

Op. Dr. İlhami Güneral (1914–2006), author and illustrator of the first original dissection manual in Turkish and his contributions to anatomy

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Abstract

Objectives: İlhami Güneral was a Turkish physician and surgeon whose contributions to anatomy education and medical illustration remained under-appreciated until this day. This study aims to outline his achievements throughout his career and acknowledge his unreported contributions to anatomical sciences in Türkiye.

Methods: A series of interviews were conducted with his surviving family, relatives, and friends. Additional documents were also collected from various national and international institutions.

Results: İlhami Güneral was born in 1914 in Anadolu Kavağı, İstanbul. He attended İstanbul University Faculty of Medicine and graduated in 1942. Upon graduation, he published his first book titled “Diseksiyon Atlası” which he also illustrated himself. His illustrations were later used in Prof. Dr. Zeki Zeren’s dissection handbook published in 1953. He visited and worked with renowned neuropathologist Philipp Schwartz between 1958 and 1960 in Warren, Pennsylvania. During his stay, he co-constructed a detachable “Transparent Brain Model” for teaching brain anatomy which was awarded with the Billings Gold Medal at the 109th Annual Meeting of the American Medical Association. After his return to Türkiye, he published his final illustrated anatomy atlas in 1972, the “Atlas Cerebri Humani”. He spent the remaining days of his life in his long standing home in Ödemiş, İzmir, as a private physician and surgeon. He was diagnosed with prostate cancer in 1993, and passed away due to his illness in 2006.

Conclusion: This interesting and unique dramatis persona is the author and illustrator of the first original dissection manual printed in Turkish.

Keywords: anatomy; anatomy education; dissection; medical illustration

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Introduction

İlhami Güneral was a surgeon who late in his career became popular and rather controversial with his books on alternative/complementary treatment of cancer in the late 1990s and early 2000s. This rather sensational aspect of his career, mostly shadows his contributions to anatomy. This paper aims to outline his achievements throughout his career and acknowledge his unreported contributions to anatomical sciences in Türkiye.

In order to collect data on this figure, different sources were contacted and utilized. Mrs. Ejide Tanık, the daughter and only surviving relative of Dr. Güneral was contacted for information on his life, personal documents, and his original works. Mrs. Tanık was interviewed on two different occasions and additional correspondence was estab-

lished for receiving relevant documents and obtaining written permission for the use of personal documents. For comparison of Dr. Güneral’s reused illustrations, İstanbul University Press, Printing and Publication Office was contacted. The American Medical Association Archives (AMA Archives) was contacted for documents regarding the award he received in 1960.

His Life

İlhami Güneral was born in Anadolu Kavağı district of İstanbul in 1914. Due to the independence war at the time, he had to change numerous schools, including Şems-ül Mekâtip, along with Saint-Joseph, Saint Benoît, and Esayan High Schools, for his elementary and high school education. He graduated from Bursa Erkek Lisesi (Figure 1).

From a very early age, he had a talent for drawing and sculpting. Initially, this led him to apply to the Academy of Fine Arts, which later became the Mimar Sinan Fine Arts University, after his graduation from high school for his training in architecture. Unfortunately, he had a passion for medicine. Therefore, he dropped out from the Academy of Fine Arts a year later and enlisted to the Faculty of Medicine of Istanbul University despite his father's wishes. This reluctance from his father financially burdened him and he had to work and study throughout his medical training. He graduated from the faculty of medicine in 1942 (Figure 2). Following his military service, he started his surgery residency and completed his training in 1950. As part of his mandatory medical service, he was appointed to the Ödemiş State Hospital in İzmir, where he later became the chief of staff.

In late 1957, he received an invitation from the world renowned neuropathologist, Professor Philipp Schwartz, who was a beloved lecturer of his from medical school in İstanbul. In the letter of invitation, Professor Schwartz asked him to come and work in the United States, and help him to produce an educational model for studying the human brain. Güneral produced a small wax model of the brain and sent it to Schwartz so that he could apply for a fund. Once the project was approved, he traveled first to Erie, Pennsylvania in early 1958. About six months later, his family joined him in Warren, Pennsylvania, where professor Schwartz was currently working as a pathologist at the Warren State Hospital and chaired a research department there. For the next two and a half years he modeled and sculpted detachable and transparent brain models for neuroanatomy education. In June 1960, he and Prof. Schwartz took the finished models and exhibited them at the 109th Annual Meeting of the American Medical Association which was held in Miami Beach, Florida. The exhibit titled "New Ways in Teaching Brain Anatomy: The Transparent Brain" was awarded with the Billings Gold Medal (Figure 3).^[1]

He returned to Türkiye in September 1960. Upon his return, he visited his professors at Istanbul University in order to convince them to produce another model for Istanbul University. Unfortunately, they could not secure necessary funds for the project.

After his return to Ödemiş, he resigned from his official post at the State Hospital and worked as a private physician/surgeon for the remainder of his life. In 1993 he was diagnosed with prostate cancer. This experience has increased his curiosity in complementary medicine, which he also authored three books titled "Kanserden Korkma



Figure 1. During his studies at Bursa Erkek Lisesi as a high school student, young Dr. Güneral served a short time in Bursa Penitentiary. From the personal collection of Mrs. Ejide Tanık, with her kind written permission.

Modası Geçmiş Tedaviden Kork", "Doktorunuzun Söyleyemedikleri", and "Kalp – Damar Hastalıklarında ve Kanser'de Ölümcül Oyunlar". He lost his more than a decade long battle with cancer, and passed away in 2006.

He had three marriages and three children.

His Contributions to Anatomy

His first contribution to anatomical sciences in Türkiye was a small dissection atlas, which was published in 1942, just after his graduation from the faculty of medicine (Figure 4).^[2] The book was 96 pages long and had 104



Figure 2. Dr. Güneral (upper row, first from right) and his peers from İstanbul University Faculty of Medicine during a dissection course at the Morphology building in Beyazıt Campus. From the personal collection of Mrs. Ejide Tanık, with her kind written permission.

Iowa, Pennsylvania Doctors Honored

Askey Urges More Action In 5 Areas

The medical profession yesterday was urged to intensify and accelerate its efforts in five major areas.

Dr. E. Vincent Askey at the House of Delegates of Los Angeles, who was invited to the association, called upon medical colleges, medical schools, and individual physicians to make the fullest possible use of medical education recruitment materials now available from the AMA.

"Let's hurry, once and for all," he said, "the false old fable that the AMA tries in any way to restrict the supply of physicians."

Askey declared that a lot of hard work and greatly intensified effort will be needed to prepare for the White House Conference on Aging, to be held next January. He urged that the profession make full use of all facts, reports, and suggestions produced at the national Conference on Medicine's Participation in the White House Conference, which was held in Chicago last April.

Concerning health insurance and third parties, Askey noted that any third party which is trying to do a medically sound job in the field of health care should be numbered among the profession's friends and allies. "Every state and county medical society should review once again the recommendations of the Commission on Medical Care Plans, as adopted and revised at the Atlantic City and Dallas meetings," he said.

Although doctors have a great deal about mental illness, Askey said, "we are not applying our present effective knowledge to the extent we could." A step toward correcting this lag will be the 3½-year study by the Joint Commission on Mental Illness and Health, which has now been completed, he said. The report will appear in 10 monographs and a final summary report, all due this year.

State and county medical societies should study their membership requirements, Askey said, with a view to eliminating any eligibility rules which may prevent otherwise-qualified physicians from joining. Thousands of physicians are not now members of the AMA, he said, and in some states the numbers of such physicians seem to be disproportionate.

Dr. Charles J. Ashworth of Providence, R. I., was elected president of the Aces and Deuces order at a breakfast meeting held at the Americana Tuesday.

Dr. Paul F. Wallace, St. Petersburg, Fla., and Dr. Hilton S. Thompson (right), San Antonio, showed techniques in setting fractures of the tibia and fibula.

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AMERICAN MEDICAL ASSOCIATION

Daily Bulletin

Volume 56 Miami Beach, Thursday, June 16, 1960 Fourth Issue

Today's Show Will Feature AMA Friday

An estimated 28 million Americans Friday morning will look over their doctor's shoulder to learn what is new in medicine. They will do it through NBC's "Today" show with host Dave Garroway. This nationally televised program will devote an hour to interviewing physicians who are exhibitors at AMA's Annual Meeting.

"Today" is seen in the Miami area on WTVT, channel 10, from 7 to 9 a.m. The hour devoted to AMA will be from 8 to 9 a.m. Garroway will begin the hour by interviewing Dr. E. Vincent Askey, AMA president. He then will talk with physicians who are participating in the Scientific Exhibit. Their exhibits will be seen on the show.

The Council on Scientific Affairs and the medicolegal department of the Communications Division have cooperated in the production. The show will be videotaped Tuesday night in New York by using a two-way audio and one-way video link. Garroway will be in New York and will be able to see and converse with the physicians. The doctors will be able to hear Garroway, but will not see him.

The following physicians are scheduled to appear on the program: C. A. Linke, Robert J. Jackson, Joseph A. Johnston, Arlil E. Hansen, Wilbur B. Stewart, Philip C. Johnson, George C. Morris, Jr., and Henry I. Russek.

Aces, Deuces Elect
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JUNE McALLISTER and Sig Conn are happy and attractive additions to Warner-Chilcote Laboratories' exhibit as they participate in the recording on Peritrate, a coronary vasodilator, for Dr. Thomas H. Copeland of Bedford, O.

House Seeks Group Retirement Plan
The House of Delegates Wednesday approved in principle a group annuity or retirement program for AMA members.

It authorized the Board of Trustees to develop the program and, after getting competitive bids from insurance firms, to recommend a specific plan at the Clinical Meeting in Washington, D.C., in December.

The House set forth its position on health care of the aged and insisted that "the principle of freedom of choice should be preserved." It said "personal medical care is primarily the responsibility of the individual." When he is unable to do this, the duty passes on to his family, community, county, state, and only when all of these fail, to the federal government.

In other actions, the House:
• Approved "Guiding Principles for Relations Between Physicians and Allied Health Groups," which said the medical profession offers to cooperate with other groups in the health professions to elevate standards of education and competence. The House said allied scientists have the right to establish their own standards of education, training and rules for professional conduct, and to enforce them.

• Declared mail order filling of prescription drugs generally is "not in the best interest of the patient."

• Supported the Federal Aviation Agency's decision to extend to all pilots the requirement that physical examinations be conducted by designated medical examiners. The House noted that the brief training in special techniques of such exams soon will be available to any MD.

MD Registration
Seven hundred twenty-four physicians registered Wednesday at the 109th AMA Annual Meeting. Total physician registration for the three days is 7,548.

In addition to MDs, 1,122 guests registered Wednesday to bring that total to 8,670. Total registration after three days is 18,840.

Physicians and guests may register between 8:30 a.m. and 5:30 p.m. today and from 8:30 a.m. until noon on Friday. Registration is at the Miami Beach Exhibition Hall.

Win Hektoen And Billings Top Awards

Winners of awards for outstanding exhibits were announced yesterday by the Committee on Awards of the Scientific Exhibit. Prize winners were selected from some 300 exhibits on display in Exhibition Hall this week.

Hektoen medals, presented for exhibits of original investigation and judged on the basis of originality and excellence of presentation, were awarded as follows:

Gold medal—Hermann N. Burian, Ginter E. von Noorden, Lee Allen and Ignacio V. Ponselli, State University of Iowa College of Medicine, Iowa City, for the exhibit on Chamber Angle Anomalies in Developmental Glaucoma and in Systemic Mendelian Disorders. Space 918.

Silver medal—Alvin L. Watanabe, Inert Hattagawa and George E. Moore, Rowell Park Memorial Institute, Buffalo, N. Y., for the exhibit on Pathology and Physiology of the Thoracic Duct Lymph. Space 410.

Ronze medal—Hans von Leden and Paul Moore, Northwestern University Medical School—The William Harriet Gould Foundation in Developmental Glaucoma and in Systemic Mendelian Disorders. Space 918.

Silver medal—Durand Smith, Frederick Stenn and Michael G. Gostvitz, Northwestern University Medical School, Chicago Medical School, Chicago, for the exhibit on Proctoscopic Manikins: Teaching the Art of Proctoscopy. Space 607.

Bronze medal—William Hentel, A. N. Longfield, Veterans Administration Hospital, Albuquerque, N. Mex.; and Hollis Boren and R. J. Blumenthal, Veterans Administration Hospital, Houston, Texas, for the exhibit on Pathology of Major Pulmonary Diseases as Demonstrated by Fume Fixation. Space 1006.

Honorable Mention to John Adams, George Sessions and Thomas Utter, Louisiana State University School of Medicine and Charity Hospital, New Orleans. Space 186.

Honorable Mention to William Cohen and Boris M. Holz, Cincinnati General Hospital, Cincinnati, for the exhibit on The Control of Staphylococcal Infection on a Derivational Basis of a General Hospital. Space 292.

Honorable Mention to Adilgott Bessel, Orange, N. J., for the exhibit on The Recognition of Fracture. (See p. 7, 406d).

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Billings Medal

Billings medals, presented to exhibits which do not exemplify purely experimental studies, but are judged on basis of excellence of fact correlation and presentation were awarded as follows:

Gold medal—Ph. Schwartz and I. Güneral, Warren State Hospital, Warren, Pa., for the exhibit on New Ways in Teaching Brain Anatomy: The Transparent Brain. Space 110.

Silver medal—Durand Smith, Frederick Stenn and Michael Gostvitz, Northwestern University Medical School, Khalid Durrani, Englewood Hospital, Milan Waisick, University of Illinois College of Medicine, and Joseph Levenson, Chicago Medical School, Chicago, for the exhibit on Proctoscopic Manikins: Teaching the Art of Proctoscopy. Space 607.

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Figure 3. A clipping from the American Medical Association Daily Bulletin (June 16, 1960) reporting that Dr. Ph. Schwartz and Dr. İ. Güneral were awarded with the Billings Gold Medal for their exhibit on new ways in teaching brain anatomy. The gray frame is zoomed in for providing detail of the bulletin. The image was used with the written permission of the AMA Archives. © American Medical Association [June 16, 1960]. All rights reserved. Courtesy of AMA Archives.

original illustrations that showed different steps of the dissections and important dissection tips (Figure 5). The book heavily relied on original illustrations that were drawn by himself. The main motivation for him to create this book was actually financial, since his father did not support his medical training. The book did not receive much interest at first and was only published in one edition. About a decade later, the Chair of the Institute of Anatomy at Istanbul University Faculty of Medicine, Professor Zeki Zeren, used some of Güneral's illustrations in his dissection manual which was published in 1953. Prof. Zeren acknowledged Güneral's contribution and included his kind permission in the forwards of his book.^[3] The manual of Zeki Zeren used 68 of Güneral's illustrations (Figure 6).

His second seminal work was the transparent brain models that he constructed during his stay in Warren, United States. During his stay, he worked to create a multi pieced detachable brain model made out of copper wires and colored epoxy resin and multiple section mod-

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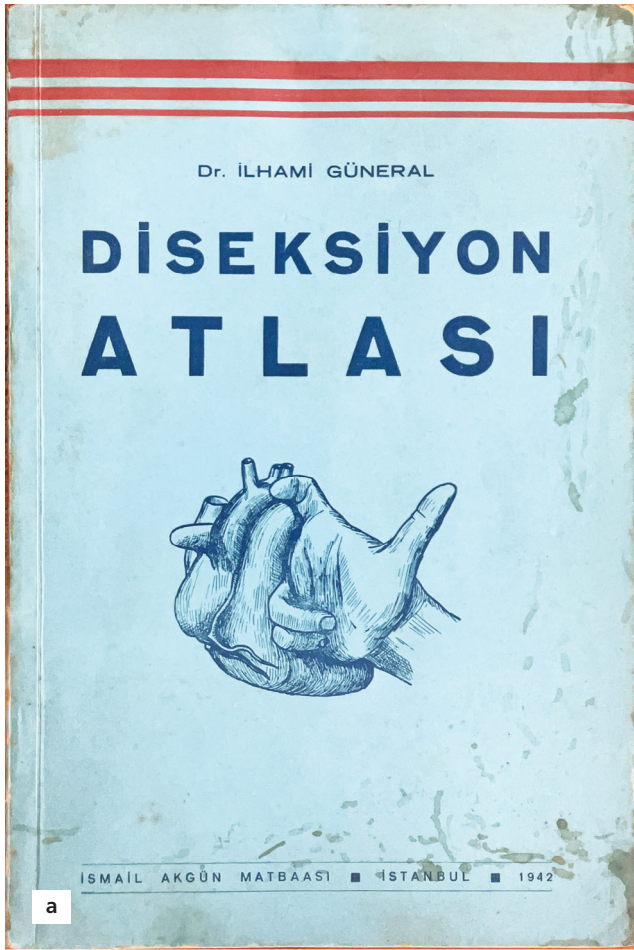


Figure 4. Cover (a) and front matter (b) of Dr. Güneral's "Diseksiyon Atlası", published in 1942. From the personal collection of Mrs. Ejide Tanık, with her kind written permission.

els. His creative process was a multi step approach. He first acquired serial slices from different regions of the brain, stained them, and investigated them under a light microscope. This helped him to visualize and follow major ascending and descending fiber systems and nuclei layer by layer. The step was basically a manual segmentation of the entire sections he evaluated. Later he drew sketches and full colored illustrations that will create the base of the constructed model. In the final step, he created different sized molds to be filled with transparent epoxy resin. In the scientific programme of the 109th Meeting of the American Medical Association held in Miami Beach, Güneral was reported as a co-creator for the exhibit titled "New Ways in Teaching Brain Anatomy: The Transparent Brain".^[4] With this exhibit, Dr. Schwartz and Dr. Güneral were awarded with the Billings Gold Medal (Figures 3, 7 and 8).^[1] Interestingly, despite being reported in the scientific programme and

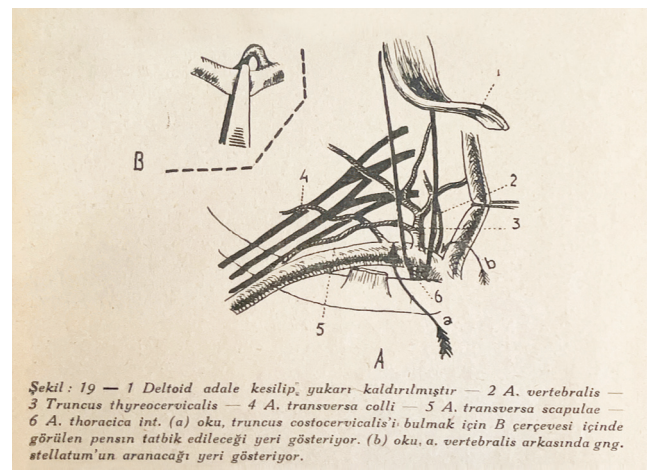


Figure 5. An example of a dissection step showing the dissection of the root of the neck. The illustrations usually provide small dissection tips and tricks. In this image, the black curved arrow (b) guides students to the inferior cervical (stellate) ganglion just posterior to the vertebral artery. From the personal collection of Mrs. Ejide Tanık, with her kind written permission.

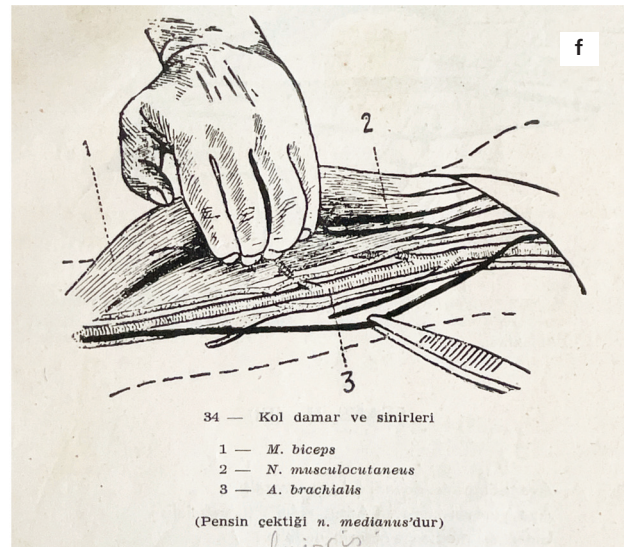
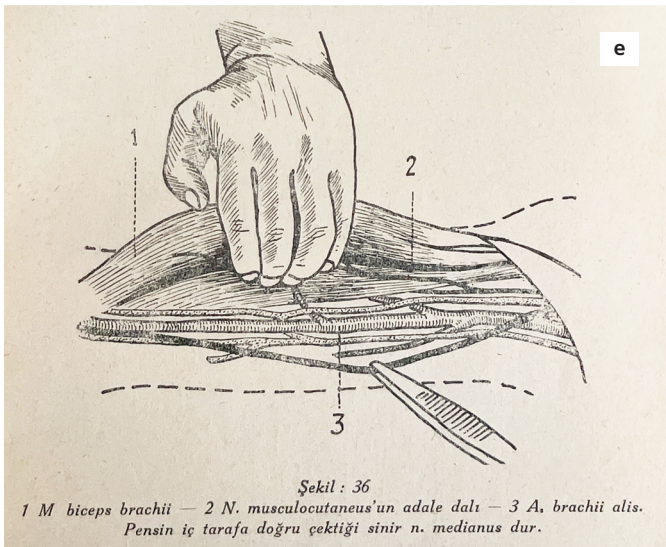
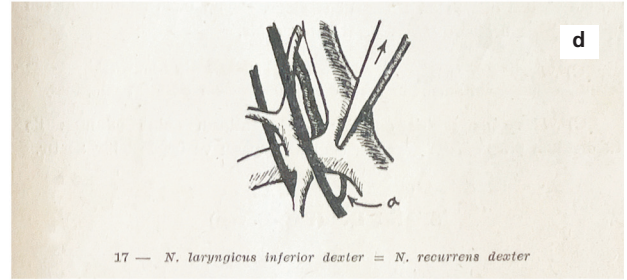
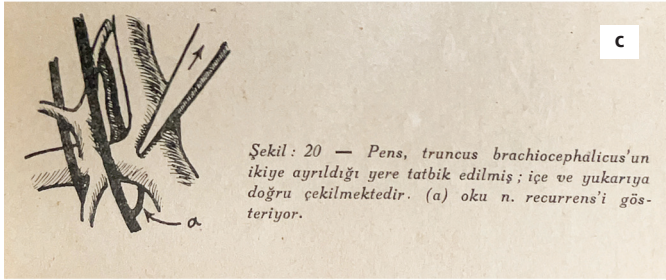
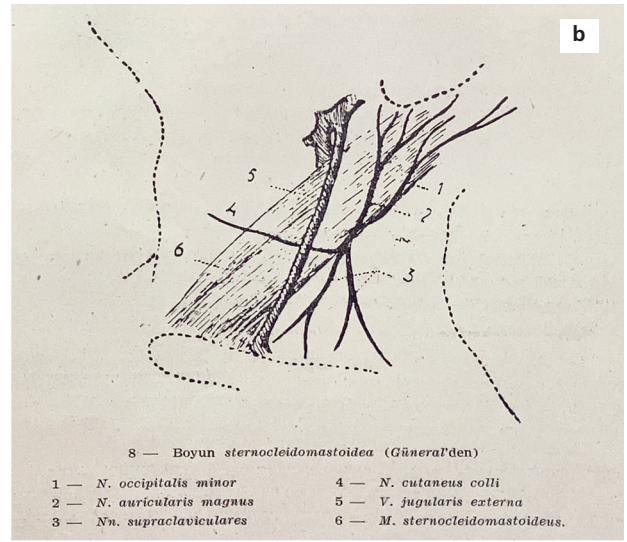
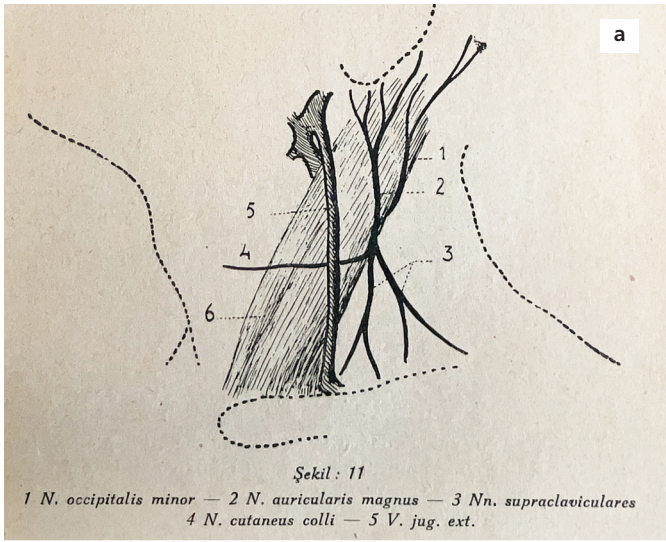


Figure 6. Comparison of some images from the books of Drs. Güneral and Zeren. The images on the left (a, c, e) and right (b, d, f) are from Güneral's and Zeren's books, respectively. From the personal collection of Mrs. Ejide Tanık, with her kind written permission.

in numerous news articles as a co-creator of the model and co-recipient of the gold medal, later publications on the life of Professor Schwartz that mention this award mostly do not mention Güneral's contributions,^[5,6] and

some report that Dr. Schwartz cooperated with a sculptor, Mr. Seymour Couzyn, from the American Museum of Natural History in New York to construct the three dimensional anatomical brain models.^[7,8] Therefore, his

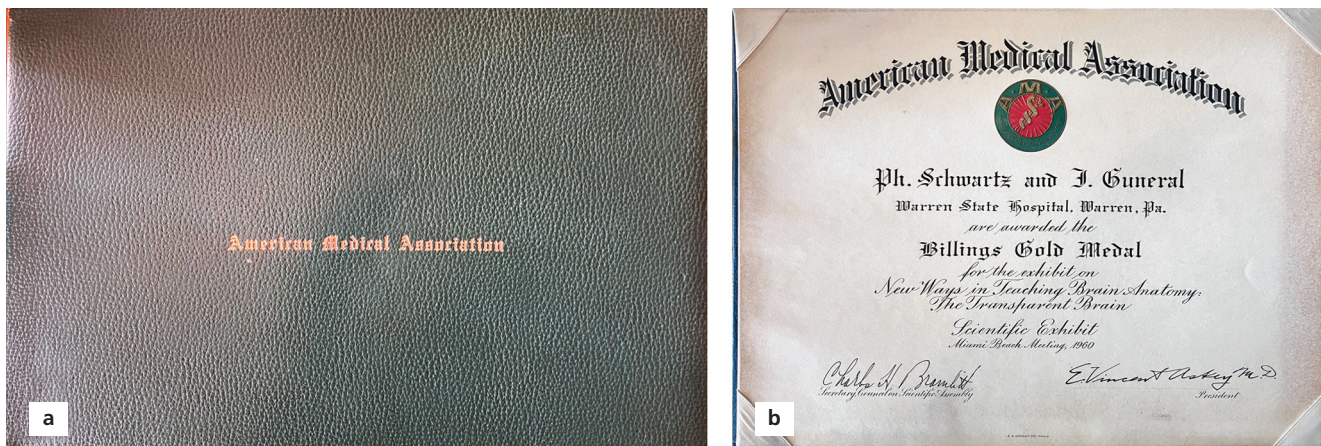


Figure 7. The cover (a) and the certificate (b) of the Billings Gold Medal given to Ph. Schwartz and İ. Güneral for the exhibit on New Ways in Teaching Brain Anatomy: The Transparent Brain presented by the American Medical Association. From the personal collection of Mrs. Ejide Tanik, with her kind written permission.

contributions to this seminal work mostly stayed uncredited up until today. There is only a single piece of the original brain model, the right half of a hemisected brain stem, in the possession of Güneral's surviving family members (Figure 8).

His final book was published in 1972. The book was titled "Güneral's Atlas Cerebri Humani" and contained 25

hand drawn and signed illustrations depicting major brain stem and cerebellar nuclei, and ascending and descending pathways (Figure 9).^[9] The striking detail of the images resemble as if the nuclei and corresponding tracts were dissected and portrayed in the white matter dissection technique of Klingler.^[10] Although there is no information on whether Güneral had experience in Klingler's dissec-



Figure 8. The only piece, a sagittal hemisection of the brainstem, from the transparent brain model that Dr. Güneral's surviving family has in their belongings. (a) lateral aspect of the brain stem; (b) close up on the lateral aspect of the bulbous part for details; (c) medial aspect of the sagittal section of the brain stem. From the personal collection of Mrs. Ejide Tanik, with her kind written permission.

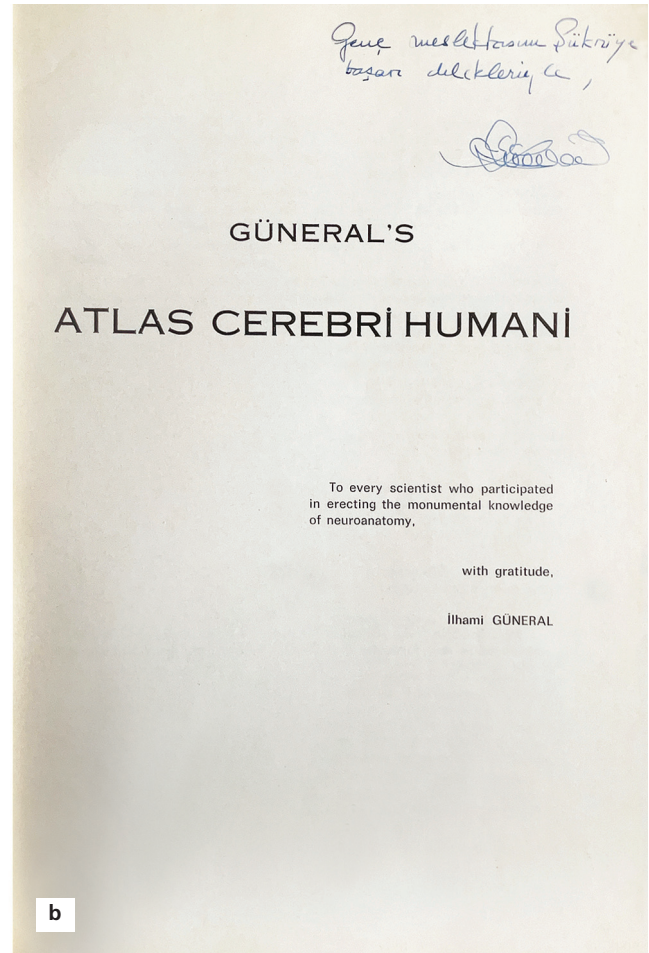
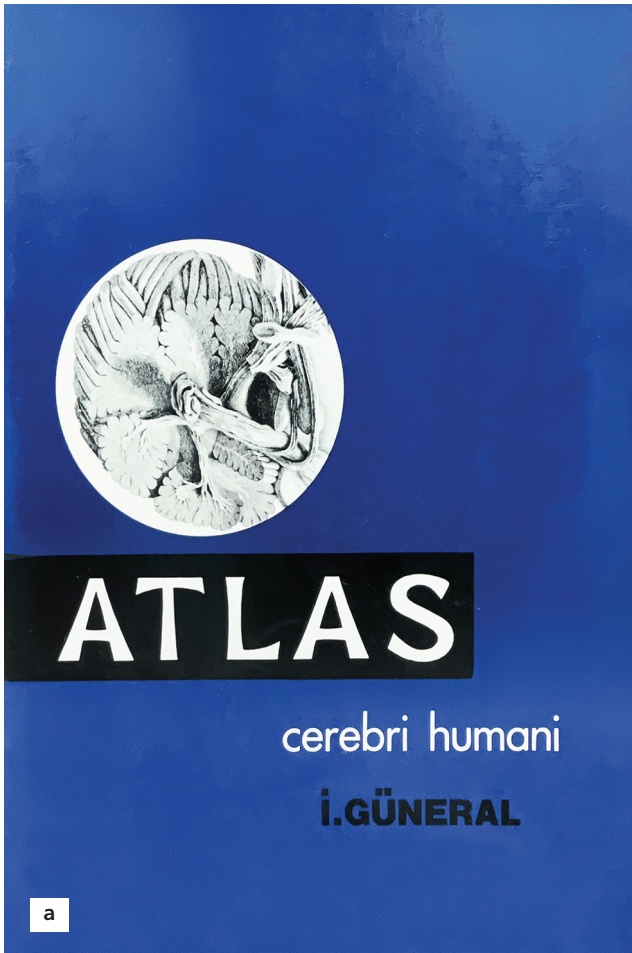


Figure 9. Cover (a) and front matter (b) of Güneral's "Atlas Cerebri Humani", published in 1972. From the personal collection of Mrs. Ejide Tanık, with her kind written permission.

tion method or he had access to human specimens to work on during the production of the atlas. It seems like he illustrated relevant structures depending only on his previous experience when he worked on the transparent brain model back in Warren, United States. The book was written in English and aimed at an international audience. Despite not being popular, and limited to a single edition, the book provided very fine imagery of brainstem and cerebellar fiber systems, and nuclei, which depicted detailed neuroanatomy similar to the work of Klingler (Figures 10 and 11).

Conclusion

Although he was not an anatomist, or enrolled or completed a PhD/residency program in human anatomy, Dr. İlhami Güneral's contributions to anatomical sciences and anatomy education in Türkiye are relevant. During

the late Ottoman and early Republic period, many anatomy books and atlases were printed in Ottoman Turkish or Modern Turkish. Most of these works, however, are translations from a single work (book or atlas) or collations of translations from various works.^[11-13] The first illustrated human anatomy atlas in Ottoman Turkish is the "Teşrih-i Miftâh" by Hristo Stambolski.^[13,14] Although this atlas, which is an anatomy atlas rather than a dissection manual/book, is the first anatomy atlas printed in Ottoman Turkish, is a direct translation of "Petit Atlas Complét d'Anatomie Descriptive du Corps Humain" by Joseph-Nicolas Masse.^[15] The first reported original dissection book in Ottoman Turkish is the Usul-ü Teşrih (method of anatomy/dissection), which is the unfinished work of Hasan Mazhar Paşa.^[14] Since this unfinished work, there is no report of a dissection book published in Ottoman

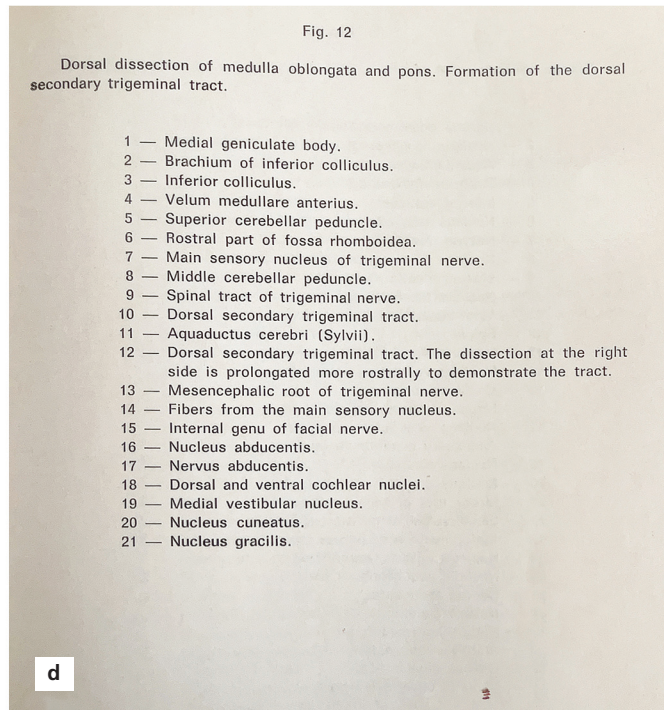
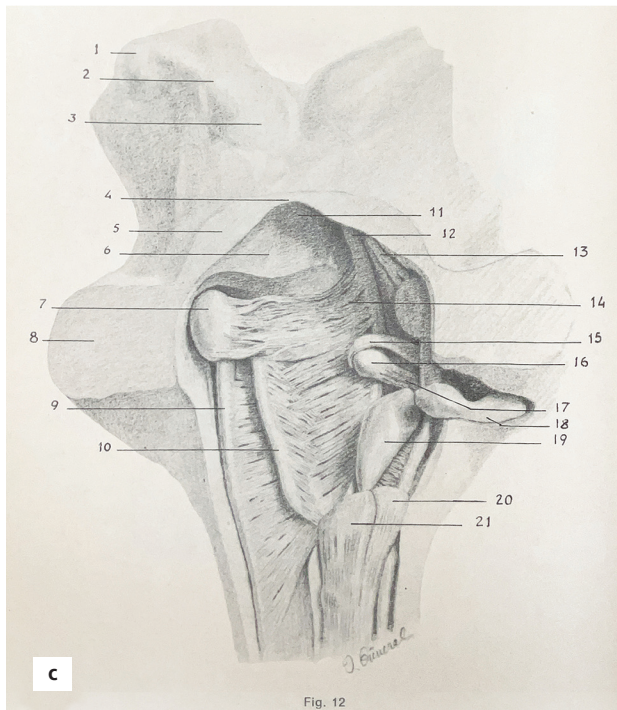
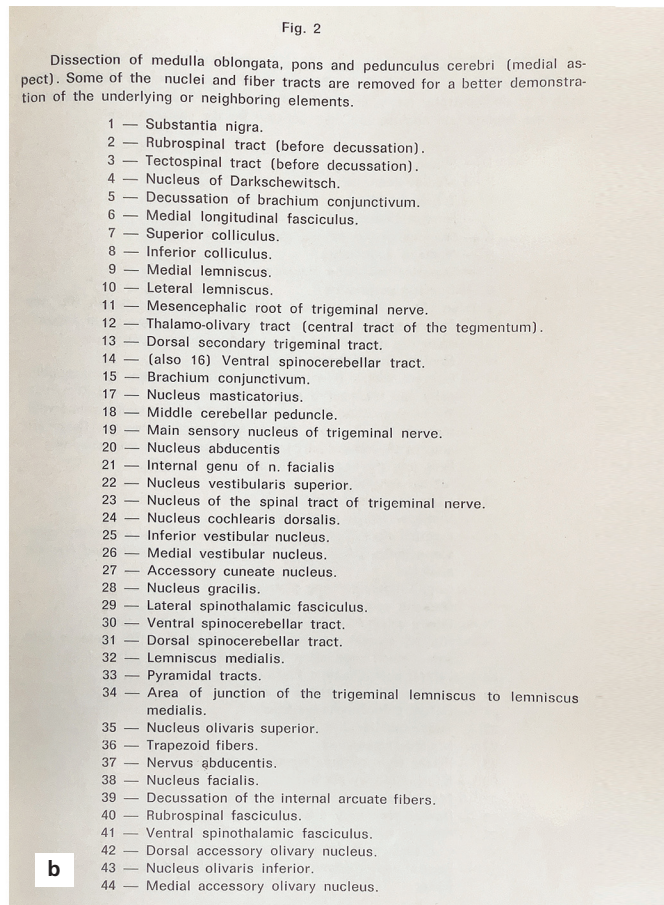
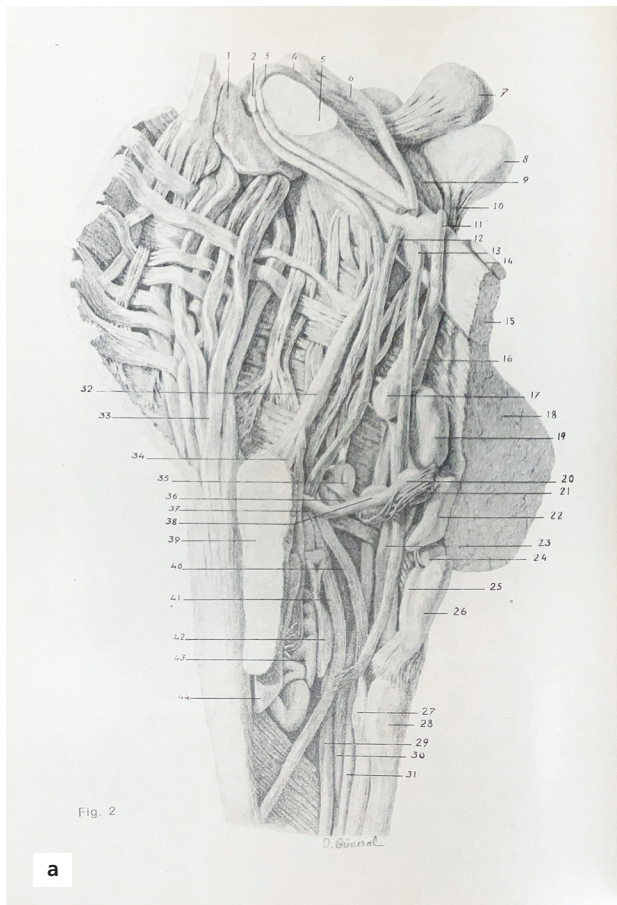


Figure 10. Detailed images in the Güneral's Atlas Cerebri Humani depicting the detailed anatomy of major brainstem nuclei and pathways (a and c) and accompanying figure legends (b and d). From the personal collection of Mrs. Ejide Tanık, with her kind written permission.

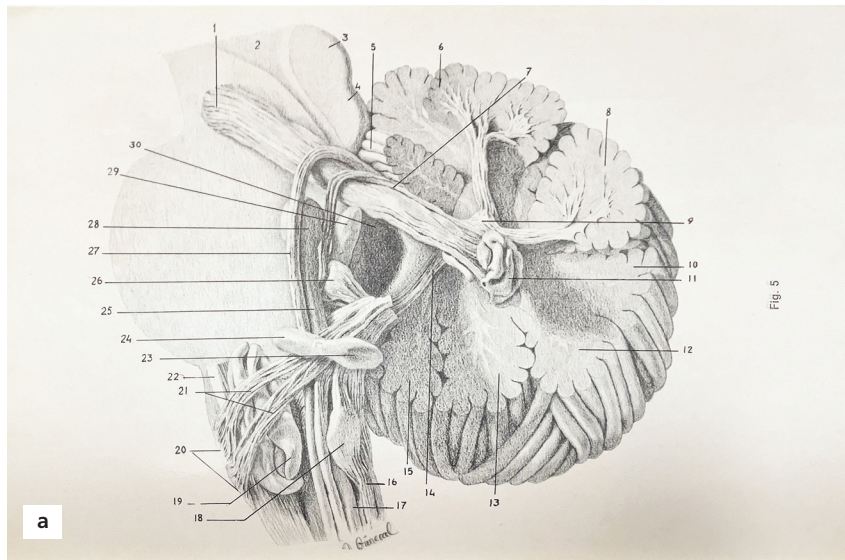


Fig. 5
Right cerebellum, superior and inferior peduncles and their constituent elements.

- 1 — Brachium conjunctivum.
- 2 — Posterior end of the third ventricle continuous with aqueductus cerebri.
- 3 — Superior colliculus.
- 4 — Inferior colliculus.
- 5 — Central lobule.
- 6 — Culmen.
- 7 — Tractus fastigiovestibularis (hook bundle).
- 8 — Declive.
- 9 — Nucleus fastigii.
- 10 — Folium and tuber.
- 11 — Nucleus dentatus.
- 12 — Pyramis.
- 13 — Uvula.
- 14 — Fastigiobulbar tract. This tract is accompanied by a variety of minor and dispersed small fascicles (whence -area fasciculata-) running both ways between the cerebellum and the nuclei of the vestibular and reticular systems. They occupy the medial part of the restiform body: juxtarestiform body.
- 15 — Nodule.
- 16 — Fasciculus dorsalis.
- 17 — Tractus spinocerebellaris dorsalis.
- 18 — Accessory cuneate nucleus.
- 19 — Nucleus olivaris inferior.
- 20 — Arcuate nuclei.
- 21 — Ventral external arcuate fibers.
- 22 — Tractus pyramidalis.
- 23 — Nucleus cochlearis dorsalis.
- 24 — Nucleus cochlearis ventralis.
- 25 — Spinal tract of trigeminal nerve.
- 26 — Nucleus vestibularis lateralis (of Deiters).
- 27 — Tractus spinocerebellaris ventralis.
- 28 — Main sensory nucleus of trigeminal nerve.
- 29 — Nucleus vestibularis superior.
- 30 — Fourth ventricle.

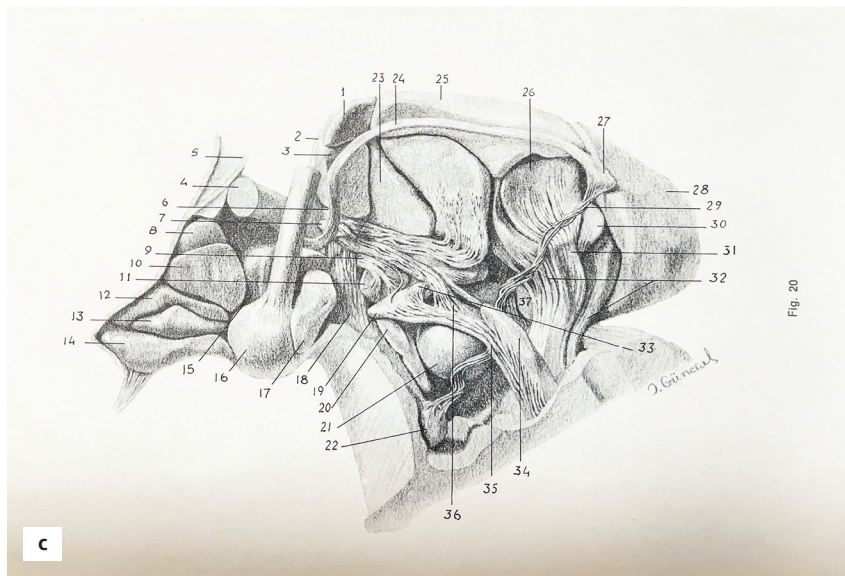


Fig. 20
Thalamic, hypothalamic and subthalamic elements. Some of the fiber tracts and nuclei are omitted.

- 1 — Nucleus anterodorsalis.
- 2 — Nucleus anterolateralis.
- 3 — Nucleus anteroventralis.
- 4 — Commissura anterior.
- 5 — Lamina terminalis.
- 6 — Fasciculus thalamicus.
- 7 — Ansa lenticularis.
- 8 — Nucleus preopticus medialis hypothalami.
- 9 — Fasciculus subthalamicus.
- 10 — Nucleus magnocellularis hypothalami.
- 11 — Nucleus subthalamicus.
- 12 — Anterior hypothalamic nucleus.
- 13 — Ventromedial hypothalamic nucleus.
- 14 — Arcuate nucleus.
- 15 — Lateral hypothalamic nucleus.
- 16 — Corpus mammillare.
- 17 — Posterior hypothalamic nucleus.
- 18 — Corticopontine fibers.
- 19 — Nucleus of medial longitudinal fasciculus (of Darkschewitsch).
- 20 — Substantia nigra (medial edge).
- 21 — Nucleus ruber.
- 22 — Nucleus interpeduncularis.
- 23 — Lateral ventral nucleus.
- 24 — Stria medullaris.
- 25 — Nucleus dorsolateralis.
- 26 — Nucleus ventralis posteromedialis.
- 27 — Habenula.
- 28 — Pulvinar.
- 29 — Fasciculus habenule-interpeduncularis (retroflexus Meynert).
- 30 — Nucleus ventralis posterolateralis.
- 31 — Joined fibers of trigeminal lemniscus and dorsal secondary trigeminal tract.
- 32 — Medial lemniscus.
- 33 — (Interstitial) nucleus of Cajal.
- 34 — Nucleus n. oculomotorius.
- 35 — Medial longitudinal fasciculus.
- 36 — Fasciculus lenticularis.
- 37 — Lateral geniculate body.

Figure 11. Detailed images in the Güneral's Atlas Cerebri Humani depicting the detailed anatomy of major cerebellar, thalamic, and hypothalamic nuclei and pathways (a and c) and accompanying figure legends (b and d). From the personal collection of Mrs. Ejide Tanık, with her kind written permission.

Turkish or Modern Turkish in the known literature.^[16] Therefore the dissection atlas of İlhami Güneral is the first original dissection book ever written, illustrated, and printed in Turkish. Similarly, the transparent brain models he produced have shown his profound knowledge in anatomy, his competence in relevant anatomical museum techniques, and his mastery in fine arts. In conclusion, it is imperative to acknowledge the contributions of Dr. İlhami Güneral to anatomical sciences and medical illustration in Türkiye.

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Conflict of Interest

No conflict of interest was declared by the author.

Ethics Approval

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