

# Photobiophysics Newsletter

An International Forum of the PDT and Photobiophysics Group

**Dear Reader,**

This issue is specially dedicated: On April 27 our group leader Prof. **Johan Moan** is celebrating his **60<sup>th</sup> anniversary**. On this occasion we would like to mention the highlights of his biography.

Johan was born in 1944 in a farmer's family in a small Norwegian countryside called Åfjord, which is around 80 km north of Trondheim. Being a farmer's son left a huge impact: Conquering the scientific heights in an urban city like Oslo, he did not forget what the hard life in the countryside has taught him. It is worthwhile to mention that he is a good carpenter as well, and has built a cottage in the mountains almost from the ground. In addition, 60 km of skiing per day is worth of being mentioned at his age!



Johan E. Moan, December 2003.

In 1970 he graduated from the Norwegian University of Science and Technology (Trondheim) with the best possible marks and was presented to His Majesty the King of Norway. His scientific carrier started when he got a scholarship from the Norwegian Research Council (*Norges Forskningsråd, NFR*) to work on his doctoral thesis. He successfully defended the Ph.D. thesis "X-rays and UV-irradiation of frozen polar solutions of L-tryptophan" in 1975. Since 1974 and until now his office is located at the Department of Biophysics at the Institute for Cancer Research of the Norwegian Radium Hospital (*Det Norske Radiumhospitalet, DNR*). In 1970s he got interested in Photodynamic Therapy (PDT) of cancer as one of the first in the world, and since then he has established a PDT group.

Johan has got an outstanding international recognition and is ranked among the best scientists in Norway and worldwide in the field of physics and photobiophysics. Because of his major achievements in fields with the prefix *photo-*, he is sometimes referred to as the Professor of Light (*Lysprofessoren*). Recently, in August 2003, he was awarded the Norwegian Birkeland's prize for advanced research in the field of physics (*Norsk Hydros Birkelandspris*), which is the most prestigious one for physicists in Norway. Before that he got a prize for his sunscreen project for its high commercial potential in "Venture Cup Oslo 2001". In 1999 he was honoured with a prize of the European Society for Photobiology (*ESP*) for his huge input into science of photobiology. In 1998 Johan received the national Bergesen's prize (*Bergesenprisen*), sponsored by the shipping company owner Sigval Bergesen. Earlier, an innovation prize of The Research Foundation of the Radium Hospital (*Radiumhospitalets Forskningsstiftelse*) in 1996 and two prizes in the project competition organized by the Research Park (*Forskningsparken*) of the University of Oslo in 1994 and 1995 were achieved.

His major achievements are in the fields of PDT, photobiology and biophysics, which all include investigations on light interaction with biological and physical systems. Photodiagnosis and PDT of cancer is a central subject of his research: Malignant and non-malignant tumours can be destroyed with minimal side-effects by using unique light-sensitive drugs, called photosensitizers, in combination



with visible light. The action spectra of the photosensitizers depend on many parameters such as light penetration, drug permeability, tumour location, skin thickness, temperature and pigmentation, which constitute a broad field of research. In addition to that, Johan is also famous in the field of ultraviolet radiation (UVR) and its carcinogenic role in the induction of skin cancer. Relationships between geographical variations of UVR and skin cancer incidence, as well as between seasonal variations of skin cancer incidence and serum levels of vitamin D and folate, and between skin cancer incidence and

sunbathing habits are very important findings. A new suncream containing lipophilic precursors of the endogenous photosensitizer protoporphyrin, with its antiphotocarcinogenic and at the same time pigmenting (tanning) effect, is a revolutionary idea. Another important subject of his studies is photobiophysics of skin and light: Recent findings show that tanned skin will reflect more light in the UV spectral region than a non-tanned skin. This is believed to be related to the number and size of melanin particles induced by exposure of the skin to UVR (natural from the sun or artificial from a sunbed). Based on all these findings, Johan is a holder of several European and US patents.

All the highlights mentioned above are consequences of Johan's scientific activity, which can be divided into a few points. First of all, a successful scientific carrier starts with presenting yourself to



Johan writing a manuscript in his office (June 1999).

other colleagues in the field. At the beginning it usually takes place by publishing articles and thus presenting experimental experience and scientific ideas to other colleagues in the field. Scientists in the field, beginners and more experienced ones, should be able to find and read your name! This is becoming even more important nowadays in the "data and Internet era" when a few touches on your keyboard bring you all the information directly into your desktop. Johan understood the importance to write articles long before the "data era" and is regularly publishing several articles

every year. His list of scientific publications has today 373 entries: Articles published in international and national journals and book chapters. In addition, he was an editor of several books.

Secondly, a good scientist should be able to present own results and ideas. Johan is successfully fulfilling this criterion by being a good speaker and regularly contributing at scientific conferences and by being an active member of many scientific societies. Johan's professional and at the same time enthusiastic talks in scientific meetings are worldwide attracting many specialists in the field. This is reflected by the fact that Johan is being invited to many conferences as a guest lecturer. Moreover, his

initiative led to the foundation of the "Journal of Photochemistry and Photobiology", which was an official ESP journal during the period 1987-2001, and to the foundation of the Norwegian Society for Photophysics and Photomedicine (*Norsk Forening for Fotofysikk og Fotomedisin, NOFFOF*). Furthermore, the basic achievements in PDT with aminolevulinic acid of him and his group laid the ground for the Norwegian pharmaceutical company "PhotoCure ASA" founded in 1993. Presently, Johan is a member of the PDT steering committee at the Radium Hospital. He has established a broad network of international collaborations, which is reflected in many joint projects and visits to and from other labs.

Thirdly, teaching and supervising students, with the hope that some of them should drive science forward in the future, is also important. Johan has until now supervised 14 master students and 14 doctoral students. Presently, he is a supervisor of 1 master student and 3 doctoral students. In addition to that, Johan shows a passion to bring the knowledge even further into the public. Throughout the last years Johan presented the frontier of the science of photobiology, biophysics, UV-induced carcinogenesis and skin cancer prevention in a series of programs on the Norwegian national television and radio, and in some publications in newspapers and on the Internet.

Last, but not least, his family, wife Margrete and children Kristin, Jon Magne and Magnhild, deserve to be acknowledged for their support throughout his life and keeping the hearth and home warm. On behalf of all our group members we would like to express our gratitude to Johan for his outstanding input into the science and into our group! We heartily congratulate the *Lysprofessoren* with this big event!

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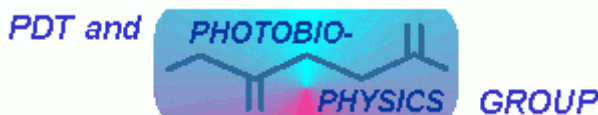
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