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LETTER TO EDITOR

Professor Elwira Lisowska Celebrates Her 90th Birthday

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Professor Elwira Lisowska was born in Przemyśl (Poland) on May 6th, 1930. She graduated from the Faculty of Chemistry, Wrocław University of Science and Technology in 1952. Her scientific interests had already shaped while still a student—she became involved in biochemical research at the Department of Physiological Chemistry, Medical Academy in Wrocław, under the supervision of Professor Tadeusz Baranowski. In 1955 she was transferred to the Department of Biochemistry of the newly founded (and in 1954 "orphaned" by its founder Professor Ludwik Hirszfeld) Institute of Immunology and Experimental Therapy. To follow Hirszfeld's research line it was decided to start biochemical studies on blood group M and N antigens. Elwira Lisowska actively participated in this project, first as a member of the team at the Department of Biochemistry supervised by Professor Baranowski, and from 1973 she continued these studies with her coworkers as the Head of the Laboratory of

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Tissue Immunochemistry (later Glycoconjugate Immunochemistry, now Laboratory of Glycobiology). It was found that MN antigens are carried by the richly glycosylated protein of human erythrocyte membrane (later called glycophorin A). Initially, some results suggested a carbohydrate character of M and N antigens (similarly as in the case of ABO blood group system). However, later results directed the attention to the polypeptide chain and finally (in 1977) it was shown that M and N antigens differ by two amino acid residues at positions 1 and 5. It was the first evidence that blood group antigens may be determined not only by differences in the structure of oligosaccharide chains, but also by differences in amino acid sequence.

Related research areas included studies on multiple lectins and monoclonal antibodies, most of them directed against various blood group antigens. Investigation of the specificity of ligand-lectin or antigen–antibody interaction solved several "serological puzzles" and supplied information on the effects of glycosylation on protein antigenic properties. Obtaining and characterization of the monoclonal antibody that recognizes human band 3 protein (anion transporter from human erythrocytes), and showing that band 3 is degraded during the life span of erythrocytes brought the prestigious Parnas award of the Polish Biochemical Society (1989).

Among other research projects supervised by Professor Lisowska were studies on the carcinoembryonic antigen (CEA) and related antigens of this family. CEA deserved attention, because the adhesive properties of these antigens (formation of dimers in solution) were reported much earlier than these antigens were recognized by others as adhesive molecules of cancer cells.

The results of research and other activities enabled Elwira Lisowska to go up on the scientific ladder. She defended her PhD thesis in 1962 and eight years later presented her habilitation thesis, then in 1980 and 1986 obtained both professor titles as was the system in use at that time. She was the Head of the Laboratory (1973–2000) and the Deputy Director of the Institute in the years 1992–2000. After retiring in 2001 for further 15 years she continued her research work at the Institute solving a new problem. It was the inheritable NOR polyagglutination, serologically described in the USA in 1972, and almost three decades later identified in a Polish family. The structure of the rare NOR antigen was explained (a glycosphingolipid with the glycosidic linkage unknown so far in humans) and the specificity of two kinds of anti-NOR antibodies commonly present in human sera was precisely identified.

Professor Lisowska's research was supported by several grants and led to the publication of over 130 articles, reviews, and book chapters. She supervised nine PhD theses, six of her coworkers obtained habilitation, and two of them got full professor title. She was an active member of several Polish and international societies and committees. In addition to her service for *Archivum Immunologiae and Therapiae Experimentalis*, Professor Lisowska was a member of Advisory Boards in *Acta Biochimica Polonica* (1977–2015), *European Journal of Biochemistry* (1979–1987), *Glycoconjugate Journal* (1984–1990) and *Advances of Clinical and Experimental Medicine (*2000–2003).

Professor Lisowska had wide contacts with foreign scientists. She spent a year (1969/1970) in the Laboratory for Carbohydrate Research of the Massachusetts General Hospital in Boston directed by Professor Roger W. Jeanloz, where she continued her own research project (M and N antigens). She was frequently invited to participate in international meetings and workshops as a speaker or co-organizer. She collaborated with distinguished scientists in Sweden, Germany, France, USA, Israel and Taiwan.

Professor Lisowska has always been committed to research with passion and a formidable capacity for hard work. Her enthusiasm and can-do attitude have always made working with her a pleasure. She excelled in the times that favored mediocrity, and built a legacy that will continue to inspire budding glycobiologists and blood group researchers.

Plurimos annos, Professor Lisowska!