicago Hotel on the Riverwalk,151 East Wacker Drive, Chicago, Illinois, USA.
Notes: see article in BEMS Newsletter, Jan/Feb 2008, page 11
Further information: http://www.ece.uic.edu/2008ursiga/

12th International Conference, International Radiation Protection Association, IRPA 12
Date: October 19-24, 2008.
Location: Buenos Aires, ARGENTINA.
Focus: 1. Epistemology of radiation: Methods, current knowledge of physical and biological sciences in relation to effects of radiation exposure. 2. Radiation Protection of people 3. Practice of radiation protection by practitioners and industries.
Contact: Maximo D.Rudelli, Organising Committee, irpa12.committee@gmail.com

Energy-Based Treatment of Tissue and Assessment
Date: January 24-29, 2009
Location: San Jose, CA (USA)
Notes: see article in this newsletter
Contact: http://spie.org/BiOS

BioEM2009: Joint Meeting of The Bioelectromagnetics Society and the European BioElectromagnetics Association
Date: June 14-19, 2009
Location: Davos, Switzerland

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