NATIONAL UNIVERSITY OF PHARMACY
FOREIGN LANGUAGES DEPARTMENT

GUIDELINES FOR "ENGLISH IN PROFICIENCY" WITH VIDEO ITEMS FOR THE UNIVERSITY STUDENTS

Kharkiv
NPhaU
2019

MINISTRY OF HEALTH IN UKRAINE
NATIONAL UNIVERSITY OF PHARMACY
FOREIGN LANGUAGES DEPARTMENT

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Методичні рекомендації

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Approved by CMC NPhaU (dated ……..2019 № ……).

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GUIDELINES FOR "ENGLISH IN PROFICIENCY" WITH VIDEO ITEMS FOR THE UNIVERSITY STUDENTS**– Kh.: NPhaU, 2019. – 48 p.**

The English guidelines for the work with video items include 8 topics and 48 tasks in analytical chemistry, organic chemistry, physical and colloid chemistry, pathological physiology, biochemistry, pharmaceutical botany, microbiology, pharmacology for applicants in preparing and use at the licensing integrated examination in English "Krok 1". Pharmacy" and further use in learning / teaching.

The English guidelines for the work with video items have been developed for pharmacy applicants at the Pharmaceutical University and faculties of Ministry of Health in Ukraine.

The English guidelines for the work with video items are intended for classroom and self - assessment work in study the subject "English in proficiency". It should be useful for applicants in their educational activity.

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PREFACE

Organization of the classwork and self - assessment work of the applicants for higher education is the basic study process of the subject “The English in proficiency”. The fulfillment and the control of the classwork and the self - assessment work play an important role in the improvement of the teaching process at Universities. The applicants of University education of the full – time and part – time studies require the English guidelines for the work with video items in the English language to practice 8 topics containing 48 tasks to “Krok 1. Pharmacy”. The English guidelines for the work with video items include 8 topics on the main subjects : analytical chemistry, organic chemistry, physical and colloid chemistry, pathological physiology, biochemistry, pharmaceutical botany, microbiology, pharmacology for applicants in preparing to the licensing integrated examination in English “Krok 1”. Pharmacy” and further use in learning / teaching at classes.

In the course of the fulfillment of the English guidelines, the applicants for higher education should master such skills :

- to master freely professionally – oriented vocabulary ;
- to be able to carry out a self – control ;
- to assess himself by using current estimation grade :

Estimation grade

38 – 40 points – 5 “A” level – excellent

35 – 37 points – 4 “B” level – good

30 – 34 points – 4 “C” level – good, but try better

25 – 29 points - 3 “D” level – satisfactory

20 – 24 points - 3 “E” level – passed, but try better

0 - 19 points - 2 “FX” level – didn’t pass

The English guidelines for the work with video items have been developed for pharmacy applicants at the Pharmaceutical University and faculties of Ministry of Health in Ukraine.

ANALYTICAL CHEMISTRY

BEFORE WATCHING

Task 1. Read and understand the vocabulary :

to determine	визначати
particular	особливий
definition	визначення
to involve	включати
to weigh	зважувати
to remove	вилучати

loss	втрата
addition	додавання
to analyze	аналізувати
to reach	досягати
familiar	знайомий
to measure	вимірювати
interaction	взаємодія
application	використання
to alter	змінювати
to decrease	зменшувати
mixture	суміш
current	тік
to contain	містити
charge	заряд
to use	використовувати
complexity	важкість

Task 2. Answer the questions :

1. What does the analytical chemistry consist of ?
2. What are the qualitative and quantitative analyses ?
3. What is the titration ?

WHILE WATCHING

Task 3. Read to grasp the main idea of the text:

Analytical chemistry consists of classical methods. A qualitative analysis determines the presence or absence of a particular compound, but not the mass or concentration. By definition, qualitative analyses do not measure quantity. Quantitative analysis is the measurement of the quantities of particular chemical constituents present in a substance. Gravimetric analysis involves determining the amount of present material by weighing the sample before and or after some transformation. A common example used in undergraduate education is the determination of the amount of water in a hydrate by heating the sample to remove the water such that the difference in weight is due to the loss of water. Titration involves the addition of a reactant to a solution being analyzed until some equivalence point is reached. Often the amount of material in the solution being analyzed may be determined. Most familiar to those who have taken chemistry during secondary education is the acid-base titration involving a color changing indicator. There are many other types of titrations, for example potentiometric

titrations. These titrations may use different types of indicators to reach some equivalence point. Instrumental methods : spectroscopy measures the interaction of the molecules with electromagnetic radiation. Spectroscopy consists of many different applications such as atomic absorption spectroscopy, atomic emission spectroscopy, ultraviolet-visible spectroscopy, x-ray fluorescence spectroscopy, infrared spectroscopy, Raman spectroscopy, dual polarization interferometry, nuclear magnetic resonance spectroscopy, photo emission spectroscopy, Mössbauer spectroscopy and so on. Mass spectrometry measures mass-to-charge ratio of molecules using electric and magnetic fields. There are several ionization methods: electron impact, chemical ionization, electro spray, fast atom bombardment, matrix assisted laser desorption ionization, and others. Also, mass spectrometry is categorized by approaches of mass analyzers: magnetic-sector, quadrupole mass analyzer, quadrupole ion trap, time-of-flight, Fourier transform ion cyclotron resonance, and so on. Electro analytical methods measure the potential (volts) and or current (amps) in an electrochemical cell containing the analyte. These methods can be categorized according to which aspects of the cell are controlled and which are measured. The four main categories are potentiometry (the difference in electrode potentials is measured), colometry (the transferred charge is measured over time), amperometry (the cell's current is measured over time), and voltammetry (the cell's current is measured while actively altering the cell's potential). Calorimetry and thermogravimetric analysis measure the interaction of a material and heat. Separation processes are used to decrease the complexity of material mixtures. Chromatography, electrophoresis and Field Flow Fractionation are representative of this field.

Task 4. Be ready to answer the questions.

1. What does the mass spectrometry measure ?
2. What are the four main categories of analytical chemistry ?
3. Why are the separation processes used ?

Task 5. Open the site to watch it and be ready to talk about it.

https://www.youtube.com/watch?v=Ywqcpu7d3Dk

AFTER WATCHING

Task 6. Discuss in pairs the problems of the text.

Task 7. Write an essay why you like Analytical chemistry (8- 10 sentences).

ORGANIC CHEMISTRY

BEFORE WATCHING

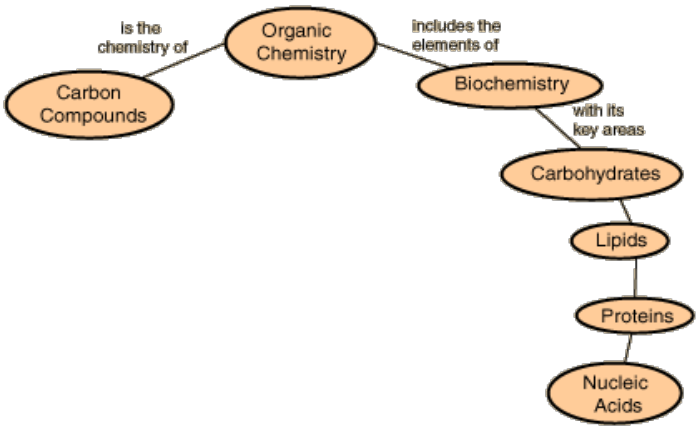
Task 1. Read and understand the vocabulary :

property	властивість
to include	враховувати

feature	показник
melting point	точка плавлення
solubility	розчинність
instead of	замість чого - небудь
to provide	забезпечувати
to evaporate	випарюватися
exception	виняток
solvent	розчинна речовина
substance	речовина
mixed	змішаний
various	різноманітний
to depend upon	залежить від
conductive	провідний
functional	функціональний
to convert	змінювати
optics	оптика
reason	причина

Task 2. Answer the questions:

1. What do the physical properties of the organic compounds include?
2. What do qualitative properties include?
3. Do organic compounds melt ?



WHILE WATCHING

Task 3. Read to grasp the main idea of the text:

Physical properties of organic compounds include both quantitative and qualitative features. Quantitative information includes melting point, boiling point, and index of refraction. Qualitative properties include odor, consistency, solubility, and color. Organic compounds typically melt and many boil. In contrast, while inorganic materials generally can be melted, many do not boil, tending instead to degrade. In earlier times, the melting point (m.p.) and boiling point (b.p.) provided crucial information on the purity and identity of organic compounds. The melting and boiling points correlate with the polarity of the molecules and their molecular weight. Some organic compounds, especially symmetrical ones, sublime, that is they evaporate without melting. A well-known example of a sublimable organic compound is para-dichlorobenzene, the odiferous constituent of modern mothballs. Organic compounds are usually not very stable at temperatures above 300 °C, although some exceptions exist. Neutral organic compounds tend to be hydrophobic; that is, they are less soluble in water than in organic solvents. Exceptions include organic compounds that contain ionizable (which can be converted in ions) groups as well as low molecular weight alcohols, amines, and carboxylic acids where hydrogen bonding occurs. Organic compounds tend to

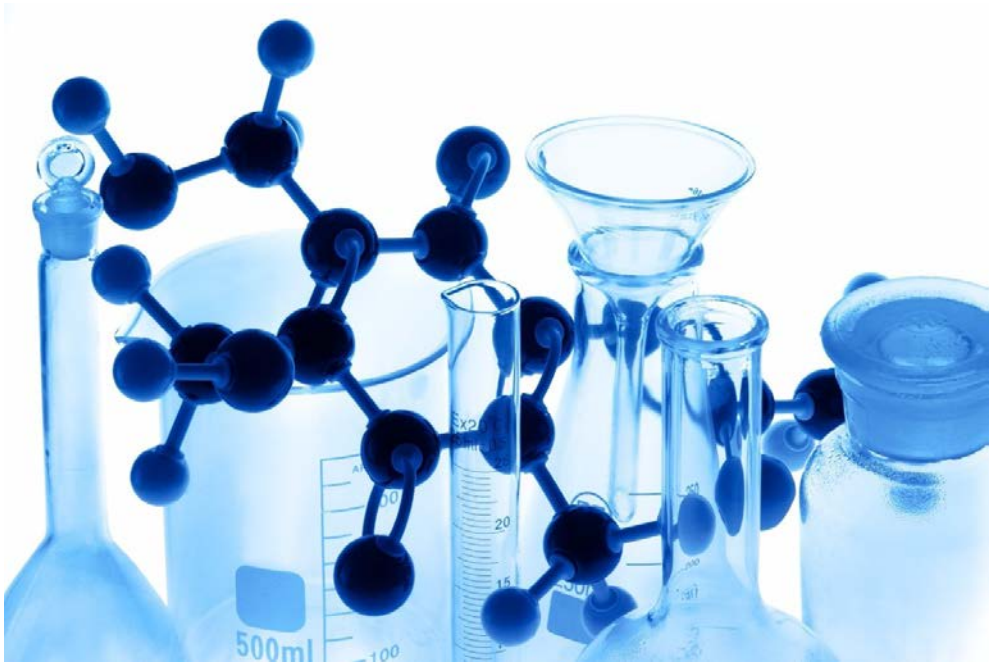
dissolve in organic solvents. Solvents can be either pure substances like ether or ethyl alcohol, or mixtures, such as the paraffinic solvents, such as the various petroleum ethers and white spirits, or the range of pure or mixed aromatic solvents obtained from petroleum or tar fractions by physical separation or by chemical conversion. Solubility in the different solvents depends upon the solvent type and on the functional groups if present in the solution. Various specialized properties of molecular crystals and with conjugated systems are of interest depending on applications, e.g. thermo-mechanical and electro-mechanical such as piezoelectricity, electrical conductivity (see conductive polymers and organic semiconductors), and electro-optical (e.g. non-linear optics) properties.

Task 4. Be ready to answer the questions.

1. What are solvents ?
2. What does the solubility depends on ?
3. Do the molecular crystals have specialized properties ?

Task 5. Open the site to watch it and be ready to talk about it.

https://www.youtube.com/watch?v=opwBkcBgrp

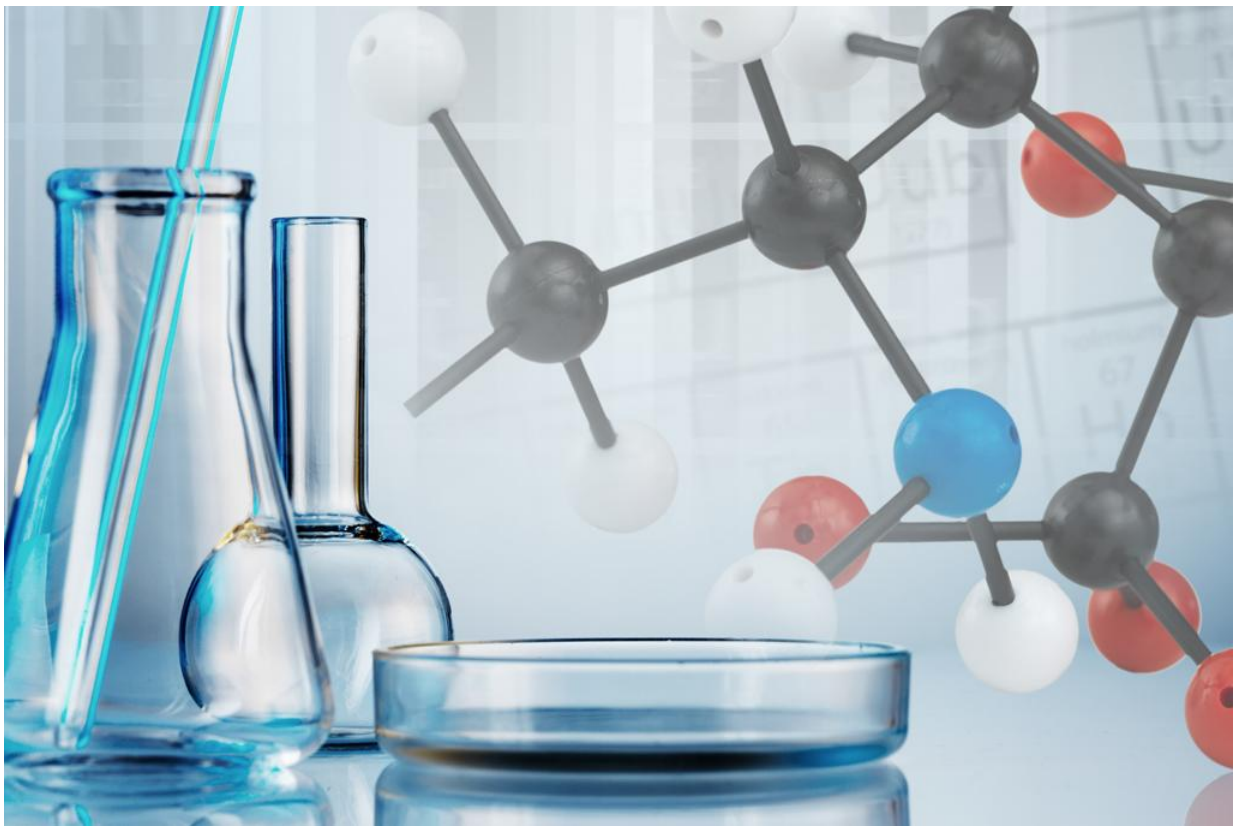


AFTER WATCHING

Task 6. Discuss in pairs the problems of the text.

Task 7. Write essay about Organic chemistry (8- 10 sentences).

PHYSICAL AND COLLOIDAL CHEMISTRY



BEFORE WATCHING

Task 1. Read and understand the vocabulary :

to identify	впізнати
to characterize	характеризувати
solid	твердий
dissolved	розчинний
to diffuse	поширюватися
particle	частинка
size	розмір
liquid	рідина
species	зразки

own	власний
value	цінність
thus	таким чином
to depend on	залежити від
to separate	відокремити
between	між
reversible	зворотний
to repel	відштовхувати
matter	матерія
following	наступний
because	тому що
to consider	розглядати
to affect	впливати
factor	чинник
homogenous	однорідний

Task 2. Answer the questions :

1. Do the colloids have appearance of the solutions ?
2. What kinds of properties identify the colloids ?
3. What does a colloid consist of ?

WHILE WATCHING

Task 3. Read to grasp the main idea of the text:

Because the size of the dispersed phase may be difficult to measure, and because colloids have the appearance of solutions, colloids are sometimes identified and characterized by their physico-chemical and transport properties. For example, if a colloid consists of a solid phase dispersed in a liquid, the solid particles will not diffuse through a membrane, whereas with a true solution the dissolved ions or molecules will diffuse through a membrane. Because of the size exclusion, the colloidal particles are unable to pass through the pores of an ultrafiltration membrane with a size smaller than their own dimension. The smaller the size of the pore of the ultrafiltration membrane, the lower the concentration of the dispersed colloidal particles remaining in the ultrafiltered liquid. The measured value of the concentration of a truly dissolved species will thus depend on the experimental conditions applied to separate it from the colloidal particles also dispersed in the liquid. This is particularly important for solubility studies of readily hydrolyzed species. Based on the nature of interaction between the dispersed phase and the dispersion medium, colloids can be classified as:

Hydrophilic colloids: The colloid particles are attracted toward water. They are also called reversible sols. Hydrophobic colloids: These are opposite in nature to hydrophilic colloids. The colloid particles are repelled by water. They are also called irreversible sols. In some cases, a colloid suspension can be considered a homogeneous mixture.

Electrostatic interaction: Colloidal particles often carry an electrical charge and therefore attract or repel each other. The charge of both the continuous and the dispersed phases, as well as the mobility of the phases are factors affecting this interaction.

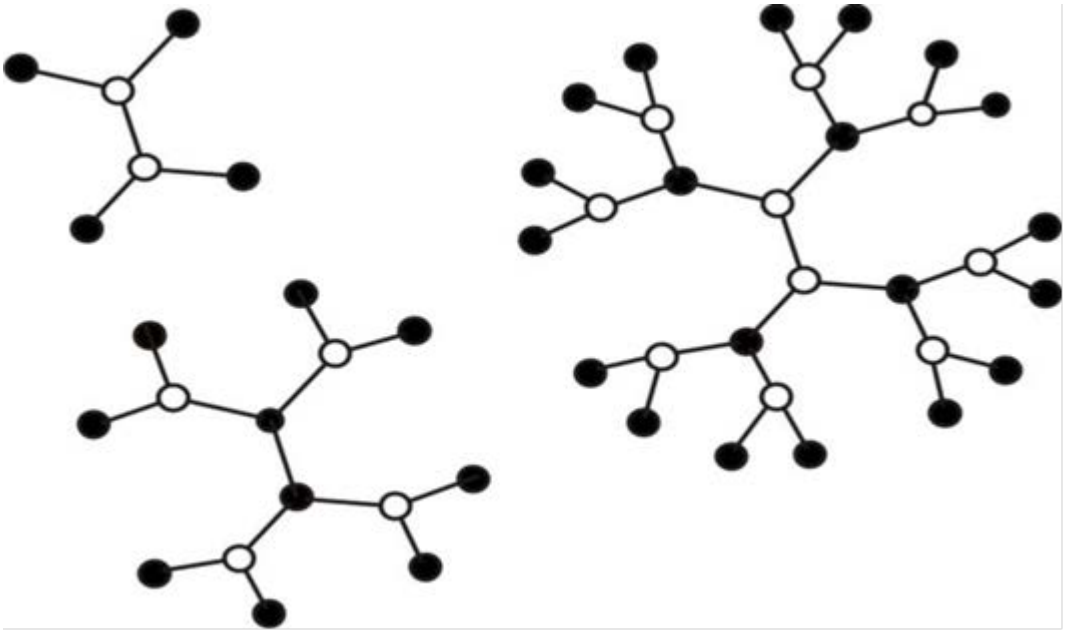
- Van der Waal forces : This is due to interaction between two dipoles that are either permanent or induced. Even if the particles do not have a permanent dipole, fluctuations of the electron density gives rise to a temporary dipole in a particle. This temporary dipole induces a dipole in particles nearby. The temporary dipole and the induced dipoles are then attracted to each other. This is known as Van der Waals force, and is always present (unless the refractive indexes of the dispersed and continuous phases are matched), is short-range, and is attractive.
- Entropic forces: According to the second law of thermodynamics, a system progresses to a state in which entropy is maximized. This can result in effective forces even between hard spheres.
- Steric forces between polymer-covered surfaces or in solutions containing non-adsorbing polymer can modulate interparticle forces, producing an additional steric repulsive force (which is predominantly entropic in origin) or an attractive depletion force between them.

Task 4. Be ready to answer the questions.

1. What is the electrostatic interaction ?
2. What are the Van der Waal forces ?
3. What are the Entropic forces ?

Task 5. Open the site to watch it and be ready to talk about it.

https://www.youtube.com/watch?v=pUa7pWhHyrM

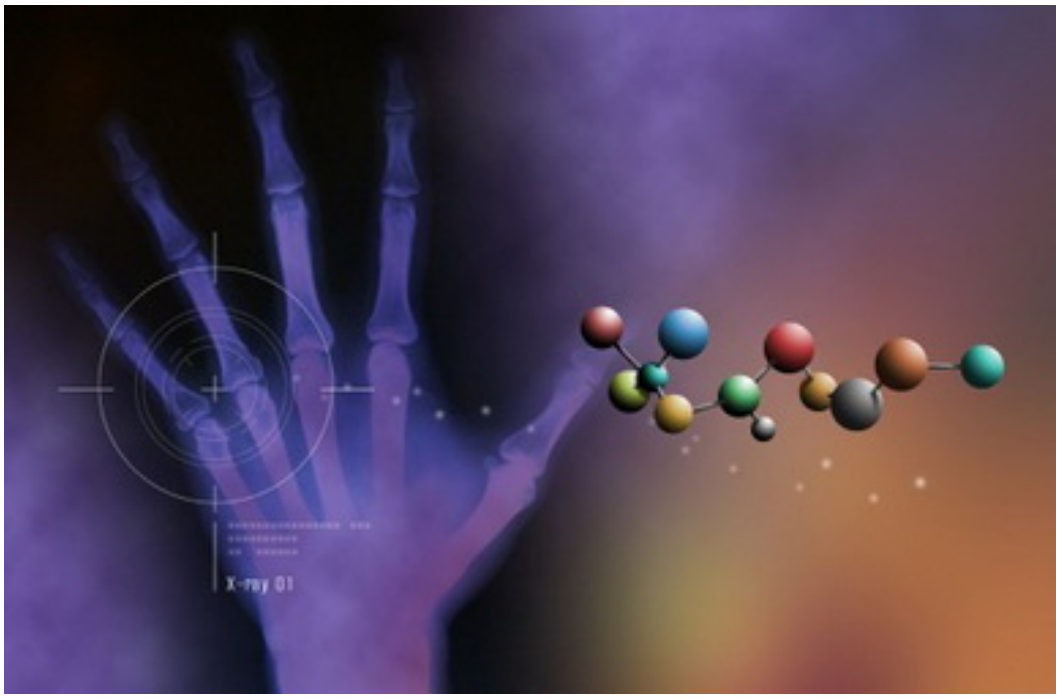


AFTER WATCHING

Task 6. Discuss in pairs the problems of the text.

Task 7. Write essay about Physical and colloid chemistry (8- 10 sentences).

PATHOLOGICAL PHYSIOLOGY



BEFORE WATCHING

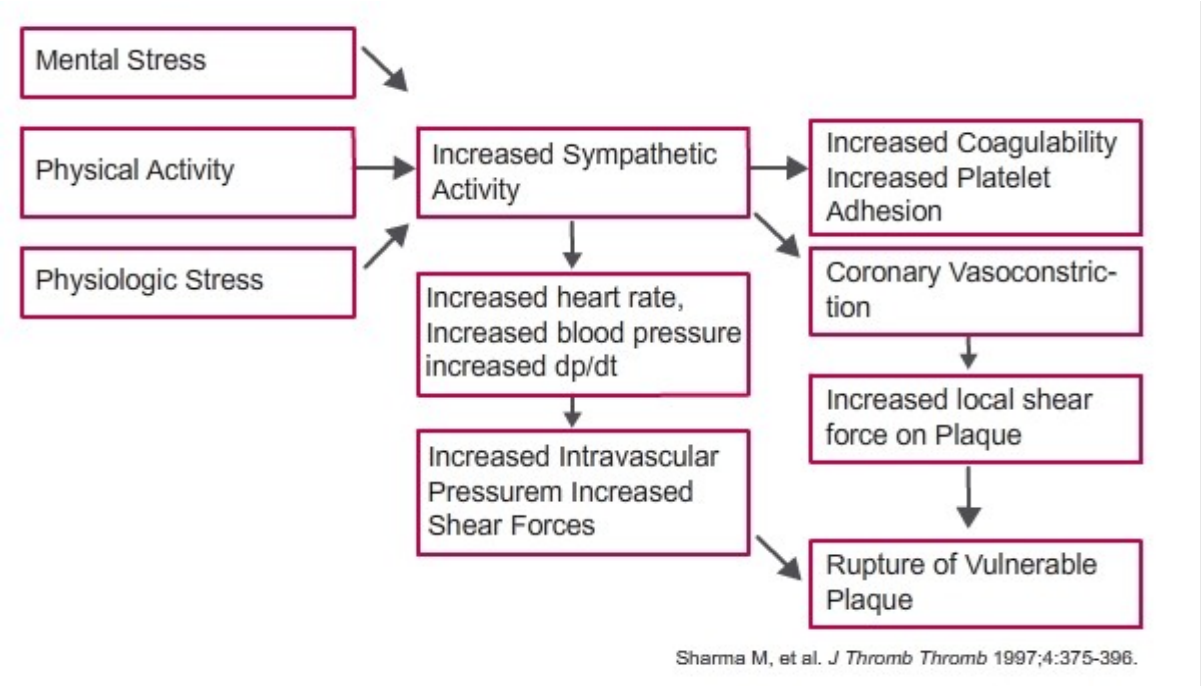
Task 1. Read and understand the vocabulary :

during	упродовж
to observe	спостерігати
to describe	описувати
injury	травма

to operate	діяти
activity	діяльність
several	декілька
however	однак
major	головний
to result in	призвести до
to cause	викликати
heart failure	серцева недостатність
reduction	зменшення
to increase	збільшувати
force	міць
damage	ушкодження
support	підтримка
to produce	виробляти
to be deposited розташованим	бути
to pump	качати
acquisition	набуття
damage	руйнування
multiple	числений
rather	більш
pressure	тиск

Task 2. Answer the questions :

1. What is pathophysiology ?
2. What is pathology ?
3. What is physiology?



WHILE WATCHING

Task 3. Read to grasp the main idea of the text:

Pathophysiology (a.k.a. Physiopathology) – a convergence of pathology with physiology – is the study of the disordered physiological processes that cause, result from, or are otherwise associated with a disease or injury. Pathology is the medical discipline that describes conditions typically observed during a disease state, whereas physiology is the biological discipline that describes processes or mechanisms operating within an organism.

•The pathophysiology of Parkinson's disease is death of dopaminergic neurons as a result of changes in biological activity in the brain with respect to Parkinson's disease (PD). There are several proposed mechanisms for neuronal death in PD; however, not all of them are well understood. Five proposed major mechanisms for neuronal death in Parkinson's Disease include protein aggregation in Lewy bodies, disruption of autophagy, changes in cell metabolism or mitochondrial function,

neuroinflammation, and blood-brain barrier (BBB) breakdown resulting in vascular leakiness.

- The pathophysiology of heart failure is a reduction in the efficiency of the heart muscle, through damage or overloading. As such, it can be caused by a wide number of conditions, including myocardial infarction (in which the heart muscle is starved of oxygen and dies), hypertension (which increases the force of contraction needed to pump blood) and amyloidosis (in which misfolded proteins are deposited in the heart muscle, causing it to stiffen). Over time these increases in workload will produce changes to the heart itself.
- The pathophysiology of multiple sclerosis is that of a inflammatory demyelinating disease of the CNS in which activated immune cells invade the central nervous system and cause inflammation, neurodegeneration and tissue damage. The underlying condition that produces this behaviour is currently unknown. Current research in neuropathology, neuroimmunology, neurobiology, and neuroimaging, together with clinical neurology provide support for the notion that MS is not a single disease but rather a spectrum.
- The pathophysiology of hypertension is that of a chronic disease characterized by elevation of blood pressure. Hypertension can be classified by cause as either essential (also known as primary or idiopathic) or secondary. About 90–95% of hypertension is essential hypertension.
- The pathophysiology of HIV/AIDS involves, upon acquisition of the virus, that the virus replicates inside and kills T helper cells, which are required for almost all adaptive immune responses. There is an initial period of influenza-like illness, and then a latent, asymptomatic phase. When the CD4 lymphocyte count falls below 200 cells/ml of blood, the HIV host has progressed to AIDS, a condition characterized by deficiency in cell-mediated immunity and the resulting increased susceptibility to opportunistic infections and certain forms of cancer.

Task 4. Be ready to answer the questions.

1. What is the pathophysiology of Parkinson's disease ?
2. What is the pathophysiology of heart failure ?
3. What is the pathophysiology of multiple sclerosis ?

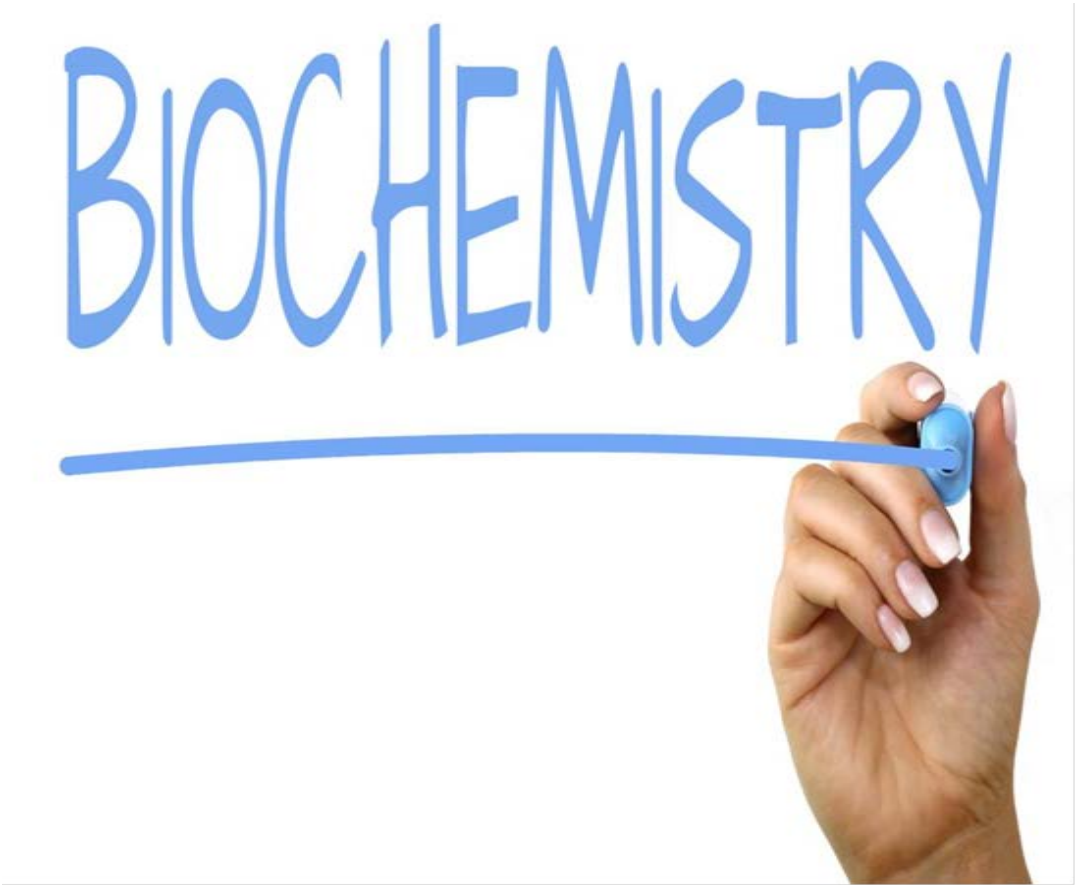
Task 5. Open the site to watch it and be ready to talk about it.

https://www.youtube.com/watch?v=B9DuTNaPm4M

AFTER WATCHING

Task 6. Discuss in pairs the problems of the text.

Task 7. Write essay about Pathological physiology (8- 10 sentences).



BIOCHEMISTRY

BEFORE WATCHING

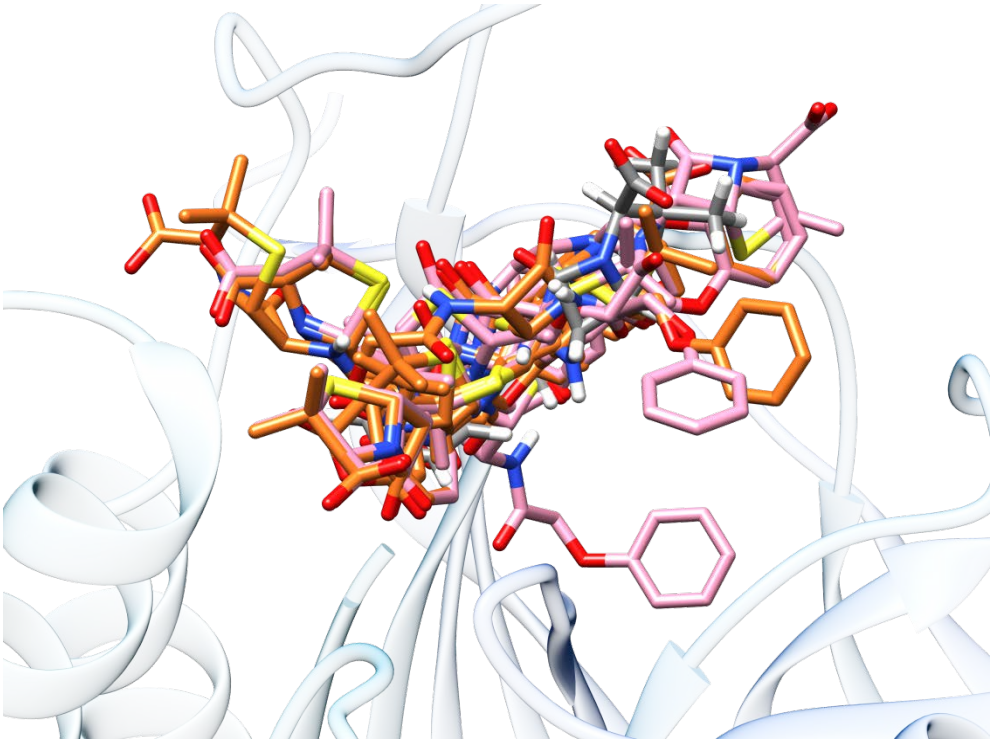
Task 1. Read and understand the vocabulary :

to absorb	поглинати
citric	лимонна
pathway	шлях
to synthesize	синтезувати
essential	істотні
most	більшість
to use	використовувати
enzyme	фермент
since	оскільки
to possess	володіти
to produce	виробляти
sufficient	достатній
growing	ростучій
amount	кількість
to remove	вилучати
to leave behind	залишати позаду
easily	легко
to transfer	передавати
important	важливий
to add	додавати
to link	зв’язати
to break down	зруйнувати
to exist	існувати
to involve	включати

to release	звільняти
to dilute	розбавляти
in order to	для того щоб
related	взаємозв’язані
sequence	послідовність

Task 2. Answer the questions :

1. What happens to ingested proteins in the small intestine ?
2. What is glycolysis ?
3. What do humans and mammals synthesize ?



WHILE WATCHING

Task 3. Read to grasp the main idea of the text:

Ingested proteins are usually broken up into single amino acids or dipeptides in the small intestine, and then absorbed. They can then be joined to make new proteins. Intermediate products of glycolysis, the citric acid cycle, and the pentose phosphate pathway can be used to make all twenty amino acids, and most bacteria and plants possess all the necessary enzymes to synthesize them. Humans and other mammals, however, can synthesize only half of them. They cannot synthesize isoleucine, leucine, lysine,methionine, phenylalanine, threonine, tryptophan, and valine. These are the essential amino acids, since it is essential to ingest them. Mammals do possess the enzymes to synthesize alanine, asparagine, aspartate, cysteine, glutamate, glutamine, glycine, proline, serine, and tyrosine, the nonessential amino acids. While they can synthesize arginine and histidine, they cannot produce it in sufficient amounts for young, growing animals, and so these are often considered essential amino acids.

If the amino group is removed from an amino acid, it leaves behind a carbon skeleton called an α-keto acid. Enzymes called transaminases can easily transfer the amino group from one amino acid (making it an α-keto acid) to another α-keto acid (making it an amino acid). This is important in the biosynthesis of amino acids, as for many of the pathways, intermediates from other biochemical pathways are converted to the α-keto acid skeleton, and then an amino group is added, often via transamination. The amino acids may then be linked together to make a protein.

A similar process is used to break down proteins. It is first hydrolyzed into its component amino acids. Free ammonia (NH3), existing as the ammonium ion (NH4+) in blood, is toxic to life forms. A suitable method for excreting it must therefore exist. Different tactics have evolved in different animals, depending on the animals' needs. Unicellular organisms simply release the ammonia into the environment. Likewise, bony fish can release the ammonia into the water where it is quickly diluted. In general, mammals convert the ammonia into urea, via the urea cycle.

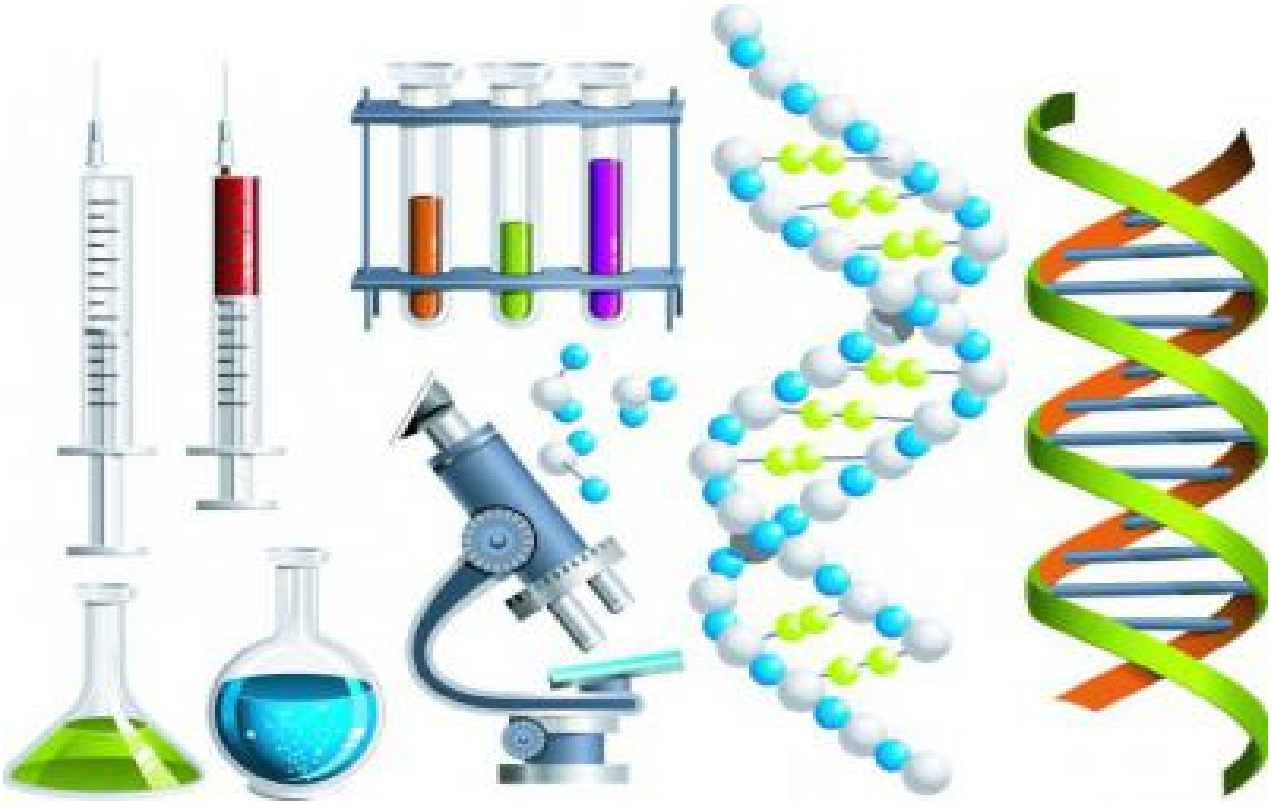
In order to determine whether two proteins are related, or in other words to decide whether they are homologous or not, scientists use sequence-comparison methods. Methods like sequence alignments and structural alignments are powerful tools that help scientists identify homologies between related molecules. The relevance of finding homologies among proteins goes beyond forming an evolutionary pattern of protein families. By finding how similar two protein sequences are, we acquire knowledge about their structure.

Task 4. Be ready to answer the questions.

1. Do mammals possess the enzymes ?
2. Why do scientists use sequence-comparison methods?

Task 5. Open the site to watch it and be ready to talk about it.

https://www.youtube.com/watch?v=8-G7D_sy7qE



After watching

Task 6. Discuss in pairs the problems of the text.

Task 7. Write essay about Biochemistry (8- 10 sentences).

PHARMACEUTICAL BOTANY

BEFORE WATCHING

Task 1. Read and understand the vocabulary :

inheritance	спадковість
multicellular	багатоклітинна
shape	форма
to discover	виявити
trait	риса
plant	рослина
difference	різниця
maize	кукурудза
distinctive	відмінний
weaker	більш слабкий
possible	можливий

familiar	знайомий
wheat	пщониця
wild	дикий
hybrid	гібрид
pollen	пилок
to reach	досягнути
to operate	діяти
to occur	відбуватися
distinctive	відмінний
different	інший
instead of	замість

Task 2. Answer the questions :

1. What did Gregor Mendel discover ?
2. What are the diploids ?

WHILE WATCHING

Task 3. Read to grasp the main idea of the text:

Inheritance in plants follows the same fundamental principles of genetics as in other multicellular organisms. Gregor Mendel discovered the genetic laws of inheritance by studying inherited traits such as shape in Pisum sativum (peas). What Mendel learned from studying plants has had far reaching benefits outside of botany. Similarly, "jumping genes" were discovered by Barbara McClintock while she was studying maize. Nevertheless, there are some distinctive genetic differences between plants and other organisms.

Species boundaries in plants may be weaker than in animals, and cross species hybrids are often possible. A familiar example is peppermint, *Mentha* × *piperita*, a sterile hybrid between *Mentha aquatica* and spearmint, Mentha spicata.The many cultivated varieties of wheat are the result of multiple inter- and intra-specific crosses between wild species and their hybrids. Angiosperms with monoecious flowers often have self-incompatibility mechanisms that operate between the pollen and stigma so that the pollen either fails to reach the stigma or fails to germinate and produce male gametes.This is one of several methods used by plants to promote outcrossing. In many land plants the male and female gametes are produced by separate individuals. These species are said to be dioecious when referring to vascular plant sporophytes and dioicous when referring to bryophyte gametophytes.

Unlike in higher animals, where parthenogenesis is rare, asexual reproduction may occur in plants by several different mechanisms. The formation of stem tubers in potato is one example. Particularly in arctic or alpine habitats, where opportunities for fertilization of flowers by animals are rare, plantlets or bulbs, may develop instead of flowers, replacing sexual reproduction with asexual reproduction and giving rise to clonal populations genetically identical to the

parent. This is one of several types of apomixis that occur in plants. Apomixis can also happen in a seed, producing a seed that contains an embryo genetically identical to the parent.

Most sexually reproducing organisms are diploid, with paired chromosomes, but doubling of their chromosome number may occur due to errors in cytokinesis. This can occur early in development to produce an autopolyploid or partly autopolyploid organism, or during normal processes of cellular differentiation to produce some cell types that are polyploid (endopolyploidy), or during gamete formation.

Task 4. Be ready to answer the questions.

1. What kinds of the mechanisms have an influence on asexual reproduction ?
2. In what case does a replacing asexual reproduction happen ?
3. What are the sexually reproducing organisms ?

Task 5. Open the site to watch it and be ready to talk about it.

https://www.youtube.com/watch?v=P4F0AG2Cjsc

AFTER WATCHING

Task 6. Discuss in pairs the problems of the text.

Task 7. Write essay about Pharmaceutical Botany (8- 10 sentences).

MICROBIOLOGY

BEFORE WATCHING

Task 1. Read and understand the vocabulary :

due to	завдяки
some	деякі

numerous	численні
to be responsible for	бути відповідальним за
fermentation	бродіння
complex	складний
to exploit	досліджувати
enzyme	фермент
yeasts	дріжджі
annual	річний
mainly	головним чином
since	оскільки
ability	здатність
purpose	мета
variety	різноманітність
properties	властивості
application	використання
tissue	тканина
delivery	доставка
pollution	забруднення
soil	грунт
approach	підхід
fungal	грибковий

Task 2. Answer the questions :

1. What are many microbes responsible for ?
2. Where is the bacteria used ?
3. Do some bacteria have the ability to synthesize antibiotics ?

WHILE WATCHING

Task 3. Read to grasp the main idea of the text:

While some fear microbes are associated with various human diseases, many microbes are also responsible for numerous beneficial processes such as industrial fermentation (e.g. the production of alcohol, vinegar and dairy products), antibiotic production and act as molecular vehicles to transfer DNA to complex organisms such as plants and animals. Scientists have also exploited their knowledge of microbes to produce biotechnologically important enzymes such as Taq polymerase, reporter genes for use in other genetic systems and novel molecular biology techniques such as the yeast two-hybrid system.

Bacteria can be used for the industrial production of amino acids. *Corynebacterium glutamicum* is one of the most important bacterial species with an annual production of more than two million tons of amino acids, mainly L-glutamate and L-lysine. Since some bacteria have the ability to synthesize

antibiotics, they are used for medicinal purposes, such as Streptomyces to make aminoglycoside antibiotics.

A variety of biopolymers, such as polysaccharides, polyesters, and polyamides, are produced by microorganisms. Microorganisms are used for the biotechnological production of biopolymers with tailored properties suitable for high-value medical application such as tissue engineering and drug delivery. Microorganisms are for example used for the biosynthesis of xanthan, alginate, cellulose,cyanophycin, poly(gamma-glutamic acid), levan, hyaluronic acid, organic acids, oligosaccharides polysaccharide and polyhydroxyalkanoates.

Microorganisms are beneficial for microbial biodegradation or bioremediation of domestic, agricultural and industrial wastes and subsurface pollution in soils, sediments and marine environments. The ability of each microorganism to degrade toxic waste depends on the nature of each contaminant. Since sites typically have multiple pollutant types, the most effective approach to microbial biodegradation is to use a mixture of bacterial and fungal species and strains, each specific to the biodegradation of one or more types of contaminants. Symbiotic microbial communities confer benefits to their human and animal hosts health including aiding digestion, producing beneficial vitamins and amino acids, and suppressing pathogenic microbes. Some benefit may be conferred by eating fermented foods, probiotics (bacteria potentially beneficial to the digestive system) or prebiotics (substances consumed to promote the growth of probiotic microorganisms). The ways the microbiome influences human and animal health, as well as methods to influence the microbiome are active areas of research.

Task 4. Be ready to answer the questions.

1. What are the microorganisms beneficial for ?
2. What are the prebiotics ?

Task 5. Open the site to watch it and be ready to talk about it.

https://www.youtube.com/watch?v=qVhvAncvbzo

AFTER WATCHING

Task 6. Discuss in pairs the problems of the text.

Task 7. Write essay about Microbiology (8- 10 sentences)

PHARMACOLOGY

BEFORE WATCHING

Task 1. Read and understand the vocabulary :

discovery	виявлення
to identify	впізнати
ingredient	добавка
remedy	лікарський засіб
cell	клітина
substance	речовина
desirable	бажаний
known	відомий
to allow	дозволяти
rapid	швидкий

quantity	кількість
common	звичайний
disease	хвороба
purified	очищений
isolated	ізольований
target	мета
reverse	зворотній
efficacy	ефективність
to involve	включати
to increase	збільшувати
selectivity	вибірковість
to fulfill	виконувати
to reduce	зменшувати
requirement	вимога
step	крок

Task 2. Answer the questions :

1. What is a drug discovery ?
2. What does a modern drug discovery involve ?
3. What is a metabolic stability ?

WHILE WATCHING

Task 3. Read to grasp the main idea of the text:

In the fields of medicine, biotechnology and pharmacology, drug discovery is the process by which new candidate medications are discovered. Historically, drugs were discovered through identifying the active ingredient from traditional remedies or by serendipitous discovery. Later chemical libraries of synthetic small molecules, natural products or extracts were screened in intact cells or whole organisms to identify substances that have a desirable therapeutic effect in a process known as classical pharmacology. Since sequencing of the human genome which allowed rapid cloning and synthesis of large quantities of purified proteins, it has become common practice to use high through put screening of large compounds libraries against isolated biological targets which are hypothesized to be disease modifying in a process known as reverse pharmacology. Hits from these screens are then tested in cells and then in animals for efficacy.

Modern drug discovery involves the identification of screening hits, medicinal chemistry and optimization of those hits to increase the affinity, selectivity (to reduce the potential of side effects), efficacy/potency, metabolic stability (to increase the half-life), and oral bioavailability. Once a compound that fulfills all of these requirements has been identified, it will begin the process of drug development prior to clinical trials. One or more of these steps may, but not necessarily, involve computer-aided drug design. Modern drug discovery is thus usually a capital-intensive process that involves large investments by pharmaceutical industry corporations as well as national governments (who provide grants and loan guarantees). Despite advances in technology and understanding of biological systems, drug discovery is still a lengthy, "expensive, difficult, and inefficient process" with low rate of new therapeutic discovery. In 2010, the research and development cost of each new molecular entity was about

US$ 1.8 billion. Drug discovery is done by pharmaceutical companies, with research assistance from universities. The "final product" of drug discovery is a patent on the potential drug. The drug requires very expensive Phase I, II and III clinical trials, and most of them fail. Small companies have a critical role, often then selling the rights to larger companies that have the resources to run the clinical trials. Discovering drugs that may be a commercial success, or a public health success, involves a complex interaction between investors, industry, academia, patent laws, regulatory exclusivity, marketing and the need to balance secrecy with communication. Meanwhile, for disorders whose rarity means that no large commercial success or public health effect can be expected, the orphan drug funding process ensures that people who experience those disorders can have some hope of pharmacotherapeutic advances.

Task 4. Be ready to answer the questions.

1. Do the Universities help the pharmaceutical companies do a drug discovery ?
2. What does the drug require ?
3. What kind of role do the small companies have ?

Task 5. Open the site to watch it and be ready to talk about it.

https://www.youtube.com/watch?v=OawHxPiGBio

AFTER WATCHING

Task 6. Discuss in pairs the problems of the text.

Task 7. Write essay about Pharmacology (8- 10 sentences).

ІНФОРМАЦІЙНИЙ РЕСУРС

Analytical chemistry [Electronic resource]. – Access mode: https://en.wikipedia.org/wiki/Analytical_chemistry (Date of access: 18.04.2019). – Screen title.

Analytical chemistry [Electronic resource]. – Access mode: https://www.youtube.com/watch?v=Ywqcpu7d3Dk (Date of access: 18.04.2019). – Screen title.

Biochemistry [Electronic resource]. – Access mode: https://en.wikipedia.org/wiki/Biochemistry (Date of access: 18.04.2019). – Screen title.

Biochemistry [Electronic resource]. – Access mode: https://www.youtube.com/watch?v=8-G7D_sy7qE (Date of access: 18.04.2019). – Screen title.

Colloidal chemistry [Electronic resource]. – Access mode https://www.youtube.com/watch?v=pUa7pWhHyrM (Date of access: 18.04.2019). – Screen title.

Microbiology [Electronic resource]. – Access mode: https://en.wikipedia.org/wiki/Microbiology (Date of access: 18.04.2019). – Screen title.

Microbiology [Electronic resource]. – Access mode: https://www.youtube.com/watch?v=qVhvAncvbzo (Date of access: 18.04.2019). – Screen title.

Organic chemistry [Electronic resource]. – Access mode: https://en.wikipedia.org/wiki/Organic_chemistry (Date of access: 18.04.2019). – Screen title.

Organic chemistry [Electronic resource]. – Access mode: https://www.youtube.com/watch?v=opwBkcBgrpU (Date of access: 18.04.2019). – Screen title.

Pathophysiology [Electronic resource]. – Access mode: :https://en.wikipedia.org/wiki/Pathophysiology (Date of access: 18.04.2019). – Screen title.

Pathophysiology [Electronic resource]. – Access mode: https://www.youtube.com/watch?v=B9DuTNaPm4M (Date of access: 18.04.2019). – Screen title.
Pharmaceutical botany [Electronic resource]. – Access mode: http://www2.pharm.u-szeged.hu/phcogweb/index.php/en/education/undergraduate-program/faculty-of-pharmacy/17-gyogyszereszi-noevenytan (Date of access: 18.04.2019). – Screen title.
Pharmaceutical botany [Electronic resource]. – Access mode: https://www.youtube.com/watch?v=P4F0AG2Cjsc (Date of access: 18.04.2019). – Screen title.
Pharmacology [Electronic resource]. – Access mode: https://en.wikipedia.org/wiki/Pharmacology (Date of access: 18.04.2019). – Screen title.
Pharmacology [Electronic resource]. – Access mode: https://www.youtube.com/watch?v=OawHxPiGBio (Date of access: 18.04.2019). – Screen title.
Physical and colloidal chemistry [Electronic resource]. – Access mode: https://en.wikipedia.org/wiki/Colloid (Date of access: 18.04.2019). – Screen title.

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