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REVIEW

on the materials submitted for participation in a competition for the academic position „**Professor**” in the Field of Higher Education: 4. Natural Sciences, Mathematics and Informatics, Professional Field: 4.3. Biological Sciences, Scientific Specialty: Ecology and Ecosystem Protection, announced by the Institute of Forestry at Bulgarian Academy of Sciences in the State Gazette, Issue 18 of February 17, 2026

Candidate for participation in the competition: Associate Professor Ina Yosifova Aneva, PhD
Prepared the statement: Professor Dimcho Zahariev Ivanov, PhD

1. Brief biographical data.

Associate Professor Ina Aneva, PhD graduated from the Acad. Sergey P. Korolyov High School of Natural Sciences and Mathematics, Blagoevgrad in 2004. She received diplomas for excellent success and for her participation in the National Olympiad in Biology and Health Education – 2004. In 2008, she received the educational and qualification degree “Bachelor” in the specialty “Molecular Biology” at the St. Kliment Ohridski University of Sofia. In the same year, she continued her studies at the same university in the master’s program “Botany (Higher Plants)”. She was awarded a Golden Badge for excellent success upon graduation in 2010. Two years later, she was enrolled as a doctoral student at the Institute of Biodiversity and Ecosystem Studies of the Bulgarian Academy of Sciences with the topic of her dissertation “Biological and phytochemical in situ and ex situ study of species with conservation status of the genus *Sideritis* L. in Bulgaria”. In 2016, she received the educational and scientific degree “Doctor”.

She began her professional development as a student. In the period November 2007 - February 2009, she worked as a laboratory assistant in the Neurogenetics section of the Acad. Rumen Tsanev Institute of Molecular Biology. She joined the Institute of Biodiversity and Ecosystem Research as a biologist, where she worked in the period September 2011 - March 2012. After completing her doctoral studies in September 2016, she was appointed as an assistant professor at the same institute. In February 2017, she already held the academic position of chief assistant. In December 2019, after a successful procedure, she was appointed as an associate professor. She holds the position of Scientific Secretary of the Department of Biodiversity, Bioresources and Ecology at the Bulgarian Academy of Sciences. She is the author (producer, screenwriter, director, cinematographer and editor) of the feature-documentary film "155 years of the Bulgarian Academy of Sciences: The Living Spirit of the Creators", presented on 11.10.2024 in the Prof. Marin Drinov hall of the Bulgarian Academy of Sciences, at the Ethnografilm Festival, Paris on 20.04.2025 and broadcast several times on the national television channels BNT2 and BNT4 in 2025.

2. Conformity of the submitted documents and materials of the candidate with the minimum requirements, according to the Regulations for Acquiring Scientific Degrees and Holding Academic Positions at the Institute of Forestry at the Bulgarian Academy of Sciences

The documents and materials submitted by Assoc. Prof. Ina Aneva, PhD fully comply with the minimum requirements specified in Appendix No. 1, as well as with Art. 14 and Chapter 6. Specific requirements of the Institute of Forestry for acquiring scientific degrees and occupying academic positions of the Regulations on the conditions and procedure for acquiring a scientific degree and occupying academic positions at the Institute of Forestry at the Bulgarian Academy of Sciences.

According to the indicator "Classroom classes", Assoc. Prof. Ina Aneva, PhD has conducted 6 courses of exercises with students at the University of Forestry, Sofia (30 points), 5 courses of lectures at the New Bulgarian University, Sofia (25 points) and 4 lectures at the Aristotle University, Thessaloniki, Greece (8 points). She is a member of the editorial boards of 8 scientific and 1 popular science journal (45 points). According to the indicator "Participations in national scientific forums", she has 44 participations (44 points), and according to the indicator "Participations in international scientific forums", she has 130 participations (260 points).

3. General description of the presented materials.

The set of materials submitted for participation in the competition includes 56 publications and 800 citations, which do not repeat those submitted for the acquisition of the doctor educational and scientific degree and for holding the academic positions chief assistant and associate professor. In addition, 174 participations in scientific forums and 31 participations in scientific research projects for the entire creative period are presented.

The list of publications submitted for participation in the competition for the academic position of "professor" includes 56 articles in scientific journals, which are refereed and indexed in world-renowned databases of scientific information (Web of Science and Scopus). In addition, a list of 92 publications outside the competition is presented. Scientific publications for participation in this competition are divided into two groups: 16 articles are equivalent to a habilitation thesis and 40 articles are outside the habilitation thesis.

Publications in journals equivalent to a habilitation thesis are distributed as follows: 7 articles are in scientific journals with Q1, 2 articles are in journals with Q2, 1 article is in a journal with Q3, 2 articles are in journals with Q4 and 4 articles are in journals referenced and indexed in world-renowned databases without quartile. They provide 254 points for indicator group B with 100 points required.

Of the publications outside the habilitation thesis, 18 articles are in issues with Q1, 4 articles are in issues with Q2, 12 articles are in issues with Q3 and 6 articles are in issues with Q4. The number of articles in scientific journals with a high quartile is very impressive. Of these, the following scientific journals with the highest impact factor are: Biological Conservation (Netherlands), Current Problems in Cardiology (UK), Diversity (Switzerland), Frontiers in Pharmacology (Switzerland), Food Research International (UK), Forest Ecology and Management (Netherlands), Horticulturae (Switzerland), Life (Switzerland), Pharmaceuticals (Switzerland), Phytochemical Analysis (UK), Phytomedicine (Germany), Phytotherapy Research (UK), Plants (Switzerland).

The following articles have the highest impact factor: Article No. 27 with IF=16.464, published in the Current Problems in Cardiology, Article No. 33 with IF=7.900, published in the Phytomedicine, Article No. 20 with IF=6.475, published in the Food Research International, Article No. 17 with IF=5.990, published in the Biological Conservation, Article No. 24 with IF=5.878, published in the Phytotherapy Research, Articles No. 18 and No. 22 with IF=5.810, published in the Frontiers in Pharmacology, Article No. 23 with IF=5.340, published in the Phytomedicine, Article No. 26 with IF=5.215, published in the Pharmaceuticals.

An important indicator of the quality of the publications is the impressively large number of scientific journals in which they have been published (40 in number): Acta Agrobotanica; Acta Ecologica Sinica; Acta Universitatis Agriculturae et Silviculturae Mendelianae Brunensis; Archives of Iranian Medicine; Biochemical Systematics and Ecology; Biologia Futura; Biological Conservation; BioRisk; Biotechnology & Biotechnological Equipment; Boletín Latinoamericano y del Caribe de Plantas Medicinales y Aromáticas; Bulgarian Chemical Communications; Chemistry and Biodiversity; Combinatorial Chemistry & High Throughput Screening; Complementary Therapies in Medicine; Comptes rendus de l'Académie bulgare des Sciences; Current Problems in Cardiology; Diversity; Ecologia Balkanica; Forestry Ideas; Frontiers in Pharmacology; Food Research International; Forest Ecology and Management; Horticulturae; Integrative Biological Control; International Journal of Secondary Metabolite; Journal of the Serbian Chemical Society; Jundishapur Journal of Natural Pharmaceutical Products; Life; Natural Product Communications; Pharmaceuticals; Phytochemical Analysis; Phytologia Balcanica; Phytomedicine; Phytotherapy Research; Plant Biosystems; Plant Cell Biotechnology and Molecular Biology; Plants; Proceedings of the X International Scientific Agricultural Symposium "Agrosym 2019"; Tropical Journal of Natural Product Research; Zeitschrift für Naturforschung - Section C Journal of Biosciences.

The total number of points for indicator group G is 782, which exceeds the minimum of 240 points by more than 3 times.

By place of publication, out of a total of 56 articles, 49 articles were published in international

and 7 articles were published in national scientific journals. All publications are in English, which is an important condition for their visibility and citation by the international scientific community.

All scientific articles are co-authored, with the candidate being the first author in 11 articles, the second author in 4 articles, the third author in 8 articles, and the fourth or subsequent author in 33 of the joint publications, with a total number of authors ranging from 2 to 36, with most articles having a large number of authors. This is very good evidence of the ability to work in a team, which is highly valued by the international scientific community.

The presented materials fully comply with the national mandatory scientific metric requirements for holding the academic position of "professor" and the criteria in the Regulations for the acquisition of scientific degrees and holding academic positions at the Institute of Forestry at the Bulgarian Academy of Sciences.

4. Main areas of the candidate's research work and the most important scientific contributions.

The habilitation work, represented by 16 scientific publications in scientific journals, referenced and indexed in world-renowned databases of scientific information (Web of Science and Scopus), includes research that can be summarized in the following scientific areas: floristic and habitat diversity, molecular studies of taxonomically complex groups such as the genus *Thymus* L., phytochemical and ethnobotanical studies.

Depending on their focus and scientific content, the presented contributions can be divided into two main groups: fundamental and applied. There is a clearly expressed logical connection and continuity between them.

The fundamental contributions include the results of studies on the species diversity, distribution and conservation significance of medicinal plants and rare plant species (publications with numbers 1, 8, 13, and 15). An important part of the publications is devoted to the clarification of taxonomic problems in genera with high morphological variability such as the genus *Thymus* L., hybridization and endemism (publications with numbers 2 and 3). The most significant result of these studies is the description of the *Sideritis elica* Aneva, Zhelev and Bonchev found in Bulgaria as a new plant species for science (publication number 3).

The scientific and applied contributions include the results of studies on the genetic and structural variability of natural populations of pharmacologically significant plant species with an emphasis on the relationship between genotype and metabolic profile (publications with numbers 7, 9, and 10). A particularly interesting group are the studies conducted in the Rhodope Mountains in the field of ethnobotany and traditional knowledge (publications with numbers 4, 5, and 6). They provide a quantitative idea of the scale and current state of traditionally used medicinal plants. An important group is represented by studies on the conservation and sustainable use of medicinal plant species (publications with numbers 7, 11, 12, 14, and 16).

The 40 scientific publications submitted for participation in the current competition cover a wide thematic range, including research on the spatial patterns of biodiversity, the genetic and biochemical characteristics of medicinal plants, as well as the assessment of their functional activity and impact on biological systems. On this basis, scientific and scientific-applied contributions have been formulated, which are divided into the following main directions:

1. Contributions to the clarification of spatial patterns of biodiversity and the influence of anthropogenic factors on ecosystems (6 in number).
2. Contributions to the study of the biochemical and genetic diversity of medicinal plants as an element of biological diversity (12 in number).
3. Contributions to the evaluation of the functional and ecological potential of medicinal plants and their secondary metabolites (14 in number).
4. Contributions to the study of the toxicological and ecological effects of natural and synthetic compounds on biological systems (8 in number).

The four groups of contributions mentioned above can be combined into two groups: fundamental and applied science.

Fundamental contributions include the results of research aimed at clarifying spatial patterns

of biodiversity, population structure and ecological interactions, as well as characterizing the biochemical and genetic diversity of medicinal plants. This group includes the results related to the analysis of the influence of ecological and anthropogenic factors on ecosystems (publications with numbers 17, 25, 30, 32, and 47) and studies on spatial and population variability and metabolic diversity of plant species (publications with numbers 19, 20, 28, 29, 36, 40, 41, 42, 44, 49, 52, and 56). These contributions expand knowledge about the regularities determining the structure, functioning and adaptive potential of biological systems and create a basis for a scientifically sound assessment of genetic resources.

Contributions of a scientific-applied nature are aimed at assessing the functional potential of plant secondary metabolites and the possibilities for their practical application. This group includes the results of research on the biological activity of plant extracts and compounds with potential application in medicine and pharmacy (publications with numbers 18, 21, 23, 24, 27, 33, 34, 38, 43, 48, 50, 51, and 54), as well as those related to the assessment of their impact on biological systems and their application in sustainable agriculture (publications with numbers 31, 35, 37, 53, and 55). This group also includes the results of research on the toxicological effects, mechanisms of action and safety of natural compounds, including the assessment of risks in their use (publications with numbers 22, 26, 39, and 45).

The presented contributions are distinguished by a clearly traceable connection between fundamental and applied research, in which the results of the analyses of biodiversity, genetic resources and phytochemical diversity are logically built upon by assessing the biological activity, practical applicability and safety of plant resources.

5. Most significant scientific and applied achievements and implementation activities.

The research results presented in the habilitation thesis, including 16 scientific publications in scientific journals, referenced and indexed in Web of Science and Scopus, are not limited to descriptive data collection, but offer a model for connecting fundamental knowledge with applied solutions: from correct taxonomic identification and assessment of conservation status to the selection of appropriate plant material, cultivation, standardization and sustainable management of natural resources. The main contribution of the habilitation thesis consists in building a comprehensive conceptual framework for the study of medicinal plants as a strategic natural resource, which has simultaneously high biological, economic and cultural value, in order to obtain a complex of fundamental, interdisciplinary and scientific-applied contributions. This study requires the application of an integrated scientific approach based on the joint use of floristic, taxonomic, molecular, phytochemical, population-biological and ethnobotanical methods.

The high scientific achievements of Assoc. Prof. Dr. Ina Aneva are recognized by the 12 scientific awards she has received. Three of the awards are international, including UNESCO's Man and the Biosphere (MAB) Young Scientists Award. Among the national awards, the Grand Prize for Young Scientists "Pythagoras 2020" and the Honorary Badge "For Merit to the Bulgarian Academy of Sciences" 2024 deserve special attention.

6. Reflection of the candidate's scientific publications in the literature (citability).

For participation in the competition, a list of noted citations in world-renowned databases of scientific information (Web of Science or Scopus) in the period 2020-2025 after taking up the academic position of associate professor is presented. The list includes 803 citations of 82 scientific publications. Of these, 3 citations are repeated and 800 citations can be recognized. The number of citations is indicatively high for the short period in which they were reported.

The following publications have the highest number of citations:

Fakhri S., Aneva I., Farzaei M., Sobarzo-Sánchez E. The neuroprotective effects of astaxanthin: Therapeutic targets and clinical perspective. *Molecules*, 24, 14, 2019, 2640-2659. JCR IF (Web of Science): 3.06 – **84 citations**.

Trendafilova A., Ivanova V., Rangelov M., Todorova M., Ozek G., Yur S., Ozek T., Aneva I., Veleva R., Moskova-Doumanova V., Doumanov Y., Topouzova-Hristova T. Caffeoylquinic Acids, Cytotoxic, Antioxidant, Acetylcholinesterase and Tyrosinase Enzyme Inhibitory Activities of Six

Imula Species from Bulgaria. Chemistry & Biodiversity, 17, 4, 2020, DOI: 10.1002/cbdv.202000051, e2000051. JCR IF (Web of Science): 2.039 – **44 citations**.

Aneva I., Zhelev P., Kozuharova I., Danova K., Nabavi S.F., Behzad S. Genus *Sideritis*, section *Empedoclia* in Southeastern Europe and Turkey – studies in ethnopharmacology and recent progress of biological activities. DARU Journal of Pharmaceutical Science, 27, 1, Springer, 2019, 407-421. JCR IF (Web of Science): 2.698 – **43 citations**.

Concepción, E., Aneva, I., Jay, M., Lukanov, S., Marsden, K., Moreno, G., Oppermann, R., Pardo, A., Piskol, S., Rolo, V., Schraml, A., Díaz, M. Optimizing biodiversity gain of European agriculture through regional targeting and adaptive management of conservation tools. Biological Conservation, 241, Elsevier, 2020, DOI: <https://doi.org/10.1016/j.biocon.2019.108384>, SJR (Scopus): 2.24, JCR IF (Web of Science): 4.66 – **43 citations**.

Farzaei M., Bayrami Z., Farzaei F., Aneva I., Das S., Patra J., Das G., Abdollahi M. Poisoning by medical plant: a comprehensive review. Archives of Iranian Medicine, 23, 2, 2020, 117-127. SJR (Scopus): 0.472, JCR IF (Web of Science): 1.2 – **41 citations**.

Ivanov I., Vrancheva R., Marchev A., Petkova N., Aneva I., Denev P., Georgiev G., Pavlov A. Antioxidant activities and phenolic compounds in Bulgarian *Fumaria* species. Int. J. Curr. Microbiol. App. Sci., 3, 2, 2014, 296-306 – **40 citations**.

The following publications have the highest number of citations within a calendar year:

Fakhri S., Aneva I., Farzaei M., Sobarzo-Sánchez E. The neuroprotective effects of astaxanthin: Therapeutic targets and clinical perspective. Molecules, 24, 14, 2019, 2640-2659. JCR IF (Web of Science): 3.06 – **24 citations** in 2023, **19 citations** in 2020, **15 citations** in 2025, **13 citations** in 2022 and **11 citations** in 2020.

Concepción, E., Aneva, I., Jay, M., Lukanov, S., Marsden, K., Moreno, G., Oppermann, R., Pardo, A., Piskol, S., Rolo, V., Schraml, A., Díaz, M. Optimizing biodiversity gain of European agriculture through regional targeting and adaptive management of conservation tools. Biological Conservation, 241, Elsevier, 2020, DOI: <https://doi.org/10.1016/j.biocon.2019.108384>, SJR (Scopus): 2.24, JCR IF (Web of Science): 4.66 – **13 citations** in 2022, **9 citations** in 2023 and **8 citations** in 2024.

Farzaei M., Bayrami Z., Farzaei F., Aneva I., Das S., Patra J., Das G., Abdollahi M. Poisoning by medical plant: a comprehensive review. Archives of Iranian Medicine, 23, 2, 2020, 117-127. SJR (Scopus): 0.472, JCR IF (Web of Science): 1.2 – **13 citations** in 2024 and **9 citations** in 2023.

Trendafilova A., Ivanova V., Rangelov M., Todorova M., Ozek G., Yur S., Ozek T., Aneva I., Veleva R., Moskova-Doumanova V., Doumanov Y., Topouzova-Hristova T. Caffeoylquinic Acids, Cytotoxic, Antioxidant, Acetylcholinesterase and Tyrosinase Enzyme Inhibitory Activities of Six *Imula* Species from Bulgaria. Chemistry & Biodiversity, 17, 4, 2020, DOI: 10.1002/cbdv.202000051, e2000051. JCR IF (Web of Science): 2.039 – **12 citations** in 2024, **9 citations** in 2023 and **8 citations** in 2021.

Aneva I., Zhelev P., Kozuharova I., Danova K., Nabavi S.F., Behzad S. Genus *Sideritis*, section *Empedoclia* in Southeastern Europe and Turkey – studies in ethnopharmacology and recent progress of biological activities. DARU Journal of Pharmaceutical Science, 27, 1, Springer, 2019, 407-421. JCR IF (Web of Science): 2.698 – **9 citations** in 2021, **9 citations** in 2023 and **8 citations** in 2025.

A particularly strong impression is made by the citations of articles in the same year of their publication. This was observed in 46 articles (13 articles from 2020, 12 articles from 2021, 11 articles from 2022, 6 articles from 2023, 3 articles from 2024 and 1 article in 2025). Of these, the following articles have the highest number of citations (the numbers of the articles are from the list of citations):

2020: Article No. 40 – 44 citations, Article No. 47 – 41 citations, Article No. 37 – 22 citations Article No. 38 – 18 citations, Article No. 42 – 17 citations, Article No. 49 – 14 citations in 2020.

2021: Article No. 53 – 24 citations, Article No. 60 – 15 citations, Article No. 56 – 14 citations, Article No. 52 – 10 citations, Article No. 59 – 10 citations, Article No. 50 – 8 citations, Article No. 57 – 8 citations in 2021.

2022: Article No. 66 – 38 citations, Article No. 63 – 13 citations, Article No. 68 – 13 citations

in 2022.

2023: Article No. 77 – 5 citations, Article No. 76 – 4 citations in 2023.

2024: Article No. 80 – 33 citations in 2024.

2025: Article No. 82 – 1 citation in 2025.

It is also worth noting that the citing authors are exclusively from other countries.

The large number of citations shows the relevance of the topic on which Assoc. Prof. Ina Aneva, PhD works. This is a particularly important and independent criterion for assessing the significance of the scientific contributions received in her research work. Based on the indicated citations, 1600 points were obtained, which is many times more than the required minimum of 120 points.

7. Participation in scientific and applied projects.

The documents attached to the competition indicate participation in a total of 31 scientific or educational projects. Of these, 15 participations are in national projects (150 points) and 6 participations are in international projects (120 points). An important contribution is the management of another 7 national projects (140 points) and the management of the Bulgarian team in 3 international projects under the Horizon Europe framework program (150 points). The funds attracted by projects led by Assoc. Prof. Ina Aneva, PhD amount to 989,731 BGN (198 points).

As a result of active participation in scientific and applied projects, the total number of points received is 758 with 150 points required.

8. Teaching and learning activities (supervisor/advisor of doctoral students, student training, etc.).

As fulfillment of the additional requirements of the Institute of Forestry at the Bulgarian Academy of Sciences, the supervision of two successfully defended doctoral students (50 points) and teaching and learning activities at two universities in Bulgaria and one in Greece (total 63 points) can be indicated: 6 courses of exercises (total 242 hours) with students at the University of Forestry, Sofia (30 points), 5 courses of lectures (total 150 hours) at the New Bulgarian University, Sofia (25 points) and 4 lectures at the Aristotle University, Thessaloniki, Greece (8 points).

9. Assessment of the candidate's personal contribution.

In the presented scientific production, the personal contribution of Assoc. Prof. Ina Aneva, PhD is significant. This is convincingly proven both by the publications in which she is the lead author, and by the indicated fundamental and scientific-applied contributions. The large number of joint publications with colleagues from the country and abroad testifies to her ability to work in a team. An undeniable recognition of the achievements of Assoc. Prof. Ina Aneva, PhD are the 12 scientific awards received, 3 of which are international.

10. Critical notes and recommendations.

In the list of citations, three of them are repeated. For example, the following citation:

Aneva I., Zhelev P., Kozuharova I., Danova K., Nabavi S.F., Behzad S. Genus *Sideritis*, section *Empedoclia* in Southeastern Europe and Turkey – studies in ethnopharmacology and recent progress of biological activities. *DARU Journal of Pharmaceutical Science*, 27, 1, Springer, 2019, 407-421. JCR IF (Web of Science): 2.698.

Quoted in:

Bouloumpasi, E., Koskeridou, A., Irakli, M., Karioti, A., Tsivelika, N., & Chatzopoulou, P. (2024). Bioactive Compounds of Green Phenolic Extracts Obtained via Microwave-Assisted Extraction of *Sideritis* Species Grown in Greece. *Molecules*, 29(23), 5612.

Given the extremely large number of citations (800 in number), this is a not significant problem.

My recommendation to Assoc. Prof. Ina Aneva, PhD is to continue her active research work, the results of which I believe will contribute not only to her scientific authority, but also to the authority of the Institute of Forestry of the Bulgarian Academy of Sciences.

11. Personal impressions.

I am very impressed by the serious research activity of Assoc. Prof. Ina Aneva, PhD, confirmed unequivocally by the scientific results and their high quality. In my communication with her in connection with her participation as a reviewer of articles in the journal Acta Scientifica Naturalis, of which I am the executive editor, I have always encountered a highly professional attitude. This was the reason for her being invited as a member of the editorial team of the journal. I am grateful that the invitation was accepted, and in her person, we have a serious Bulgarian scientist in the team. She is also another researcher with high scientific results in the composition of the scientists from the Institute of Forestry of the Bulgarian Academy of Sciences that I know.

12. Conclusion.

In connection with the above, I propose that Assoc. Prof. Ina Yosifova Aneva, PhD be elected as a "professor" in the Field of Higher Education: 4. Natural Sciences, Mathematics and Informatics, Professional Field: 4.3. Biological Sciences, Scientific Specialty: Ecology and Ecosystem Protection.

June, 5, 2026
Shumen

Reviewer:
(Prof. Dimcho Zahariev, PhD)