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# THE ROLE OF THE LATIN LANGUAGE IN THE DEVELOPMENT AND STANDARDIZATION OF ANATOMICAL NOMENCLATURE

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**Abstract:** Latin has played a fundamental role in the creation, consolidation, and continuous development of anatomical nomenclature from the Renaissance to the present day. The aim of this article is to examine the linguistic and conceptual development of anatomical terminology and to explore the lasting influence of Latin on the standardization of anatomical nomenclature. The study uses a historical-linguistic and descriptive method, analyzing key moments from the early Greek names of body parts to the contemporary Terminologia Anatomica (TA2023AG). The results show that the adoption of Latin as the lingua franca of anatomy has provided a basis for semantic precision, morphological consistency, and cross-cultural scientific communication. Furthermore, the systematic revisions from Basle Nomina Anatomica (1895) through Nomina Anatomica (1955) to Terminologia Anatomica (1998, 2023) illustrate the dynamic interaction between linguistic tradition and scientific innovation. The discussion highlights the importance of Latin in contemporary medical education and international standardization, emphasizing its irreplaceable function as a unifying linguistic code in the biomedical sciences. In conclusion, the thesis on the need to preserve Latin as a reference framework in anatomical terminology is presented, along with the integration of modern bilingual structures that reflect current linguistic and didactic realities, as well as the need for its presence in the curricula of medical specialties. The importance of Latin is emphasized not as an anachronism, but as one of the most reliable and appropriate tools for scientific clarity, standardization, and universalism.

***Keywords:*** *Latin language, anatomical nomenclature, terminology, standardization.*
**Field:** Humanities

## 1. INTRODUCTION

Scientific nomenclature (from Latin nomenclatura - “list of names”) is a set of names used in every branch of science to designate objects of study (Vocabulary.com, n.d.), and its compilation is one of the most significant achievements of modern scientific thought. Specialized nomenclature aims to ensure clear and accurate communication in a given scientific field, which is why it has several important characteristics: unambiguity, precision, international uniformity, and stability. Anatomical nomenclature is also a component of scientific nomenclature. About 5,000 years ago in Ancient Greece, the first definitions of parts of the human body were given. They were spontaneous and depended on the observations and imagination of the author. During this period, there were about seven hundred anatomical names.

In the 15th century, Leonardo da Vinci brought order to anatomical nomenclature, becoming the first to categorize the muscles of the human body according to their function. After da Vinci’s death, Andreas Vesalius continued to contribute to the development and systematization of nomenclature by removing Arabic definitions and translating all foreign words into classical Latin in his treatise De humani corporis fabrica (1543) (Kemp, 2017). In doing so, he attempted to achieve accuracy, etymological logic, and didactic clarity.

By the end of the 18th century, the number of anatomical names exceeded 30,000 and they needed to be selected and scientifically systematized. Henle (F. G. J. Henle) made a significant contribution to the development of anatomical terminology. Together with Owen (R. Owen), he proposed a number of terms denoting the planes and axes of the human body (ventralis - abdominal; dorsalis - spinal; medialis - directed inward, toward the midline; lateralis - directed outward from it), which greatly facilitates and simplifies the presentation of anatomy. Henle published the first descriptions of the structure and distribution of human epithelial tissue and the fine structures of the eye and brain as early as 1834, which contributed to the standardization of the language of anatomy (Britannica Editors, 2025).

His works, especially Handbuch der systematischen Anatomie des Menschen (Systematic Handbook of Human Anatomy), played a role in shaping the anatomical descriptions used in later official nomenclatures such as Basle Nomina Anatomica (BNA), which codified about 5,600 Latin terms and eliminated redundant information, and later developed into Terminologia Anatomica (TA) ((Kinne-Saffran & Kinne, 1994, pp 355-360).

Subsequently, fundamental works appeared that significantly improved anatomical nomenclature.

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Among them, Hyrtl's study in the field of anatomical names, Onomatologia anatomica, occupies an important place, in which he concludes, "Anatomical language may have its whims in the choice of words for new terms and concepts, because every language has such whims, but these whims must not conflict with the inviolable rules of grammar and etymology" (J. Hyrtl, 1880, pp. 6-14). Hyrtl's goal was to reform and standardize anatomical nomenclature in order to facilitate communication and education in the medical community. Wilhelm His (1863-1934) played an important role in the development of anatomical terminology.

On the initiative of Wilhelm His's father, the German Anatomical Society discussed the issue of revising anatomical nomenclature at its meeting in Leipzig in 1887, "instructing its board of directors to prepare for the implementation of this undertaking. The reason for this is the anarchy that has existed in this field for years and from which both teachers and students suffer, as well as the harm to scientific research" (His, W, 1895, pp. 1-2). As a result, in 1889 a special commission was set up under the chairmanship of Kölliker (His, W, 1895, p. 3), with the participation of scientists from a number of countries. The list of Latin and anatomical terms drawn up by the commission was adopted at the congress of the Anatomical Society in Basel (1895) and was named the Basel Anatomical Nomenclature (Baseler Nomina Anatomica - BNA).

The BNA is based on terms indicating the direction, position, and relationship of body parts in relation to an upright person. Its compilers adhere to the following principles: 1) elimination of synonyms; each part must have one name - Latin, as short and simple as possible. Thus, out of about 50,000 terms used, 4,500 are retained (Eycleshymer, A, 1917, p.10); 2) the name must contribute to quick memorization, but not be a description or explanation; 3) proper names in the names are placed in brackets [e.g. tuba auditiva (Eustahii)]; 4) adjectives must indicate their opposites. The BNA contains about 5,600 terms. Identical terms known by different names are combined. This unified anatomical nomenclature has been quickly recognized in a number of countries in Europe, as well as in America, but has not been recognized in France and the United Kingdom (Kachlik, Baca, Bozdechova, Cech, & Musil, 2008, pp. 459–466).

In addition to its influence on anatomical vocabulary, the linguistic role of Latin is based in part on the nature of scientific thinking. The grammatical categories of Latin allow it to create semantically consistent and precise compound words as an integrative language (Rey, 2020). English is the dominant language in medical science, but Latin retains its authority as the reference language for anatomical, histological, and embryological terminology (Tzamaloukas & D'Antoni, 2022). For this reason, in this article, I can analyze the historical development, linguistic arguments, and standardization of the use of Latin in anatomical nomenclature, while also seeking to examine the continuing influence of Latin on scientific and medical language, communication, and education today.

## 2. MATERIALS AND METHODS

This research uses a qualitative and descriptive methodological framework combining historical, linguistic, and terminological analysis. The aim is to trace the development of anatomical nomenclature from its origins in antiquity to the most recent international revisions, while identifying the linguistic tools that have ensured its universality and continuity. The analysis is based on the study of commonly accepted anatomical nomenclatures, scientific publications, and commentaries, with an emphasis on the influence of Latin as a means of standardization.

Using a historical-linguistic approach, we can reconstruct the development of terms from Antiquity and identify patterns of lexical stabilization and reform. Comparative analysis is used to study the relationship between individual nomenclatures and to determine the ways in which Latin terminology has adapted over time in anatomical science and in changes in educational practices. In addition, a terminological-descriptive approach is applied to focus attention on the structural and morphological characteristics of Latin anatomical terms (derivation, composition, semantic transparency, etc.) that give them precision and durability.

Instead of quantitative indicators, this article emphasizes the qualitative and functional aspects of linguistic stability, consistency, and international comprehensibility. Applying this integrated methodological approach, this study attempts to clarify how Latin has shaped the conceptual and communicative foundations of modern anatomical science and continues to serve as its normative reference system.

## 3. RESULTS

Despite its contributions, the BNA also has a number of shortcomings. Some names are inaccurate, and linguistic errors remain. With the development of morphological science, anatomical terminology needs

to be refined and supplemented. In 1903, the IFAA (International Federation of Anatomical Associations) was established, which began work on revising the BNA in 1905. Due to the lengthy work, the Anatomical Society of Great Britain and Ireland published its own modification of the nomenclature in 1933, called the Birmingham Revision (Kachlik, D., Baca, V., Bozdechova, I., Cech, P., & Musil, V., 2008, p. 461). The Anatomical Society responded and, two years later, approved its own revision, called Jenaiensia Nomina Anatomica (INA, I.N.A.), which focused more on veterinary anatomy, the horizontal position of the body, and made many linguistic corrections. In 1936, the IFAA established the International Anatomical Nomenclature Committee (IANC) to create an international anatomical nomenclature in Latin, but due to the war, it began work in 1952 (Kachlik, D., Baca, V., Bozdechova, I., Cech, P., & Musil, V., 2008, p. 461) The committee's work focused on creating a Latin anatomical nomenclature based entirely on the BNA, as the INA was not approved.

In 1955, the committee created Nomina Anatomica, which contained 5,640 terms, about 80% of which were unchanged from the BNA. It is also known as the Parisian anatomical nomenclature - Parisiensia Nomina Anatomica (PNA) and was adopted at the Sixth International Anatomical Congress in Paris in 1955 (Britannica Editors, 2024; Kachlik et al., 2008). In 1961 the Paris Anatomical Nomenclature (PNA) was revised and from then on began to be called Nomina Anatomica NA). NA underwent a third revision in 1966, a fourth revision in 1977, and a fifth revision in 1983. The sixth revision, published in 1989, was not approved by the IFAA, which appointed a commission called the Federal Committee on Anatomical Terminology (FCAT).

In 1998, this committee published a new nomenclature called Terminologia Anatomica or International Anatomical Nomenclature, abbreviated TA98. It is a bilingual nomenclature offering anatomical terms in both Latin and English (Sakai T, 2007). In this nomenclature, all eponyms have been removed. The latest revision of TA98 was made in 2023 and adopted at a meeting in Würzburg. It is called "Terminologia anatomica 2023 of the Anatomische Gesellschaft-International Anatomical Terminology (TA2023AG)" (Pretterklieber M. L., 2024). This edition is recommended for use in all anatomy textbooks. It further harmonizes digital and educational standards, retaining Latin as the primary linguistic framework while providing updated English equivalents for broader accessibility (Yamada & Shimizu, 2021).

In summary, the results outline three main theses:

1. Latin has functioned as a stable linguistic axis, maintaining conceptual precision over the centuries.
2. The reforms from BNA to TA2023AG demonstrate a continuous process of linguistic refinement rather than replacement.
3. The use of Latin and English in modern anatomical terminology has proven to be a successful model of diachronic connectivity and successful application in scientific language.

## 4. DISCUSSION

It is remarkable that as a phenomenon, Latin has been actively preserved in both historical and contemporary aspects to this day in anatomical nomenclature, serving as a mechanism for scientific precision and linguistic accuracy. The results of this study confirm that Latin still performs three important linguistic functions: stability, universality, and semantic transparency. These characteristics have allowed anatomy to maintain a single systematized terminology even in the enormous linguistic diversity of the modern global world and the technological boom in the development of medical knowledge (Williams, 1998; Rey, 2020). As an inflectional language, Latin possesses morphological flexibility, thus making it easy to structure and compose phrases without ambiguity. The fact that descriptive expressions such as musculus flexor digitorum longus or arteria circumflexa humeri posterior are formed with ease in Latin demonstrates the economy and precision of the Latin language system. These grammatical devices enhance semantic economy and hierarchical structure, features that are absent in modern analytical languages (Tzamaloukas & D'Antoni, 2022).

In addition, Latin also provides a degree of linguistic neutrality. Unlike English, which dominates scientific discourse but is bound up with national and cultural identity, Latin is a "dead yet living language" – free from political ownership and universally accepted in international relations (Whitmore, 2019). This neutrality allows anatomists, educators, and physicians of different linguistic and cultural backgrounds to use a common conceptualized vocabulary. However, the discussions also reveal some problems. The inclusion of English equivalents in Terminologia Anatomica (1998) and TA2023AG serves to facilitate access and increase efficiency, especially in medical education – an area where students may not have a classical language training embedded in the curriculum. This bilingual approach has given rise to debate as to whether Latin should still be required in the training of medical professionals (Ghosh, 2021).

Defenders of Latin emphasize its role as the "linguistic skeleton" of anatomy, the structure upon which terminological precision rests. Opponents argue that such a complete transition to English could facilitate learning, but would come at the cost of losing historical and etymological value (Hildebrandt, 2016). A more symmetrical approach is present in modern anatomy. According to the Federated International Program for Anatomical Terminology (FIPAT, 2023), Latin is still considered the official language of reference in the international terminology of anatomy. English translations have been used for worldwide dissemination and didactic clarity in the learning process.

This dual model illustrates a successful combination of tradition and modernity, with Latin as the basis for conceptual rigor and continuity, and English as a means of communicative accessibility. Thus, the debate argues that the preservation of Latin in anatomy is not an anachronism, but a correct strategy for meeting the epistemic needs of medical science. Moreover, the structural precision and semantic transparency of the Latin language itself become means of standardized regulation, so that the anatomical language is both historically accurate and functionally adaptable in an increasingly globalized medical education.

## 5. CONCLUSIONS

It is on this rational, well-founded basis that I argue that Latin is the universal language of anatomical nomenclature and medical terminology. The intransitive nature of this language system throughout history demonstrates its adaptability to change and scientific progress, but also expresses the consistency of its semantics and syntax. Latin has helped to ensure the global uniformity and comparability of anatomical terms and information and has facilitated the transfer of medical knowledge across generations and cultures (Rey, 2020).

A review of the revisions from the Basel Nomina Anatomica (1895) through the Parisiensia Nomina Anatomica (1955) to Terminologia Anatomica 2023 (TA2023AG) is positive; new editions generally carry out their revisions through improvement and refinement, rather than replacement. Anatomical terminology is built and established in Latin as a lexical base, which is confirmed by all existing revisions, although there are bilingual English equivalents that serve mainly educational purposes (FIPAT, 2023). Latin and English coexist in modern medical education in a pragmatic amalgam of tradition and pragmatism.

While Latin provides conceptual stability, morphological precision and etymological clarity, English makes it accessible and promotes its use on a global scale (Tzamaloukas & D'Antoni, 2022). A symbiosis similar to the classical and modern language systems maintains scientific rigor and didactic clarity in the construction of anatomical nomenclature. Future revisions of terminology should retain Latin as the normative linguistic base, not only for historical reasons, but also because of its unique ability to generate systematic and semantically coherent terminology.

As digital health and multilingual resources grow, Latin will continue to provide a reference framework for maintaining linguistic accuracy and for interdisciplinary collaboration. In this sense, Latin is preserved not so much as the result of an outdated classical education, but as one of the most reliable and relevant tools for scientific clarity, standardization, and universalism. Its preservation in the language of anatomy testifies to the fundamental relationship between linguistic order and scientific knowledge, a relationship that characterizes the language of anatomy.

## REFERENCES

Britannica Editors. (2025, July 15). Friedrich Gustav Jacob Henle. Encyclopedia Britannica. Retrieved October 30, 2025, from https://www.britannica.com/biography/Friedrich-Gustav-Jacob-Henle

Eycleshymer, Albert (1917). Anatomical names especially the Basle nomina anatomica (BNA), p.10, New York W. Wood.

Federative International Programme on Anatomical Terminologies (FIPAT). (2023). Terminologia Anatomica 2023 (TA2023AG). Würzburg: Anatomische Gesellschaft.

Ghosh, S. K. (2021). Human anatomy: Historical and conceptual foundations. Springer.

Hildebrandt, S. (2016). The history of anatomy: Past, present, and future. Anatomical Sciences Education, 9(2), 117–128. https://doi.org/10.1002/ase.1552

Hyrtl, J. (1880). Onomatologia anatomica: Geschichte und Kritik der anatomischen Sprache der Gegenwart, mit besonderer Berücksichtigung ihrer Barbarismen, Widersinnigkeiten, Tropen und grammatikalischen Fehler (pp. 6–14). Wien: W. Braumüller.

Kachlik, D., Baca, V., Bozdechova, I., Cech, P., & Musil, V. (2008). Anatomical terminology and nomenclature: past, present and highlights. Surgical and radiologic anatomy : SRA, 30(6), 459–466. https://doi.org/10.1007/s00276-008-0357-y

Kemp, M. (2017). Leonardo da Vinci: The marvellous works of nature and man. Oxford University Press.

Kinne-Saffran, E., & Kinne, R. K. (1994). Jacob Henle: the kidney and beyond. American journal of nephrology, 14(4-6), 355–360. https://doi.org/10.1159/000168747

Pretterklieber M. L. (2024). Nomina anatomica-unde venient et quo vaditis?. Anatomical science international, 99(4), 333–347.

https://doi.org/10.1007/s12565-024-00762-w
Rey, A. (2020). The persistence of Latin in medical and scientific terminology. Language and Communication in Medicine, 42(3), 201–215. https://doi.org/10.1016/j.lcim.2020.03.005
Sakai T (2007) Historical evolution of anatomical terminology from ancient to modern. Anat Sci Int 82:65–81 10.1111/j.1447-073X.2007.00180.x
Sudhoff, K. (2002). Essays in the history of medicine. Johns Hopkins University Press.
The Editors of Encyclopaedia Britannica (2024, October 28). anatomy. Encyclopedia Britannica. Retrieved October 30, 2025, from https://www.britannica.com/science/anatomy
Tzamaloukas, A. H., & D'Antoni, A. V. (2022). The continuing importance of Latin in modern anatomical and medical terminology. Clinical Anatomy, 35(4), 501–509. https://doi.org/10.1002/ca.23843
Vocabulary.com. (n.d.). Nomenclature. In Vocabulary.com Dictionary. Retrieved March 9, 2025, from https://www.vocabulary.com/dictionary/nomenclature
Whitmore, I. (2019). Evolution of anatomical terminology and the role of the Federative Committee on Anatomical Terminology. European Journal of Anatomy, 23(1), 7–14.
Wilhelm His. Die anatomische Nomenclatur: Nomina anatomica. Leipzig: Veit & Comp., p.1-2,1895.
Williams, P. L. (Ed.). (1998). Terminologia Anatomica: International Anatomical Terminology. Thieme.
Yamada, M., & Shimizu, Y. (2021). Digital anatomy and the modernization of Terminologia Anatomica: Challenges and perspectives. Journal of Anatomy and Education, 44(2), 89–102. https://doi.org/10.1016/j.janat.2021.05.003