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ДЖЕРЕЛА ПОХОДЖЕННЯ АНГЛІЙСЬКОЇ БІОТЕХНОЛОГІЧНОЇ ТЕРМІНОЛОГІЇ

ORIGIN SOURCES OF ENGLISH BIOTECHNOLOGICAL TERMINOLOGY

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Abstract. *The article characterizes the peculiarities of the formation of the English biotechnological terminological system, which is of growing interest among linguists, since it is a young terminological system that is at the stage of formation due to the high level of innovation and dynamism of biotechnology. This makes linguistic research related to the study of a new terminology system relevant. The object of research of our article is the English-language special (terminological) vocabulary that nominates the concept of the biotechnological sphere. From a linguistic point of view, this branch of knowledge is characterized by a special biotechnological terminology, which is still being formed and formed mainly in the English language, although the development of scientific research in the biotechnology field is not a priority of the Anglo-American community. In this connection, the question arises as to the definition of the sources of the formation of the terms of biotechnology, which is necessary for the understanding of those factors that affect the general composition of the vocabulary of the English language. The research material was a sample consisting of terminological units of the modern English language, belonging to biotechnology sphere, selected from specialized dictionaries, scientific works on the problems of biotechnology, Internet sites dedicated to the creation and production of new modified organisms and products. During the analysis, we relied on methods of continuous sampling of linguistic material, definitional analysis, classification, as well as comparative analysis and statistical methods. On the basis of the analyzed sources of English biotechnological terms, it is concluded that the biotechnological term system develops under the influence of semantic processes in the vocabulary of the national language and their assimilation by the biotechnological term system. The movement of lexical units from the composition of commonly used vocabulary to the terminology of biotechnology is connected with the terminology of their meaning. Terms formation consists in the peculiarity of one and the same word functioning in non-terminological and terminological meanings, that is, a development of special terminological meanings from a general literary word. An important source of increasing the English biotechnological term system is borrowing from the terminology of various disciplines, since biotechnology is a complex integrative science that combines dozens of sections and directions. A more common source of formation of biotechnological terminology is metaphorization. Word formation processes are the most significant source of replenishment of the biotechnological terminological system: affixation (prefixes, suffixes), compounding of bases, abbreviation. The development of biotechnology as a science and globalization lead to the replenishment of the biotechnological terminology system due to neologisms formation.*

Key words: *term, terminological system, biotechnological term, sources of term formation.*

Introduction. Modern scientific and technological progress gives birth to new branches of science and technology, which develop their lexical and, in particular, terminological apparatus. The study and description of terms arising in a new field of knowledge, to which biotechnology undoubtedly belongs, is one of the most important trends in modern linguistic research. Addressing the issues of biotechnological terminology is explained by the growing need for international cooperation, which is especially important for the further development of society, to support the progress of science, technology and intercultural communication of specialists in the field of biotechnology.

The object of research of our article is the English special (terminological) lexis that nominates the concept of biotechnological

sphere. The choice of the biotechnological terminology as an object of our research is not accidental. From a linguistic point of view, this branch of knowledge is characterized by a specialized lexis, which is still being formed mainly in the English language, although the development of scientific research in the field of biotechnology is not a priority of the Anglo-American community. In this connection, a question arises regarding the peculiarities of the formation of the English terminological system in the field of biotechnology and determination of the formation sources of its terms. It should be emphasized that the language of biotechnology in modern English is a complex system correlated with a certain professional sphere of human activity aimed at the creation and use of genetically transformed biological objects (for example: transgenic plants, somatic hybrids, etc.).

Literature review. The relevance of the linguistic study of biotechnological language is indicated by a number of scientific studies by linguists, who have recently paid some attention to the problem of forming a terminological system of innovative and technical discourse directly related to biotechnology. Thus, O. Myshak devoted her works to the structural-semantic and derivational analysis of English biotechnological terminology, its classification and evolution [11; 12], L. Rytikova conducted the study of biotechnology term system and the general trends of its development in the English language [2; 3]. Semantic phenomena characterizing English biotechnological terminology was investigated by L. Rogach [13], multicomponent terms in the context of biotechnology were the subject of scientific investigations by A. Gainutdinova, A. Mukhtarova [9] and O. Syrotin [12; 15]. A number of our works are devoted to the linguistic and cognitive aspects of metaphorization in the English-language terminology of the biotechnology field and its innovations [7; 14].

The analyzed scientific literature on the issue under study gave reasons to state that the English terminology of biotechnology is of growing interest among linguists, since it is a young term system that is at the stage of formation due to the high level of innovation and dynamism of biotechnology. This makes linguistic research related to the study of a new terminology system relevant.

However, until now in linguistics, the sources of formation of biotechnological terms have not been systematically identified and presented, which is necessary for understanding those factors that affect the general composition of the English language lexis.

Thus, the purpose of our study is to determine the sources of the English biotechnological term system formation.

Material and methods of research. The research material is a sample consisting of more than 1000 terminological units of the modern English language, belonging to the biotechnology field, selected from specialized dictionaries, scientific works on the problems of biotechnology, Internet sites dedicated to the creation and production of new modified organisms and products, etc. In the course of analysis, we relied on the methods of linguistic material sampling, definitional analysis, classification, as well as comparative analysis and statistical methods.

Results. In order to understand the concept of "biotechnological term", we examined the definitions of the “term” in scientific literature. In modern linguistics, "term" is presented as "a word or word-combination that expresses a clearly defined concept from a certain field of science, technology, art, social and political life, etc". [1, p. 306].

O. Selivanova qualifies the term as a word or compound denoting the concept of a special sphere of communication in a specific field of knowledge and emphasizes the dynamic characterization of the term as a functional, textual phenomenon that materializes in discourse and constitutes a "verbalized concept that gives cognitive direction to terminological research" [4, p. 221]. In her opinion, the term should be characterized by systematicity, the presence of a classification, definition, brevity, correspondence to the designated concept, unambiguity, conventionality, and high informativeness.

E. Skorokhodko understands the term as a word or an established word combination that is a member of such a lexical-semantic system that represents a certain professional system of concepts. This interpretation excludes general scientific lexical units from the range of terms [6, p. 47].

Therefore, all scientists emphasize the

specificity of the terms, their unequivocalness and the correlation with the concepts of a certain field of knowledge. Concepts have linguistic expression and cannot exist without it. Thus, we can talk about the dual nature of the term: on the one hand, it names a concept, on the other, it provides a connection between it and the logos. Since the term is a naming unit in a certain scientific field, we define the biotechnological terminology system as a set of lexical units that correlate with the concept of "biotechnology" and express its conceptual meaning, revealing an evaluative or pragmatic meaning. An element of the biotechnological terminology is the biotechnological term, which O. Myshak defines as a word or lexical unit that verbalizes knowledge about the use of living organisms and biological processes in production and serves biotechnology – a branch of science that combines features of both biology and technology [11]. A biotechnological term, like any term, is characterized by certain requirements: motivation, unambiguity, semantic and structural connections. The basis of assigning a word to a biotechnological term is the selection of its content and conceptual features, which make it possible to assign the word to the one particular scientific field or field of "biotechnology", which we consider a branch of science that studies the possibilities of using living organisms, their systems, or the products of their vital activities for solving technological problems, as well as the possibility of creating living organisms with the necessary properties by the method of genetic engineering.

The word, being used in the biotechnological field for the first time, becomes an element of the terminology system that serves the field of biotechnology and forms a complex of terminological systems depending on the direction of biotechnological activity, which is combined into a single biotechnological terminology system.

The formation of the biotechnological terminology is determined by the specificity of biotechnology as a science, which at the beginning of the 21st century was transformed into a complex integrative science that combines dozens of sections and directions. Biotechnological terminology is a complex phenomenon, it is characterized by the use of terms borrowed from the terminology of various disciplines – biology, genetics, medicine, ecology, bioethics, philosophy, sociology, psychology, legal science, therefore the most common source of its formation is borrowing at the interdisciplinary level. In the process of our research, we discovered a number of borrowings from various fields of science and industry. For clarity, we shall consider several examples of cross-industry borrowing:

1) medical: to affect (about a disease) – influence; allergy – increased sensitivity of the body to substances that cause various disorders; carcinoma – one of the names of a malignant cancerous tumor; diagnosis – recognition of the disease, its name; infection; metabolic disease; outbreak; vaccine; vector – carrier of infection; viral disease;

2) biological, which also includes botanical and zoological terms: adaptation – adjustment of the organism to new conditions of existence in the external environment, which arose in the process of evolution; anabiosis –, a state of the body consisting in an almost complete but reversible cessation of vital functions; asexual reproduction – a way of reproduction that is carried out without meiosis or fusion of gametes; cell; chromosome; female; gamete – a reproductive cell of multicellular organisms, which ensures the transfer of hereditary information; germ; nutrition; selection; unicellular – one-celled, tissues, organs or organisms consisting of one cell;

3) genetics: allele – one of the forms of a gene; autosome – any of the chromosomes of the set, except sex chromosomes; anticodon – triplet of nucleotides (often modified), which is a part of the anticodon loop of transport RNA (tRNA); cistron – DNA sequence coded for a certain polypeptide of gene; epistasis – the interaction of genes located in different positions, in which one gene suppresses the action of another; exon – a section of a eukaryotic gene, which is transcribed as part of the primary transcript, and after being processed is a part of functional RNA molecule; to express – to transcribe and translate a gene; gene – the basic physical and functional unit of heredity; recombination – the process of offspring obtaining a combination of genes different from the combination of genes of one of its

parents;

4) chemical: alkaloids – a group of nitrogen-containing organic substances, usually of plant origin; antibiotic – a chemical substance – the result of the synthesis of fungi and bacteria, which kill other organisms or delay their growth; antioxidant – a compound that slows down the rate of oxidative reactions; bacteriocide – a chemical reagent or a drug that kills bacterial cells; catalyst – a substance that accelerates a chemical reaction; contaminant – an undesirable chemical component present in a compound or a mixture of compounds; purine – a nitrogenous base that has two rings and is part of nucleic acids;

5) environmental: abiotic factor – a component of inanimate, inorganic nature; biodiversity; biome – a large regional or subcontinental subdivision of the biosphere; bioremediation – biological cleaning, use of microorganisms to solve environmental problems; habitat of life.

One of the sources of the origin of biotechnological vocabulary in the English language is the semantic processes in the lexis of national language and its assimilation by the biotechnological terminology. In the English language, there are certain lexical units with a general meaning, which have gained special importance in the field of biotechnology and have become a part of the biotechnological terminology. This process occurs without changing the original meaning in the general lexis. Such words become terminological if, having received a special definition, they take their place in the term system of biotechnology. For example, the word "gap" in Longman's dictionary is explained as 1) a space between two objects or two parts of an object, especially because something is missing; 2) a big difference between two situations, numbers, groups of people; 3) something missing that stops something else from being good or complete; 4) a period of time when nothing is happening, that exists between two other periods of time when something is happening [10]. In biotechnology, this term is characterized by two meanings: 1) period of time, during the cell cycle, between M and S phases; 2) a missing section on one of the strands of double-stranded DNA [16]. As we can see, the semantic features of the period of time and space, taken from the common language meaning, are used in the terminology to denote two special concepts of biotechnology related to the cell.

The word "label" means 1) a piece of paper or another material that is attached to something and gives information about it; and 2) a word or phrase which is used to describe a person, group, or thing, but which is unfair or incorrect [10]. In biotechnological terminology, the term “label” is defined as “a compound or atom that is either attached to or incorporated into a macromolecule and is used to detect the presence of a compound, substance, or macromolecule in a sample” [16]. The biotechnological term "cohesion" is used in the special sense of "a force holding a solid to a solid or a solid to a liquid, owing to attraction between like molecules" [16]. If there is cohesion among a group of people, a set of ideas, etc., all the parts or members of it are connected or related in a reasonable way to form a whole [10]. As we can see, the term "cohesion" developed its special meaning on the basis of seme “holding together”, “connection”. The term "bridge" is defined in a special dictionary as "a filter paper or other substrate used as a wick and support structure for a plant tissue in culture when a liquid medium is used" [16]. As a universal lexical unit, the word "bridge" means "a structure built over a river, road, etc. that allows people or vehicles to cross from one side to the other and something that provides a connection between two things” [10]. Seme “supporting construction” is taken as the basis of the term "bridge".

One of the sources of biotechnological terminology is metaphorization. The formation of metaphors is atypical for terminology, which follows from the basic requirements that are put forward to terms (unambiguity, accuracy, etc.), however, as for the field of biotechnology, it is full of metaphors, the corpus of which is continuously updated and expanded due to the new terms. O. Selivanova interprets metaphor as "the most productive creative means of language enrichment, a manifestation of linguistic economy, a semiotic regularity that is manifested in the use of signs of one conceptual sphere to denote another" [4, p. 388]. The researcher believes that within the framework of the "modern linguistic synergistic scientific paradigm, metaphor serves as a powerful attractor, that is, a

parameter of self-organization, a factor in the preservation and development of the terminological system in the language, provides creative mechanisms in any professional field of knowledge, since the unlimited cognitive capabilities of a person cause the need for new language designations" [5, p. 286]. Since biotechnology is a multidisciplinary field, among its terminological units there is a large number of metaphorical terms, which include borrowed and reinterpreted elements of conceptual scientific fields: physics, molecular genetics, molecular biochemistry, biology, bioinformatics, medicine. Let us consider the sources of such metaphorization more closely.

Physics (Physical metaphors)

Gene flow – the spread of genes from one population to another population as a result of migration, which leads to changes in allele frequencies [16, p. 187]; genetic equilibrium – maintenance in a steady state of the ratio of allele frequencies in a population of interbreeding organisms [16, p. 48]; mutational pressure – a constant level of mutation that adds mutant alleles to the population, repeated occurrence of mutations in the population [16, p. 148]; population density – the number of cells or individuals in the calculation per unit of environment volume; genetic distance – assessment of genetic similarity between populations, it is determined by taking into account the assessment of allele frequencies or DNA sequences. For example, if the genetic distance between two populations is estimated by only one locus, and the same frequencies of alleles of this locus are observed in these populations, the distance is zero [16, p. 49].

Computer Sciences

Editing RNA – post-transcriptional processes that change the information encoded in RNA molecules [16, p. 204]; domain – a part of a protein or DNA molecule that has a certain function or structure. The domain in the protein molecule can be small – just a few amino acid residues, or include up to half of the entire polypeptide chain [16, p. 76]; operator – a section of DNA located to the left of a gene or genes, to which one or more regulatory proteins (repressors or activators) are attached, controlling the expression of the gene(s) [16, p. 161]; site catalytic – a part of the surface of the enzyme molecule (usually small), necessary for the catalytic process [16, p. 214].

Biology

Absorption in biotechnology means capillary absorption, osmotic, chemical, or solvent action, such as absorption of a gas by a solid or liquid, or absorption of a liquid by a solid [16, p. 1]. In biology, absorption is the movement of liquid or dissolved substance through the cell membrane [10, p. 2]. Adaptation in biotechnology means adjustment of the population over a number of generations to environmental changes. Adaptation is associated (at least partially) with a change in the genotype structure of the population as a result of the action of selection caused by changes in the environment [16, p. 2]. In biology, adaptation is an adjustment of an organism to new conditions of existence in the external environment, which arose in the process of evolution [10, p. 3].

Medicine

The medical term "ligation" (from Latin ligare "to tie") means the procedure of putting a ligature on blood vessels. In relation to biotechnology, the term "ligation" means: 1. Insertion of foreign DNA between two ends of a plasmid using the enzyme's DNA ligase. 2. The process of connecting two linear nucleic acid molecules using phosphodiester bonds, which are carried out with the participation of the enzyme of ligase [16, p. 35].

In addition to defining the types of terminological metaphors according to the source of their formation, the metaphor of each type is formed according to one or another model of similarity. The main denotative groups of such metaphors are presented below. One of the most productive in biotechnological terminology is the anthropomorphic metaphor, since it is characteristic of human consciousness to know the external world in a close associative connection with personal experience of a biological and social nature. In this sense, technology, resembling a person, performs various functions. Linguistic analysis of terms-metaphors in the field of biotechnology allows us to identify the following semantic groups among anthropomorphic metaphors:

1) metaphors that transfer words characterizing family ties into the biotechnology term system, for example: mother plant, spore mother cell, sib-mating,

sister chromatid exchange, multigene family, foreign DNA;

2) metaphors that draw analogies between human qualities and biotechnological processes and objects: competent cell, passive immunity, silent mutation, hypersensitive response, temperature-sensitive mutant, temperate phage;

3) metaphors that are built on vocabulary related to a person's daily life, or denote actions in daily life, for example: chromosome walking, chromosome jumping, chromosome landing, Chakrabarty decision, gene interaction, gene regulation, carrier molecule, gamete and embryo storage;

4) metaphors that involve the realities of human life in the biotechnological terminology, for example: gene shears, replication fork, sieve cell, sieve element, sieve plate, cDNA library, cDNA clone bank, gene construct;

5) metaphors that transfer human social behavior into the term system of biotechnology, for example: gene-host, candidate-gene, nurse culture, cell sorter;

6) metaphors that draw similarities between objects of biotechnology and parts of the human body, for example: zinc finger, Barr body, microbody.

"Military" metaphors in the field of biotechnology occur as a result of transferring to the processes or objects of gene manipulation represented by the concept characteristics from the field of military affairs, for example: gene gun, target cell, microprojectile bombardment, target duplication of the target site [15, p. 209].

Word-forming processes are an important source of replenishment of the biotechnological term system: affixation, assembly of bases. Analysis of word-forming processes of existing forms of terms allows establishing the most productive methods and models of their formation, which makes it possible to further forecast the development of the system. The most productive suffixes involved in the creation of biotechnological terms in the English language include the following: -ion (bioaugmentation, biore-mediation, pollination, hybridization, expression, replication, transcription, transformation, translation, duplication, explantation); -ing (cloning, splicing, sequencing, crossing (breeding), mapping, profiling); -tide/-cide (nucleotide, pesticide, herbicide); -ance (-ence) (dominance, inheritance, sequence, resistance); -ism (mutualism, organism, parasitism, metabolism, commensalism); -er (transfer, dimer, impeller, isomer, promoter, marker); -ity (consanguinity, cytotoxicity, incompatibility, instability); -y (allelopathy, dichogamy, exogamy, fortify, lysogeny, karyogamy) and others.

In turn, the most productive prefixes involved in the formation of biotechnological noun terms are anti- (anticodon, antigen, antisense RNA, anti-oncogene), hyper- (hyperploid, hyperthermia), dia- (diakinesis, diazotroph), endo- (endocytosis, endodermis, endomitosis, endopolyploidy), epi- (episome, epistasis, epitope, epicotyl, epigenesist), im-/in- (inbreeding, inhibitor, intragenic, immu-nosensor), co- (co-factor, co-transfection, co-enzyme, co-linearity), para- (parahormone, paralogous, paratope), poly- (polymerase, polygene, polycistronic, polyadenylation, polymorphism, polypeptide), re- (recom-bination, remark (replica), recombinant), sub- (sub-clone, sub-strain, substrate), super- (supergene, supercoil, superbug, supernatant), trans- (transgenic, transposase, transposon), ultra- (ultrasonication), ex- (excinuclease, excision, explantation, explant).

The following suffixes are involved in the formation of biotechnological adjective terms: -ic (antigenic, ecologic, atmospheric, inorganic, heterotrophic, antagonistic, anthro-pogenic, heteromosaic, erratic, aquatic, intrinsic, genetic, thermic, symbiotic); -al (ecological, environmental, artificial, tropical, directional, mineral, geographical, bacterial, anaerobic, hydrospheric, dispersal, dimen-sional, caterpillar); -able (degradable, pre-dictable, vegetable, renewable, arable, usable, favorable, inflammable); -ive (alternative, reproductive, degradative, competitive, extensive, positive, negative, relative, successive); -ar (nuclear, unicellular, multicellular); -ant (tolerant, dominant, constant, abundant, toxicant); -ous (dangerous, gaseous, hazardous, indigenous, superfluous); -ful/less (harmful, harmless, careful, careless); -y (sedi-mentary, hereditary, fragmentary); -ent (dependent, independent, effluent).

An important source of enrichment of English biotechnological terminology is the use of word-forming elements of Latin and Greek origin (eco-, bio-, macro-), for example ecobiotechnology, ecotype, ecobiotic, biote-chnology, bioremediation, bioaugmentation, bio-

energetics, biosafety, bioreactor, bioanalysis, bioassay, biochip, biocontrol, bioconversion, biofuel, biogas, biolistics, bioleaching, bioluminescence, biomass, biometrics, biopiracy, bioprocess, biopesticides, biosensor, biosorbents, biosynthesis, biotin, biotoxin, biotransformation, biotope, macronutrient, macromolecule, macrophage, macropropagation. Their use is explained by extralinguistic factors. The large number of prefixes bio- and eco-, suffixes -ation, -ist/ism, -ics is caused by the fact that biotechnological science continues its unstoppable development.

Another no less common way of replenishing the biotechnological terminology is word formation (or formation of bases). The leading role of word formation in the enrichment of the biotechnological terminology of the English language in recent decades is associated with the growth of the number of complex concepts in the fields affecting biotechnology. The formation of a significant number of lexical neologisms in word formation is explained not only by the desire for linguistic economy, which is achieved due to the semantic capacity of composites, but also primarily by the analytical nature of the English language. According to the degree of motivation, composites are divided into structurally motivated and partially or completely rethought. According to the structure of components, complex biotechnological units (composites) are divided into the following types: a) complex words formed from several simple bases: genotype, gametoclone, gametogenesis, bacteriophage, telophase, radioimmunoassay, retrovirus, pyrophosphate, pseudogene; b) compound words: electroblotting, genetically modified, genealtered; c) complex abbreviated words: agro-biotech, high-tech, hightech, anti-oncogene; d) lexicalized syntactic formations: biotechnology-derived, herbicide-tolerant, plant-incorporated [11]. An important source of replenishment of the English biotechnological term system is neologisms formation. According to O. Selivanova, "a neologism is a new word or compound used in a language to denote a concept in a new meaning" [4, p. 43].

Let us emphasize that the key neologism of the studied field of biotechnology was shortened to the form biotech, which "absorbed" the value of the original unit and also turned into one of the key word forms around which a certain number of neologisms are grouped, for example: biotechnique, biotechnician, biotechnologist, biotech industry, biotech company, agricultural biotech business.

For the formation of such innovations, the word-forming element bio functions in the sense of "biotechnology", "related to biotechnology" [7, p. 93]. Among the morphological methods of neologisms formation in the field of biotechnology, the most active in recent decades is contraction. The desire to save time and effort resulted in a huge number of abbreviations. We consider the following models of abbreviations to be the most common in the field of biotechnology: 1) proper-initial graphic abbreviations – formations from initial letters: SSCP – single-strand conformational polymorphism, RFLP – restriction fragment length polymorphism, SSR – simple sequence repeat, HAC – human artificial chromosome; 2) initial-combined graphic abbreviations, which are represented not only by independent, but also service parts of speech: GRAS – generally regarded as safe, IVEP – in vitro embryo production, PIPs – plantincorporated protectants, 3) partial-initial graphic abbreviations – formed by initial shortening from the components of the complex term: Bt corn – biotechnological corn, GM food – genetically modified food, F factor – fertility factor.

The number of abbreviations and acronyms for complex biotechnology terms is constantly increasing. The presence of a large number of thematic groups of abbreviations indicates a high level of development of the biotechnology language. The biotechnological terminology of the English language is supplemented by telescopic formations. Telescopic word formation of neologisms is a fusion or simplification. Telescopy is the combination of two bases, as a result of which it is impossible to establish to which component of the telescoping word the common component belongs, when a new vocabulary unit arises from two words or from one complete word. According to our empirical sample, neologisms formed by telescopy include such units as: agbiotech (agricultural + biotechnology), reprogenetics (reproductive

+ genetics), Frankenfish (Frankenstein+fish), Franken-food (Frankenstein+food) [7, p. 93].

Conclusions. The processes of formation, development and functioning of the biotechnological term system correspond to the general trends of the formation and existence of the system of terms in language and speech practice. The biotechnological vocabulary of the English language is not a closed layer in the lexical system. The number of terminological units in the biotechnological terminology system is constantly increasing, since it is a young terminology system that is at the stage of formation due to the high level of innovation and dynamism of biotechnology. Based on the analyzed sources of English biotechnological terms, it can be concluded that the biotechnological term system develops under the influence of semantic processes in the vocabulary of the national language and their assimilation in the biotechnological term system. The movement of lexical units from the composition of commonly used vocabulary to the terminology of biotechnology is connected with the terminology of their meaning.

Terminology of commonly used words, the condition of which is the narrowing of the scope of use (in the case of biotechnological terminology), makes the word an expression of a special concept, it performs a definitive function. Terms replenishment consists in the peculiarity of one and the same word functioning in non-terminological and terminological meanings, that is, a development of special terminological meanings from a general literary word. Secondly, a significant source of the increase in the English biotechnological terminological system is borrowing from the terminology of various disciplines and fields, since biotechnology is a complex integrative science that combines dozens of sections and directions. Thirdly, a more common source of formation of biotechnological terminology is metaphorization. Fourthly, the most significant source of replenishment of the biotechnological terminological system is word-forming processes: affixation (prefixes, suffixes), compounding of bases, abbreviation. Fifth, the development of biotechnology as a science and globalization lead to the replenishment of the biotechnological terminology by means of forming neologisms.

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Анотація. *У статті схарактеризовано особливості формування англійської біотехнологічної термінологічної системи, яка викликає зростаючий інтерес у мовознавців, оскільки це молода терміносистема, яка перебуває на етапі формування в зв'язку з високим рівнем нововведення і динамізму біотехнології. Це робить актуальними лінгвістичні дослідження, пов'язані з вивченням нової терміносистеми. Об'єктом дослідження нашої статті є англомовна спеціальна (термінологічна) лексика, що номінує поняття біотехнологічної сфери. З лінгвістичної точки зору ця галузь знання характеризується особливою біотехнологічною термінологією, яка ще*

формується і утворюється, головним чином, в англійській мові, хоча розробка наукових досліджень в галузі біотехнології не є пріоритетом англо-американського співтовариства. У зв'язку з цим виникає питання щодо визначення джерел утворення термінів галузі біотехнології, що є необхідним для розуміння тих чинників, що впливають на загальний склад лексики англійської мови. Матеріалом дослідження послужила вибірка, яка складається з термінологічних одиниць сучасної англійської мови, що належать до сфери біотехнологій, відібраних зі спеціалізованих словників, наукових праць з проблем біотехнологій, інтернет-сайтів, присвячених створенню та виробництву нових модифікованих організмів і продуктів. В ході аналізу ми спиралися на методи суцільної вибірки мовного матеріалу, дефініційного аналізу, класифікування, а також порівняльний аналіз і статистичний метод. На основі проаналізованих джерел англійських біотехнологічних термінів зроблено висновок, що біотехнологічна терміносистема розвивається під впливом семантичних процесів в лексиці загальнонаціональної мови та їх засвоєння біотехнологічною терміносистемою. Рух лексичних одиниць зі складу загальновживаної лексики до термінології біотехнології пов'язаний з термінологізацією їх значення. Термінологізація полягає в особливості одного і того самого слова функціонувати в нетермінологічному і термінологічному значеннях, тобто як розвиток у загальнолітературного слова особливих термінологічних значень. Важливим джерелом збільшення англійської біотехнологічної термінологічної системи є запозичення із термінології різних дисциплін і галузей, оскільки біотехнологія являє собою комплексну інтеграційну науку, що поєднує в собі десятки розділів і напрямків. Поширенішим джерелом формування біотехнологічної терміносистеми є метафоризація. Найбільш вагомим джерелом поповнення біотехнологічної термінологічної системи виступають словотворчі процеси: афіксація (префікси, суфікси), складання основ, абревіація. Розвиток біотехнології як науки та глобалізація зумовлюють поповнення біотехнологічної терміносистеми за рахунок неологізації.

Ключові слова: *термін, термінологічна система, біотехнологічний термін, джерела формування термінів.*