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The First Experimental Studies of Human Eggs' Fertilization Outside the Body in 1955–1966

The first fundamental experimental studies of human eggs' fertilization outside the body were conducted at the Crimean Medical Institute (CMI) (Simferopol, USSR) in 1955–1966. Professor B. Khvatov entrusted with graduate student G. Petrov to study this process at the Department of histology and embryology, CMI (1955). He received the eggs from the removed ovaries during the planned surgical interventions. The scientist was the first in the world to examine and describe the all stages of human egg fertilization and cleavage outside the body. The first publication was appeared in 1955: „On the issue of fertilization and cleavage of the human egg cell“ (scientific session of the CMI), in 1958 — „Fertilization and the first stages of cleavage of the human egg outside the body (journal „Archive of anatomy, histology and embryology“, № 1, Leningrad). In 1959, he defended his thesis: „The process of fertilization outside the body of eggs of some mammals and humans“ (182 p., 71 photos). In 1966. G. Petrov made a report and published theses at the VII all-Union Congress of histologists and embryologists, made a sensational conclusion: „Data on fertilization and cleavage of human eggs in artificial conditions indicate the possibility of successful transplantation of embryos into the uterus after their cultivation for 2—3 days outside the body“. In the article „Let happiness fly to them“ of the regional newspaper „Krymskaya Pravda“ 30. 09. 1962 the journalist wrote: „B. Khvatov assumes to extract the matured egg from the ovary operatively, to fertilize it outside the body... and to place the embryo in the uterus, which already ready for the embryo implantation. Then the development of the fetus will be in the usual, quite natural way.“ This is a description of a real IVF technique. There were 7 years left before the report of the embryologist R. Edwards (UK) on the development of the concept of fertilization „in vitro“ at a conference in Cambridge, in 1969. The work was stopped for non-medical reasons. The recognition of Petrov's studies took place only at the XXVI conference of the Russian association of human reproduction (RAHR) in Moscow in 2016, where he was the first noted for his merits as a scientist who did the first IVF in the world. It is known, that R. Edwards in his Nobel lecture (2010), told about the research of G. Petrov in 1958 and 1964. The monograph about the IVF pioneers in the world „In-vitro fertilization the Pioneers History“ (G. Kovacs et al., Cambridge University Press, 2018) was published to the 40th anniversary of the first IVF baby in the world. Chapter 21 is devoted to the research in the USSR and Russia and it begins with the words:

„The first report in the world about in-vitro cultivation of a fertilized and splitting human egg was the above-mentioned “On fertilization and embryonic fision of a human ovicell” (1955). A comprehensive article about the results of the study was published in 1958”. A little earlier (2013) at the international conference of UARM, Prof. B. Lunenfeld (Israel), for the first time particularly noted the merits of the scientist: „Petrov (1955) is a pioneer in the field of embryo cultivation and successful transfer of a 2—3-day embryo into the uterine cavity“. 7 scientific papers have been published on this problem. The first experimental studies of human eggs’ IVF were conducted at the CMI in 1955—1966 and recognized by the international medical community.

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