

MINISTRY OF EDUCATION AND SCIENCE OF UKRAINE

Petro Mohyla Black Sea National University

Faculty of Physical Education and Sports

Department of Medical Biology and Physics, Microbiology, Histology, Physiology and Pathophysiology

APPROVED
First Vice-Rector
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ACADEMIC DISCIPLINE PROGRAM

BIOLOGY IN THE WORLD SPACE

Speciality 091 «Biology»

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1. Description of the academic discipline

Indicator name	Discipline characteristics	
Discipline name	Biology in the World Space	
Branch of knowledge	09 «Biology»	
Specialty	091 «Biology»	
Specialization (if any)		
Educational program	Kinesiology	
Higher education level	Second (master's)	
Discipline status	Compulsory	
Course of study	6	
Academic year	2022-2023	
Number(s) of semesters (trimesters):	Full-time form	External form
	11	-
Total number of ECTS credits/hours	3 credits / 90 hours	
Course structure: - lectures - seminars (practical, laboratory, semi-group) - hours of students' independent work	Full-time form	External form
	10	-
	20	-
	60	-
Percentage of classroom load	33	
Language of teaching	English	
Form of intermediate control (if any)	-	
Form of final control	Credit	

2. Purpose, objectives and results of learning the discipline

Purpose: to deepen students' knowledge of the ways to search for scientific information in the world information space and the main aspects of the biology sublanguage for oral and written scientific and professional communication; acquaintance with the topical and debated issues of modern biology, which are quite ambiguous in the interpretation and use in practice.

Objective: to provide students with basic knowledge about the necessary components of successful professional activity in the field of biology. Provide comprehensive information on topical issues of biology and modern technologies used in biology. Be able to use the gained knowledge to analyze and solve problematic situational tasks (predicting possible ways to choose a particular product, treatment method, lifestyle, etc.). Acquaint with the basic methods of introducing new biological ideas into practice.

The developed program corresponds to the educational program and is focused on **the formation of competencies:**

General competencies (GC)	GC1	Ability to work in an international context
Special (professional, subject) competencies (SC)	SC1	Ability to use the latest advances in biology necessary for professional, research and/or innovative activities
	SC6	Ability to predict the development directions of modern biology based on a general analysis of the development of science and technology

As a result of studying the discipline, a student must

know:

- modern biological phenomena as causal processes that change in phylogeny and ontogeny.
- organization of biological phenomena taking into account the basic principles of biological cybernetics (information processes, self-regulation, systemic approach).

be able to:

- apply the acquired knowledge in direct practical activities
- know English (B2-C1).
- master the basics of the theory of biology, knowledge acquired during the course.
- work independently with scientific and scientific-methodical literature.
- operate with knowledge, skills and abilities acquired during the study of the course and in practical activities.

According to the educational program, the expected **results of learning** include the following abilities:

PR 1	Know the state and foreign languages at a level sufficient for communication on professional issues and presentation of the results of own research
PR 2	Use libraries, information databases, Internet resources to search for the necessary information
PR 5	Use libraries, information databases, Internet resources to search for the necessary information
PR 8	Apply knowledge of the peculiarities of the development of modern biological science, the basic methodological principles of scientific research, methodological and methodical tools for conducting scientific research on specialization during carrying out the research
PR 13	Follow the basic rules of biological ethics, biosafety, biosecurity, assess the risks of using the latest biological, biotechnological and biomedical methods and technologies, identify potentially dangerous organisms or production processes

	that can pose a threat of emergencies
PR 14	Adhere to the norms of academic virtue during education and conducting of scientific activities, know the basic legal norms for the protection of intellectual property
PR 15	Carry out experimental studies using the latest physiological methods to determine the nature of adaptive changes in the human body in terms of motor activity of different orientations.

3. Program of academic discipline

Full-time form:

	Topics	Lectures	Practical (seminars, laboratory, semi-group)	Independent work
1	Topic 1. Search and systematization of professionally-oriented sources in the specialty.	2	2	8
2	Topic 2. Written language means of professional and scientific communication.	2	2	8
3	Topic 3. Language models of oral communication in the field of biology.		2	8
4	Topic 4. Bioethical principles in biological research.	2	4	10
5	Topic 5. Formation and development of modern biology.	2	2	8
6	Topic 6. Biotechnology - current state and development prospects.	2	4	10
7	Topic 7. Practical implementation of biological knowledge		4	8
	Total for the course	10	20	60

4. Content of the academic discipline

4.1. Lecture plan

№	Lesson / Lecture topic	Number of hours
1	Topic 1. Search and systematization of professionally-oriented sources in the specialty 1. Worldview and scientific picture of the world 2. General ideas of information 3. Typology of information and main types of publications 4. Search for information.	2
2	Topic 2, 3. Written language means of professional and scientific communication. Language models of oral communication in the field of biology. 1. Text as a form of scientific knowledge existence 2. Composition of scientific work 3. Language means of scientific style 4. The most typical scientific texts 5. Abstract 6. Proceedings. Compendium. Response. Review	2

	<ul style="list-style-type: none"> 7. Course work and thesis 8. Article. Abstract. Abstract of the dissertation 9. General information about the dissertation research 10. Basic theories of language communication in biology 11. Notification (statement) 12. Differences in communication between humans and animals. 	
3	<p>Topic 4. Bioethical principles in biological research.</p> <ul style="list-style-type: none"> 1. Ethical assessment of biosafety and risks of biomedical technologies 2. Principles and rules of bioethics and its teaching 3. Bioethics of medical and biological experiments and clinical research 4. Directions and methods of bioethics 5. Bioethical principle of justice in the distribution of resources 6. Declaration of Helsinki 	2
4	<p>Topic 5. Formation and development of modern biology.</p> <ul style="list-style-type: none"> 1. Biology as a system of sciences 2. Scientists-biologists of Ukraine 3. Modern directions of research in biology 	2
5	<p>Topic 6, 7. Biotechnology - current state and development prospects. Practical implementation of biological knowledge</p> <ul style="list-style-type: none"> 1. Biotechnology as a scientific discipline 2. Prospects and problems of gene cloning biotechnology. 3. Biotechnology of hormone production 4. Biotechnology and vaccines of the future. 5. Biotechnology of obtaining vitamins 	2

4.2. Plan of practical (seminars, laboratory, semi-group) lessons

No.	Lesson topic / plan	Number of hours
1	<p>Topic 1. Search and systematization of professionally-oriented sources in the specialty</p> <ul style="list-style-type: none"> 1. Worldview and scientific picture of the world 2. General ideas of information 3. Typology of information and main types of publications 4. Search for information. 	2
2	<p>Topic 2. Written language means of professional and scientific communication.</p> <ul style="list-style-type: none"> 1. Text as a form of scientific knowledge existence 2. Composition of scientific work 3. Language means of scientific style 4. The most typical scientific texts 5. Abstract 6. Proceedings. Compendium. 7. Response. 8. Review 9. Course work and thesis 10. Article. 11. Abstract. Abstract of the dissertation 12. General information about the dissertation research 	2
3	<p>Topic 3. Language models of oral communication in the field of biology.</p> <ul style="list-style-type: none"> 1. Basic theories of language communication in biology 2. Notification (statement) 3. Differences in communication between humans and animals. 	2
4	<p>Topic 4. Bioethical principles in biological research.</p> <ul style="list-style-type: none"> 1. Ethical assessment of biosafety and risks of biomedical technologies 	2

	2. Principles and rules of bioethics and its teaching 3. Bioethics of medical and biological experiments and clinical research	
5	Topic 4. Bioethical principles in biological research. 1. Directions and methods of bioethics 2. Bioethical principle of justice in the distribution of resources 3. Declaration of Helsinki	
6	Topic 5. Formation and development of modern biology. 1. Biology as a system of sciences 2. Scientists-biologists of Ukraine 3. Modern directions of research in biology	2
7	Topic 6. Biotechnology - current state and development prospects. 1. Biotechnology as a scientific discipline 2. Prospects and problems of gene cloning biotechnology. 3. Biotechnology of hormone production	2
8	Topic 6. Biotechnology - current state and development prospects. 4. Biotechnology and vaccines of the future. 5. Biotechnology of obtaining vitamins	2
9	Topic 7. Practical implementation of biological knowledge 1. Laboratory diagnostics	2
10	Topic 7. Practical implementation of biological knowledge 1. Technologies for diagnosing the functional state of a person	2

4.3. Assignments for independent work

Prepare individual work. The volume of work should be 10-15 pages. The total amount of work does not include appendices, glossary, a list of used sources, tables and figures that completely occupy the page area. But all pages of the specified elements are subject to continuous numbering.

The work must be neatly handwritten or printed in accordance with stylistic and grammatical norms. The text must contain references to literature and other sources that were used during the preparation of the work.

The text of an individual work must be presented in the state language on standard sheets of A-4 format (210 x 297).

The work must be printed in Times New Roman font, 14 point size; alignment – "Fit to width"; line spacing "One and a half" (1.5 Lines); paragraph indent – five characters (1.25 cm); top and bottom margins – 2 cm, left – 3 cm, right – 1 cm. Paragraph indent should be the same throughout the text and equal to five characters (1.25 cm).

Abbreviations of words and phrases must comply with the current standards of librarianship and publishing (for example: the Ministry of Internal Affairs of Ukraine (hereinafter - MIA)). Sections and subsections should contain headings that should be accurately reproduced in the content. Section headings are as a rule placed in the middle of the line. Section titles are printed in capital letters without punctuation marks at the end, without underscores. Section headings should begin with a proper indent.

Paragraph indent should be the same throughout the text and equal to five characters (standard indent defined by text editors on a PC).

If the title consists of two or more sentences, they are separated by a period. Hyphenation in section headings should be avoided. The distance between the heading and the subsequent or previous text, in the printed production of a written work, must be at least two lines.

Page numbering should be continuous. The serial number of the page must be indicated by an Arabic numeral and placed in the upper right corner of the page without a dot or dashes. The title page

(attached) must be included to the general page numbering of the written work, but the page number on the title page, as a rule, is not placed. Sections should also be numbered in Arabic numerals.

When using literary sources in the text of a written work, there may be two options for references to them. The first one is page references (footnotes): when a source is cited on a page, at the bottom of this page below the main text there is a bibliographic description of the literary source and the page is indicated. The second one is when in case of referring to a literary source in square brackets, its serial number in the list of references and a specific page are indicated, a citation, exact numbers, data are given, for example [3, p. 17].

Illustrative material – drawings, diagrams, schemes, etc. should be placed immediately after the first reference to it in the text. If the diagram, scheme, table does not fit on the page where there are links, they are submitted on the next page. Each illustrative material should be referenced in the text.

Topics for individual assignments:

1. Methods of analytical processing of scientific foreign language sources.
2. The global Internet network and its use in scientific research.
3. Typical language models of scientific communication.
4. Publication of the research results and their implementation in practice.
5. Ethical norms and biology.
6. The latest trends and achievements in biology.
7. Applied modern scientific research in Ukraine and their professional presentation on the world stage.
8. Use of bacteria in industry and medicine.
9. Positive and negative consequences of the practical use of microorganisms.
10. History of genetic engineering.
11. Biotechnological means of genetic engineering.
12. Features of the GMO use in the world and in Ukraine.
13. New characteristics that are most often "joined" to GMOs.
14. Reasons for the creation of genetically modified plants.
15. GMOs and environmental risk.
16. Sex cells: factors of their growth, development and division.
17. Concept of cloning. History of research of this phenomenon.
18. Ethical and legal aspects of cloning.
19. Concept of the human genome.
20. Analysis of biotechnological problems of cloning.
21. Enzymes used in molecular cloning.
22. Ways of isolation and use of stem cells.
23. Basic concepts of gerontology. History of the development of gerontology as a science.

4.4. Ensuring the educational process

Educational and methodical material: abstracts of lectures and practical lessons.

Internet: access to university websites and other sites that are necessary for the educational process.

Equipment: multimedia projector.

5. Final control

The list of questions of the final control (credit)

1. Types and sources of scientific information.
2. Information support of biological research.
3. Art of written professional and scientific presentation of thoughts.

4. Curriculum Vitae: purpose and peculiarities of writing.
5. Scientific article, rules of writing articles.
6. SMART-model of project writing.
7. Structure and rules of poster report design.
8. Ethical principles in biology.
9. Preparation of oral presentations. Speech on biological topics.
10. Conducting biological research in accordance with bioethical standards.
11. Objects, methods and connection of biotechnology with other sciences.
12. Industrial biotechnology.
13. Genetic engineering.
14. Biotechnology of microorganisms.
15. Plant biotechnology.
16. Biotechnology of animals.
17. Prospects and problems of biotechnology.
18. Characteristics and nature of GMOs.
19. Reasons for the creation of genetically modified plants and animals.
20. Peculiarities of GMO usage in the world and in Ukraine.
21. Methods of producing GMOs.
22. Methods of GMO identification.
23. Bioethics and biosafety in relation to GMOs.
24. GMOs and environmental risk.
25. Theoretical foundations of genetic engineering.
26. Basic operations of genetic engineering.
27. Obtaining transgenic organisms.
28. Methods of genetic modification of products and organisms and the degree of their safety for humans and the environment.
29. Stem cells, the history of the doctrine development.
30. Appearance and transformation of stem cells during embryonic development.
31. Division of stem cells.
32. Stem cells in children and adults.
33. Bone marrow stromal cells - "central spare parts warehouse".
34. Ways of isolation and use of stem cells.
35. Stem cells, their use in practical medicine.
36. Bioethics and biosafety of stem cell use.
37. Concept of "cloning". Cloning in living systems.
38. Cloning of plants.
39. Cloning of animals.
40. Therapeutic and reproductive human cloning.
41. Ethical and legislative aspects of cloning.
42. Analysis of biotechnological problems of cloning.
43. History of the method of artificial insemination.
44. Reproductive health of the population. Female and male infertility.
45. Sex cells: factors of their growth, development and division.
46. Methods and technologies of artificial insemination.
47. Ethical problems of artificial insemination.
48. Basic concepts of gerontology.
49. History of the development of gerontology as a science.
50. Laws and general mechanisms of aging of the human body.
51. Basic theories of aging and their physiological basis.
52. Methods of rejuvenation.
53. Transplantology. Basic concepts.
54. History of the development of transplantation.
55. Methods of conservation and transplantation of organs.
56. Creation of artificial organs.
57. Concept of "organ bank" and peculiarities of preservation and transplantation of organs.

58. Cell transplantation.
59. Mechanisms of immunological tolerance. Rejection reactions and the use of immunosuppressants.
60. Use of bacteria in medicine and industry.
61. Positive and negative consequences of the practical use of microorganisms.
62. Peculiarities of the use of microorganisms in Ukraine and in the world.
63. Prospects for the practical use of microorganisms.
64. General characteristics of antibiotics.
65. Mechanism of action of antibiotics.
66. Classification of antibiotics by type and spectrum of action.
67. Methods of obtaining antibiotics.
68. Side effects of antibiotics.
69. Biotechnological means of genetic engineering.
70. Methods of analysis of antibiotics.
71. Selectivity of action of antibiotics in relation to certain microorganisms.

Example of a credit ticket

Ministry of Education and Science of Ukraine

Petro Mohyla Black Sea National University

Department of Medical Biology and Physics, Microbiology, Histology, Physiology and Pathophysiology

Credit ticket

on the discipline «Biology in the World Space»

Variant 0

1. Art of written professional and scientific presentation of thoughts.

2. Basic operations of genetic engineering.

Approved at the meeting of the Department. Protocol No. ____ dated «__» 20__.

Examiner _____

Head of the department _____

For a complete detailed answer to each of the questions, the student receives 15 points:

14-15 points: full answer to the questions with examples and explanations of these aspects;

11-13 points: deep mastering of the program material; complete answer to the questions;

7-10 points: complete mastering of the program material and the ability to navigate in the new one; meaningful answers to questions;

4-6 points: partial, incomplete coverage of the content of the question; inaccuracies in the answer; there is an understanding of the basic provisions of the material.

0-3 points: for not mastering a significant part of the program material; lack of knowledge of the theory of basic issues and terms;

The maximum number of points for a credit is 30 points.

4. Assessment criteria and means of diagnostics of learning results

4.1. Student work grading system

The control of the level of mastering of educational material is carried out by checking the knowledge of students at the credit according to the schedule of the session.

In accordance with the regulation on the system of rating assessment of students' knowledge in the study of the discipline "Biology in the World Space", the following system of assessment of students' work is applied.

No.	Type of control	Maximum number of points	Deadline
1.	Seminars (practical lessons): 10 classes 5 points each	10 x 5 = 50	During semester
2.	Preparation and defense of individual work	20	During semester
3.	Credit	30	Credit and examination session
	Total	100	

4.2. Oral answer at a practical lesson

5 points (excellent)	A student has completed the practical task completely, is fluent in the conceptual apparatus, knows the main problems of the academic discipline, its purpose and objectives. Can work with educational material; has an idea and awareness of the importance of studying the discipline. Able to successfully perform creative tasks. Doesn't make mistakes in oral and written forms of speech.
4 points (good)	A student has a solid thorough knowledge, is able to apply them in practice, but may make inaccuracies, some mistakes in formulating answers.
3 points (good)	A student knows the program material completely; has practical skills; not completely able to think independently, can not go beyond the topic.
2 points (satisfactory)	A student knows the main content of the topic, but his knowledge is general, sometimes not supported by examples.
1 point (unsatisfactory)	A student has fragmentary knowledge on the topic. Does not know terminology, because the conceptual apparatus is not formed. Can not speak on the program material.

4.3. Writing and defense of individual work

17-20 points	A work proposed by a student is presented in the required volume, designed grammatically, relies on basic theoretical and practical material, contains new, non-traditional information on this issue and suggestions for its practical application.
13-16 points	A work proposed by a student is presented in the required volume, designed grammatically, relies on mainly on basic theoretical and practical material, contains fragments of new, non-traditional information. The design of the work has minor drawbacks.
9-12 points	A work proposed by a student is presented in the required volume, designed grammatically, includes basic theoretical and practical output, but contains certain shortcomings in the coverage of the issue that is studied. The design of the work has minor drawbacks.
5-8 points	A work contains basic theoretical and practical material, but has no practical output. The presentation of the material is inaccurate, there are significant shortcomings in the coverage of the topic and design of the work.

1-4 points	A work contains basic theoretical and practical material, but the topic is not fully disclosed. The presentation of the material is inaccurate, there are shortcomings in the coverage of the topic. The volume and the design of the proposed work have significant inaccuracies.
0 points	The work is based on fragmentary knowledge of the course. The research topic is not disclosed. The design does not meet the requirements.

5. Recommended sources of information

5.1. Essential:

1. Birta G.O. Methodology and organization of scientific research: textbook / G.O. Birta, Yu.G. Burgu - Kyiv: -Center of Educational Literature, 2014. - 142 p.
2. Kravtsiv R.Y. Genetic engineering: textbook / R.Y. Kravtsiv, A.G. Kolotnytsky, V.I. Butsyak. - Lviv: Gzhytsky S.Z. Lviv National Academy of Veterinary Medicine, 2008 - 2007. - 214 p.
3. Krushelnytska O.V. Methodology and organization of scientific research: textbook. - Kyiv: Condor, 2009. - 206 p.
4. Kotsan I. Ya. Biology in the world space: Test tasks for checking the quality of knowledge acquisition / I. Ya. Kotsan, T.V. Kachynska, O.V. Korzhik. - Lutsk: PE Ivanyuk V.P., 2017. - 79 p.
5. Mykytenko N.O. Structure of foreign language training of a specialist in natural sciences in higher educational institutions of Ukraine / O.N. Mykytenko // Scientific notes. Series: Pedagogy. - 2010. - No. 2. - P. 41-48.
6. Pyrog T.P. General biotechnology: textbook / T.P. Pyrog, O.A. Ignatova. - Kyiv: NUFT, 2009. - 336 p.
7. Tereshkevich G.T. Bioethics in the system of health care and medical education: Textbook - Lviv: Svit, 2008. - 344 p.
8. Clark D.P., Pazdernik N.J. Biotechnology. - Amsterdam: Elsevier Inc., 2012 - 767 p.
9. Davic K. Cracking the Genome / Davic K. - N.Y. : The Free Press, 2001. - 260 p.
10. Gene transfer to plants by diverse species of bacteria / Broothers W., Mitchell H. J., [et al.] // Nature. - 2005. - Vol. 433. - P. 629-633.
11. Gene transfer to plants by diverse species of bacteria / Broothers W., Mitchell H. J., [et al.] // Nature. - 2005. - Vol. 433. - P. 629-633.
12. Initial Sequencing and Analysis of the Human Genome / Lander E. S., [et al.] // Nature. - 2001. - No. 6822. - Vol. 39. - P. 860-921.
13. Phillips, T. (2008) Genetically modified organisms (GMOs): Transgenic crops and recombinant DNA technology. *Nature Education* 1(1):213.
14. Tuch B.E (2006). "Stem cells - a clinical update". *Australian Family Physician*. 35 (9): 719-21. PMID 16969445.
15. Verma I.M., Weitzman M.D. Gene therapy: twenty-first century medicine // *Annual Rev. Biochemistry* - 2005. - V.74. - P. 711-738.

5.2. Additional:

1. Anisimov V.N. Molecular and physiological mechanisms of aging / V.N. Anisimov. - SPb.: Nauka, 2003. - 468 p.
2. Archambault, Eric, et al. (2013). Proportion of Open Access Peer-Reviewed Papers at the European and World Levels—2004-2011. http://www.science-metrix.com/pdf/SM_EC_OA_Availability_2004-2011.pdf.
3. Davis, P. M. (2009). Author-choice open access publishing in the biological and medical literature: A citation analysis. *Journal of the American Society for Information Science and Technology* 60(1):3-8.
4. Davis, P. M. and W. H. Walters. (2011). The impact of free access to the scientific literature: a review of recent research. *Journal of the Medical Library Association* 99(3): 208-217.

5. Ermishin A.P. Biotechnology. Biosafety. Bioethics / A.P. Ermishin et al .; ed. by A.L. Ermishina. - Minsk.: Tehnologiya, 2005. - 430 p. - ISBN 985-458-118-7.
6. Kurilo L.F. Ethical and legal aspects of the use of human stem cells / Kurilo L.F. // Chelovek. – 2003. – No. 3. - 23–27.
7. Melnichuk M.D. General (industrial) biotechnology: textbook / M.D. Melnichuk, O.L. Klyachenko, V.V. Borodai, Yu.V. Kolomiyets. - Kyiv: FOP Korzun D.Yu., 2014. - 252 p.
8. Suber, P. (2013). *Open Access Overview*. <http://legacy.earlham.edu/~peters/fos/overview.htm>.
9. Walters, W. H. and A. C. Linvill. (2011). Characteristics of Open Access journals in six subject areas. *College and Research Libraries* 72(4): 372-392.
10. Yulevich O.I. Biotechnology: textbook / O.I. Yulevich, S.I. Kovtun, M.I. Gyl; ed. by M.I. Gyl. - Mykolaiv: Mykolaiv State Agrarian University, 2012. - 476 p.

5.3. E-resources:

1. Zheng X, Zheng P, Sun J. [Systems biology for industrial biotechnology]. *Sheng Wu Gong Cheng Xue Bao*. 2019 Oct 25;35(10):1955-1973. Chinese. doi: 10.13345/j.cjb.190217. PMID: 31668041. <https://pubmed.ncbi.nlm.nih.gov/31668041/>
2. Saura A. Race biology. *Hereditas*. 2020 Nov 25;157(1):48. doi: 10.1186/s41065-020-00161-x. PMID: 33239087; PMCID: PMC7690032. <https://pubmed.ncbi.nlm.nih.gov/33239087/>
3. Dahal S, Yurkovich JT, Xu H, Palsson BO, Yang L. Synthesizing Systems Biology Knowledge from Omics Using Genome-Scale Models. *Proteomics*. 2020 Sep;20(17-18):e1900282. doi: 10.1002/pmic.201900282. Epub 2020 Jul 12. PMID: 32579720; PMCID: PMC7501203. <https://pubmed.ncbi.nlm.nih.gov/32579720/>
4. Schwartz TS. The Promises and the Challenges of Integrating Multi-Omics and Systems Biology in Comparative Stress Biology. *Integr Comp Biol*. 2020 Jul 1;60(1):89-97. doi: 10.1093/icb/icaa026. PMID: 32386307. <https://pubmed.ncbi.nlm.nih.gov/32386307/>
5. Aikens ML. Meeting the Needs of A Changing Landscape: Advances and Challenges in Undergraduate Biology Education. *Bull Math Biol*. 2020 May 13;82(5):60. doi: 10.1007/s11538-020-00739-6. PMID: 32399760. <https://pubmed.ncbi.nlm.nih.gov/32399760/>
6. Woese CR. A new biology for a new century. *Microbiol Mol Biol Rev*. 2004 Jun;68(2):173-86. doi: 10.1128/MMBR.68.2.173-186.2004. PMID: 15187180; PMCID: PMC419918. <https://pubmed.ncbi.nlm.nih.gov/15187180/>