REPORT from the BioEM2014

The Annual Meeting of BEMS & EBEA held in Cape Town, South Africa on June 8-13, 2014

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DISCLAIMER

- *This report was prepared for the Pandora Foundation, Germany, which supported travel and participation of the author in BioEM2014.*
- *Parts of this report were published during the BioEM2014 as blogs on "BRHP – Between a Rock and a Hard Place" site.*
- *This report contains expert opinions of Dariusz Leszczynski.*

Full program of the BioEM2014: http://www.bioem.org/system/files/BioEM2014_program.pdf

D'Arsonval Award by BEMS

Meeting was opened with decorum – a lecture by Dr. Carl F. Blackman, the 2014 recipient of the D'Arsonval Award, the highest scientific honor that can be bestowed by the Bioelectromagnetics Society. Carl is also not just a scientist who gets this award; he is one of the six original founding members of the Bioelectromagnetics Society.

Carl's talk, as expected, was easy and entertaining, though it had some somber moments like e.g. remembering US governmental agency allowing him to work on EMF effects, but health effect's research was off-limits – forbidden.

Carl provided an interesting word of caution concerning research on cells grown in a laboratory. The cells, in order to grow, need to be kept in incubators that upkeep constant temperature, humidity and carbon dioxide levels. All incubators are equipped with electric motors facilitating continuous movement of atmosphere inside an incubator. These motors are sources of an EMF that is not considered by scientists. He also pointed that similar problems, of an unaccounted EMF, might be posed by wiring of the buildings. Such unaccounted EMFs might cause problems in finding, or in replication, of biological effects.

Another interesting comment was about glass vs. plastic bottles for storing cell growth media and glass and plastic lab ware used in growing cells in a laboratory. There is, as Carl said, a "plastic effect" – results done in earlier studies using glass lab ware are not replicable using plastic lab ware…

Another interesting statement in Carl's talk was about EHS: "*people claiming to be EHS might indeed be affected by EMF*". Furthermore, Carl mentioned that apparently EHS studies were not designed properly because the scientists designing them have no understanding of EHS. Such EHS-related statements, coming from the D'Arsonval awardee, carries scientific weight and should be seriously considered by anyone and by everyone.

Stress as mechanism of the effects

The problem with the parallel session is that one cannot be in two places at the same time. Thus, I decided to attend session on children and leave out session on mechanisms. However, there were few interesting presentations in session on mechanisms.

Two of the presentations dealt with activation of cellular stress response by exposures to EMF.

Nussler and colleagues presented a paper on the activation of the ERK 1/2 stress signaling pathway by ELF-EMF. The work was on application of ELF-EMF in bone fracture healing. Observation that ELF-EMF activates stress response kinases is, to me, "obvious" one. Exposures to ELF-EMF, similarly to exposures to RF-EMF, induce biological effects. Thus, it is obvious that stress signaling pathways are be activated in cells. In my opinion more effort in research should be put on activation of stress response pathways by EMF because, down-stream of the stress pathways is the nuclear expression of genes regulating cellular processes. If the genes become under-expressed or over-expressed cell physiology will change and pathological processes begin to show up. Stress response pathways are likely the "middle man" in the induction of biological effects by EMF. EMF exposures affect some yet unknown molecular targets in cells. These molecular targets respond and inform cell of the danger by activation of stress pathways. This, in turn, leads to changes in protein and gene expression that are to protect the cell. Of course, different cell types have different set of stress proteins and different stress pathways are important for proper functioning of diverse cell types. Fact that one cell type is activated by EMF exposure in a certain cell type but not in others does not mean that the finding is wrong. Different cell types can respond differently. And one thing is certain – if cell responds in any way to EMF exposure then the stress response pathways were activated and are part of this response. We need more studies on stress response and EMF as they can reveal what biological responses exposures can induce and what physiological disturbances we could expect from them.

Kapri and colleagues (among them Niels Kuster and Rony Seger) reported that sub-micro-Tesla magnetic fields activate ERK/MAPK stress response. Again, an "obvious" finding. ELF-MF are classified as a possible carcinogen because of the epidemiological evidence linking them with childhood leukemia. Thus, it is to me obvious that ELF-MF induction of biological effect (leukemia) must be accompanied by the activation of some of the stress response signaling pathways.

To me, the conclusion from the reports by Nussler et al. and by Kapri et al. is that more research should focus on determining what kind of stress response are activated in various cell types by various EMFs. Comparative studies of the phenomenon of activation of stress pathways by EMF exposures will help us finding the mechanism of the effects and will help in predicting the biological and health outcomes.

Report by Kapri et al. suggested that ELF-MF act via the radical-pair mechanism. The same mechanism for the effects of ELF-MF was suggested by the theoretical study reported by Barnes & Greenebaum. Does it mean that, at last, scientists are closing up on the mechanism explaining how the leukemia is caused by exposures to ELF-MF? I certainly hope so. I also hope so that these studies will be published in peer-review journals and the full scientific evidence will become available for evaluation.

Disharmony in the WHO harmonization attempts

The other of the two morning parallel sessions on Monday morning was about effects of EMF on children.

The first talk was by Mary Redmayne, currently from Monash University in Australia. Mary has given a very comprehensive review of the spectrum of precautionary policies exercised by different organizations and countries. In short – it is a mess. The aim of the WHO EMF Project to harmonize safety standards and policies around the world seems to be badly failing. In fact, WHO itself is contributing to this standards and policy mess by providing contradictory statements, as seen in one of Mary's slides. ICNIRP is quoted as follows "*Different groups in a population may have differences in their ability to tolerate a particular NIR exposure. For example, children*..." and "*[I]t may be useful or necessary to develop separate guideline levels for different groups within the general population*" (ICNIRP 2002 General approach to protection against non-ionizing radiation. Health Physics vol 82, no 4, pp540-548). To me, something does not add up in what WHO and ICNIRP say...

There was also a very interesting observation, in Mary's presentation, concerning what general public considers as a standard operating position of tablet computer and what the industry considers it to be. The industry considers it to be some 20cm away from the body and at this distance, the compliance of EMF emissions with the safety standards is tested. However, the general public thinks otherwise and people, including small children, keep tablets on their laps, often for hours at the time. It means that the compliance with the safety standards goes "down the drain" – it is not valid. The big unanswered question is: how it is possible that the industry tests such devices in conditions that are completely different from how these devices are used? Why people are not warned that the industry's standard operating position has nothing to do with real life?

Bad design leads to waste of time and money

In the Monday morning children session were presented two reports that made me to conclude that lots of research efforts and scarce research money is being wasted by the poor design of the studies.

Schoeni and colleagues (including Martin Röösli) presented a study on the effect of the night use of mobile phone on health and cognition in adolescents. Their conclusion was that health was affected but cognitive functions were not. To me there were two major problems with this study and with the conclusions drawn by the authors. First of all the authors concluded that the observed effects were not caused by the radiation exposure. How such conclusion was possible when there was no control group that would be e.g. waken up in the night (sleep disturbance) but not by cell phone but e.g. by person. Meaning, no radiation would be involved. The study by Schoeni had no ability to determine whether radiation was, or was not, the factor because it had no appropriate controls. The authors arrived at wrong, unsupported by the data, conclusion. Secondly, it was a very small study of 439 adolescents. My bet is that taking another 439 adolescents from different school, or city or country, would most likely produce a very different result. This experimental sample is way too small to make conclusions that could be, with any reliability, generalized and applied to all adolescents. So, what is the practical value of such a small study? None whatsoever, except that a student got job done and a conference presentation was made. However, if being this student, I would be very disappointed that my supervisor gave me project that was designed, from the start, to be useless.

This is the cold truth, and there is proof that it is so, in another presentation from Redmayne et al.

Redmayne et al. (including Rodney Croft) presented report on use of mobile phones by Australian children and its impact on cognition. The design of the study is very "disturbing". The experimental sample was small as it consisted of 619 children. Information about their use of mobile phones and cordless phones was obtained from

their parents. It is puzzling to me how parents could reliably estimate use of phone by children. It is certain that this way of gathering information must lead to lots, and lots, of misclassifications. Results of the study showed nothing. And the last sentence of the abstract was: "*The current results are not in agreement with our previous findings for adolescent cognition and mobile phone use*." Right, when study has small sample and nonexistent exposure data, as this had, it is no wonder that it cannot "confirm" result of an earlier study done with another small sample of children and nonexistent exposure data. Flipping a coin might be as useful, though much faster and cheaper.

Studies as Schoeni et al. and Redmayne et al. are examples of poorly designed studies that waste time and money and do not produce any useful data or conclusions. How it is possible that experienced scientists, considered as prominent experts in EMF research, can participate in the design and execution of such useless and wasteful studies?

These are just some ad hoc examples of the problem.

Skin, the largest exposed organ

On the Monday afternoon, one of the two parallel sessions dealt with dosimetry. I went there to listen to a particular talk given by Theo Samaras on absorption of EMF in skin. I was delighted to see that, at last, skin is getting someone's attention. Thus far most of the research focused on exposures to our internal organs; and skin, the largest and the most exposed organ of our body was left without attention. Theo's presentation had one very interesting and very important point: "*From the results it becomes clear that the maximum SAR affecting a large number of cells in the skin can be several times higher than the average SAR*". It means that although, on average, skin cells are exposed to SAR considered as safe by the ICNIRP standards, there are some of the cells receiving several times higher exposures. Such high exposures will certainly cause physiological stress to the overexposed cells. We need to remember that it is enough to affect a single cell to cause development of cancer. Besides cancer, physiological stress to some of the cells may lead to impairment of skin physiology that could lead to impairment of protective capabilities of the skin.

As Theo said me later, at the coffee break, the new 5G technologies will produce EMF emissions that will be nearly entirely absorbed by skin. It is time to finally take a close look at what EMF exposures cause to skin physiology.

Effects on fauna may lead to disastrous impact on human life

On Tuesday morning two plenary talks dealt with the effects of EMF on animals and insects.

Hynek Burda presented a talk on "*Making sense of nonsense. The study of magnetic alignment in vertebrates*" and Uve Greggers on "*Reception and learning of electric fields in bees*". Sensing the earth natural EMF by animals and insects, and its influence on their lives and behavior, is accepted by the science world. However, the possible disruption of it by man-made EMF emitting devices (cell towers, wi-fi networks, power lines) is understudied and requires more attention. At the stake is not only animals' behavior. At the stake is the wellbeing of human society. If the omnipresent man-made EMFs introduced to our environment will affect normal life and behavior of insects, birds, mammals, then we might face food shortages, because crops' pollination activity might be impaired due to EMF-induced "direction-confusion" in insects and birds. It is very good that, at last, BEMS and EBEA decided to have two plenary lectures on this topic. It requires much more attention, and it is not only about animals. In the end, it is about humans' well-being. That was something new for bioelectromagnetics meeting…

Collateral damage of the "blind" statistics

Genomic instability is a well-known phenomenon for ionizing radiation, but it is first time that I saw, in bioelectromagnetics meeting (unless I missed something…) session on this topic. The session was opened by study that caught my interest due to certain 'twist' in the methodology. The abstract of this study is as follows:

> *Impact of millimeter waves exposure on cellular response to energetic stress. Denis Habauzit1, Yonis Soubere Mahamoud1, Meziane Aite1, Catherine Martin1, Maxim Zhadobov2, Ronan Sauleau2 & Yves Le Dréan1; 1IRSET, University of Rennes 1, Rennes, France, 35042; 2IETR, University of Rennes 1, Rennes, France, 35042*

> *This study investigated possible additive effects of millimeter-waves (MMW) radiations on cellular response to metabolic stress. 4 groups of primary keratinocytes were included: 1) Sham; 2) MMW exposure at 60 GHz and 20mW/cm²; 3) chemical treatment with 2 deoxy-glucose (2dG); 4) 2dG and MMW co-treatment. DNA microarray analysis was performed. Our results show that MMW do not induce significant modification in gene expression when cells do not experience stress. Comparison between MMW-2dG co-exposure and 2dG treatment alone, followed by RT-PCR validation identified 5 genes differentially expressed.*

What is not seen from the abstract is the fact that when gene expression changes were analyzed using statistical correction test, the result was negative. No changes in gene expression. However, when the statistical correction test was omitted, ten genes showed up as affected by the treatment. Confirmation experiments using RT-PCR showed that five of the observed gene expression changes were real and confirmed. This does not give yet assurance that the changes in gene expression will have any impact on cell physiology. The authors should, and hopefully they will, look whether expression and activity of the proteins encoded by the five affected genes is also altered.

However, independently whatever the result of the further study will be, the technical 'twist' of omitting the statistical correction test gives us an important lesson.

When gene expression changes are induced by strong stimuli, many genes are affected and statistical corrections might seemingly work, though I am not absolutely certain…

When gene expression changes are induced by weak stimuli, like low level EMF, the gene expression changes are small in both numbers of genes and extent of change in expression level. In such cases the statistical correction tests cause that the small number of weakly affected genes is automatically recognized as false finding. However, this is not correct. As the study has shown, out of 10 genes that were indicated by the statistical correction test as invalid, 5 of them were shown by RT-PCR as real changes.

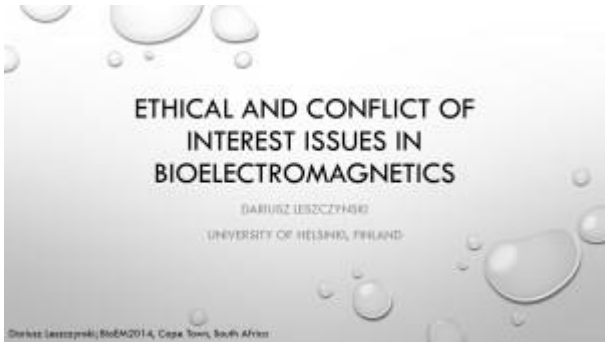
Automatic application of statistical correction tests might lead to a false indication that EMF exposures have no effect on gene expression. Statistical correction tests need to be used carefully and with great consideration when examining effects of weak stimuli. That was something lost… and found, by forgetting statistics for a moment…

Conflict of Interest in Bioelectromagnetics

The second day ended with a Discussion Workshop that I prepared and chaired, and also I presented a talk on "Ethical and Conflict of Interest Issues in Bioelectromagnetics". Talk lasted some 30 minutes and was followed by exciting 30 minutes of discussion. It was apparently a good idea to talk about think that are not talked very often about.

Presentation slides are available on BRHP:

Ethical and Conflict of Interest issues in Bioelectromagnetics



Late epiphany for Dr. Veyret

The third day of the conference is traditionally short, because this one afternoon is reserved for the free time sightseeing. However, this does not mean that the day was uneventful. Just the opposite.

The opening session of the day was a tutorial session "Overview of 50 years of laboratory, animal and human studies" and the presentation was made by Bernard Veyret. The content of the talk was very superficial. It was obvious to expect it when someone has to review 50 years of EMF research in just well under one hour of time.

There were, however, few statements in Bernard's talk that got mine, and not only mine, attention.

The first one was on thermal and non-thermal effects of RF exposures. When presenting microwave hearing effects on cochlea, Bernard said that it was a thermal effect even if the temperature increase is only a millionth part of a degree Celsius. After the talk, there was just one question from the audience, by Rene DeSeze, who, as I, wondered at this "thermal" classification. The response from Bernard was that it is a thermal effect because without the increase in temperature, it does not happen. Then, came a "shocker", when Bernard said that defining non-thermal effects as effects where a temperature increase is less than one degree Celsius in useless. It means that Bernard, former member of ICNIRP, questioned the validity of ICNIRP's way of distinguishing between thermal and non-thermal effects.

I agree with Bernard. Attempts, to classify effects as thermal and non-thermal, are useless, unless really strong heating happens; strong enough to overwhelm the thermoregulatory mechanisms of a living organism.

Important is whether EMF exposure, at levels below the safety standards, causes a measurable biological effect. Apparently, depending on the situation the very minute change in temperature (a millionth part of degree) can induce a measurable effect – e.g. on the cochlea.

The other interesting statement concerned omics techniques of research. Bernard stated that the future lies in the application of omics techniques in EMF research. To me, it shows how much Bernard's attitude towards this kind of research has changed over the years. I vividly remember, in 2003 at the WHO EMF Project meeting to revise the research agenda, during the coffee break discussion Bernard said that epidemiology was the only research that can provide answers about health effects of cellphone exposures. He did not like my approach, proteomics (my group just published in 2002 first study on stress response using proteomics) and called it a fishing expedition without a hypothesis to examine. The same repeated in 2007, at the meeting at the National Academies in Washington, DC. There, however, I had a strong defender of my idea of using proteomics and other omics techniques - Joe Roti Roti. The most recent opposition of Bernard to use of "omics" was in 2012 during the preparation of Geronimo project. I was invited by Elisabeth Cardis to organize project on proteomics that would be enlarged replication of pilot study published in 2008 by my research group at STUK. Things were moving well, in spite of opposition from Bernard. Unfortunately, after my participation in Geronimo was forbidden to me by STUK, the proteomics project faded out from Geronimo. I wonder why? I am not the only proteomics researcher dealing with EMF effects, but so far the only who did a human volunteer proteomics study.

Over the last 10 years Bernard, in my opinion, came to his senses, got the late epiphany, and finally acknowledged that use of "omics" in necessary in order to find out what EMF's do.

Finally, bad news for EHS. Bernard, speaking about EHS, mentioned that some week ago was meeting at the WHO in Geneva where EHS was debated. The conclusion of this meeting was that 44 of the EHS studies were negative… Meaning, there is no causal link between EHS and EMF, at least in WHO, Geneva…

This Bernard Veyret's opinion on EMF is in stark opposition to what Carl Blackman said…

Uncharted territory

The fourth day of BioEM2014 had a very interesting plenary lecture on "Staying in Shape: Membrane Voltage as a Master Regulator of Tissue Shape during Regeneration" presented by Wendy Beane from the Department of Biological Sciences, Western Michigan University, Kalamazoo, MI, USA.

> *The short version of the presentation*
>
> *Bioelectrical (ion flux-mediated) signaling is essential—not just for excitable cells, such as neurons and cardiac muscle, but for all cells. The significance of ion currents, voltage gradients and endogenous electric fields to wound healing, growth and development, and even cancer progression has long been noted. However, historically few researchers have focused on the important roles of bioelectrical signaling in non-excitable cells. This presentation will provide an overview of our current understanding of how membrane voltage and ion flux regulate cell fate, cell proliferation and migration, and organ formation during both embryogenesis and adult tissue regeneration. This will be followed by closer examination of in vivo studies using the awesome*

> *regenerative powers of the planarian flatworm, which are able to regrow a complete worm in just 2 weeks from a tiny fragment lacking even brain. These studies have established planaria as one of the first models for investigating regenerative shape, and they reveal that membrane voltage acts as a master shape regulator—determining the position, size and shape of organs during regeneration. Despite our advanced insights into gene regulation, we still cannot explain how changes in individual cells lead to predetermined animal shapes (why a decapitated flatworm always regenerates with the correct "planarian" shape). However, recent data demonstrate that early bioelectrical signaling is essential for coordinating cell communication between old (pre-existing) tissues and newly regenerating ones. Disruption of this signaling leads to worms with significant shape defects, including disproportionate organs and tiny, shrunken heads. These data suggest that reagents regulating ion flux, many of which are already approved for human use, could be adapted to control tissue shape in stem cell-driven regenerative therapies.(*for more see Beane et al., 2013, Development, 140:313-322.)

It was a very, very, interesting presentation. In my opinion, one of the best at this meeting. What Wendy Beanie made clear is that the "*bioelectrical (ion flux-mediated) signaling is essential not just for neurons but for all cells. Ion currents and endogenous electric fields are crucial for wound healing, tissue outgrowth and even cancer*".

The most "disturbing" for me was the information that slight changes in cell membrane potential, leading to depolarization of membrane, can, in developing embryo, completely change the fate of the depolarized area, including stimulation of development in the affected areas of additional organs, like e.g. eye.

This brought to my mind two unknowns:

- Current dosimetry models do not consider cell-level ion fluxes and their ability to affect cell membrane voltage potential dosimetry models are too "crude" for analysis of such subtle morphological structures.
- We have no research on whether RF exposures are able to modify or interfere with normal cellular membrane potentials and affect polarization status of cell membrane. At the same time, there are old studies, from e.g. Astumian and Bohr & Bohr, suggesting that RF exposures can affect aggregation of charged biological macromolecules, e.g. proteins.

Exploration of such phenomena as the effect of RF exposures on charged structures and macromolecules might be the way to find a mechanism of the RF-induced effects; effect that seems to occur in spite of the low energy delivered to the exposed cells.

Lesson in biology for physicists

Following the plenary session was, second already, session on mechanisms (session 7). In this session were two presentations that demonstrated the difference in studying biological material by physicists and by biologists.

The first study, showing physicists-approach, was on "An improvement method of estimation of cell cytoplasm conductivity using nanosecond pulsed electric fields: Coupling of a microdosimetric model with experiments for a single cell". The study, attempting to examine conductivity of cell cytoplasm, had two problems. First problem was that the cellular cytoplasm was treated as a uniform medium, what cytoplasm is not due to extensive compartmentalization by membranes forming different type of cytoplasmic organelles. The second problem, of even bigger magnitude, was that during the measurements cells were suspended in supposedly inert medium - solution of sucrose. However, this medium is not biologically inert, and as it was shown in another presentation in the same session, sucrose solution can exert very powerful effects on cells. Effects that might affect cell's ability to live or to die. Therefore, the measurements of cytoplasmic conductivity, presented in this study, should be looked at with a great caution.

The study demonstrating the impact of sucrose on cells' life and death was entitled "Actin cytoskeleton and cellular effects of the nanosecond pulsed electric field (nsPEF)". This very elegant study has shown "*[nanosecond] pulses caused cell membrane poration, cell rounding, swelling, and disappearance of bright actin features. Blocking of swelling by isoosmotic addition of sucrose blocked disassembly of actin features. Hence, disintegration of the actin was downstream from nsPEF-induced cell swelling*." This observation shows that sucrose solutions can block even the apoptosis-inducing signals.

These two studies clearly show that the educational background of the scientists affects study design which, in turn, can significantly affect the results of the study. It is worrisome to consider how many research studies

(biological or engineering/physical) carry errors because scientists involved had insufficient knowledge and experience and hands-on experience.

Asking the wrong question brings wrong answers

On the last day of the BioEM2014 conference, three presentations got my attention. The first one was the presentation in the session on standards, policy and compliance (session 12) "Intuitive exposure and risk perception of RF EMF". This study presented results obtained in the European LEXNET project; with aims briefly presented in the abstract "*One of the main assumptions of the LEXNET project is that a reduction of the RF EMF exposure will result in more acceptance of wireless communication networks in the public sphere*". The study examined the response of users to the reduction of the safety standards by 50%. The conclusion of the study was "*The results suggest that perception of RF EMF risks is only marginally determined by exposure characteristics*."

This result is not surprising. Those who do not care about RF exposures will also not care if the exposures are reduced by 50%. On the other hand, those who are worried about RF exposures, demand much greater reduction than the 50% and inuring whether such reduction will change their attitude is a futile exercise.

There was also a question from the audience, from a scientist employed by the industry, who questioned the existence of projects like LEXNET. In his opinion, any discussion of whether reduction of the exposures, from the current ones, is "dangerous". In his opinion safety standards provide a sufficient margin for protection of the general public and any discussion about optional or voluntary reductions, to increase general public's confidence, are bad because they undermine trust in the safety standards. It is a very well-known mantra of the industry. This mantra, however, does not consider the question of the reliability, validity and sufficiency of the current safety standards. As I said many times in my blog and other recent writings, reliability of the safety standards was seriously undermined by the IARC 2011 classification of cell phone radiation as a possible carcinogen.

Industry's attitude of silencing any debate, on the sufficiency of the safety standards, begins to remind the activities of tobacco and asbestos industries...

The attitude of the industry was seen clearly in the next presentation, delivered by CK. Chou, formerly of Motorola and currently of CK Chou Consulting. Presentation was very forceful in pushing the argument that the current safety standards are valid and that safety standards should consider only science and do not consider attitudes and worries of the general public. In the following brief discussion, the attitude of not considering views of the general public was put in question by Chris Portier. In his opinion, the worries and concerns of the general public should and are incorporated in the safety standards dealing with exposures to chemicals, and the same should apply e.g. to RF.

Half-ready attempt to dismiss Pashe's findings brings to mind the Hsp27 controversy

Last year, at the BioEM2013 in Thessaloniki, one of the hotly debated presentations was from Boris Pasche on cancer treatment using amplitude-modulated at discrete frequencies RF-fields. Pasche is already using this method to treat terminally ill cancer patients and is reporting positive results.

This year, presentation from French scientists led by Yann Percherancier and Bernard Veyret, tested Pasche's method's validity in the animal study. The result of the French animal study was negative - scientists were unable to replicate Pashe's results.

In the following discussion, it was asked and suggested that the results of the French animal study should be published in a peer-reviewed journal. Some scientists in the audience considered Pasche's results as not supported by the experimental evidence and, therefore, the successful treatment of some patients might be just a spontaneous recovery that happens from time to time and not the result of the treatment.

Bernard Veyret, who presented the study in Cape Town, appeared somewhat uncertain about the publication of the results. Clearly, what he presented, was a pilot study and more experiments would be required to validate the result. As he put it, he did not want to get full-time involved in further animal study aimed at replication of the results of Pasche's work.

This statement is very worrisome and reminds me of another case from the Bordeaux lab. After my research group published in 2002 findings showing activation of the Hsp27 by RF exposures, group in Bordeaux attempted replication of our results. Using a modified approach, they got a negative results - were unable to replicate our result. They presented the preliminary data at the meeting in Helsinki and... that was the end of the story. They

never finished this study and never published it. However, at the meeting in Helsinki, by presenting the preliminary data they put out a doubt about the validity of our observation. They did not bother to finalize the study and publish it in peer-reviewed journal.

Statement from Dr. Veyret, where he does not want to be further and fully involved in replicating Pasche's results in the animal study, reminds me the story the of Hsp27. Is it so that, yet again, the preliminary results were presented at the scientific meeting, doubts about Pasche's results were presented and instilled and... the full study will never be completed? Let's hope that this time the full study will be completed and published, whatever the result of it will be.

Closing words…

BioEM meetings attempt to be the primary event for the scientists in this area of research. Unfortunately, in spite of the efforts from BEMS, EBEA and meeting organizers, the preeminence is not here. The efforts to make the meeting known and appreciated are insufficient and amateurish, in my mind. The number of participants of BioEM2014 was very low, only ca 200.

Generally, the interest in this meeting is – low. Many prominent scientists do not come. Many important research projects are not presented at BioEM but taken elsewhere. This leads to decline in interest from the scientists, the general public and the news media.

BioEM does not publish any press releases before, during and after the meeting. General public does not know that BioEM exists and that science pertinent to everyday life is debated.

As a consequence, and no wonder, scientists prefer to go elsewhere, where the audience is larger and prominence visible. Students are not tempted either.