## Professor dr Desanka Marić



Professor Desanka Marić is the first teacher of Animal Physiology at the Faculty of Sciences (FS) at the University of Novi Sad (UNS) and the founder of scientific and teaching activities in the field of reproductive endocrinology and animal physiology.

Desanka Marić was born on 10.XI 1929. in Novi Sad. Prof. Dr Desanka Marić graduated from the Gymnasium in Novi Sad in 1948. She graduated from the FS University in Belgrade (UB) in 1952., and received her PhD in 1960. at the same faculty. The PhD dissertation entitled "Attachment to the mechanism of action of female sexual hormones on the rabbit platelets" was defended at the Department of Physiology of FS UB under the mentorship of prof. Dr. Radoslava K Anđusa (http://giaja.bio.bg.ac.rs/radoslav-andjus/). Prof. Dr Desanka Marić is married to prof. Dr. Vojislav Marić and she is mother of two children living in the United States (Dr. Ivana Marić, Dr Svetislav Marić).

Prof. Dr. Desanka Marić was employed at the Institute for Medical Research in Novi Sad in the group of prof. Dr. Strahinje Marinkova from 1953. to 1963. She was appointed as an assistant professor of animal physiology at the Faculty of Philosophy UNS. She was appointed as an associate professor in 1970. and full professor in 1975. From 1964. to 1973. prof. Dr Maric was in charge of teaching of the courses the General Animals Physiology and Comparative Animals Physiology, and since 1973. she has been responsible for the course General Animal Physiology. The research in the fields of animal physiology and the reproductive endocrinology were very intense in that period, numerous mechanisms of physiological phenomena were explained, and in their lectures prof. dr Marić tried to put all these new knowledge into the teaching content. Prof. Dr Marić was the first who recognize contemporary research trends, and introduced new teaching subjects: Reproductive Physiology, Reproductive Endocrinology, Endocrinology with Neuroendocrinology. She has published two editions of General Animal Physiology textbooks with Dr. Stanko Stojilković, Practicum with selected chapters from Comparative Animals Physiology with prof. dr. Irina Simonović, as well as selected chapters in the textbook Radiological and related analysis (theory and application).

Prof. Dr. Desanka Marić is the founder of the research in the field of endocrinology FS UNS. At the end of the seventies of the XX century prof. dr Marić led research in one of the most advanced laboratories for experimental endocrinology in the former Yugoslavia, which was also one of the European reference laboratories for radiomunologic analysis. Among other things, under the leadership of prof. dr Marić routine analyzes of protein and steroid hormones were perfomed, as well as other analyzes in the field of reproductive endocrinology. Laboratory under the leadership of prof. dr Marić contributed very significantly to the inclusion of Yugoslav experimental endocrinology into European trends. Thes research activities, which are still fostered at our faculty, are certainly the result of the postdoctoral training of prof. Marić in the USA. During 1963. and 1964., prof. dr Marić was on post-doctoral studies in the field of reproductive physiology at the Worcester Foundation for Experimental Biology (Shrewsbury, Massachusets USA), and then in 1966. and 1967. at the Medical Faculty University of Lexington (Kentucky USA). In this period, prof. dr Marić performed research in the field of neuroendocrinology. Part of the research results obtained during staying in the Worcester Foundation for Experimental Biology was published in the prestigious journal Endocrinology and this paper is highly appreciated and cited.

During her work at FS UNS prof. dr Maric was the holder and participant in a number of national and international scientific projects. Her research work was focused on the examination of regulatory mechanisms of reproduction and hypothalamic control of gonadotrophic secretion. Applying the method of hypothalamic

deaferentation and accompanying changes in gonadotrophic hormones and prolactin, her results have contributed to understanding complex mechanisms of neuroendocrine regulation of reproductive function. Her extensive research work is also associated with the study of hormonal changes during postnatal development, as well as mechanisms involved in the development of puberty, with a particular emphasis on the role of prolactins in males and the concept of corelation in the production of prolactins and androgens. In addition to the above mentioned, the significan contribution of prof. Marić is dedicated to a very interesting problem of the impact of stress on central and local regulatory mechanisms of testicular steroidogenesis, as well as the importance of endogenous opiates and free radicals (nitric oxide) in the paracrine control of production of androgens. In addition to fundamental research in the field of reproductive endocrinology, prof. Marić was also involved in the examining the effects of pesticides on the reproductive capacity of rats of both sexes over several generations, and studied the hormone status of cows in order to control and improve reproduction.

Prof. Dr Marić worked with her associates during her scientific research work with numerous eminent national and international scientists. The most intensive cooperation was achieved with prof. Dr. Radoslav K Anđus and his associates (Institute of Physiology, Faculty of Biology, UB) in scientific projects of the Serbian Academy of Sciences and Arts supervised by prof. dr Anđus. It is also important to mention the cooperation with prof. dr Radivoje Milin and his associates (Institute of Histology, Medical Faculty, UNS) that is still ongoing. From international cooperation are distinguished: prof. dr Luciano Martini (Institute of Endocrinology, Faculty of Medicine, University of Milan), prof. dr Belá Flerco (Faculty of Medicine, University of Pecs), prof. dr Belá Halász (Faculty of Medicine, University of Budapest), prof. dr Mirjana B Nikitovitch-Winer (Faculty of Medicine, University of Lexington). The significance of the results of the scientific research work of prof. Dr Marić was recognized by invitation from Faculty of Medicine, University of Lexington to hold a special seminar, which prof. Dr Marić held in 1982., etitled: "Relationship between prolactin and androgen variables in the growing male".

Scientific production prof. dr Marić includes over 90 peer-reviewed scientific papers, of which 17 were published in eminent international journals, as well as 49 publications at international and domestic conferences. It is necessary to emphasize the significant positive influence of these works at the international and domestic scientific community, expressed through numerous citations in the works of other authors. In addition, she was mentor of 7 PhD theses, 4 master theses and 32 graduation theses.

Regardless of the fact that intensive teaching and scientific work requires a lot of engagement, prof. dr Marić was involved in the work of the administrative structures at the PMF UNS during her thirty-two years of work. In addition, she was the President of the Society of Physiologists of Yugoslavia, a member of the International Society of Neuroendcrinologists, the Society of Biologists, as well as the Society of Endocrinologists of Vojvodina, and she was a member of the editorial board of the Matice srpske and the editorial board of the Proceedings of the Faculty of Sciences. Prof. dr Marić belongs to the most prominent UNS teachers. The results of her persecution, enthusiasm and work were recognized in the scientific and wider comunity, and she was awarded: diploma and medals Matica srpska (1976), honorary of FS UNS (1979), diploma of the Association of Endocrinologists of Yugoslavia (1983), October Prize of Novi Sad (1989). It is specialy important to point the UNS Lifetime Achievement Award specially awarded by the Association of University Professors and Scientist UNS (2006).

After retirement in 1995, the engagement of prof. Dr Maric in the scientific work did not stop. On the contrary, evidences of her work are represented by the published scientific paper. It is particularly important to point out that during all 23 years since retirement, close associates of prof. dr Marić has a unique and very valuable mentor, a referee and a friend.

## Publication of prof. dr Desanka Marić (given Kostić)

(https://scholar.google.com/scholar?hl=en&as sdt=0%2C5&q=desanka+maric&oq=des)

- (1) Marinkov S, **Marić D** (1953). Merenje koagulacije krvne plazme I odnos koncentracije kalcijuma prema prvoj I drugoj fazi koagulacije. *Medicinski pregled* 6: 331.
- (2) Marinkov S, Kostić D, Kapamadžija V (1956). Antikoagulaciono delovanje heparina i trombocita. Medicinski pregled 9: 221.
- (3) Kapamadžija V, Kostić D (1956). Uticaj heparina na retrakciju krvnog koaguluma. Medicinski pregled 9: 315.
- (4) Kostić D, Kapamadžija V (1965). Promene koagulacione funkcije trombocita kod primene heparina. *Medicinski pregled* 9: 385.
- (5) Marinkov S, Kostić D (1957). Merenje čvrstine fibrinskog koaguluma krvne plazme i odnos te čvrstine prema koncentraciji kalcijuma u krvnoj plazmi. *Medicinski pregled* 10: 84.
- **(6)** Marinkov S, Timotijević T, Kapamadžija V, **Kostić D** (1958). Changements dans le nombre des trombocytes chez les rats exposos aux rayons X compares aux changements dans la trombocytopoiese. *Acta medica Yugoslavica* 12:39.
- (7) Marić D (1958). Efekat estradiola na broj trombocita normalnih i kastriranih zečica. Arhiv bioloških nauka 10: 39.
- (8) Marić D (1960). Action de la progesterone sur les plaquesttes sanguines chez la Lapine. CR Sec Biologie, CLIV 1538.
- (9) Marić D (1960). Effet le l'application successive de l'oestradiol et de la progesterone chez la Lapine. CR Sec Biologie, CLIV 1865.
- (10) Marić D (1960). Prilog izučavanju mehanizma delovanja ženskih seksualnih hormona na trombocitopoezu. doktorska disertacija.
- (11) Marić D (1964). Izučavanje estradiola, estrona i estriola posle promene estradiola dipropionata kod normalnih i kastriranih zečica. *Godišnjak Filozofskog Fakulteta u Novom Sadu*. Knjiga VII, 376.
- (12) Marić D, Kiralj F (1965). Delovanje estradiola na količinu gonadotropnih hormona u hipofizi pacova. *Medicinski pregled* 11-12: 581.
- (13) Maric D, Matsuyama E, Lloyd CW (1965). Gonadotropin content of pituitaries of rats in constant estrus induced by continuous illumination. *Endocrinology* 77: 529.
- (14) Dimković D, Marić D, Sesler D, Janča AK (1968). Endokrini I klinički aspekti ginekomastije. *Acta Chirurgica Yugoslavica* XV, 65.
- (15) Marić D (1969). Uticaj estrogena na težinu organa posle kompletnog izdvajanja bazalnog dela hipotalamusa od centralnog nervnog sistema. *Zbornik za prirodne nauke, Matica srpska*, Novi Sad 36: 147.
- (16) Marić D (1971.) Efekat unilateralne kastracije kod mužjaka pacova. *Zbornik radova Prirodno-matematičkog fakulteta,* Novi Sad 1: 221.
- (17) Marić D (1972). Efekat konstantnog osvetljivanja na pubertet ženki pacova. *Zbornik radova Prirodno-matematičkog fakulteta,* Novi Sad 2: 135.
- (18) Tadić R, Vojvodić S, Morovič M, Krsmanović L, **Marić D** (1973). Efekat testosterone na adenohipofizu I reproduktivne organe estradioliziranog mužjaka pacova. *Zbornik radova Prirodno-matematičkog fakulteta*, Novi Sad 3: 157.
- (19) Marić D, Nikitovitch-Winer MB (1974). The ability of the medial basal hypothalamus (MBH) to respond to electrical stimulation following partial deafferentation. *Yugoslav Physiol et Pharmacol Acta* 10 (1): 107.
- (20) Simonović I, Maric D (1974). Uticaj frontalne hipotalamične deaferentacije na količinu folikulostimulirajućeg hormona u hipofizi ženke pacova. Zbornik za prirodne nauke, Matica Srpska, Novi Sad, sveska 46.

- (21) Marić D, Tadić R, Milin R (1974). The influence of the gonads in the functional development of the hypothalamo-hypophyseal system of male rat. *Neuroendocrinology* 15: 92.
- (22) Marić D, Simonović I (1974). Količina luteinizirajućeg hormona u hipofizi pacova u konstantnom estrusu. *Proc Nat Sci* 4: 135-142. Zbornik radova Prirodno matematičkog fakulteta, Novi Sad
- (23) Simonović I, Krsmanović L, Marić D (1978). Uticaj frontalne hipotalamične deaferentacije na količinu folikulo-stimulirajućeg hormona u hipofizi ženke pacova. *Proc Nat Sci* 46: 73-83.
- (24) Simonović I, Krsmanović L, Marić D (1978). Efekat fotoperioda i pinealektomije na seksualno sazrevanje i serumski prolaktin kod ženki pacova. *Proc Nat Sci* 55: 5-15.
- (25) Maric D, Simonovic I, Kovacevic R, Krsmanovic L, Stojilkovic S, Anđus RK (1982). Effects of short-term and long-term hyperprolactinemia on the developmental pattern of androgen and LH levels in the immature male rat. *J Endocrinol Invest* 5(4): 235-241.
- (26) Kovacevic R, Krsmanovic L, Stojilkovic S, Simonovic I, Maric D, Anđus RK (1982). Effects of bromocriptine-induced hypoprolactinaemia on the developmental pattern of androgen and LH levels in the male rat. *Int J Androl* 5(4): 437-447.
- (27) Simonović I, Krsmanović L, Stojilković S, Kovačević R, Marić D (1985). Effect of hypothalamic deafferentation on prolactin level in male rats. *Proc Nat Sci* 69: 15-23.
- (28) Maric D, Stojilkovic S, Krsmanovic L, Simonovic I, Kovacevic R, Anđus RK (1987). Rapid naloxone—induced alterations of androgen variables in the growing male rat. *Neuroendocrinology* 46: 15-23.
- (29) Kovačević R, Krsmanović L, Stojilković S, Simonović I, Marić D, Anđus RK (1987). Developmental pattern of the testicular androgen response to gonadotropin stimulation in vitro and its modification by chronic hypoprolactinaemia. *Int J Androl* 10(6): 773-784.
- (30) Marić D, Babić Z, Simonović, Krsmanović L (1989). Enhancement of androgen secretion after intratesticular naloxone administration. *Proc Nat Sci* 19: 39-47.
- (31) Simonović, Krsmanović L, Babić Z, Šovljanski R, Marić D (1989). Uticaj kaptanskog preparata, Orthocida S-50, na reproduktivne procese kod pacova. *Proc Nat Sci* 77: 5-13.
- (32) Marić D, Simonović I (1992). Ovulation response to acute and long-term intermittent immobilization stress. *Proc Nat Sci* 22: 107-111.
- (33) Marić D, Simonović I (1993). Uloga pinealne žlezde u reproduktivnoj aktivnosti ženke pacova. Proc Nat Sci 23: 14-23.
- (34) Marić D, Simonović I (1993). Direct effect of naloxone on testicular function in the male rat. *Proc Nat Sci Matica Srpska* 86: 21-27.
- (35) Simonovic I, Milin J, Kostic T, Kovacevic R, Maric D (1994). Effect of hypothalamic deafferentation on naloxone-induced modification of LH and PRL in stress condition. *Proc Nat Sci Matica Srpska* 86: 21-27.
- (36) Maric D, Kostic T, Simonovic I (1994). Paracrine regulation of the testis. Proc Nat Sci Matica Srpska 87: 5-15.
- (37) Simonovic I, Kostic T, Maric D (1994). Participation of the pineal gland in the reproductive physiology. *Proc Nat Sci Fac Nat Sci* 23: 5-12.
- (38) Maric D, Simonovic I, Kovacevic R, Kostic T, Andus RK (1995). Opioid-mediated and opioid-independent components of hormonal responses to acute restraint stress in the male rat. *Proc Nat Sci* 24: 177-205.
- (39) Marić D, Kostić T, Kovacević R (1996). Effects of acute and chronic immobilization stress on rat Leydig cell steroidogenesis. *J Steroid Biochem Mol Biol* 58(3): 351-5.

- (40) Kostić T, Andrić S, Kovacević R, Marić D (1997). The effect of opioid antagonists in local regulation of testicular response to acute stress in adult rats. *Steroids* 62(11): 703-8.
- (41) Simonović I, Šovljanski R, Marić D (1997). Efekat hronične primene kaptana na reproduktivne procese, praćen kod sedam generacija ženki pacova. *Proc Nat Sci* 26: 5-12.
- (42) Kostić T, Andrić S, Marić D, Kovacević R (1998). The effect of acute stress and opioid antagonist on the activity of NADPH-P450 reductase in rat Leydig cells. *J Steroid Biochem Mol Biol* 66(1-2): 51-4.
- (43) Kostić T, Andrić S, Kovacević R, Marić D (1998). The involvement of nitric oxide in stress-impaired testicular steroidogenesis. *Eur J Pharmacol* 346(2-3): 267-73.
- (44) Kostic TS, Andric SA, Maric D, Stojilkovic SS, Kovacevic R (1999). Involvement of inducible nitric oxide synthase in stress-impaired testicular steroidogenesis. *J Endocrinol* 163(3): 409-16.
- (45) Kostic TS, Andric SA, Maric D, Kovacevic RZ (2000). Inhibitory effects of stress-activated nitric oxide on antioxidant enzymes and testicular steroidogenesis. J Steroid Biochem Mol Biol 75(4-5): 299-306.
- (46) Kostic TS, Stojkov NJ, Janjic MM, Maric D, Andric SA (2008). The adaptive response of adult rat Leydig cells to repeated immobilization stress: the role of protein kinase A and steroidogenic acute regulatory protein. *Stress* 11(5): 370-80.

## Saopštenja

- (1) Marić D (1962). Influence of estradiol and progesteron and trombocytopoesis. *Proc. of the VII Congress of the Europian Society of Haematology,* Wien, Austria, 62a.
- (2) Marić D (1962). Uticaj metabolizma estradiola na broj trombocita. Il kongres biologa Jugoslavije, Beograd, 75.
- (3) Marić D (1965). Efekat estradiola na postkastracione promene u hipofizi ovarijektomisiranih pacova. *Bilten zajednice medicinskih naučnih ustanova SR Srbije*, 56.
- **(4) Marić D**, Nikitovitch-Winer MB (1967). Post castration changes in hypophisis of female rats following the isolation of hypothalamus from CNS. 49<sup>th</sup> Meeting of the Endocrine Society, Florida, USA, 59.
- (5) Marić D (1969). Uticaj estradiola na težinu reproduktivnih organa posle kompletne izolacije hipotalamusa od CNS. *III kongres biologa Jugoslavije*, Ljubljana, 168.
- (6) Anđus R, Ćirković T, Kamberi I, Koren A, **Marić D**, Palanački V, Simonović I (1970). Dejstvo produženog tretmana homologim međumoždanim ekstraktima na reproduktivni sistem. *Simpozijum neuroendokrinih regulacionih mehanizama*, Beograd, 7.
- (7) Anđus R, Marić D, Tadić R, Simonović I (1971). Uticaj hipotalamičnih ekstrakata na reparaciju reproduktivne funkcije mužjaka posle dugotrajne estrogenske blokade. VII kongres jugoslovenskog društva za fiziologiju, Beograd.
- (8) Marić D, Tadić R (1971). Uticaj gonada na funkcionalni razvitak hipotalamo-hipofizarnog sistema kod mužjaka. VII kongres jugoslovenskog društva za fiziologiju, Beograd, 239.
- (9) Anđus R, Ćirković T, Kovačević R, **Marić D** (1973). Effects of hypothalamic extracts and prolactin on the weight of reproductive organs of estradiol blocked male rats. VI<sup>th</sup> Congress of the Hungarian Society of Endocrinology and Metabolism, Pecs, Hungary.
- (10) Simonović I, Ćirković T, Marić D (1974). Pituitary prolactin following deafferentation in the male rats. VII<sup>th</sup> Conference of European Comparative Endocrinologists, Budapest, Hungary, Gen Comp Endocrinol (22): 360.