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The Contributions of Prof. Dr. Jaures S. Jordanov, MD, DSc for the Development of Experimental Morphology in Bulgaria

At his 85th anniversary

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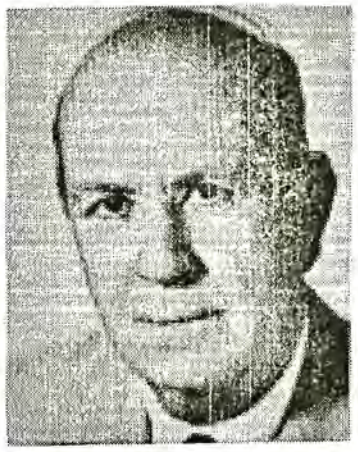
The outstanding Bulgarian scientist Prof. Jaures S. Jordanov MD, DSc (1915-1995) is one of the founders of the Bulgarian morphological scientific school. A great number of graduates in medicine and stomatology in our country have acquired knowledge and experience from him in histology at the Faculty of Medicine in Sofia. He is the founder of the Chair of Histology and Embryology at the Medical Faculty in Plovdiv and a long-term Deputy Director of the Institute of Morphology at the Bulgarian Academy of Sciences. He has fundamental and applied contributions in the field of histology, embryology, cytochemistry, tissue culture and electron microscopy. Prof. Jaures Jordanov, has helped Bulgarian morphological science a lot in its rise to the world level.

Key words: histology/histochemistry, embryology, tissue culture, electron microscopy

The famous Bulgarian histologist and embryologist Prof. Dr. Jaures S. Jordanov is one of the founders of Bulgarian morphological scientific school. He was born on July 14th, 1915 in the city of Dupniza. After his graduation from the Faculty of Medicine at the University of Sofia in 1940 he worked as a doctor of the Rilomonastery region and in the health services of the village of Iskrez (1940-1941). In 1943-1949 he was an assistant-professor at the Department of Histology and Embryology at the Faculty of Medicine, Sofia [15]. Prof. J. Jordanov has devoted his life to the development of morphology in Bulgaria and active tutorial work. A great number of graduates in medicine and stomatology in our country have acquired knowledge and experience from him in histology at the Faculty of Medicine in the city of Sofia. He has found the Chair of Histology and Embryology in Plovdiv where for the period 1946-1954 he has been elected for private (1946) and associated professor (1949, 1952) and Chief of the Department of Histology and Embryology at the Faculty of Medicine, Plovdiv (1949-1954). His assistants have been S. Tarlukov, I. Georgiev, I. Nedialkov, Z. Zaprianova.



Acad. A. I. Hadjiolov, Corr. member D. Kadanov and Prof. J. S. Jordanov have found the Institute of Morphology at the Bulgarian Academy of Science. Prof. J. S. Jordanov was elected as Deputy-Director of this Institute in 1954, and in 1961 he became professor and Chief of the Department of "Hematology and Experimental Cytology" and later of the Department of "Gametogenesis". In 1970 he was given the scientific degree "Doctor of Science" for his research works upon the problems of the cytobiology of hen egg [14]. He worked in the Institute of Morphology until 1980 [12, 13, 15, 16, 17].

Prof. Dr. J. S. Jordanov has written many books of embryology (1948, 1951 and 1956 with A. I. Hadjiolov) and manuals of histology (1953 and 1955 with Iv. Georgiev).

Prof. Jordanov was a scientist in the truest sense of the word. He loved his research and set high standards for himself in its pursuit. He expected the same from his postgraduate students and collaborators (E. Zaprianova (1961-1965), L. Gitzov (1972-1975), K. Abadjiev (1973), P. Angelova (1974-1976), K. Baleva (1976-1978).

In his 117 scientific works (83 publications, 7 books, and 27 participations in Bulgarian and international scientific forums) he proposed original methods in the field of cytology, embryology, cyto- and histochemistry, and tissue culture, used and cited all over the world.

Fifty-nine per cent of his works have been published in Bulgaria, and 41% - abroad.

Forty-four per cent of his works are in the field of tissue, cell and organ cultures. J. Jordanov has achieved many important theoretical and practical results [1, 4, 5, 13, 14, 15, 16, 17]. J. Jordanov and Iv. Georgiev have first used the yolk membrane of hen egg and other artificial hemi-transparent membranes (collodium) in tissue cultures, taken from one animal and subsequently implanted subcutaneously to another one.

After his return from a specialization in Budapest in 1954 J. Jordanov and I. Georgiev have arranged the first cell and tissue culture box in Bulgaria in the Chair of Histology and Embryology in Plovdiv, and later he organized the same box in the Institute of Morphology at the Bulgarian Academy of Science. In 1955 he developed a new method for using the viteline membrane as a matrix for cultivation of tissue fragments, Tbc bacteria and tumor cells and strains [4]. In 1959 he developed an original method for preparation of nutritional media based upon yolk dialysates [5]. This was an original method for histocultures upon fresh hen egg yolk. Upon this medium there could be also cultuvated Tbc bacili. These studies are very important for the examination of cytobiology of ovum and biology of tissue cultures.

The methods of explantation and implantation elaborated by J. Jordanov and Iv. Georgiev are very important for the explantation and implantation of different tissues and organs. These methods have been subsequently developed by prof. Iv. Georgiev, L. Popova, P. Angelova and V. Berbenkova.

In 1966 Prof. J. Jordanov developed an original modification of the method of New, using celoidin membranes. In 1974 J. Jordanov and P. Angelova applied agar organ cultures upon celoidin membranes in order to study the impact of drugs upon the differentiation of bird and mammal gonads in vitro [1]. They have first shown the possibility of experimental masculinization of the embryonal ovarium in cultivation

in heterosexual parabiosis of male and female gonads. These results support the bihormonal theory of sexual gonad differentiation in birds.

In 13% of his works J. Jordanov has applied the achievements of transmissional and scanning electron microscopy. In 1966 for the first time in medical literature J. Jordanov, A. I. Hadjiolov, A. Boiadjieva-Mihailova, and M. Kristeva have described the ultrastructural organization of the viteline body of Balbiani in the chicken ovocyte - a complex of centrosome, mitochondria and Goldgi vesiculae and cysternae [3]. In 1987 J. Jordanov and A. Boiadjieva, P. Angelova, K. Baleva and I. Christov proposed an original method for preparation and observation of cell suspensions and tissue cultures using a scanning electron microscopy [2].

Thirty-two per cent of Prof. Jordanov's works are in the field of histo- and cytochemistry where he and his collaborators have many scientific contributions. In the field of histochemistry his achievements are mainly in the development of original methods and modifications of pre-existing ones, and their usage in laboratory practice. J. Jordanov has a number of methodical contributions in the field of the histochemistry of nucleic acids [6,7,8]. In 1963 he has introduced cold hydrolysis with 5N HCl in the Feulgen reaction which has quickly found wide application in histochemical studies [8]. Later on, in 1976 he has proposed a cytochemical method for the demonstration of basic proteins in the cell nucleus and nucleolus [10]. In 1972 together with Dr. E. Zaprianova he has developed a modified method for visualization of phospholipids which was well accepted abroad [9].

With his investigations on the histochemistry of lipids in the chicken embryo and the chick (1948, 1951) J. Jordanov contributed to the theory of the lipid metabolism. The author has made attempts to link his studies to the practical problems in the breeding and feeding [14, 16, 17].

In his works devoted to the cytochemistry of certain biologically important substances- vitamin C in the embryo and the blood of the human; polyphosphates in lower organisms, J. Jordanov has created two original methods for their detection.The presence of vitamin C has been cytochemically established in blood platelets and granulocytes for the first time.

In 1978 with M. Staikova and I. Goranov he described a cytochemical method for visualization of the myelin basic proteins [11].

Eleven per cent of Prof. J. Jordanov's works are in the fields of agriculture, veterinary and human medical practice, in which he has worked with many famous physicians, pathologists, microbiologists, and radiologists.

Prof. Jordanov showed the "nucleus disappearance" of erythropoetic cells, using some own modifications of histochemical methods. These researches have particular role in the diagnosis, treatment, and prognosis of blood tissue diseases.

Prof. Jordanov and M. Kristeva have first detected the appearance of muscle fibres in the yolk-sack wall after hatching and a particular kind of organic-mineral concrements in the yolk. These studies have an enormous impact on bird-raising technologies and the rational bird feeding [16, 17].

Of great importance are his studies on the stimulating role of culture media of two actinomycete strains (192b and 210c) upon rat ovogenesis. In the group of experimental animals he observed earlier ovulation and subsequently - a higher birth rate than in the control group.

Of great interest and practical importance are the results of a joint study with K. Baleva and K. Christov upon the DNP stability of periphery blood lymphocytes after radiation. They show that the changes of the Feulgen-DNA value amount of these lymphocytes could be used as a sensitive screening test for early and discrete damages after low-dose radiation.

His post-graduate student, now Professor E. Zaprianova, MD, PhD, DSc has developed a new field of the neurobiological studies in Bulgaria - the myelination and demyelination investigations, the results of which have been quoted and used all over the world. She discovered a new phenomenon in the myelinogenesis of the central nervous system - the particypation of the neuron in the synthesis of myelin phospholipids. She and her collaborators have achieved original data concerning the role of gangliosides in autoimmune demyelination [12].

The publications and studies of Prof. Dr J. Jordanov have been quoted all over the world. He has participated in 27 scientific forums in Bulgaria and abroad, and has taken part in organizing of many congresses, symposia, meetings, and workshops that have affirmed him as a world-known scientist. Prof. Jaures S. Jordanov has helped Bulgarian morphological science a lot in its rise to the world level.

For the period 1953 - 1982 Prof. J. Jordanov has been member of the Board of Editors and Deputy-Editor of a specialized series named "Announcements of the Institute of Morphology at the Bulgarian Academy of Sciences", renamed "Acta morphologica" and "Acta cytobiologica et morphologica". He has been member of the Bulgarian Society of Anatomists, Histologists and Embriologists, of the Association of the French-speaking Anatomists (1969), of the European Association of Tissue Cultures (1971), and of the Union of Scientists in Bulgaria.

For his contributions for the development of morphology in Bulgaria and for the affirmation of the Institute of Morphology as a world-famous institute and a scientific and educational centre, prof. J. S. Jordanov has been honoured with many awards. He was awarded with the medal "Cyril and Methodius" I class (1965), "Golden Medal of Labor" (1975), "100 Years BAS" (1969), "1300 Years Bulgaria" (1981) etc. [13,15]. All these awards are a symbol of acknowledgement and high appraisal of his work and his scientific contributions as a notorious researcher in the field of morphology, tissue and cell biology.

Prof. Jaures Seraphimov Jordanov died on February 4th, 1995 in Sofia.

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