Impact Factor: 9.9 ISSN-L: 2544-980X

Anatomical Structure of the Stomach

Kattaxodjayeva Dinara Utkurxodjayevna [1], Aytjanova Aysaule Yesemuratovna [2], Ibragimova Gulzira Janabayevna [3]

Abstract: The work examines the anatomical structures of the stomach, such as the anterior wall of the stomach, the posterior wall of the stomach, the lesser curvature of the stomach, and the greater curvature of the stomach. It is shown that the shape of the stomach depends on the position of the body, the fullness of food, and the functional state of a person. The wall of the stomach consists of four - the mucous membrane, the submucosa, the muscular layer, and the serous membrane.

Key words: anatomy, wall, stomach, curvature, body, food, mucus, muscular, plate, fold, pit, gland, cell, pepsin, epithelium.

The stomach (Latin: *ventriculus*) is a section of the digestive tract following the esophagus. and preceding the duodenum .

During examination, the position, size, and shape of the stomach depend on the patient's position, the fullness of the stomach, and also on the condition of the surrounding organs—the liver, spleen, and intestines.

The stomach is 5/6 of its size located to the left of the midline and only the pyloric part is located to the right.

The upper part of the stomach, being a continuation of the esophagus, is tightly fixed to the diaphragm by connective tissue strands. The entrance to the stomach (cardia) is located 3 cm from the place of attachment to the sternum of the VII left costal cartilage or at the level of the X-XI thoracic vertebrae behind. The highest point of the vault of the stomach lies on the V rib on the left along the parasternal line. The greater curvature, as the most mobile part of the stomach, is located more in front, adjoining together with a part of the anterior surface of the stomach to the anterior abdominal wall. On the left, the upper part of the greater curvature touches the spleen, and below - the transverse colon .

The level of the lower edge of the greater curvature is very variable and depends on the type of constitution, gender, position of the subject (horizontal, vertical), size of the abdomen, tone and fullness of the stomach. In women, it is 1-2 cm lower than in men. In the horizontal position of the patient, with an average filling of the stomach, it is located in men 2-3 cm above the navel, in women - at the level of the navel, when the stomach is overfilled, the level drops lower. In the vertical position of the subject, the lower edge of the stomach in men is 3-4 cm, in women - 2-3 cm above the iliac line. The distended and overfilled transverse colon displaces the greater curvature from the anterior abdominal wall back and up. The outlet of the stomach is located at the level of the 1st lumbar vertebra, 1-2 cm to the right of the midline.

The time that the contents (digested food) remain in the stomach is normally about 1 hour.

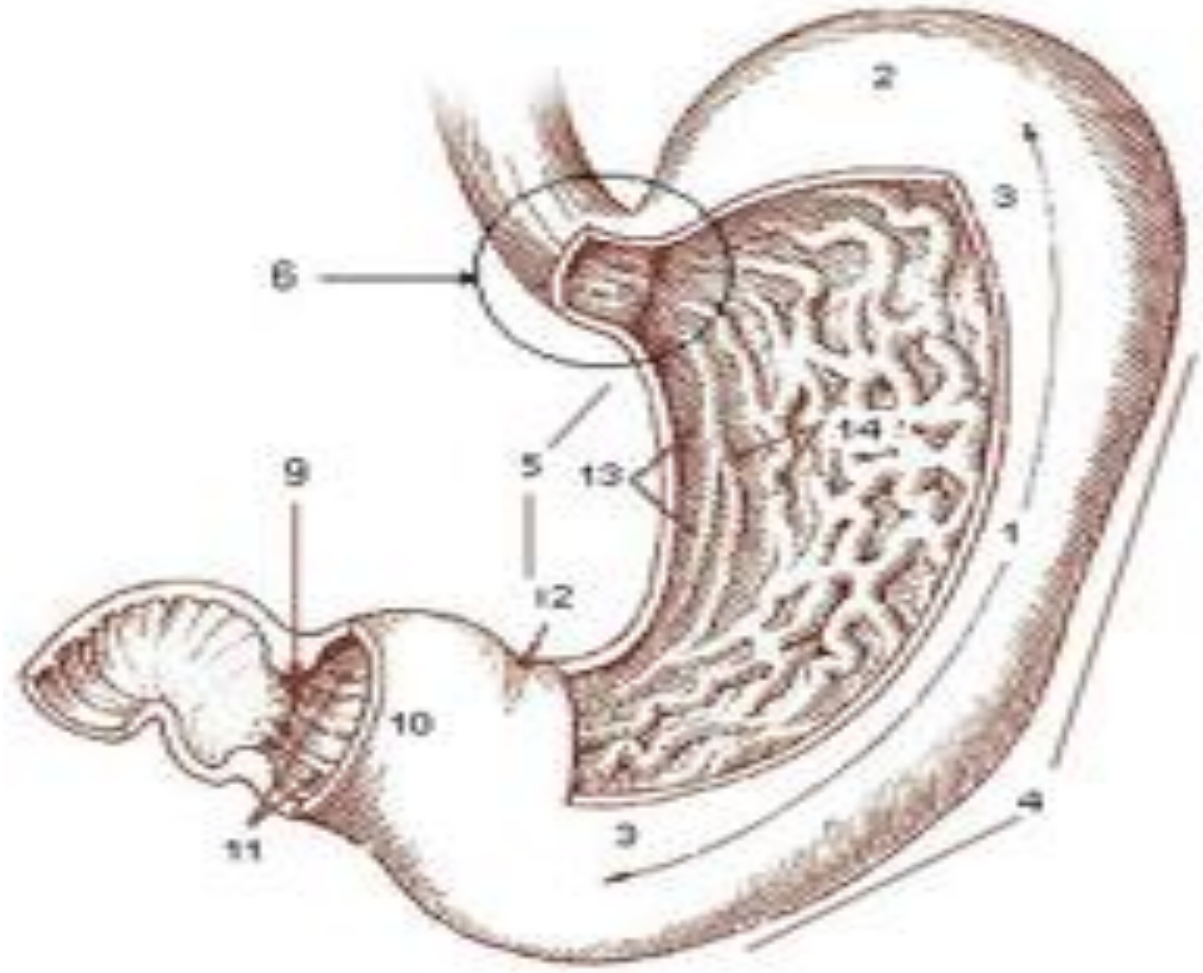
Anatomically, the stomach is divided into four parts:

- Cardiac (Latin: *pars cardiaca*), adjacent to the esophagus;
- Pyloric or pyloric (Latin: *pars pylorica*), adjacent to the duodenum ;

[1] Senior Lecturer, Tashkent State Medical University
[2] Assistant, Tashkent State Medical University
[3] Assistant, Tashkent State Medical University

- the body of the stomach (Latin: *corpus ventriculi*), located between the cardiac and pyloric parts;
- the bottom of the stomach (Latin: *fundus ventriculi*), located above and to the left of the cardiac part.

In the pyloric section, the pyloric cave (Latin: *antrum pyloricum*), synonyms: antral part or antrum , and the pyloric canal (Latin: *canalis pyloricus*) are distinguished.



In Fig. 1 on the right are marked: 1. Body of the stomach. 2. Fundus of the stomach. 3. Anterior wall of the stomach. 4. Greater curvature. 5. Lesser curvature. 6. Lower esophageal sphincter (cardia). 9. Pyloric sphincter. 10. Antrum. 11. Pyloric canal. 12. Angular notch. 13. Groove formed during digestion between the longitudinal folds of the mucosa along the lesser curvature. 14. Folds of the mucous membrane.

The following anatomical structures are also distinguished in the stomach:

- front wall stomach (lat . *paries anterior*);
- back wall stomach (Latin : *paries posterior*);
- small curvature stomach (Latin : *curvatura ventriculi minor*);
- big curvature stomach (Latin : *curvatura ventriculi major*).

The stomach is separated from the esophagus by the lower esophageal sphincter and from the duodenum - by the pyloric sphincter.

The shape of the stomach depends on the position of the body, the fullness of food, and the functional state of the person. With an average filling, the length of the stomach is 14-30 cm, the width is 10-16 cm, the length of the lesser curvature is 10.5 cm, the greater curvature is 32-64 cm, the wall thickness

in the cardiac section is 2-3 mm (up to 6 mm), in the antral section 3-4 mm (up to 8 mm). The capacity of the stomach is from 1.5 to 2.5 liters (the male stomach is larger than the female). The mass of the stomach of a "conditional person" (with a body weight of 70 kg) is normally 150 g.

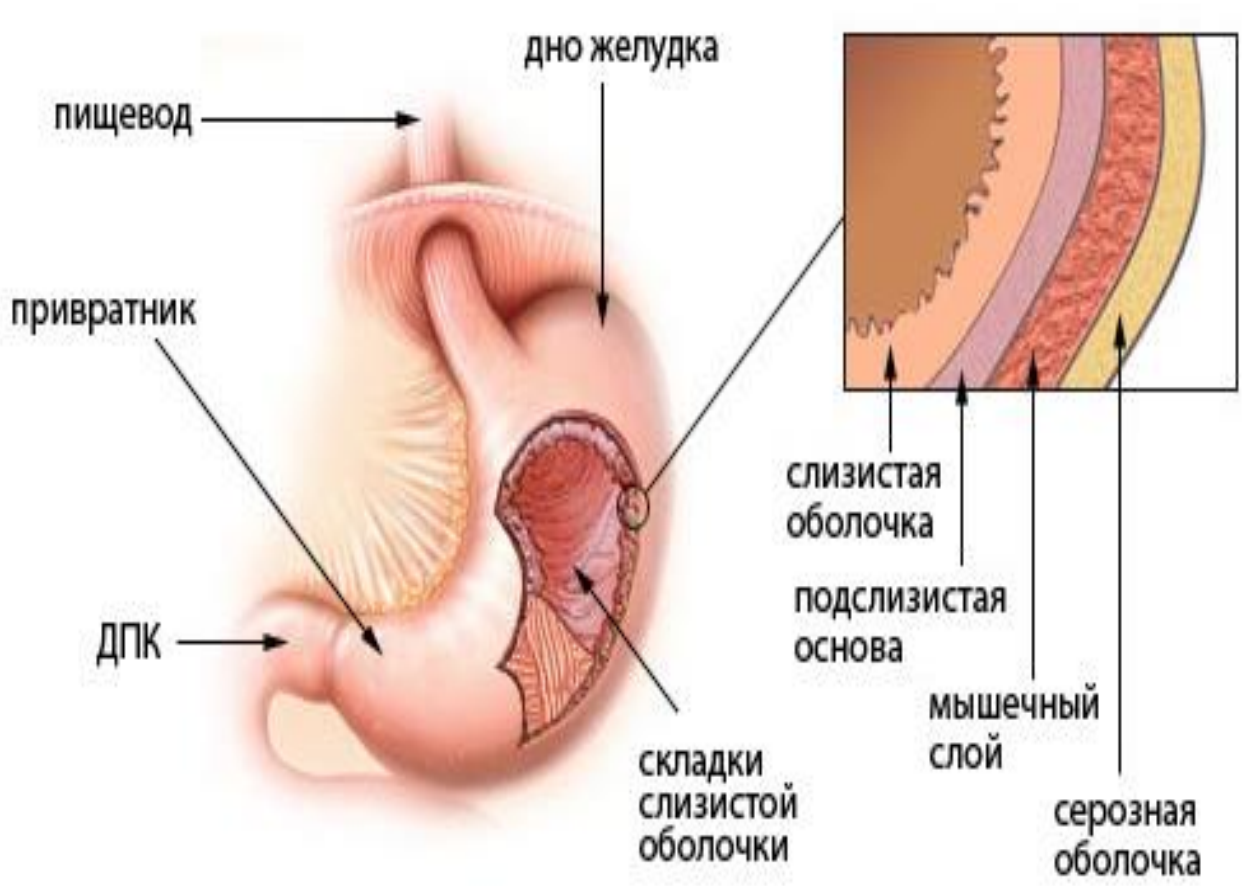
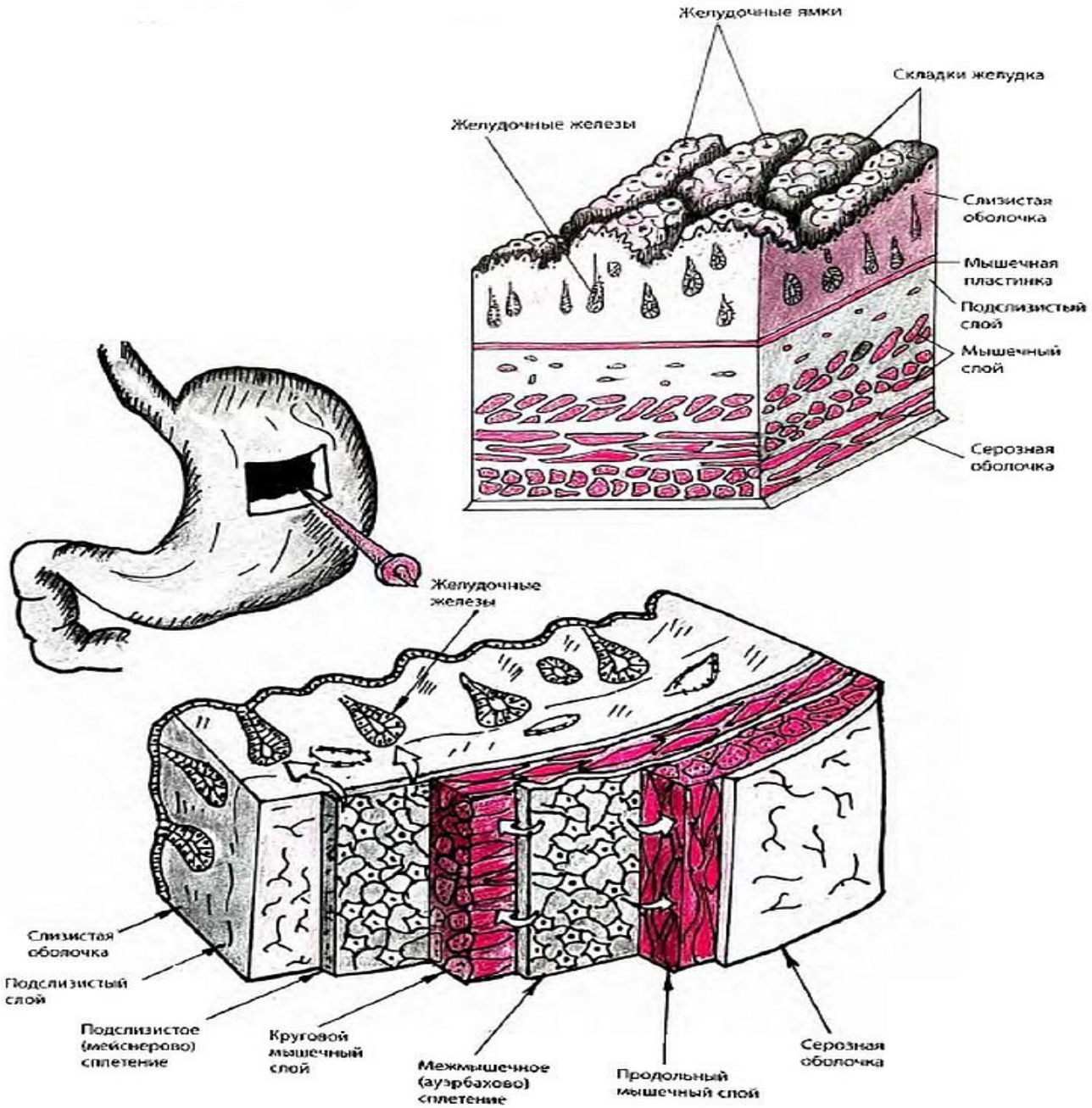


Fig. 2. The wall of the stomach

The stomach wall consists of four main layers (listed from the inner surface of the wall to the outer):

- mucous membrane covered with a single-layer columnar epithelium
- submucosa
- muscular layer consisting of three sublayers of smooth muscle:
  - ✓ internal sublayer of oblique muscles
  - ✓ middle sublayer of orbicularis muscles
  - ✓ outer sublayer of longitudinal muscles
- serous membrane.

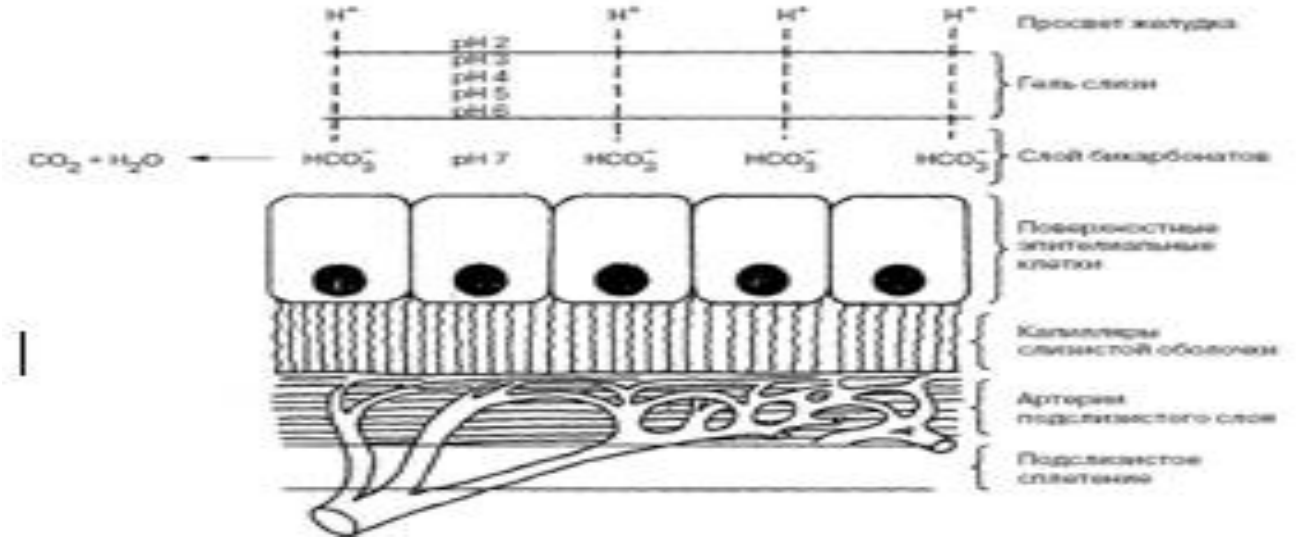
Between the submucosa and the muscular layer is the Meissner nerve. (synonym submucous; lat. *lexus submucosus*) a plexus that regulates the secretory function of epithelial cells, between the circular and longitudinal muscles - Auerbach's (synonym: intermuscular; lat. *plexus myentericus*) plexus.



The structure of the stomach wall (at the top of the figure).

Below - submucosal (Meissner's) and intermuscular (Auerbach's) nerve plexuses of the stomach wall

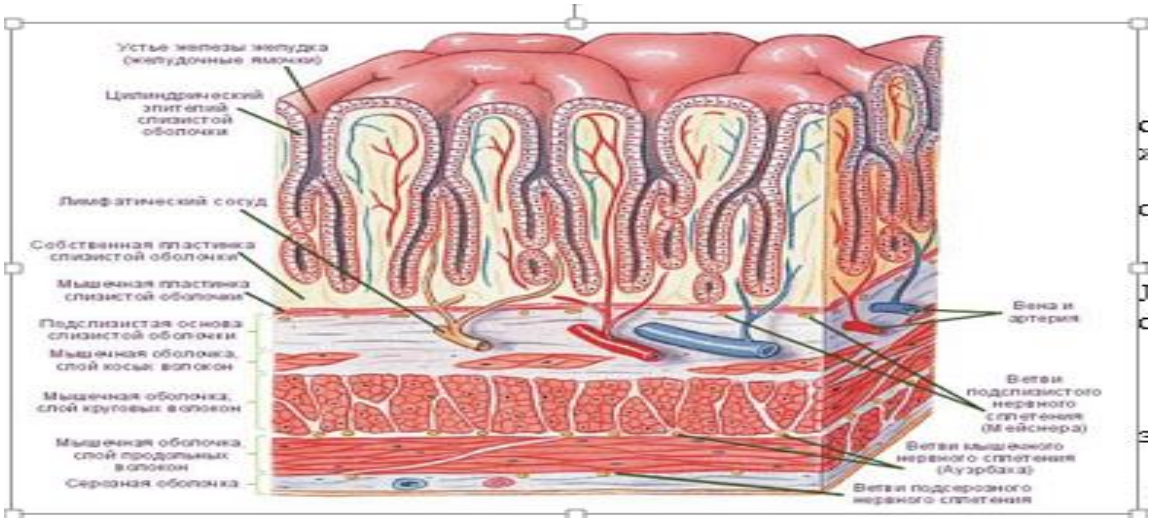
The gastric mucosa is formed by a single-layer cylindrical epithelium, its own layer and a muscular plate, which forms folds (relief of the mucous membrane), gastric fields and gastric pits, where the excretory ducts of the gastric glands are localized. In the proper layer of the mucous membrane are tubular gastric glands, consisting of parietal cells , which produce hydrochloric acid; chief cells , which produce the proenzyme pepsin pepsinogen , and additional (mucous) cells that secrete mucus. In addition, mucus is synthesized by mucous cells located in the layer of the superficial (covering) epithelium of the stomach.



Schematic representation of the mucus layer, bicarbonates, superficial epithelial cells and blood supply of the gastric mucosa

The surface of the gastric mucosa is covered with a continuous thin layer of mucous gel consisting of glycoproteins, and underneath it is a layer of bicarbonates adjacent to the surface epithelium of the mucosa. Together they form the mucous bicarbonate barrier of the stomach, protecting epithelial cells from the aggression of the acid-peptic factor. The mucus contains immunoglobulin A (IgA), lysozyme, lactoferrin and other components with antimicrobial activity.

The surface of the mucous membrane of the body of the stomach has a pitted structure, which creates conditions for minimal contact of the epithelium with the aggressive intracavitary environment of the stomach, which is also facilitated by a powerful layer of mucous gel.



Therefore, the acidity on the surface of the epithelium is close to neutral. The mucous membrane of the body of the stomach is characterized by a relatively short path of hydrochloric acid movement from the parietal cells into the lumen of the stomach, since they are located mainly in the upper half of the glands, and the main cells are in the basal part. An important contribution to the mechanism of protection of the mucous membrane of the stomach from the aggression of gastric juice is made by the exceptionally rapid nature of the secretion of the glands, caused by the work of the muscle fibers of the mucous membrane of the stomach. On the contrary, the mucous membrane of the antral region of the stomach (see the figure on the right) is characterized by a "villous" structure of the surface of the mucous membrane, which is formed by short villi or convoluted ridges 125–350 μm high.

References

1. Elmurotova D., Odilova N.J., Jumanov Sh.E., Odilova E.U. Physical basis of proton radiation therapy in medicine // Educator Insights: Journal of Teaching Theory and Practice, V.01, Issue 02, 02.2025 ISSN (E): 3061-6964, P.188-196, Руминия. https://brightmindpublishing.com/index.php/EI/article/view/70
2. Elmurotova D.B., Fayziyeva N.A. Technological support for proton therapy// V.3., Issue 2, 02.2025, ISSN (E): 2938-3811.
3. Элмуротова Д.Б., Арзикулов Ф., Олимов А. Параметры и характеристики импульсной техники // Open Herald: Periodical of Methodical Research, V.3, Issue 2, February-2025 ISSN (E): 2810-6385, C.33-37, Chile, Website: https://academiaone.org/index.php/6
4. Nuritdinov I, Eshbekov A.A., Yusupov Q.X, Mussaeva M.A., Elmurotova D.B. Study of luminescent characteristics of chromium-doped crystals // Web of scientist: Int. scientific research journal, ISSN:2776-0976, V.6, Issue 4, April-2025, P.46-57, Indonesia. https://wos.academiascience.org/index.php/wos/article/view/5342/5118
5. Elmurotova D.B., Kattaxodjayeva D.U., Jaxongirova Sh.U., Yusupova M.B. Physics of remote gamma therapy // Web of Discoveries: Journal of Analysis and Inventions, V.3, Issue 4, ISSN(E): 2938-3773, P.50-54, April – 2025, Испания, https://webofjournals.com/index.php/3/article/view/3880
6. Elmurotova D.B., Shodiev A.A., Mussaeva M.A. Impact of electron radiation on resistivity in YBCO and GdBCO high-temperature superconducting tapes // Web of scientist: international scientific research journal, ISSN: 2776-0979, V.6, Issue 5, may-2025, P.161-173, Indonesia, https://wos.academiascience.org/index.php/wos/article/view/2672
7. Elmurotova D., Fayziyeva N.A., Bozorov E.H. History of the discovery of radioactivity and x-rays, nuclear explosions explanation of the phenomenon research using interactive methods // Web of Discoveries: Journal of Analysis and Inventions, V.3, Issue 5, ISSN(E): 2938-3773, P.61-65, May-2025. Испания https://webofjournals.com/index.php/3/article/view/4233
8. Elmurotova D.B., Ro‘zimatova Sh.Sh., Umarova F.S. Insonning estetik tafakkuri // Лучшие интеллектуальные исследования, ISSN:3030-3680, Ч.45, Т.1, С.130-135, май-2025, Россия. scientific-jl.com/luch/.
9. Elmurotova D.B., Farmonova Sh.Sh., Umarova F.S. Borliq va bo‘shliq: mavjudlik chegaralari haqida tafakkur // Лучшие интеллектуальные исследования, ISSN:3030-3680, Ч.44, Т.5, С.411-416, май-2025, Россия. scientific-jl.com/luch/.
10. Elmurotova D.B., Jo’rayeva R.A, Umarova F.S. “Bilimning chegarasi va rad etilishi”: eskeptitsizm va bilimga bo‘lgan ishonchsizlik muammosi // Лучшие интеллектуальные исследования, ISSN:3030-3680, Ч.44, Т.5, С.417-423, май-2025, Россия. scientific-jl.com/luch/.
11. Elmurotova D.B., Umarova F.S., G’uzorova O.U. Hayot va o‘lim chegarasida: bioetikaning zamonaviy tibbiyotdagi o‘rni // Лучшие интеллектуальные исследования, ISSN:3030-3680, Ч.44, Т.4, С.261-266, май-2025, Россия. scientific-jl.com/luch/.
12. Elmurotova D.B., Bazarbayev M.I., Arzikulov F.F. Recommendations for improving the research methodology for digital image processing related to hand hygiene // The New Uzbekistan Journal of Medicine (NUJM), V.I, Issue I, Yanvar-2025, ISSN: 2181-2675, B.72-79, Uzbekiston, https://ijournal.uz/index.php/nujm/index
13. Элмуротова Д.Б., Арзикулов Ф. Физические основы протонной терапии // Ilm fan xabarnomasi, Sc.Bul., Вест.науки, V.5, №2, ISSN:3030-3931, IF:7.241, январь-2025, С.281-287. https://worldlyjournals.com/index.php/Yangiizlanuvchi/article/view/8273

14. Элмуротова Д.Б., Каттаходжаева Д.У., Ибрагимова Г.Ж. Физические принципы протонной терапии в медицине // Ta'lim innovatsiyasi va integratsiyasi, ISSN: 3030-3621, №39, T1, 02.2025, C.110-114. scientific-jl.org.
15. Elmurotova D.B., Odilova N.J., Jumanov Sh.E., Odilova E.U. Nanostrukturalarni o‘rganishning an’anaviy usullari va qurilmalari // World scientific research journal, V.36, Issue-1, 02.2025, C.155-161. https://scientific-jl.org/index.php/wsrj,
16. Elmurotova D.B., Farmonova Sh.Sh., Jo’rayeva R.A., Xusainova X.J. Odam askaridasining inson organizmiga biologik ta’siri // Ta'lim innovatsiyasi va integratsiyasi, ISSN: 3030-3621, №44, T4, 05.2025, B.50-54. scientific-jl.org.
17. Elmurotova D.B., Azamatova D.O’., G’uzorova O.U., Xusainova X..J. Lyambliyaning morfologiyasi, hayotiy sikli va biologik xususiyatlari // Ta'lim innovatsiyasi va integratsiyasi, ISSN: 3030-3621, №44, T3, 05.2025, B.197-202. scientific-jl.org.
18. Elmurotova D.B., Kattaxodjayeva D.U., Aytjanova A.Ye., Ibragimova G.J. Inson tanasidagi to'qimalar funksiyasi // Ustozlar uchun, V.72, №5, B.173-178, may-2025. Pedagoglar.org
19. Elmurotova D.B., Qo’shboqova S.D., Majlimov F.B., G‘oyibnazarov R.B. Ko’z kasalliklarining biofizik mexanizmlari // Ta'lim innovatsiyasi va integratsiyasi, ISSN: 3030-3621, №45, T2, 05.2025, B.186-189. scientific-jl.com.
20. Elmurotova D.B., Samiqova L.S., Majlimov F.B., G‘oyibnazarov R.B. Bronxial kasalliklarda nafas olish dinamikasining biofizik tahlili // Ta'lim innovatsiyasi va integratsiyasi, ISSN: 3030-3621, №45, T2, 05.2025, B.190-194. scientific-jl.com.