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OPINION

about the materials for participation in a competition for the academic position "Professor", field of higher education 6. Agricultural sciences and veterinary medicine, professional field 6.4 Veterinary medicine, scientific specialty: "Animal pathology", in the discipline "Pathology (Special pathological anatomy)", Announced by the University of Forestry in State GazetteNo 32 / 03.04.2020 and procedure code VM-P-0320-35.

Candidate for participation in the competition: Assoc. Prof. Dr. Vasil Kostadinov Manov, PhD.

Opinion prepared by: prof. Dr. Teodora Petrova Popova, DB, DSc., University of Forestry, city of Sofia, field of higher education "Agrarian sciences and veterinary medicine", professional area 6.4. "Veterinary medicine", scientific specialty "Epizootology, infectious diseases and prevention of contagious diseases in animals", appointed as member of the Scientific jury by Order№ ЗПС - 173/11.05.2020 of the Rector of University of Forestry in Sofia.

1. Brief biographical data about the candidate.

Vasil Kostadinov Manov graduated from the Secondary Special Education School of Veterinary Medicine in Lovech with a speciality Veterinary Technician. He graduated in 1989 at the Faculty of Veterinary Medicine at HIZVM in Stara Zagora (Master of Veterinary Medicine). In the same year he started working in the specialty in the town of Byala Slatina. After a successful competition in 1989, he entered the HIZVM in Stara Zagora as an assistant professor, working in this academic position there until 1993, when he was elected senior assistant professor (1993-1996) at the HIZVM (Trakia University) in Stara Zagora. From 1996 to 2010 Dr. V. Manov was a chief assistant professor at the University of Forestry, Sofia. On 20.08.2009 he obtained the Educational and Scientific Degree "PhD" from the Higher Attestation Commission in the scientific specialty 03.01.03 "Pathoanatomy and Cytopathology" on the basis of a defended dissertation. Since 2010 up to now he is an associate professor at the University of Forestry, Sofia. He performs teaching activities with students majoring in "Veterinary Medicine", preparation and conduct of exercises, seminars, practical and semester exams in the disciplines "General Pathological Morphology" and "Special Pathological Anatomy". He also carries out research and expert activity. He is fluent in Russian and English, as well as working with histological and microscopic techniques and modern computer programs, which is essential for his successful teaching and research work.

2. Conformity of the submitted documents and materials of the candidate with the required ones according to the Rules for development of academic staff at University of Forestry.

Assoc. Prof. V. Manov has presented all the documents necessary for participation in the competition for the academic position "Professor". They are prepared according to the requirements of the professional direction according to the Rules for RAS in UF, which was found during their review by the Scientific Jury at its first meeting on 12.06.2020. The documents are presented, arranged and described very precisely and clearly.

3. Evaluation of the teaching activity of the candidate.

Assoc. Prof. Vasil Manov has held an academic position since 1989, when after a successful competition he was elected an assistant at HIZVM in Stara Zagora. From 1993 to 1996 he has been a senior assistant at the same institute. From 1996 to 2010 Dr. V. Manov entered as a senior assistant at the Faculty of Veterinary Medicine (FVM) at the University of Forestry (UF), Sofia, and since 2010 he has held the academic position of "Associate Professor" at FVM at UF in the Department of Internal Uninfectious Diseases, Pathology and Pharmacology. His total academic internship is 31 years, of which 7 at the Thrakia University in Stara Zagora and nearly 24 years at

UF in Sofia. He is **the titular of two courses:** "Pathology (General Pathological Morphology)" with hours in the curriculum 30 h. lectures and 30 h. exercises and "Pathology (Special Pathological Anatomy)" with hours of 60 h. lectures and 60 h. exercises. Assoc. Prof. V. Manov is **the author of the curricula in Bulgarian and English in these two disciplines** in FVM - UF. He teaches in these disciplines with students majoring in "Veterinary Medicine", giving lectures and preparing and conducting exercises, seminars, practical and semester exams. He also participates in the state exams of the graduating of the specialty "Veterinary Medicine" in FVM at UF.

The presented documents show that Assoc. Prof. V. Manov largely **fulfills,** and in some periods **overfulfills the compulsory classroom and extracurricular educational employment.** In the 2018-2019 school year, he has conducted a total of 322 hours. Of these, 276 hours are classroom employment (auditorial), of which 180 h. of lectures and 96 h. of exercises in Bulgarian. For the same period his extra auditorial employment in Bulgarian is 46 hours. The data for the previous school years are similar. For 2017-2018, the classes he conducted with students in Bulgarian are a total of 316.9 h., of which 273 hours are auditorial (168 hours of lectures and 105 hours of exercises) and 43.9 h. - extra auditorial employment. For 2016-2017, these are 326.7 hours (272 h of auditorial- 180 hours of lectures and 92 hours of exercises; 54.7 hours - extra auditorial). For the academic year 2015-2016, the classes he conducted with students in Bulgarian were a **total of 402** (344 h. auditorial - 96 h. of lectures and 248 hours of exercises, as well as 58 hours - extra auditorial). The differences are mainly related to the change (decrease) in the number of groups of students in some academic years in the upper courses due to student interruption.

Assoc. Prof. Manov not only **has many years of teaching internship,** but is distinguished by high competence and significant experience as a specialist in animal pathology, which contributes to his performance as an **excellent teacher** in the disciplines led by him.

4. Evaluation of the scientific, scientific-applied and publishing activity of the candidate.

The total number of publications of Assoc. Prof. Manov is **82.** For participation in this competition he has presented a total of **46 scientific papers,** which do not repeat those for the acquisition of "PhD" degree and the academic position "Associate Professor". The total impact factor of the publications submitted by Assoc. Prof. Manov for participation in this competition is significant - **20,553,** and according to additional data it amounts to **23.66.** The total number of points received by the candidate in the groups of indicators is **1570.43** at a minimum national requirement of 550 points.

• According to indicator 1 **(group A)** Assoc. Prof. Manov has **50** points out of 50 required - for a dissertation for the acquisition of "PhD" degree on "Comparative pathomorphological studies in animals infected with Bulgarian isolates of Aujeszky's disease virus", defended in 2009 (Diploma №33557 / 20.08).

• By indicator 2 **(group Б)** - 0 points out of 0 required.

• According to the indicators from **group B** he has presented a habilitation thesis - monograph: "Manov, V. Special Veterinary Pathology, Panev Publishing, Sofia, 2020, 298 pages. ISBN 978-619-90789-4-5", for which he receives **100** points of 100 required.

• According to the indicators from **group Г - 245.63** points out of 200 required. Of these, 100 points are for a published monograph, which is not presented as a major habilitation publication (G5): "Manov, V. Morphological characteristics of some neoplasms in animals, 2019, Panev Publishing, Sofia; 151 pages. ISBN 978-619-90789-3-8 ". The remaining 145.63 points are obtained from 15 research publications in journals, referenced and indexed in world-famous databases of scientific information and 22 articles and reports published in non-refereed journals with scientific review and in edited collective volumes.

• Especially high is the number of points that the candidate has received on the indicators from the **group Д - 1030** points out of 100 required, with which **he exceeds ten times the minimum national requirements** for this academic position on this indicator. They are obtained from 58 citations of 8 publications with his participation in scientific journals, referenced and indexed in world-famous databases with scientific information or in monographs and collective volumes (870 points) and 32 citations of 8 publications in non-referenced journals with scientific review (160 points).

• The number of points received according to the indicators from **group** E is also significant - **144.08** points out of 100 required. Included here are 20 points for the **guidance of doctoral student** Georgi Stoychev Popov, who successfully defended his dissertation in 2019. Another 30 points are awarded for participation in 2 national research projects. Assoc. Prof. Manov receives another 80 points on this indicator for **published 2 university textbooks**: „Manov, V. General veterinary pathology. Textbook for students of veterinary medicine. Panev Publishing, Sofia, 2018. ISBN 978-619-90789-2-1" and "Manov, V. Pathoanatomical characteristics of diseases in domestic animals. Textbook for students of veterinary medicine, Panev Publishing, Sofia, 2020. ISBN 978-619-90789-5-2". He also receives 14.08 points for **published 5 university textbooks (manuals)**, one of which is in English.

As can be seen from the presented information, according to all necessary indicators Assoc. Prof. V. Manov **fulfills, and in most cases significantly exceeds the minimum national requirements and those of UF** for scientific, teaching and expert activities required for the academic position "Professor".

4.1. Participation in scientific, applied and educational projects.

Assoc. Prof. V. Manov has participated in the implementation of two national research projects (after the occupation of AP "Associate Professor"): **1.** Contract №DDVU 02/62 dated 20.12.2010, Sofia, at the National Science Foundation at the Ministry of Education and Science, competition: "Stimulation of research in state higher schools" - 2010; topic of the project: "Studies on the epizootology of current parasitosis in domestic and wild animals in Bulgaria, opening opportunities for early diagnosis and effective prevention." **2.** Project funded by the National Research Fund (contract DM 01/1/216 and contract co-financed by COST Action CM1704, DKOST 01/11/2016) and MES (National Scientific Program "Healthy foods for a strong bioeconomy and quality of life "of the Ministry of Education and Science, approved by RMS No. 577 / 17.08.2018).

4.2. Characteristics of the published scientific results.

The total number of works of Assoc. Prof. Manov is **82,** of which **7** are presented for acquisition of the educational and research degree **"PhD"** (dissertation and abstract are included here, but they should not be presented as separate publications), **29 pcs.** are for participation in the competition for **"Associate Professor"** (27 publications and 2 textbooks) and **46 pcs.** are presented in this competition. Of the publications submitted for participation in the competition for the academic position of "Professor", 37 are scientific publications, 2 are monographs, another 2 - textbooks and the remaining 5 are teaching aids (manuals).

The habilitation paper is written on 298 pages, including literature sources and images, and is richly illustrated with 33 original photographs of excellent quality, included in 30 color figures, as well as 1 diagram and 3 tables. It is a valuable current work, which presents important for veterinary practice processes and morphological changes in many of the organs and systems in animals. It fully meets the requirements for such work. Its use by both practitioners and veterinary students would be very useful.

The second monograph is written on 151 pages, incl. literature sources and photos and is illustrated with 46 original color figures of very good quality. It presents the morphology of some

of the most common cancers in animals, which are systematized and described in detail. Thanks to the author's rich over 30 years research and practical experience on the subject, wonderfully reflected in this work, it can serve as a valuable up-to-date guide for veterinarians in practice and in the scientific field, as well as a teaching aid for students, postgraduates specialisants and doctoral students.

From the **publications in scientific journals: (37 issues) 12** are printed in journals with impact factor, 1 - in foreign refereed edition, 2 - in Bulgarian refereed journals and **17** are published in non-refereed editions, of which **3** - in foreign ones. The publications in collective volums of national scientific forums are **5** issues.

Most of the scientific papers are **in English - 30 pcs.** (29 publications and 1 guide). The remaining 16 are in Bulgarian (2 monographs, 2 textbooks, 4 manuals and 8 scientific articles). There are **6 individual** (with one author) ones. (2 monographs; 3 publications and 1 textbook)

In addition, 24 published abstracts of participation in scientific forums are presented, of which 1 in international and 23 in national conferences with international participation. Of these, 9 are reports and 15 are in the form of posters. Particularly important for the presentation of the scientific production of Assoc. Prof. Manov not only in Bulgaria but also worldwide are the publications in journals with Impact Factor (**12** in number), as well as the articles in foreign journals - **16** in number (together with these with impact factor). The articles in national journals are **15** in total, and the reports in collections of national scientific conferences - **5 pcs. The total impact factor** of the presented scientific papers in the competition for professor is **23.66.**

4.3. Reflection of the candidate's scientific activity in the literature (citations).

The results of the scientific activity of Assoc. Prof. V. Manov are widely reflected in the specialized literature not only in our country, but also worldwide. The established **citations** of publications with his participation are a total of **86.** Those in scientific journals, referenced and indexed in world-famous databases of scientific information (Scopus, Web of Science) so far are **54** in number, which is an impressive result. The number of citations in unreferred scientific peer-reviewed journals is also significant - **32** so far. The publication with citation № 24 is in print. There is an inaccuracy (repetition) in citations under № 63 and 64 in the presented list, as well as in № 71 and 73, which are repeated (one citation is mentioned twice in the list), but these are technical omissions that do not detract from the high results. These data testify to the importance and wide reflection of his scientific production in the literature.

4.4. Contributions in the works of the candidate (scientific, scientific-applied, applied).

A large number of contributions emanate from the rich and diverse research activity of Assoc. Prof. Manov. Most of his research is in the field of pathology caused by infectious agents, neoplasias and toxic substances. The studies are aimed at the application of modern diagnostic and classical morphological methods in order to clarify the etiology, pathogenesis and morphogenesis of some emerging, as well as known but problematic for the country diseases.

Current and especially significant from a scientific and practical point of view are the studies to confirm the pharmacological activity of medicinal plants using pathohistological methods. In this regard, hepatoprotective, antioxidant, antidiabetic and neuroprotective activity of various extracts, saponin fractions and secondary metabolites have been studied. In addition, a number of experiments of a scientific-applied nature have been carried out. They are related to: creation of a model system for cancer research, development of an in silico protocol for prediction of pharmacological activity, differential diagnostic scheme of diseases related to reproductive disorders in pigs, etc. The obtained results for the protective action of medicinal plants are valuable from a practical point of view, as they are the basis for the development of phytoproducts for their application in veterinary and in human medical practice.

There are also valuable contributions in the presented two monographs, two textbooks, five practical manuals and one review article.

The studies can be grouped into five main research areas. They are the following:

I. Clinical, pathological and differential diagnostic assessment of some infectious diseases and neoplasias important for veterinary practice.

A number of **original** scientific contributions are included here. ▪ As a result of a 10-year molecular biological study for the detection of parvovirus infection in samples of carnivores in Bulgaria, the field strains, proven in clinical cases, were distinguished from the vaccine ones. For the first time, canine parvovirus was detected in samples from wild animals as well as from domestic cats (publ. №4 from the presented list). ▪ A rare case of fatal foreign pneumonia in a dog has been reported as a result of an aspirated grass awn entered the lungs through the trachea. The cause of death has been proven - septicemia and purulent-necrotic pneumonia caused by a combined infection with *Pseudomonas aeruginosa, Streptococcus pneumoniae* and *Candida albicans*. An endoscopic examination is recommended for the timely detection and removal of foreign bodies in the airways, especially in hunting dogs (publ. № 18). ▪ Atypical pneumonia in cows, imported from Austria with fibrinous-purulent changes in the lungs and pleura, characteristic of pasteurellosis, has been proven. *Pasteurella* spp. has not been identified, and *Serratia marcescens* and small amounts of *Staphylococcus xylosus, S. pneumoniae, Enterococcus faecalis* and *C. albicans* have been isolated from the lungs. It has been established that in vitro antibiotic resistance in combination with transport stress and adaptation to new living conditions are the cause of the fatal development of the disease (publ. №35). ▪ The etiological role of porcine circovirus 2 (PCV2) in the development of new circuvirus-associated diseases for the country has been proven: the syndrome of multisystem weight loss after weaning pigs (PMWS); dermatitis and nephropathy syndrome in pigs (PDNS); respiratory diseases and reproductive disorders. The clinic and pathological changes in PDNS are described in detail (publ. №16 and 20). ▪ Comparative pathomorphological studies were performed in neonates not sucked colostrum pigs after infection with a vaccine and two uterotropic strains of *Psevdorabies* virus. Specific pathological changes have been identified and described by histological, histochemical and electron microscopic methods. Different tropism and intensity of the changes caused by the individual viral strains in the body of pigs have been proven (publ. №31 and 34).▪ The clinical manifestations and pathomorphological changes caused by a vaccine strain and two field uterotropic strains of Suid herpes virus 1 in young dogs and cats have been studied and analyzed (publ. №32). ▪ A case of paratuberculosis in cattle in the country has been described (in official statistics in Bulgaria lack accurate data on its prevalence), with characteristic pathological changes and microscopic observations of typical mycobacteria in altered areas of the small intestine. Conventional PCR has been showed the presence of DNA from *Mycobacterium avium ssp. paratuberculosis* (publ. №27). ▪ During the early embryonic development of chickens, turkeys and guinea fowl treated with the carcinogens N-nitrosodimethylamine (NDMA) and N-nitrosodiethylamine (NDEA), pathomorphological examination revealed preneoplastic changes progressing to liver and pancreatic neoplasms. NDMA has also been proven to cause neoplastic lesions in the pancreas and kidneys of White Leghorn chickens, line 15I (publ. №6, 23 and 29). ▪ As a result of morphological and biochemical examination of the blood of chickens, turkeys and guinea fowl treated during their early embryonic development with NDMA and NDEA, the presence of specific indicators for the development of paraneoplastic syndrome has been proven (publ. №6, 23 and 29). ▪ A pronounced liver spongiosis was found only in Japanese quail embryos after administration of NDMA and NDEA (publ. №25). ▪ A 6-year-old female Caucasian Shepherd dog was diagnosed with hepatocellular carcinoma, liver necrosis and hepatic jaundice using cytological and pathohistological examination. The anaplastic and epithelial origin of the tumor was confirmed by immunohistochemical examination with polyclonal carcinoembryonic antigen and cytokeratin 7 (publ. №19). ▪ The neuroendocrine origin of a tumor in a dancing Eurasian brown bear has been proven. An imaging examination of the chest with CT (computed tomography) has been performed and the identified characteristic changes were described, as well as those of the performed pathological, histological and immunohistochemical examinations. A

negative immunohistochemical reaction of TTF-1 on lung tissue rejects the possibility of lung adenocarcinoma. Data on a positive reaction with cytokeratin and two neuroendocrine markers give high reliability for tumor origin (publ. №21). ▪ The process of development of secondary sinusitis in a horse was traced in view of topographic-anatomical preconditions for the unilateral involvement of the complex of six sinuses. Imaging tests were used, and postmortem - radiography and CT, with subsequent treatment of the skull. The observed osteolytic changes have been compared with the obtained radiographic images and CT cuts, as well as 3D reconstructions. The study reveals an opportunity to explain the pathogenesis and complications of sinusitis in horses (publ. №28).

Contributions of a confirmatory nature in this direction. ▪ *In ovo* tests have been successfully performed to demonstrate the toxic and carcinogenic potential of NDMA and NDEA on turkey embryos (publ. №23) and Japanese quail (publ. №25), and it has been confirmed that NDEA induces neoplastic lesions in the liver of White Leghorn chickens (publ. №6). ▪ The data that *in ovo* tests are a suitable model system for experimental studies of chemically induced neoplasia on embryos of White Leghorn hens and guinea fowl have been confirmed (publ. №6). ▪ In an experiment with rabbits by induction of infection with *Leporipox* virus field isolate, specific macroscopic and pathohistological changes on the skin and in the internal organs have been identified and described (publ. №17).

II. Pathological and pharmacological studies of substances of plant origin. All contributions from research in this area are original in nature. ▪ For the first time, a series of in vitro and in vivo studies have been performed for the protective effect of purified extracts, saponin mixtures and biologically active substances derived from *Gypsophila trichotoma* Wend., three species of the genus *Astragalus* L. and *Ruscus aculeatus* L. A pathological anatomical assessment of the nature and extent of involvement of various organs was made, which confirmed the obtained pharmacological data. Histopathological examination of the livers of animals treated with plant samples revealed pronounced protective effects, manifested by the accumulation of fat in a limited number of cells and the absence of necrotic changes in hepatocytes. No haemodynamic lesions and degenerative-necrotic changes in ganglion and glial cells were observed in the brains of animals treated with a toxic agent and protected with plants (publ. №1-3; 5, 8-13, 15 and 33). ▪ In hepatotoxicity models with paracetamol and carbon tetrachloride (CCl_4) has shown the *in vitro/in vivo* hepatoprotective potential of the flavonoid saponarin isolated from *Gypsophila trichotoma*, whose activity is comparable to that of the classical hepatoprotector 1 and silymarin (publ. №1 and 2). ▪ Hepatoprotective and antioxidant effects *in vitro/in vivo* have been established for butanol extract of *A. monspessulanus subsp. monspessulanus*, commensurate with the activity of silymarin (publ. 3). ▪ *In vitro/in vivo* protective effects of alcesepholiside isolated from the aerial part of *Astragalus monspessulanus subsp. monspesulanus* have been established. Antioxidant, neuroprotective and hepatoprotective activity comparable to that of silibin and silymarin have been found in non-enzymatic lipid peroxidation with Fe^{2+}/AA and in a model of CCl_4-induced brain and liver toxicity (publ. №9 and 15). ▪ In studies of flavoalkaloids and flavonoids isolated from *A. monspesulanus subsp. monspesulanus* and *illyricus*, have been shown to have hepatoprotective activity under conditions of t-BuOOH-induced oxidative stress, as well as neuroprotective activity in a model of damage with 6-ONDA, comparable to that of silibin. The hepatotoxicity of the compounds has been also assessed by QSAR testing (publ. №11). ▪ In an *in vivo* model of experimentally induced type 2 diabetes in spontaneously hypertensive rats, purified saponin mixture (PSS) from *A. glycyphylloides* was shown to improve the glycemic, hepatic and antioxidant status of the animals. Using *in silico* methods, it has been found that MSS can be a source of potential leading structures for PPARγ-mediated prevention and treatment of metabolic syndrome (publ. №10). ▪ Hepatoprotective and neuroprotective effects *in vitro* of purified saponin mixture obtained from *A. glycyphylloides* alone (publ. №33) and in models of intoxication with *t*-BuOOH (publ. №13) as well as with 6-OHDA have been established (publ. №8). ▪ The antioxidant potential of defatted *Astragalus spruneri* extract in spontaneously hypertensive rats

(SHR) has been evaluated. Compared to normotensive animals, the extract was found to affect the activity of antioxidant enzymes in the liver, spleen and kidneys (publ. №5). ▪ Purified *Ruscus aculeatus* extract (ERA) containing 20% steroid saponins has been shown to have effects on the bone structure of rats with estrogen deficiency induced by bilateral ovariectomy. This extract may be a potential candidate for the prevention of osteoporotic complications after menopause (publ. №12).

III. Pathological anatomical characteristics in poisoning with toxic substances and others. 1. Poisoning with toxic substances. ▪ The frequency of contact sensitization to formaldehyde at exposures in medical practice has been assessed. In a study involving a total of 206 people, it was found that the frequency of contact sensitization to formaldehyde is highest among students of veterinary medicine (VM) - 94.4% and veterinarians - 85%. The frequency of sensitization is higher in the same groups compared to the control one, and the differences are of very high statistical significance. It has been proven that working in a formaldehyde environment during the training of students in VM and in the practice can be a significant risk factor for the occurrence of contact sensitization. It is recommended to introduce stricter preventive measures to reduce the exposure of VM students and teachers (publ. №7). ▪ Snakes at the age of 6 months from the species Coluber caspius, which died with nervous signs and allotriophagia (swallowing peat bedding) were studied. Bacteria with morphology of *Clostridium botulinum* have been detected microscopically in liver and peat litter samples. Clinical, pathological and microbiological studies have been performed, the results of which show that the most probable cause of these symptoms and death is botulinum intoxication. It is recommended that peat and other reptile bedding not be stored in humid and anaerobic conditions (pub. № 30). ▪ Poisoning in two castrated male horses with yew (*Taxus baccata*) - a plant containing poisonous substances from the group of diterpenes, has been proven by pathological examination. The clinical signs before death are described, as well as the most obvious macroscopic lesions at the performed autopsy. Partially ground twigs and numerous yew needles (publ. №: 36) have been identified in the gastric contents - **a contribution of a confirmatory nature.**

2. Others. The contributions are of a confirmatory nature. ▪ A morphological characteristic of the ovaries of a water buffalo (*Bubalus bubalis*) in the early postpubertal period was performed, which proves that some of the follicles have normal structure and physiological activity, although they do not have egg cells. Corpora lutea have been identified, which confirms the endocrine maturity of the hypothalamic-pituitary-gonado endocrine system in heifers aged 11-14 months (publ. №14). ▪ In a pathological anatomical examination of a 4-month-old English Cocker Spaniel, multiple extrahepatic portosystemic shunts (PSS) were observed between the venous vessels draining the empty intestine and the descending colon with the veins of the kidneys, spleen, left ovary and posterior vena cava. A single shunt was found in a 6-month-old Rhodesian Ridgeback, in which the middle colic vein bypasses the anterior mesenteric and portal vein, flowing into the hepatic. For the correct diagnosis of PSS, portography with insertion of a catheter into the anterior mesenteric artery and rhythmic injection of the contrast agent is recommended (publ. №: 24).

IV. Contributions of an applied nature. ▪ A differential diagnostic scheme of clinical signs and macroscopic changes in infectious abortions and stillbirths in pigs has been developed, facilitating and directing the actions of the veterinarian. The scheme includes viral diseases such as classical plague, Aujeszky's disease, reproductive and respiratory syndrome and parvovirus, as well as bacterial (brucellosis, leptospirosis, listeriosis and chlamydia). Emphasis is placed on the differences at the time of abortion or birth, their clinical characteristics, the more important macroscopic changes and the appropriate materials and methods for laboratory diagnosis (pub. № 37). ▪ Studies on the hepatocarcinogenicity of chemical compounds on avian embryos are a valuable model system for experimental research on cancer, which can contribute to a significant

reduction in the number of laboratory animals used in in vivo experiments, which I consider extremely important from a human point of view (publ. №.6, 23, 25, 29). ▪ The application of different models of *in vitro* and *in vivo* intoxication in combination with histopathological examinations of the affected organs makes it possible to reveal the possible mechanisms of protective and antioxidant action of new biologically active substances, which is a prerequisite for further studies with a view to their application for additional therapy of certain pathological conditions in humans and animals (publ. №1-3, 7-8, 10-13, 15 and 33). ▪ A combined *in silico* protocol has been developed to predict at an early stage the potential for antidiabetic action of *A. glycyphylloides* saponins by modulating the activity of the PPARγ protein. The study provides an opportunity to make a preliminary assessment of the pharmacological activity of olean-type saponins and their metabolites, which helps to more effectively prioritize potential therapeutic molecules for further analysis (publ. №10). ▪ Pharmacological and pathological studies with biologically active substances of plant origin prove well-expressed protective activity and are a prerequisite for the development and application in human and veterinary practice of appropriate phytoproducts (publ. №1-3; 5, 8-13, 15, 33). ▪ Cellular material from Holstein cows was obtained by vaginoscopy. The applied cytological diagnostic approach is useful for rapid diagnosis of the reproductive tract. A clear association between cytologically established inflammation (increased neutrophil count) and impaired reproductive function has been demonstrated (publ. №26).

V. Monographs, textbooks, teaching aids and overview.

▪ The habilitation work (monograph) reflects pathological processes and morphological changes significant for veterinary practice, in a number of organs and organ systems in animals, some of which are illustrated with 33 original photos. Author's research reflected in 52 scientific publications and cases from practice are included (monograph №1). ▪ The second monograph summarizes data on the morphology of common oncological diseases in animals. Some new data on some aspects of the etiology of tumors, their growth, evolution and morpho-functional characteristics have been interpreted (monograph №2). ▪ In the textbook "General Veterinary Medical Pathology" a number of common pathomorphological processes occurring in certain circumstances in the human and animal body are considered. The morphological picture of the changes in these processes and states is presented. The textbook is in accordance with the curriculum of the discipline General Pathomorphology, approved by the Rector of UF in Sofia (textbook № 1). ▪ The textbook "Pathoanatomical characteristics of diseases in domestic animals" is intended for students of VM (prepared according to the curriculum at the FVM, LTU - Sofia) and for practicing veterinarians. Data related to the etiology, general epizootological, pathogenetic and clinical aspects of the manifestation of diseases important for veterinary practice are reflected. Emphasis is placed on the macroscopic changes and the main histological changes in the specific nosological units. Frequently used laboratory methods for accurate diagnosis and differential diagnostic options for comparison between diseases are presented (textbook № 2). ▪ The manuals on "Veterinary medical autopsy technique and rendering work" acquaint the students of VM with the purpose of performing the pathological examination, the order and sequence of its implementation, the tools used, the safety measures, etc. The method of taking, processing and sending materials for additional laboratory analysis, preparation of durable macroscopic preparations and autopsy protocols is described. The methods for destruction of the corpses are considered, as well as the structure and technological processes in the renderings (manuals №3 and 4). ▪ The manuals on "Veterinary Medical Histopathology" in Bulgarian and English are used in the training of students in the study of microscopic changes in the animal body in various pathological conditions. They help the tracking of the material studied, but also the performance of individual work and the development of creative thinking (Guides №5-7). ▪ The review article presents a summary of the literature on the importance of avian *in ovo* models as a link between *in vitro* and *in vivo* experiments to study pathological processes, including carcinogenesis. The

advantages of this type of research are highlighted. Data on preneoplastic liver lesions in avian embryos are included. The use of such embryos in embryotoxicity studies has been discussed (publ. 22).

5. Other activities in connection with the scientific specialty.

Assoc. Prof. V. Manov is the **research supervisor of PhD student** Georgi Stoychev Popov, who **successfully defended** his dissertation in 2019 on the topic: "Pathomorphological and pharmacological studies for the protective action of biologically active substances from medicinal plants." Under his leadership, the elaboration of the dissertation is at a very high level, and his brilliant public defense was a memorable event in FVM - UF.

Assoc. Prof. V. Manov is a **member of the editorial board of the specialized scientific journal** "Tradition and Modernity in Veterinary Medicine", University of Forestry, Faculty of Veterinary Medicine, Sofia, which is published since 2016. During the period 2012 - 2014 **he has reviewed articles** for publication in the proceedings of the scientific conference "Traditions and modernity in veterinary medicine", UF-Sofia (2012 - 2014). The textbooks reviewed by him (manuals for practical work), issued in the VMF in the Thrakia University in Stara Zagora in 2017 and 2018, are 5 in number, one of which is in Bulgarian, one - in English and three are bilingual editions.

He is also a reviewer of three research projects, one of which - at the Scientific Research Sector in UF - Sofia (2016) and two are in the field of research activity for 2017 and 2018 at the Faculty of Veterinary Medicine, Thrakia University - St. Zagora.

Assoc. Prof. Manov has **a number of participations in scientific juries with the preparation of reviews and opinions** in FVM, UF - Sofia, VMF, TU - St. Zagora, NDRVMI - Sofia and in IEMPAM - BAS. Two of them are for the acquisition of the academic position "Professor", one - for the scientific title "Doctor of Science", five - for the academic position "Associate Professor", two - for "Chief Assistant" and six - for the acquisition of educational and scientific Doctor's degree.

He has been also **actively involved in the creation (equipment) of the following training laboratories and centers in UF:** • Training laboratory in pathohistology in building D;□ • Laboratory for preparation of macroscopic preparations; □ • University Clinic for Small Animals "Academica", of which he was also the head.

The work of Assoc. Prof. Manov **in elected positions at UF** is also active and fruitful. He is a member of the Faculty Council of FVM, of the Academic Council of UF and of the Commission for selection of students under the Erasmus program at UF - Sofia. During the period 2012 - 2016 he was the Manager of the University Clinic for Small Animals "Academica" at FVM - UF. He is also a member of: BFSA Medical Commission; BVA; Ethics Commission; Legislative Committee of the Ministry of Agriculture and Forestry; Bulgarian Association of Veterinarians for Small Animals and the Union of Veterinarians in Bulgaria.

He actively and successfully carries out **other activities,** an important part of which are forensic veterinary examinations in connection with pre-trial proceedings related to criminal acts on animals (autopsy reports are presented). He has prepared a film library with autopsies concerning the order of the autopsy, as well as interesting clinical cases from practice, which he skillfully uses in his teaching.

For his successful research work, Assoc. Prof. Manov was deservedly awarded with **nominations and awards.** In connection with the achieved high results in the research activity in 2018, he was **nominated** by the Research Commission at the AC of UF for participation in the competition for the "Annual Rector's Award for contribution to the development of research activity in UF". The following year **he received a Gold Certificate** for Best Poster on "Antitumor effect of purified saponin's mixture from A. glycyphyllos on Graffi tumoir-bearning hamsters", presented at the Scientific Conference with international participation "Traditions and modernity in veterinary medicine" in Yundola.

6. Assessment of the candidate's personal contribution.

Assoc. Prof. V. Manov personally participates in the performance of pathoanatomical and pathomorphological examinations and his participation in the presented scientific production is significant. This applies not only to his individual publications (7 in number) and those with one (2 pcs.) and two co-authors (2 pcs.), but also to the other 35 pcs., which have three or more co-authors.

7. Critical remarks and recommendations

I have no critical remarks. I would recommend in the future Assoc. Prof. Manov to take part as a speaker at national and international scientific forums by delivering plenary reports. Thus, he will be useful for the audience with his extensive professional experience, remarkable public speaking skills and high qualification in the scientific specialty. I would also recommend membership in the Union of Scientists in Bulgaria.

8. Personal impressions.

I have the pleasure to know Assoc. Prof. Manov since his admission to FVM at LTU. I am impressed by his high qualification, diligence, collegiality, sociability, tolerance and kindness. These qualities, as well as his positive thinking, intelligence, sense of humor, ability to work in a team and to train and pass on experience, characterize him as a good professional, respected and valued by all colleagues and teacher at a high level.

9. Conclusion.

Assoc. Prof. V. Manov is one of the prominent specialists in animal pathology in our country, characterized by rich cognizances, significant practical and research experience and a high theoretical and practical level of competence in the field of veterinary pathoanatomy. He is an excellent teacher of the disciplines he teaches, loved and valued by students. In the current competition, he fulfills, and in most cases significantly exceeds the minimum national requirements and these of UF for scientific, teaching and expert activities, necessary for holding the academic position "Professor". He is the titular of two academic disciplines in FVM at UF and the author of their curricula in Bulgarian and English. The total number of points on all indicators (1570.43) is almost three times higher than the minimum national requirements for holding this position. The total impact factor of the publications submitted for participation in this competition is also significant - 23.66. His participation in the implementation of research projects, in the faculty and academic council, in commissions at UF, the Ministry of Agriculture and the BFSA, in the establishment and management of the University Clinic for Small Animals, forensic veterinary examinations and others deserve high praise. The contributions resulting from his scientific works and teaching aids are numerous and for the most part original. The reflection of his scientific production in the literature is especially significant.

Based on the above, I propose the candidate Assoc. Prof. Dr. Vasil Kostadinov Manov, Ph.D, to take the academic position of "Professor" in the field of higher education 6. Agricultural sciences and veterinary medicine, Professional field 6.4 Veterinary medicine, scientific specialty: "Animal Pathology", in the discipline "Pathology (Special Pathological Anatomy)", in FVM at the University of Forestry in Sofia.

16 July 2020

City of Sofia

Opinion prepared by:

(prof. T. Popova, DSc)