

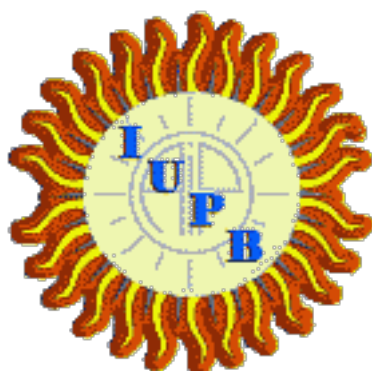
16th International Congress on Photobiology



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SEPTEMBER 8th - 12th, 2014

Universidad Nacional de Córdoba
Córdoba, Argentina



International Union of Photobiology



Introduction

It is a great pleasure for the Local Organizing Committee and the Board of the International Union of Photobiology welcoming you in Córdoba, Argentina, for the 16th International Congress on Photobiology. We feel very honoured by your participation in this Congress, held for the first time in the Southern Hemisphere and even South of the Rio Grande. With ca. 500 participants from 38 Countries and the high level of the science shown by the abstracts submitted, this ICP promises to be a great scientific meeting.

We have tried to attract all groups working in Latin America in the wide area of photobiology and we are sure that this Congress will strongly enhance the connection among those groups. There is a significant number of abstracts dealing with specific problems of the region, such as the influence of the high level UV radiation caused by the ozone hole on the phytoplankton and zooplankton in the Atlantic coast and lakes of South America, the photobiology of extremophiles in the Puna region at high altitude, the particular properties of the algae from South Chile, and the effects on human health, through the production of skin cancer, of the high level of UV radiation in Brazil and other Countries (to mention just a few). The high number of Argentine participants (more than 150) underscores the development of many areas of Photobiology in the host country.

The strong financial support by the Argentine Minister of Science, Technology and Innovative Production (MINCyT) and by the Science and Technology Research Council (CONICET) have permitted the participation of many graduate students and young researchers from Argentina, whereas the support by IUPAC (International Union of Photochemistry) has allowed us to aid the participation of young colleagues from Latin America. We also acknowledge the support by the International Union of Biological Societies (IUBS), The World Academy of Sciences (TWAS), and last, but not least, the support by the Photobiology Societies from Europe (ESP), the United States (ASP) and from Asia and Oceania (AOSP) as well as by the Research Institutions in Germany (MPG, DAAD, DFG, Humboldt Foundation, etc.) grouped under “Research in Germany”. The generous support from several Companies (listed with their logos), such as L’Oreal, BASF, and Johnson & Johnson as well as all the exhibitors, has helped us finance this Congress without putting a very large burden on the fees, especially for

the participants from Latin America. The Rector and officers from the National University of Córdoba (UNC) have supported us in every possible manner and we are very grateful for this help.

We are sure that you will enjoy the 5 days of stay at the Campus of the UNC, the oldest University in Argentina, as well as visiting the surroundings in the City and, perhaps, the nearby wonderful mountains.

We also thank the “Agencia de Córdoba Turismo” and the Gobierno de la Provincia (Province Government) for the welcome reception.

We deeply thank the members of the International Advisory Scientific Committee and the Symposia Organizers for the great collaboration and the time spent putting together the many puzzles that permitted to complete the complex programme of the Congress.

It is the effort and contributions of the participants what marks the success of a Congress, and this one should be no exception. We wish you a very fruitful exchange of scientific ideas, the creation of new friendships and the renovation of old ones as well as the establishment of fresh long-term scientific collaborations.

In the name of the International Union of Photobiology (IUPB, www.iuphotobiology.com) and the Local Organizing Committee of the Congress,

Silvia E. Braslavsky

Henry W. Lim

August 2014

The Challenge of Photoreceptor Renewal

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Light is critical to support life and most living animals have developed photoreceptors to detect it. This relevance is underscored by the presence of stem cells in most multi-cellular animals to replace these neurons in case of injury or disease. However, this capacity is very limited in higher vertebrates, so that neurodegenerative diseases of the retina, like retinitis pigmentosa in humans, or in the retinal degeneration (“rd”) mice, end up in blindness. We have recently shown that rat Muller glial cells (MGC) express the stem cell markers nestin and Pax6, and promote trans-differentiation of photoreceptor progenitors into multipotent stem cells, which in turn, acquire morphological and functional properties of photoreceptors. However, it is not known why MGC are unable to replace photoreceptor loss in the “rd” mice. We investigated this problem by comparing mixed neuron-glia cultures from wild type (wt) and “rd” mice. Nuclear morphology was substantially modified in “rd” MGC: in wt cultures nearly all of their nuclei showed a regular shape and less than 10% of them evidenced indentations. By contrast, in the “rd” cultures the percentage of MGC nuclei having deep indentations doubled. Moreover, nestin expression was reduced from about 80% in cultured wt MGC, to almost 40% in the “rd” cultures. Noteworthy, while in wt cultures each MGC supported about 2 photoreceptor progenitors, this number was 3 times higher in “rd” cultures, thus suggesting that this “overload” in “rd” mice might affect the availability of trophic support for photoreceptors, thus favoring their degeneration.

In summary, our results suggest that, in addition to the already known defects in "rd" photoreceptors, the alterations in the structure of MGC and in their crosstalk with photoreceptors might contribute to the loss of photoreceptors and impair their possible renewal.

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