

Introduction to the 49ers' special issue

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Awhile ago several of us who had, in various combinations, worked together since we were young scientists realised that an unusually large number of us were born in 1949. We decided that it would be fun to celebrate this by getting together over a long weekend and have a mixture of science and social events. So we had our first small meeting in Glasgow when we were all 50. This was so successful that we decided to form the 49ers' Club and repeat the event every 5 years. Then, as happens on these occasions, the word got round and more 49ers were identified. Moreover, several others who just missed being a 49er also wanted to join. So being scientists we decided we should include those who were born in 1949 plus or minus 1, in other words those who were born in either 1948 or 1950 as well. Since 1999 we have met every 5 years. After Glasgow we went to Vilnius, then to Budapest and lastly in 2014 to Tel Aviv (Fig. 1). At Tel Aviv we decided, firstly that it would be a splendid idea to put together a special issue of Photosynthesis Research where as many 49ers as possible could contribute a paper and secondly that we should now meet every two and a half years (recognising that we are all getting older!).

We, the 49ers, are a lucky generation. For us the 'goldmine' of photosynthesis research was opened by our great

forerunners. One just has to go back and look at some of the key early reviews that inspired us (Anderson and Boardman 1966; Barber 1977; Clayton 1965; Förster 1965; Goedheer 1972; Govindjee 1975; Gregory 1971; Junge 1977; Kamen 1963; Olson and Hind 1976; Vernon and Seely 1966; Witt 1971). Like so many things in life success is all about timing and in this we were very fortunate. Since the 1970s, when we started our scientific careers, the basic tools of steady state and ultrafast spectroscopy, structural biology and molecular biology and biophysical techniques for monitoring photosynthetic processes have become gradually available—opening the door for understanding the photophysical and photochemical mechanisms of photosynthesis, also in relation to physiological functions. The progress in our research has mirrored the development of these techniques. No wonder, many young scientists of our generation—coming from different backgrounds: spectroscopy, theoretical physics, physical chemistry, crystallography, laser spectroscopy, solid-state physics, protein biochemistry, membrane biology, molecular biology and physiology—were attracted by the field of photosynthesis. This is also because this field offered the satisfaction of working with marvellous structures, from molecules and protein complexes to membrane systems. Our world is an intensely colourful world where spectroscopy and function go hand in hand, and where the basic process is of fundamental importance. One of the unique—but apparently inherent features of photosynthesis research is that researchers with different backgrounds easily find a common language and become members of the 'family'—evidently realizing the complexity of problems and the need of multidisciplinary in order to begin to understand how the molecular mechanisms of photosynthesis have changed the face of our planet. This spirit, and numerous collaborations and exchanges of ideas led to the founding of the

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Fig. 1 A small collection of pictures taken from the 49ers' meetings. **a** Leonas Valkunas 'patiently' waiting for the team at the Vilnius gathering. **b** Győző Garab briefing the team during the Budapest gathering. **c** Győző Garab and Hartmut Michel waiting to be served lunch at the Hungarian Academy just after Hartmut's lecture. **d** At the Theatre in Budapest. From left to right, Rienk van Grondelle, Richard Cogdell and Barbara Cogdell. **e** About to cut the 49ers' 60th birthday cake in Budapest. There really were 60 candles! Győző has just asked

Avigdor to count them. From left to right, Leonas Valkunas, Avigdor Schertz, Wolfgang Lubitz, Barbara Cogdell, Arvi Freiberg, Rienk van Grondelle, Győző Garab, Alfred Holzwarth and Peter Maroti. **f** The Tel Aviv gathering. From left to right, Back row Gediminas Trinkunas, Andre Vermeglio, Rienk van Grondelle, Mike Wasielewski, Hugo Scheer, Győző Garab, Front Row, Alfred Holtzwarth, Richard Cogdell, Arvi Freiberg, Leonas Valkunas, Avigdor Schertz, Peter Maroti and Wolfgang Lubitz

49ers' Club. We are proud to belong to this Club, and hope that we can pass the torch, kept alight by our continued enthusiasm and wonder, to the next generation. Many interesting questions remain open for them to solve—a few are exposed in this special issue. Above all, the mission and task left to the generation(s) following us is to find all possible solutions for the utilization of solar energy to supply humanity with food and clean renewable fuel.

This issue is the outcome of our desire to produce a special 49ers' set of papers. We hope you enjoy reading them as much as we have done producing them. Long live the 49ers!

Richard Cogdell and Gyöző Garab.

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