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Paper title: WOMEN'S CONTRIBUTION TO PLANT BIOTECHNOLOGY IN THE INSTITUTE OF GENETICS, BULGARIAN ACADEMY OF SCIENCES

Abstract

The Department of Plant Biotechnology, Institute of Genetics, Bulgarian Academy of Sciences was established in the beginning of 1970's as a Laboratory of Plant Tissue Cultures with main objectives of establishment of tissue cultures *in vitro*. The basis of cell development in controlled *in vitro* conditions is the ability of plant cells to express their entire genetic information and regenerate whole plants (i.e. totipotence). That allow establishment of biotechnological techniques and methods for more sophisticated genetic manipulation.

In vitro work is specific. Object of manipulations are plant cells and tiny tissue pieces (around 1-5 mm) isolated from plant organs. These explants are inoculated in test tubes or other special vessels under sterile conditions and are cultivated in chambers with controlled environment till these *in vitro* cultures grow and develop into new plants. Experimental work requires skill hands, exactness and patience, usually attributes of women. Imagination, creativity and care to the new forms of plants are very important for the success in the research. These are some of the explanations for the wide participation of women in plant biotechnology.

A major part of the establishment and management of the Department of Plant Biotechnology and projects has been conducted out by women. Their number varied throughout the years (from 7 to 20), but always remains the greater share (63-83%) compared to that of men.

Throughout the years the main research of the Department has followed the world tendencies and focuses on establishment and development of *in vitro* techniques and their use in theoretical and applied science for crop improvement, enrichment and reservation of plant biodiversity, environmental protection, and production of valuable substances.

Research in this area has contributed in almost all sheres of plant biotechnology: establishment of morphogenic systems in callus, suspension and protoplast cultures; micropropagation of valuable plants; somaclonal variation in callus and protoplast cultures; *in vitro* mutagenesis using γ -rays irradiation of isolated protoplasts and meristem tissues; cell selection for resistance to biotic and abiotic stress in callus, suspension and protoplast cultures using pathotoxins, pathogen fungal filtrate, herbicides, antibiotics, PEG; genetic manipulations using *Agrobacterium* mediated transformation, direct DNA transfer into protoplasts; somatic hybridization.

Main objects of research have been valuable and important for agriculture, pharmacy and industry species like tobacco, tomato, wheat, pea, soybean, maize, alfalfa. medicinal and ornamental plants, endangered species.

Outcomes of the research are great number of publications, reliable *in vitro* protocols, original methodologies and approaches, new plant forms, lines and varieties. Scientists are consultants and experts in biotechnology in national and international organizations.

Biography

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Position – Senior Scientist/Researcher, Project and Group leader

Education: M.S., University of Sofia (1973), Dept. Molecular Biology; granted

Ph.D. degree on Plant Physiology - (1983), Academy of Sciences of USSR, Moscow

Knowledge of foreign languages: English, Russian, Italian

Current activity: Leader of a group on Grain Legumes *in vitro* Cultures - use of biotechnology approach, mutagenesis and genetic markers for crop improvement.

Other activities: Expertise and FAO consultant on biotechnology, students' tuition and lecturing, management and marketing of bioproducts.

Research experience: Since 1978 working on the establishment and development of *in vitro* techniques and their use in theoretical and applied studies for plant and food quality improvement, environmental protection and production of valuable substances. Experience and knowledge **in all spheres** of plant biotechnology, methods in molecular biology, genetics, cytology, physiology...

Publications: 60 articles in national and international journals and publications.

Projects Participation and Leadership: more than 20 international and national projects (EC, UK, Italy, Russia, India, Czech Republic, Greece)

Research experience in international area: Italy (1 year in ENEA), UK (1 year), Russia (3 years), Austria, Czechia, India (1 month each).

Institutional affiliation

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