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МІНІСТЕРСТВО ОСВІТИ І НАУКИ УКРАЇНИ
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Кафедра теорії і практики перекладу з
англійської мови

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Захист _____

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Підсумкова оцінка_____

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(кількість балів, оцінка за 4-х бальноюсистемою, дата, підпис викладача)

КУРСОВА РОБОТА

З ПЕРЕКЛАДУ

Особливості перекладу українською мовою англійської лексики біотехнологій (на матеріалі наукових текстів).

Менжега Юлія

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(підпис)

кандидат філологічних наук, доцент

Київ – 2023

Київський національний лінгвістичний університет
Кафедра теорії і практики перекладу з англійської мови

Завідувач кафедри
теорії і практики
перекладу з
англійської мови

_____
(підпис)

к.ф.н., доц. Мелько Х.Б.

"_____" вересня
2022р

ЗАВДАННЯ

на курсову роботу з перекладу з англійської мови

для студентів IV курсу

студентка IV курсу ПА03-19 групи, факультету перекладознавства КНЛУ

спеціальності **035 Філологія,** спеціалізації **035.041 Германські мови та літератури (переклад включно), перша – англійська,** освітньо-професійної програми **Англійська мова і друга іноземна мова: усний і письмовий переклад**

Тема роботи Особливості перекладу українською мовою англійської лексики біотехнологій (на матеріалі наукових текстів).

Науковий керівник

Дата видачі завдання вересня 2022 року

Графік виконання курсової роботи з перекладу

№ п/п	Найменування частин та план курсової роботи	Терміни звіту про виконання	Відмітка про виконання
1.	Аналіз наукових першоджерел і написання **теоретичної частини** курсової роботи (**розділ 1**)	1–5 листопада 2022 р.	
2.	Аналіз дискурсу, який досліджується, на матеріалі фрагмента тексту; проведення перекладацького аналізу матеріалу дослідження і написання **практичної частини** курсової роботи (**розділ 2**)	7–11 лютого 2023 р.	

3.	Написання **вступу і висновків** дослідження, оформлення курсової роботи і подача завершеної курсової роботи науковому керівнику для попереднього перегляду	28–31 березня 2023 р	
4.	**Оцінювання** курсових робіт **науковими керівниками**, підготовка студентами презентацій до захисту курсової роботи	25–30 квітня 2023 р.	
5.	**Захист** курсової роботи (за розкладом деканату)	2-13 травня 2023 р.	

Науковий керівник_____ (підпис)

Студент_____(підпис)

РЕЦЕНЗІЯ НА КУРСОВУ РОБОТУ

З ПЕРЕКЛАДУ З АНГЛІЙСЬКОЇ МОВИ

студентка IV курсу групи ПА03-19 факультету германської філології і перекладу КНЛУ спеціальності **035 Філологія,** спеціалізації **035.041 Германські мови та літератури (переклад включно), перша – англійська,** освітньо-професійної програми **Англійська мова і друга іноземна мова: усний і письмовий переклад**

Менжега Юлія Володимирівна

(ПІБ студента)

за темою Особливості перекладу українською мовою англійської лексики біотехнологій (на матеріалі наукових текстів).

	Критерії	**Оцінка в балах**
1.	Наявність основних компонентів структури роботи — ***загалом 5 балів*** (усі компоненти присутні – **5**, один або декілька компонентів відсутні – **0**)	
2.	Відповідність оформлення роботи, посилань і списку використаних джерел нормативним вимогам до курсової роботи — ***загалом 10 балів*** (повна відповідність – **10**, незначні помилки в оформленні – **8**, значні помилки в оформленні – **4**, оформлення переважно невірне – **0)**	
3.	Відповідність побудови вступу нормативним вимогам — ***загалом 10 балів*** (повна відповідність – **10**, відповідність неповна – **8**, відповідність часткова – **4**, не відповідає вимогам – **0)**	
4.	Відповідність огляду наукової літератури нормативним вимогам — ***загалом 15 балів*** (повна відповідність – **15**, відповідність неповна – **10**, відповідність часткова – **5**, не відповідає вимогам – **0**)	
5.	Відповідність практичної частини дослідження нормативним вимогам — ***загалом 20 балів*** (повна відповідність – **20**, відповідність неповна – **15**, відповідність часткова – **10**, не відповідає вимогам – **0**)	
6.	Відповідність висновків результатам теоретичної та практичної складових дослідження — ***загалом 10 балів*** (повна відповідність – **10**, відповідність неповна – **8**, відповідність часткова – **4**, не відповідає вимогам – **0**)	

Усього набрано балів: _____

Оцінка:

«До захисту» _____ _____

(42-70 балів) *(підпис керівника)*

«На доопрацювання» _____ _____

(0-41 балів) *(підпис керівника)*

”____”_____2022 p.

CONTENT

INTRODUCTION

In the context of globalization of modern society, there is a revival of international communication between representatives of science, technology, economics of different countries, so knowledge of foreign languages is necessary for a deeper understanding and access to new professional information. Biotechnology science is served exclusively by English-language terminology, although the development of scientific research in the field of biotechnology is not a priority of Anglo-American society.

With the progress of biotechnology, the terminological apparatus of this sphere is gradually being formed. The study, description of terms arising in new fields of knowledge, which include biotechnology, is one of the current areas of modern linguistic research. Biotechnological terminology is at the stage of formation due to the high level of innovation and dynamism of biotechnology, which makes it relevant to develop a classification of its terms, due to the need for analysis, allocation of thematic groups, streamlining of special vocabulary.

The theoretical significance of this work lies in determining the meaning of a multicomponent term as a complex linguistic phenomenon, in identifying new patterns in the formation of multicomponent terms, determining their place in the language system, as well as sources, models, internal relations and terms in the terminology system under study.

The object of research is terminological units that express the basic concepts of modern biotechnology vocabulary in Ukrainian and English.

The subject of the study is structural, morphological, syntactic and semantic features of the organization of terminology in the field of biotechnology of comparative analysis of Ukrainian and English lexical units included in the terminology of biotechnology.

The aim of the work is a comprehensive consideration of the terms of

biotechnology in various aspects: lexico-semantic, derivative, morphological.

The structure of the work. The work consists of an introduction, two chapters, 6 subsections, two tables, conclusions, a list of references. The total amount of work is 34 sides.

CHAPTER 1. THE STUDY OF BIOTECHNOLOGICAL VOCABULARY IN TRANSLATION

1.1 Scientific discourse in translation studies.

In modern translation studies, the concept of discourse is associated with the concept of a picture of the world. It is appropriate to emphasize that scientific discourse correlates not only with the concept of language, but also with the concept of a conceptual picture of the world. In this sense, the linguistic picture of the world appears naïve and nationally conditioned, and the scientific picture is objective and universal. It can be represented as a certain set of abstract concepts reflecting the scientific understanding of the world.

In view of this, A. Kolesnikova understands scientific discourse as a type of discursive activity, verbalized in the text in the field of communication, speech interaction of representatives of the relevant social group / institute in order to implement status-role opportunities in the established social institution of borders, a component of "their own professional zone of professional discourse [1].

Confirming this opinion, we give an interpretation of the scientific discourse of A. Kravtsov, who introduces the concept of "scientific institutional discourse" and postulates that this is a form of communication between scientists who may not know each other personally, but must interact in accordance with the norms and needs of society [1].

As a structural component of the professional field of professional discourse, scientific discourse is characterized by creativity, truth, professional value; It is characterized by other features of professional discourse, such as: professional orientation, anthropocentrism, multidisciplinarity, disproportionality of the development of its individual parts, dialogicity, selectivity, isolation, non-cyclicity, didacticism, dynamism, linguistic normativity, stylistic stratification [1].

The strategies of scientific discourse are determined by its tasks: 1) to determine the problem situation and highlight the subject of research; 2) study the history of the

issue; 3) formulate a hypothesis and purpose of the study; 4) justify the choice of research methods and material; 5) build a theoretical model of the subject of research; 6) present the results of observations and experiments; 7) comments and discusses the results of the study; 8) give an expert assessment of the study; 9) determine the scope of practical application of the obtained results; 10) present the results in a form accessible to specialists and non-specialists.

Strategies of scientific discourse are implemented in its genres – scientific article, monograph, dissertation, scientific report, speech at a conference, panel report, scientific and technical report, review, abstract, abstract, abstract, theses. The topic of scientific discourse covers a wide range of problems that are divided into problems of humanities and natural sciences. The humanities are less formal and show a strong dependence of the object of knowledge on its subject. According to G. Slishkin, scientific discourse differs from others by a high degree of intertextuality, so reliance on precedent texts and their concepts is one of the system-forming features. Intertextual communication is presented in the form of quotations, references, well-known titles of monographs, articles, etc., which perform reference, evaluation, etiquette and decorative functions [4].

Modern translation studies are characterized by a fairly large number of concepts aimed at solving problems of scientific and technical translation. We consider the translation of scientific texts from the standpoint of interpretation theory "as a communicative process in which three main participants participate, namely the sender (addressee) of the source text, translator and recipient (addressee) of the source text" [4] and therefore it is appropriate to use the term "discourse" to name the results of this process. The concept of scientific discourse has not yet become widespread in domestic linguistic research, we consider it appropriate to interpret scientific discourse as texts created as a result of the speech activity of scientists as representatives of professional groups, considered in the totality of their linguistic parameters and socio-cultural context.

It follows that genre and stylistic categories of discourse are important for translation analysis, since they form the basis of the traditional classification of types of translation in relation to the nature of texts. Note that the works of scientific discourse are distinguished by a wide variety of literary forms. Among them there are three types - stories, pictures, comments. The three main methods of presentation - description, narration and analysis - are combined in them in different ways, the dominant method gives grounds for such a classification. Based on the above considerations regarding scientific discourse, it is necessary to find out the type of its translation, which will set priorities when translating the text into the target language [6].

Traditionally, there are two types of translation – "artistic (literary)" and "informative (special)". Literary translation is a type of translation activity, the main task of which is to create a language product in the target language, capable of exerting an artistic and aesthetic impact on the reader. Informative translation is the translation of texts, the main function of which is the transfer of information, and not the artistic and aesthetic impact on the reader. In informative translation, subspecies of translation are distinguished depending on whether the translated texts belong to functional styles. The functional and stylistic features of the originals determine the specific features of translations of such texts.

The main function of scientific research is the transfer of information, which is concentrated in terminology, therefore, according to the above classification, the translation of scientific discourse is an informative translation. However, taking into account the use of lexico-syntactic means of expression and taking into account the diversity of literary forms and different levels of conceptualization of scientific discourse, it can be argued that translations of scientific texts also contain elements of literary translation. Despite the wide variety of works of scientific discourse, they are united by the fact that the lexical composition is characterized by elements of commonly used vocabulary that are combined with terminology.

Scientists note that an important feature of scientific discourse is "authority", which means that the text is part of a kind of hypertext that the author supplements, denies or updates and at the same time uses references to authoritative sources. Thus, the peculiarity of all texts of scientific discourse is the obligatory presence of references to other sources. Scientific discourse is a multi-level structure consisting of two interrelated lines of description. One line is continuous (a line representing the scientific field in the author's text), and the other leans - broken (lines representing the scientific field in the texts of other authors) [8].

1.2 The position of biotechnology in scientific discourse.

The formation of a terminological system in biotechnology is closely related to the formation of terminology itself. Biotechnology is a scientific field. Despite the fact that biotechnology originated at the end of the$^{20\text{th century}}$, its terminological system is an entity associated with the entire course of genetic development of biological problems, starting from ancient times.

The methodology of biotechnological research contributed to the convergence of natural sciences and humanities, as well as fundamental and applied scientific activities. Biotechnology has transformed into a complex integrative science that unites several dozen sections and directions. Biotechnological terminology includes a number of terms borrowed from the terminology of related disciplines – biology, genetics, ecology, bioethics, philosophy, sociology, psychology, law [12].

From the point of view of formal expression, a large number of biotechnological terms consist of the use of terms of elements of Greco-Latin origin, which are borrowed from the terminology of biology and genetics.

Biotechnology is a field of knowledge that studies and develops ways to obtain products useful for humanity using biological objects: microorganisms, animal and plant cells. The first microbes of biotechnology appeared when man began to use the

fermentation process for the preparation of wine drinks and baking bakery products. Biotechnology was recognized as a separate branch of science in the$^{20th\ century}$.

As evidenced by the material of the terminological system and its history, many key terms in biotechnology are individually author's formations associated with the names of leading experts in genetics - K.F. Wolf (variability, heredity, modification, mutation), I.H. Koehreyter (heterosis, analytical crossing), G. Mendel (dominance, recessivity, combination series), V. Johansen (gene, phenotype, genotype, phenotype), H. de Vries (isogonism, anisogonism, equal inheritance, unequal inheritance), W. Bateson (allomorph, homomorph, heterozygote, homozygote, genetics), M. Timofeev-Resovsky (expressiveness, penetrance) [18].

Although the development of biotechnology is not a priority only for the Anglo-American scientific community, it is served exclusively by the English-speaking terminal area, in which the leading place belongs to multicomponent terms that semantically reflect global and nationally specific changes in biological and biotechnological science.

On the other hand, the development of the biotechnological system of science itself stimulates the rethinking of terms towards greater specification and branching of their semantic and conceptual connections with other terms.

Biotechnological terminology is a young terminological system that is in a state of formation, so the study of general trends in the development of terminology in English and Ukrainian and its individual features is interesting, in our opinion, both from a theoretical and practical point of view.

Studies of biotechnology terms show that in their structure, biotechnological terms are divided into one-word lexemes and phrases. Depending on the number of components and the nature of the relationship between them, two-component and multicomponent terms are distinguished. They are recognized as the best means of speech in the field of modern science.

Two-component phrases, that is, terms that include two full meaningful words, mainly refer to the following structural types:

- N+N (nucleotide sequence, pesticide resistance, resistance management, semantic codon, stem cells, radiation genetics, gene therapy);
- A + N (structural gene, asexual reproduction, bacteriostatic, biological resources, monoclonal antibodies);
- N + Prep + N (cell culture, cell hybridization, food labeling);
- Past participle + N (bio-based products, related genes/markers, relaxed plasmid, conserved sequence, applied research);
- There is a participle + N (flank region, union (J) segment, perpetuation of the oncogene, reading frames, oncogenic transformation);
- N + Gerund (cell engineering, gene splicing, mutational reproduction, molecular farming, walking on cromos, antigenic switching, alternative splicing) [7].

Among the three-membered phrases there are own phrases and lexical phrases with transitional status: profiling of gene expression, genetically modified organism, plant protectors, single-nucleotide polymorphisms, herbicide-resistant crop, polymerase chain reaction, recombinant DNA molecules, recombinant DNA technology, soil preservation practices, open reading frame, glycoprotein with variable surface.

Prepositions make up a small number of three-syllable phrases of constructions: vertical gene transfer.

Among the four-word terms, there are also proprietary phrases and lexical units with transitional status: limiting the place of cutting enzymes, using genetics of farm animals, polymorphism of the length of restriction fragments.

Among the terms-phrases, two-word terms make up the largest proportion, the rest are composite combinations with three and four components. The maximum number of words in a term is six.

Let us pay attention to the description of word-forming formants, which form terms from biotechnology. They can be divided into several unequal groups:

a) derivative forms of Greek origin (a-/an, ana-, apo-, anti-, amphi-, aro-, andro-, auto-/auto, alo-, allo-, bio-, gene/geno-, - genesis, mono-, poly-, plo-, pleio-, pseudo-, pan-, palin-, spore/a/, phen/pheno-, oligo-, soma-, hamo-/gamy, angium, gameto-, acro-, morpho-, mix-, koino-/cenosis, eu-/ev-, id-/aids-, troph-, hyper-, hypo-, phase/a/, iso-, macro-, micro-, cycl- , type/typist, techno-, nomo-, son-, ortho-, onto-);

b) words of Latin origin (aberration, abbreviation, additivity, attenuation, vitalism, hybridization, degeneration, determination, inversion, dominance, inhibitors, interkinesis, collinearity (genes), complementarity, conjugation, convergence, locus, penetrance, perforatorium, preformism, reduction, recombination, repair, replication, recessivity, transition, transversion, transduction, transcription, translocation, translation);

c) words of Western European origin – English (outbreeding, backcross, genetic marker, inbreeding, inhibitor, crossing, crossing, linker, site, spacer, splicing), French (isolation, gene pool)

d) words of Ukrainian origin (variability, cell, heredity, fertilization, gender).

As it turned out, Ukrainian biotechnological terminology is presented as a system in which the vast majority of terms are constructed using international (Greek-Latin) word-formation elements and words [5].

It is appropriate to note that the use of thermoforming formants - roots and affixes of Greek-Latin origin is a productive type of word formation of biotechnological terms

It is appropriate to predict that modern terminology in the field of biotechnology will deepen this trend by involving mainly international elements in the creation of

terms and using those already used to expand the terminology fund of biotechnological science.

In general, the international direction in thermo-creativity should be recognized as a positive phenomenon, since it reflects the deep processes of interaction of (European) languages, and behind this, according to V.V. Akulenko, there are outwardly imperceptible processes of development of international semantics, behind which there are already non-linguistic areas of systems of concepts, social and cultural life, rapprochement and internationalization [10].

1.3 Peculiarities of translation of biotechnological terms

Interlingual communication usually works with the help of an intermediary translator. The main requirement for translation is communicative and pragmatic equivalence, since it must convey a key aspect of the text. The main requirement for the translator of a scientific text is to preserve the purpose, content and typological characteristics of the text in the target language. It is important to reproduce the message during professional communication, while retaining all the constituent elements of scientific discourse. If the author of a scientific text turns to specialists, then it is extremely important to reproduce the content of industry terminology; If the author informs a large audience of listeners about a popular science magazine, the translator should pay more attention to the stylistic inflection of the text, argumentative strategies of the speaker, etc. [6].

The translator acts as an intermediary in the reproduction of the text of the target language. When translating a scientific text by means of another language, it is necessary to remember about the adequate reproduction of scientific terms. Different genres working in scientific discourse require from the translator full control not only over a clear presentation of the source material, but also over the elimination of inaccuracies by finding clear equivalents in the target language. Sometimes there are

no analogues in Ukrainian, and translators turn to well-known ways of translating lexical units.

Recently, the process of terminology, which is conditioned, has intensified, increasing the flow of scientific and technical information. Due to the fact that the pace of development of different countries of the world differ significantly and taking into account the linguistic characteristics of the languages of different nations, there is a problem of adequate translation of terms that are proposed when obtaining new knowledge and developing new technologies. With this in mind, the main task of a translator is to convey the correct information in full to an ordinary user.

In addition, the translator must take into account the terms when translating the features of the sphere, the conditions of which are translated. Scientists evaluate about 200 different industries, each of which has its own terminological system, while in the modern world the spheres of activity of different sciences are often interrelated, so optimizing the translation of terminological units is relevant today [12].

In addition, it is possible to use biotechnological terminology without the necessary number of explanations and clarifications, the use of abbreviations, a large number of instructions for technological equipment. All this requires from the translator not only a thorough knowledge of the source languages and translation, but also awareness of the topic of the material, and even some technical knowledge.

Another feature of biotechnological translation is a large number of terms in Latin, which additionally requires the translator to know this language. Another feature of the translation of biotechnological terms is the presence of a large number of so-called terms "false friends", that is, words that may be similar to words in the target language, but have a completely different meaning. The solution to this problem can only be if the translator speaks languages at the level of native speakers, that is, he can recognize the shades and nuances of the meanings of different words.

Thus, the problems associated with the translation of biotechnological terms can be solved by training translators with a high level of knowledge in medicine, knowledge

of the Latin language and necessary for the translation of languages. Translators can be students, interns or doctors [16].

Studying at the university should contribute to the training of capable specialists in the translation of biotechnological articles, constantly increasing with the increase of their professional level, the level of their complexity.

Understanding and translating most multicomponent terms can cause some difficulties due to semantic and syntactic inconsistencies in constructs in Ukrainian and English.

Based on the study of Ukrainian and English multicomponent terms, from our point of view, methods of translating English multicomponent terms into our native language were important.

The process of translating individual multicomponent terms is greatly facilitated by international terms and/or term elements of Greek or Latin origin.

For English multicomponent terms with a typical left extended character, the so-called prepositive (dependent) components, which are located to the left of the reference single component, for Ukrainian multicomponent terms, on the contrary, the right ones are dispositive. Consider several ways to translate multicomponent terms [14].

1. Translation is carried out using words and expressions of the native language, which literally use words and expressions of the English language (the so-called tracing paper): chain reaction- ланцюгова реакція; genetically modified organism (GMO) – генетично модифікований організм (ГМО); abiotic factor – абіотичний фактор; natural selection - природний відбір.

2. Translation using the genitive case, for example: cell culture – культивування клітин; storage of embryos – зберігання ембріонів; gene sequencing – сканування генів; gene recombination – рекомбінація генів; Density nopulation - щільність населення.

3. Translation of a noun using an adjective, for example: gene therapy – генна терапія; seed bank – банк насіння; species richness – види багатства; stem cells –

стовбурові клітини; cell cycle – клітинний цикл; embryonic sac – ембріональний мішок; cell Engineering – клітинна інженерія.

4. Translation of a phrase using a group of explanatory words, for example: biotechnology derivative – той, що має біотехнологічне походження; herbicide-resistant crop – культура, стійка до гербіцидів; plant protectors (PIP) – захисні засоби, що входять до складу рослин; substances emitting gamma radiation – Речовини, що поширюють гамма-випромінювання; traceability – відстеження.

5. Translation with changing the order of the components of the attributive group, for example: biosynthetic antibody binding sites – a biosynthetic site that binds antibodies; Antibiotic resistance marker gene – antibiotic resistance marker gene; Antibody-mediated immune response is an immune response mediated by antibodies.

Thus, the above examples, which demonstrate the functioning of multicomponent biotechnological terms and possible variants of their translation, draw our attention to the fact that biotechnological terminology tends to polydispersity in translations, polysemy or homonyms, and complex words mostly require special knowledge and understanding when translating them. Our research also shows that two-component phrases are the most common in English biotechnology terminology, namely we established 74.5 two-component phrases (out of a total of multicomponent terms). In turn, among the two-component phrases we poured out the 7 most productive models. The most productive model for constructing two-component terms is the model (Adj + N) – 47.3%, where the noun is the reference component, and the adjective is in the preposition. This once again confirms the priority of using the noun in the scientific world, in particular in the field of biotechnology. Less productive is the model (N+N) – 26%, where the first noun depends on the second and acts as an attribute. The model of construction of two-component terms (N + prep.+ N) -10.6% can be called average productivity. In most cases, such a model involves the preposition "c", indicating genetic relationship, that is, the second component of the phrase is dependent on the first. Low-performance models are models in which one of the components is the

participle (Ping + N and Peij + N) -7.2% and 3.1% [17].

Consider scientific discourse, and conduct a discursive and stylistic analysis. Fragment of scientific discourse "Development and testing in vitro of inorganic nanobiomaterials as matrixes for cell cultures"

"The study included 7 samples of a laboratory batch of nanostructured bioceramic materials based on calcium phosphates with control bioresorption, 3 samples of multicomponent nanostructured shells based on titanium and 4 samples of 3-dimensional cubic packs of SiO2 nanospheres." In vitro experiments performed on a model of immortized human fibroblasts. The acute cytotoxicity of the samples was determined by 24-hour incubation of human fibroblasts with these materials, the matrix qualities of the surface of the studied materials are judged by the dynamics of human fibroblast growth. The control was human fibroblasts on culture plastic – polysterene. The viability of human fibroblasts at the cultivation stages was determined by the MTT test.

Results. It was shown that all materials, with the exception of three samples of carbanapatite that are non-toxic to human fibroblasts, the fraction of cells that survived after 24 hours of the experiment is 83-100% (vs 25-50% for carbanapatites). It was shown that when cultivating human fibroblasts on these materials, the population of human fibroblasts increased on the tested samples with different intensity. At the same time The matrix qualities of pure hydroxyapatite and biphasic bioceramic materials, as well as one of the samples from the opal microparticle series, significantly exceeded those of polyterene: the adhesive properties of the three samples were compared with the controls. Overall, the results obtained suggest that these materials (excluding carbonatapatites)) non-toxic to human fibroblasts" [5].

The text refers to the scientific style. The text is very full of terms, so it is difficult to perceive. Also, many verbal nouns, such as **executed**, **cultivated**, defining the process, are transformed into predicate verbs when translated, causing the original sentence to be divided into two statements in the final English text. This is a specific

transformation of the text. The division of the original statement in the translation process reflects the differences that are associated with the linguistic selectivity of the Ukrainian and English languages, in the degree of discreteness in describing one subject situation.

In Ukrainian we use one complicated statement, and in English this statement is divided into two short statements, shows a tendency to use simple syntactic structures.

Also in the text we find monolexeme terms, such as "nanostructured bioceramic materials", but there are also words to explain. The words of word formation are **carbanapatites, immortilizedand fibroblasts.**

It should be noted that in the study of a scientific text, special attention should be paid to the category of object, since in the scientific style texts very often contain a description of inanimate objects (**nanostructured bioceramic materials**) on which various manipulations are carried out.

"Human fibroblasts" - this statement acts as a social marker of the text.

The results of the study are of theoretical and practical interest, since the conclusions made as a result of the study on the material of the terminology system of one language can be correlated with the results of the study of other sciences.

CHAPTER 2. FEATURES OF FORMATION AND FUNCTIONING OF BIOTECHNOLOGY VOCABULARY IN TRANSLATION

2.1. Methods and tasks of research in the translation of biotechnology vocabulary

Modern scientific communication actualizes the global task of reflecting the real scientific reality, its basic concepts and categories.

One-component terms are no longer always able to denominate complex processes, descriptions, characteristics and properties. The presence in a scientific text of the role of isolated terms-words decreases, and the role of multicomponent terminology increases significantly. This causes the transition in their analysis from the morphological level to the syntactic level.

From the point of view of formation and development, it is possible to single out basic terms that were borrowed from other terminology systems. For example, "ligation" (from the Latin. "зв'язати") is a medical term that defines the procedure for imposing ligatures on the hematopoietic vessels. In relation to biotechnology, the term "ligation" means the embedding of foreign DNA between the two ends of the plasmid using the DNA of the enzyme ligase. The process of connecting linear two nucleic acid molecules using a phosphodiester bond.

The analysis of multicomponent terms when translating terms from the field of biotechnology from English showed that two-, three-, four-component terms are common among them. As a result of the analysis of 800 English multicomponent terms.

The next stage of our research is to study the morphological structure of biotechnological multicomponent terms of the English language, which is related to the order of connection and the correspondence of components to parts of speech. A common trend for all multicomponent terms has become the grouping of components around a noun, which acts as the main word.

In the process of analyzing multicomponent terms, structural models (two, three, four, six component terms) were identified.

Structural models of two component terms:

N+N (stem cells, gene therapy, pesticide resistance).

A+N (структурний ген, безстатеве розмноження, бактеріостатик , біологічні ресурси)

Structural models of three component terms:

A+N+N (однонуклеотидні поліморфізми, центральна материнська клітина)

N+Prep+N (cell culture, cell hybridization, food labeling)

Structural models of four component terms:

N+N+N+N (генна терапія зародкової лінії, тест на інокуляцію хромосомного трансплантата).

Structural models of five component terms:

A+N+A+N+N (somatic cell transfer technique, tissue hybrid cell culture fluid).

In English structural formulas, the following notation was used: N – noun, A – adjective, Adv-adverb, Ving - the form of a verb ending in -ing, Ved- forms of a verb ending in -ed.

Model type	Total number of three-component terms, %	Total number of multicomponent terms, %	Examples
A+N+N	35,5	26,5	Totipotent stem cells
N+N+N	20,4	15,3	Embryo transfer technology
A+A+N	16,6	12,4	Secondary vascular system
N+A+N	5,4	4,0	Artificial chromosome yeast
A+Ving+N	3,2	2,4	Genetic engineering technology
At+N+N	2,8	2,1	Expressed funnel tag
N+Ving+N	2,5	1,9	Yeast cloning vector

2.2. The peculiarities of formation and translation of biotechnology terms

In any branch of terminological vocabulary, two groups can be distinguished: words (one-word, monolexeme terms) and phrases (verbose, polylexim).

As part of one-word medical terms, three main structural types of terms can be distinguished: simple, affixal, complex. Simple (or root) terms are one-word terms whose basis coincides with the root (cell, index, disease). Affix terms include one-word terms whose base contains a root and affixes (discomfort, implant, incision). There are also methods of term formation such as: morphological, syntactic, word composition.

The most common method of morphological terminology formation is conversion, which is very actively used in English, in term formation. Using this method, terms such as: transplant, drug, hurt are formed.

The next method of morphological terminology formation is suffixation. Productive models are models with suffixes – ing, - tion, - er.

The suffixes – ing, - tion can be used to form the names of processes, actions (restriction, malabsorption).

The suffixes -er, -or can also be used to indicate hardware names (activator, adapter , oxygenerator).

With the help of prefixation, a much smaller number of terms are formed, and there is a significant tendency to use borrowed prefixes, most of which are derived from the Latin language.

Complex terms consist of two or more elements, which are characterized with integral design. Such terms are mainly formed by adding several components (words), which may also include borrowed words from other languages: waterproof - водонепроникний.

A terminological phrase is a multicomponent separately formed, semantically integral combination, which is formed by combining two, three or more words: restriction enzyme cutting site.

When it comes to translating terminological units, there are several approaches, such as transcription, transliteration, tracing, direct inclusion, descriptive translation, the use of a functional equivalent, and the creation of a neologism.

With the help of transcription, many English terms have been translated into Ukrainian.

Tracing – translation without equivalent vocabulary of a foreign language by replacing its constituent parts with their direct lexical correspondences, is used in the translation of the following terms: chain reaction – chain reaction, abiotic factor – абіотичний фактор, genetically modified organism (GMO) – генетично модифікований організм.

Sometimes, when translating English terms, you have to use a group of explanatory words, for example: biotechnology-derived – той, що має біотехнологічне походження, herbicide-tolerant crop – сільськогосподарська культура, стійка до гербіцидів.

Translation when changing the order of the components of the attributive group, for example: biosynthetic antibody binding sites – біосинтетичний сайт, що зв'язує антитіла, antibiotic resistance marker gene – маркерний ген стійкості до антибіотика.

The syntactic method of terminology is the most productive means of replenishing terminology. This method consists in converting familiar free phrases into complex "word equivalents". The simplest and at the same time the most common type of compound terms in English terminology is a two-component attributive phrase, which consists of a nuclear element – a noun in the nominative case and an attributive one. Two-component terms are: attributive phrases with an adjective in the function of the prepositive definition (determining factor – детермінаційний фактор), attributive phrases with a noun in the function of the prepositive definition (chloroplast transit peptide –транспортні білкові пластиди).

Word formation is a combination in one word of two or more root words:

(hemochromatosis, morphogenesis).

The most noticeable in the language are lexical and semantic changes. Semantic changes can occur due to linguistic, historical and social reasons. Eventually, semantic changes can be caused by influences from other languages and dialects. One of the types of semantic changes is the generalization or dissemination of the meanings of words, which in the work is understood as an increase in the semantic volume of a word in the process of historical development. Often, the expansion of the value is carried out as a result of the transfer of the name according to the function that two objects perform. For example, "doctor" meant "вчитель», from the Latin. "docere" - вчити. Today, the use of this word is the norm, but in this sense it gradually entered due to the fact that people associated a doctor with an educated person.

The opposite process is the narrowing of the meaning of the term. The narrowing (specification) of the meaning in this work is understood as a decrease in the semantic volume of a concept in the process of its historical development or in the context of linguistic use.

The following classification of semantic narrowings can be given:

- локальність (acrodysplasia, акродисплазія) – (craniodysplasia краніодісплазія). Both terms are synonymous and the second part of the word "dysplasia" means "developmental anomaly". The term "acrodysplasia" names the location of the defect according to the principle of "top bottom", "acro-" from the Greek. akros "екстремальний», «найвіддаленіший», високий. In medical terms, this component of composites means: "a term that refers to the limbs, to the distal organs, parts of the body", "a term that refers to the tops, upper". Obviously, the term does not correlate with a specific anatomical nomenclature, does not enter into any subject area. Conversely, the term element "cranio" - from the Greek. Kranion, lat. Череп Craniodysplasia is a common name for anomalies in the development of the skull.

- уточнення часу (наприклад, Parrot's atrophy – Атрофія Парро)- Parrot's atrophy of newborn (Парро атрофія новонародженого). Parro atrophy of the

newborn is a disproportionate dwarfism in fetal chondrodystrophy. In this case, we are talking about a pathology that arose in the prenatal period of fetal development.

- Quality clarification (e.g. Pemphigus, pemphigus) – Pemphigus vulgaris. Pemphigus is a serious skin disease that is associated with the formation of blisters on the skin and mucous membranes, which open with the formation of painful erosions.
- Clarification of the process "Plastic surgery, plastic surgery". Plastic surgery deals with surgical interventions that are aimed at eliminating deformations and defects of any organ, tissue or surface of the human body.
- object clarification (for example, stem-cell-стовбурові клітини).
- clarification of the subject (eg albuminometer, albuminometer) - Esbach's albuminometer (Альбумінометр Есбаха). This is a special test tube device, which is designed to quantify protein in urine – the term fixes the specificating sema to the author of the invention G. Esbach.

Until recently, it was believed that synonyms, as a phenomenon, are not characteristic of terminology, and one of the primary requirements that were imposed on the term was the absence of synonyms. Due to the fact that the term is not a special word, but only a word in a special function, it must be characterized by the same linguistic phenomena as any other word of the general literary language, and therefore the phenomenon of synonymy. In terminology, synonyms are correlated with the same phenomenon, concept or object, they cannot characterize its various properties. In this regard, this phenomenon is recognized by some researchers as terminological duplication. Synonyms in terminology are characterized by a different nature and other functions. Here they, as a rule, are devoid of stylistic functions. The main factor in the appearance of synonyms in terminology are various sources of the formation of terms. The practice of the formation and implementation of terms is evidence that this lexico-semantic phenomenon is becoming increasingly regularity for terminology, Moreover, this layer of vocabulary is characterized, as a rule, by absolute synonymy.

Terminological synonyms are characterized by absolute semantic

interchangeability, as a result of which synonymous terms must be considered as absolutely identical in meaning and interchangeable in any context.

It should be noted in this connection that some concepts of biotechnology have several synonyms, for example, the concept of "Tumor" in English is expressed in terms: tumour, mass, growth, blastoma, swelling, or the concept of «Хвороба» - disease, illness, sickness, ailment. As a result of studying the lexico-semantic process of synonymy of biotechnology, it was revealed that its distribution, especially in terminological systems, is due to the following factors: a certain area of knowledge is developed simultaneously in some different countries and with wider contacts, mutual exchange of information is carried out, and hence in terms, in their works, many authors introduce their own terms for the nomination of objects and concepts, The approach to the study of certain phenomena is carried out by scientists from different points of view, in connection with which, various characteristic features of one particular concept are recorded. That is why a separate part of the synonymous terms is individual.

For clarity, we demonstrate the following synonymous series, which includes international terminological combinations of free and coherent type, national equivalent, as well as an eponymous term. Most often, final terminological elements are polysemantic, since they perform a classified function and can determine the class of pathological phenomena. On the contrary, initial terminology elements in complex words, as a rule, carry one meaning. For example, the terminology element Pathy (from the Greek. pathos – страждання, хвороби) is common (кардіопатія, cardiopathia – the common name of heart disease), sensitivity (гіперпатія, hyperpathia – increased sensitivity threshold). In the terminology of heart transplantation, the terminology element "pathy " is used in its first meaning, as a common name for the disease. For example, contraindications to heart transplantation are the following diagnoses: retinopathy (common name for retinal damage), nephropathy (common name for some types of kidney damage), neuropathy (common name for nervous diseases without constant pathological and anatomical changes).

The productive mode of terminology is the semantic way, which is expressed by metaphor and metonymy. About 30% of the terminological fund of biotechnology is occupied by associative terms, which reflect emotions, feelings, subjective perception of the world by the author of the term. The author's associations in the most illustrated form are reflected in allegory terms, for example (graft versus host).

The metaphor defines the process of meaning by the similarity of external and internal signs, as well as function. The main function of terms that are formed by metaphorical hyphenation is the function of the name of new objects, processes, phenomena, that is, the function is nominative. For example, hairy tongue – волохатий язик.

A metaphor is a trope, transferring the properties of one object to another based on a trait that is common or similar to both comparable parts.

As a result of the study, we were able to identify 4 groups of terms that are formed using metaphor.

Group 1 – metaphors that are used as a source of the word, for example, mother plant – материнська рослина, sister chromatid exchange – сестринські обміни хроматидами, multigene family – багатогенна сім'я.

Group 2 – metaphors that draw analogies between human qualities and biotechnological processes and objects (passive immunity, hypersensitive site – гіперчутливий сайт, competent cell – компетентна клітина).

Group 3 – metaphors, as the source material of which groups of vocabulary related to human life are determined (chromosome jumping – стрибки по хромосомі, gene interaction – взаємодія генів

Group 4 – metaphors that draw analogies between biotechnology objects and parts of the human body, for example, microbody – мікротіло, zinc finger –цинковий палець.

If metaphorization is based on a comparison or analogy of any objects, phenomena, properties (principle of similarity) with each other that are not related and

independent of each other, then metonymy is based on transfer along contiguity. In this case, attention is focused on the part of anything that can mark or replace something whole. Metonymic transfer is carried out on a real connection, on a real relationship between objects or phenomena. In metonymy, terms are formed as a result of a shift in meaning based on spatial, temporal, causal contiguity of concepts. It is believed that metaphorization is more productive in the sphere of concrete vocabulary, and metonymic transference, which is associated with a narrowing of meaning, is more common in abstract vocabulary. Metonymization is less productive than metaphorization. For example, brandy nose – ринофіма «винний ніс», swamp itch – анкілостоми шкіри.

Semantic terminology is a source of replenishment of the biotechnological terminology system, this is especially noticeable on the material of metaphorical meaning transfer.

Consider metaphorical terms as mental structures that are presented in writing. For example, wild flesh (надлишковий розвиток ранньої грануляції). Many researchers believe that the metaphorical term is an extremely undesirable phenomenon, including in biotechnological terminology. Inaccurate interpretation of such terms can have significant consequences in practice, especially in biotechnology, and difficulties in communication between specialists.

The analysis of metaphorical terms is interesting not only from a linguistic point of view, but also from a pragmatic and cognitive point of view. Knowledge of the rules of metaphorical transfer will allow scientists to find a reliable way to understand and practice the use of biotechnological terms.

In terminology, in particular in biotechnology, metaphor appears as a result of the aesthetic perception of the object by the author of the term. The author deliberately tries to reflect in the term not only the essence of the pathological process, but also his own impression, which he received in the study of a particular object. For example, marple syrup disease (спадкове захворювання при патології).

The role of metaphorical terms is especially important in the nomination of pathological processes or phenomena that relate to biased concepts. Their characteristics are chosen by analogy with signs open to sensitive perception. As a rule, these are signs of material objects.

Adjectives or participles that indicate mechanical movements are often used to convey subjective sensations. For example, shooting pains (стріляючі болі), cutting pains (ріжучі болі,).

As the analysis shows, most biotechnological terms that are formed according to one or another metaphorical model are phrases that are characterized by a certain type of stability. The component words of such a phrase separately lose their metaphorical meaning and cease to be biotechnological terms. It is well known that metaphorical transference is a reinterpretation by which people establish similarities and distinctions between objects and phenomena. With the help of semantic analysis of metaphorical terms, you can try to point out their distinctive features.

Metaphorical terms are easier to understand and understand, given the patient-centric approach to biotechnology is their undeniable virtue.

It can be concluded that metaphorization in medical terminology is a productive means of terminogenesis. A distinctive feature of biotechnological terminology in Ukrainian and English is the coincidence of the general linguistic picture of the world in European languages, which is confirmed by the presence of a significant number of crippled metaphors. A characteristic feature is also the borrowing of international metaphorical terms.

These samples demonstrate that metaphorical reflection is a productive way of forming terms in the field of biotechnology. The anthropomorphic model is especially widespread, within which metaphor terms with a component – a proper name, which is called a well-known person, are distinguished into a separate group. Scientific and technological progress entails the need to nominate new concepts. The metaphor makes it possible to create a new term that will be accessible for memorization and awareness.

Thus, it is possible to predict the further development of biotechnological terminology in general, as well as its individual terminology systems, in particular, through metaphorization. Prospects for further research are considered through the selection and analysis of metaphorical models in the field of biotechnology, which allow to establish trends in the nomination of a particular industry.

The paper analyzed 50 one-component terms, which were selected by continuous sampling from scientific and technical articles posted in the journals of the Contemporary Problems of Ecology series. Consider ways to translate words-terms in the field of biotechnology from English into Ukrainian.

Table 2

Method of translating words	Application, %	Examples
Translation transliteration and transcription	11% of cases	Antioxidants– антиоксиданти Sorbcya – сорбція Mortgage - мортмаса
Tracing	48% of cases	Elution – вимивання Compounds - сполуки Lead- свинець
Approximate translation (synonyms)	11% of cases	Aeration – аерація Poisonous – токсичний Young -молодий
Transformational translation (specification)	23% of cases	Soot- сажа Scorch – обпалок Clusters- кластери
Transformational translation (adding)	7% of cases	Habitat – місце зростання Redox – окислювально-відновні Fuels – паливні матеріали
Ways to translate multicomponent terms.		
Multicomponent terminological phrases of regressive structure	2% of cases	High pressure preheaters – нагрівачі високого тиску

Multicomponent terminological phrases of progressive structure	2% of cases	Water Reuse – Повторне використання води
Tracing	10% of cases	Condensate coolers – охолоджувачі конденсату; Global temperature rise – Глобальне підвищення температури
Grammatical transformation permutation, inversion	20% of cases	Oxygen-deficient dead zones - мертві зони з нестачею кисню; Total quality management – загальне управління якістю
Grammatical transformations (replacing parts of speech, noun with an adjective)	20% of cases	Nickel alloys – нікелеві сплави Feed water tanks – ємності для кормової води
Grammatical transformations (use of a noun in the genitive case)	10% of cases	Particulate removal Point pressure – тиск насиченої пластової рідини
Grammatical transformations (adding words, various prepositions)	1% of cases	Regulated contaminants – забруднюючі речовини з нормованим вмістом
Lexical transformations (specification)	10% of cases	Approach to reducing the risk of viruses and mycoplasmas - оцінка ризику зараження мікоплазмами і вірусами;
Lexical transformations (omission of words)	7% of cases	Air gap of effluents – air valves Коефіцієнт обсягу водоутворення - це об'ємний коефіцієнт води

Thus, based on the classification of translation methods and translation transformations in the translation of one-component terms, such methods as tracing, transliteration or transcription of an English term, lexical and grammatical substitutions, as well as lexical addition were identified.

In the work on the example of the above terms and their translations, it can be argued that when translating one-component terms, the most effective is the way to create an equivalent by tracing, and the method of lexical addition has become the least representative.

All these methods of translating multicomponent terms, as a rule, are applied in combination.

CONCLUSION

Biotechnology is a complex science that is developing very intensively, the subject area of which covers a wide field of related sciences. Based on modern system ideas about terminology, it is the terminology of biotechnology that acts as an organized lexical system in the form of systemic lexical connections of various levels.

The social conditionality of language is expressed in the social differentiation of national languages, in the preferences of different social groups when using certain expressive means that are represented by the language and system. It has already been studied that certain linguistic means, when acquiring the functions of social markers, may indicate belonging to a certain social environment. Sociallabeling, as a linguistic phenomenon, covers language units of different levels and different semantic scope. Analysis of their nature and character, as well as use in speech indicates the diversity of forms of speech.

The differences between the English variants in the lexical system of biotechnology are minor and relate mainly to general scientific and neutral vocabulary. The source of terminology variability will be terms that are formed on the basis of Greek-Latin elements, as the most stable and convenient means of language nomination in the system of scientific communication.

The terminology of the biotechnology industry is characterized mainly by terms with a transparent structureandmotivation. The presence of an emotional-evaluative component of lexical meaning, since structural-semantic features and extralinguistic

parameters are of interest and claim to be a separate study.

As a result of the study, it was found that the meaning of each of the components in the formation of the semantic meaning of multicomponent terms is different. Auxiliary components of multicomponent terms have greater semantic value, dependent components of terms carry much less importance. Thus, it can be concluded that multicomponent temurs have a higher semantic capacity, which leads to a weakening of the intercomponent semantic valence.

Understanding and translating most multicomponent terms can be difficult due to semantic-syntactic inconsistency of structures in Ukrainian and English. The process of translating individual multicomponent terms greatly facilitates international terms or thermoelements of Greek-Latin origin.

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